Robinson+Cole

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April 9, 2018

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**
Oliver Road, Enfield, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) antennas at the 149-foot level of an existing 160-foot tower off Oliver Road in Enfield, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). The Council approved Cellco's use of this tower in 1991 (Docket No. 139). Cellco now intends to remove all of its existing antennas and install nine (9) new antennas (one (1) model BXA-80063-4CF, 850 MHZ antenna; two (2) model BXA-70080-4CF, 850 MHz antennas; three (3) model SBNHH-1D65B, 700 MHz antennas; and three (3) model SBNHH-1D65B, 2100 MHz antennas) all at the same 149-foot level on the tower. Cellco also intends to replace three (3) remote radio heads ("RRHs") with three (3) newer model RRHs, install six (6) new RRHs and install two (2) HYBRIFLEX™ fiber optic antenna cables, attached to the outside of the monopole. 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 Bryan Chodkowski, Enfield's Town Manager; Roger J. O'Brien, Enfield's Town Planner; Oliver Road Holding LLC, the owner of the Property; and Crown, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the

existing structure. Cellco's new antennas and RRHs will be attached to its existing antenna platform at the 149-foot level of 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 installation of replacement antennas and RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included in Attachment 2.

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

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

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

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Bryan Chodkowski, Town Manager
Roger J. O'Brien, Director of Planning
Oliver Road Holding LLC
Crown Castle
Tim Parks

ATTACHMENT 1

BXA-80063-4CF-EDIN-X

X-Pol | FET Panel | 63° | 13.0 dBd

Replace "X" with desired electrical downtilt.

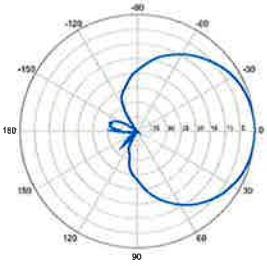
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	
Frequency bands	806-900 MHz*
*Optional frequency band for iDEN	806-941 MHz (specify when ordering)
Polarization	±45°
Horizontal beamwidth	63°
Vertical beamwidth	15°
Gain	13.0 dBd (15.1 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 9, 10, 12, 14
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-22.1 dB
Front-to-back ratio (+/-30°)	-34.9 dB
Null fill	5% (-26.02 dB)
Isolation between ports	< -25 dB
Input power with EDIN connectors	500 W
Input power with NE connectors	300 W
Lightning protection	Direct Ground
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)

Mechanical Characteristics				
Dimensions Length x Width x Depth	1205 x 285 x 133 mm		47.4 x 11.2 x 5.2 in	
Depth with z-brackets	173 mm		6.8 in	
Weight without mounting brackets	4.5 kg		9.9 lbs	
Survival wind speed	> 201 km/hr		> 125 mph	
Wind area	Front: 0.34 m^2	Side: 0.16 m^2	Front: 3.7 ft^2	Side: 1.7 ft^2
Wind load @ 161 km/hr (100 mph)	Front: 498 N	Side: 260 N	Front: 111 lbf	Side: 55 lbf

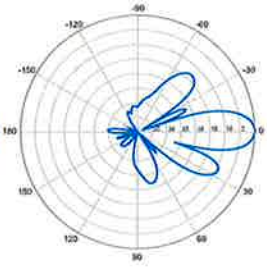
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit	36210006	40-115 mm 1.57-4.5 in	4.1 kg 9 lbs
Concealment Configurations	For concealment configurations, order BXA-80063-4CF-EDIN-X-FP		

BXA-80063-4CF-EDIN-X



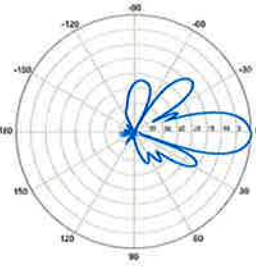
Horizontal

BXA-80063-4CF-EDIN-0



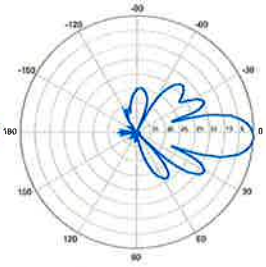
0° | Vertical

BXA-80063-4CF-EDIN-2



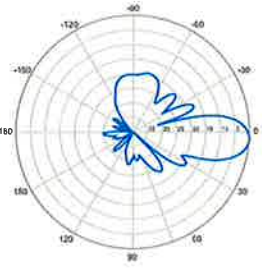
2° | Vertical

BXA-80063-4CF-EDIN-3



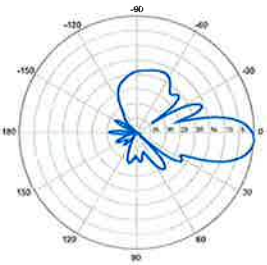
3° | Vertical

BXA-80063-4CF-EDIN-4



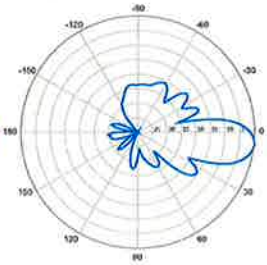
4° | Vertical

BXA-80063-4CF-EDIN-5



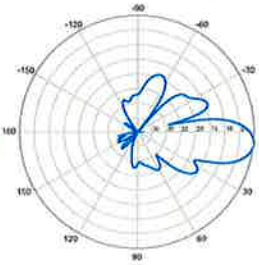
5° | Vertical

BXA-80063-4CF-EDIN-6



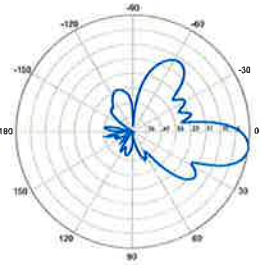
6° | Vertical

BXA-80063-4CF-EDIN-8



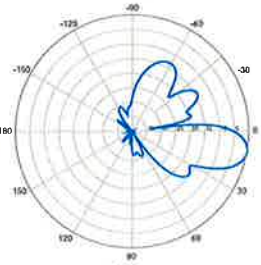
8° | Vertical

BXA-80063-4CF-EDIN-9



9° | Vertical

BXA-80063-4CF-EDIN-10



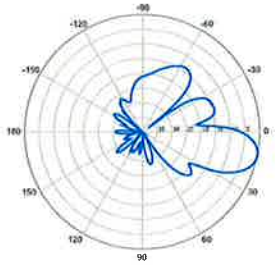
10° | Vertical

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

BXA-80063-4CF-EDIN-X

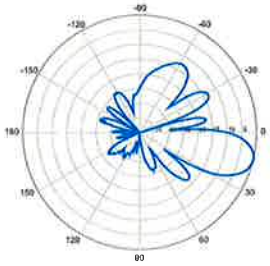
X-Pol | FET Panel | 63° | 13.0 dBd

BXA-80063-4CF-EDIN-12



12° | Vertical

BXA-80063-4CF-EDIN-14



14° | Vertical

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BXA-70080-4CF-EDIN-X

X-Pol | FET Panel | 80° | 12.0 dBd

Replace "X" with desired electrical downtilt.

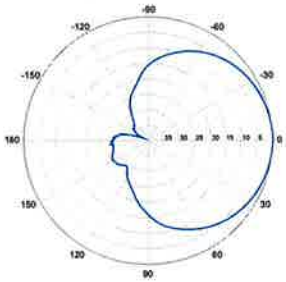
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	82°	80°
Vertical beamwidth	17°	15°
Gain	11.5 dBd (13.6 dBi)	12.0 dBd (14.1 dBi)
Electrical downtilt (X)	0, 2, 4, 6, 8, 10, 12, 14	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-11.8 dB	-13.1 dB
Front-to-back ratio (+/-30°)	-30.3 dB	-36.7 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -25 dB	
Input power with EDIN connectors	500 W	
Input power with NE connectors	300 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	

Mechanical Characteristics		
Dimensions Length x Width x Depth	1206 x 204 x 151 mm	47.5 x 8.0 x 5.9 in
Depth with z-brackets	196 mm	7.7 in
Weight without mounting brackets	5.4 kg	12 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.25 m² Side: 0.18 m²	Front: 2.6 ft² Side: 1.9 ft²
Wind load @ 161 km/hr (100 mph)	Front: 351 N Side: 280 N	Front: 79 lbf Side: 61 lbf

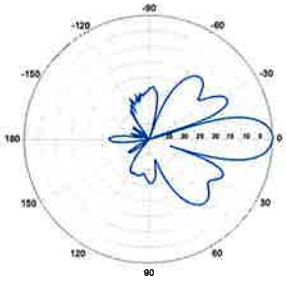
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit	36210006	40-115 mm 1.57-4.5 in	4.1 kg 9 lbs
Concealment Configurations	For concealment configurations, order BXA-70080-4CF-EDIN-X-FP		

BXA-70080-4CF-EDIN-X



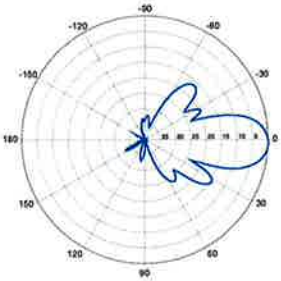
Horizontal | 750 MHz

BXA-70080-4CF-EDIN-0

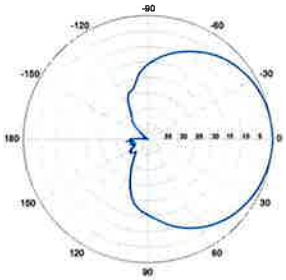


0° | Vertical | 750 MHz

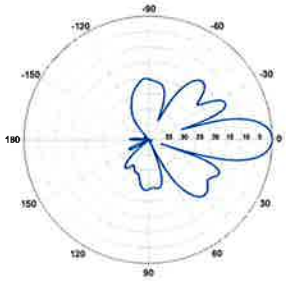
BXA-70080-4CF-EDIN-2



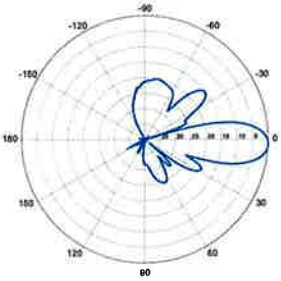
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



2° | Vertical | 850 MHz

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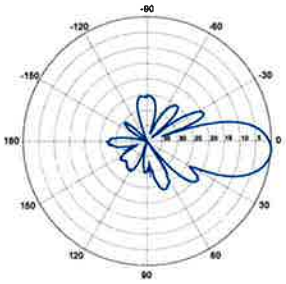
BXA-70080-4CF-EDIN-X

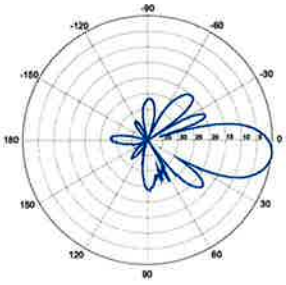
X-Pol | FET Panel | 80° | 12.0 dBd

BXA-70080-4CF-EDIN-4



4° | Vertical | 750 MHz

BXA-70080-4CF-EDIN-6



6° | Vertical | 750 MHz

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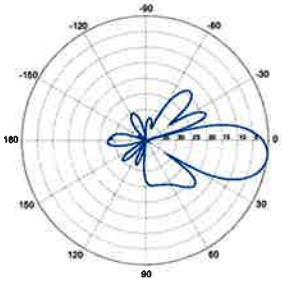
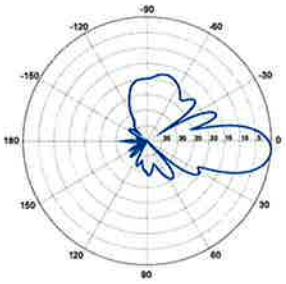
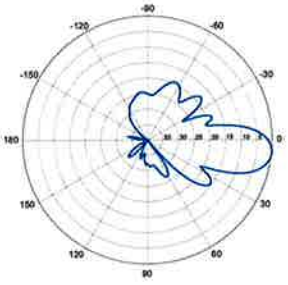


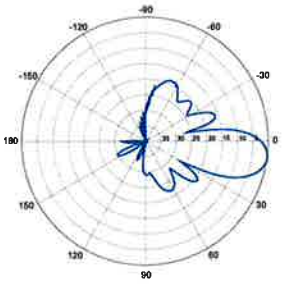
8° | Vertical | 750 MHz



4° | Vertical | 850 MHz

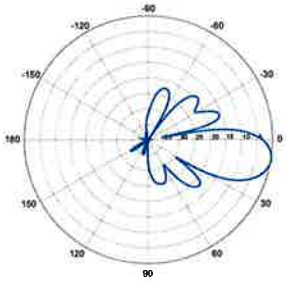


6° | Vertical | 850 MHz



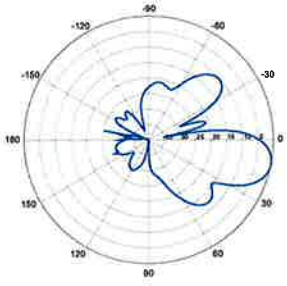
8° | Vertical | 850 MHz

BXA-70080-4CF-EDIN-10



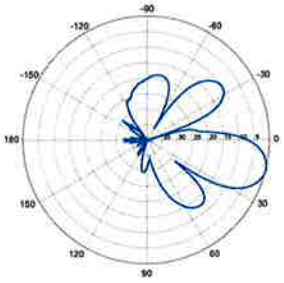
10° | Vertical | 750 MHz

BXA-70080-4CF-EDIN-12

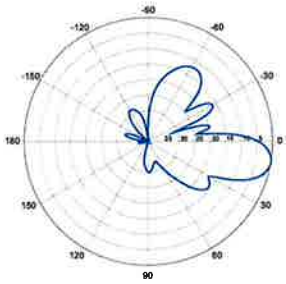


12° | Vertical | 750 MHz

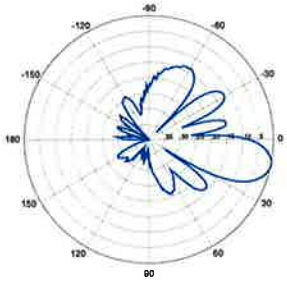
BXA-70080-4CF-EDIN-14



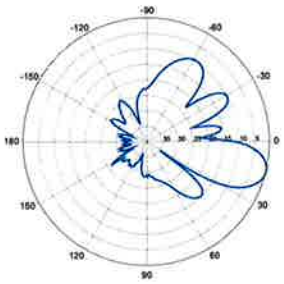
14° | Vertical | 750 MHz



10° | Vertical | 850 MHz



12° | Vertical | 850 MHz



14° | Vertical | 850 MHz

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Product Specifications

COMMSCOPE®

SBNHH-1D65B

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

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

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

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

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All specifications are subject to change without notice. See www.commscope.com for the most current information. Revised: May 26, 2017

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

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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

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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

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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.

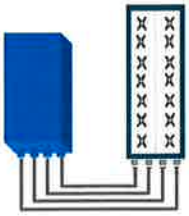
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

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ALCATEL-LUCENT B25 RRH4X30

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

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

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

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

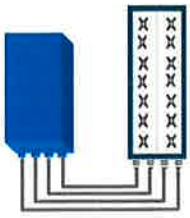
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

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

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ALCATEL-LUCENT B66A RRH4X45

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

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

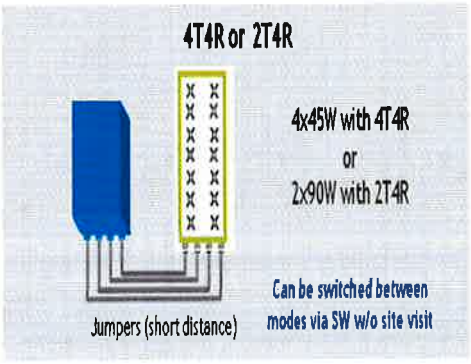
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

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

FEATURES

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



BENEFITS

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

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

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Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

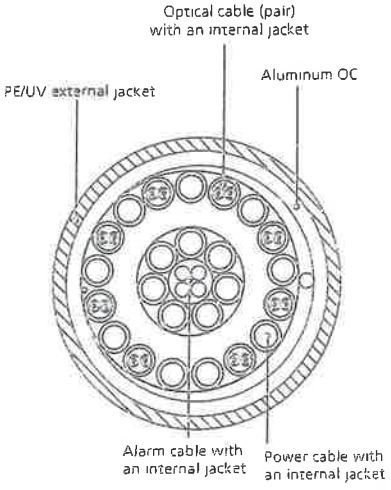

Figure 2: Construction Detail

* This data is provisional and subject to change

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

ATTACHMENT 2

	General	Power	Density					
Site Name: Enfield								
Tower Height: 160Ft.								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*AT&T-UMTS	2	414	163	850	0.0121	0.5667	0.21%	
*AT&T-PCS-UMTS	2	656	163	1900	0.0191	1.0000	0.19%	
*AT&T-LTE	2	1239	163	700	0.0362	0.4667	0.77%	
*AT&T-PCS-LTE	4	1876	163	1900	0.1095	1.0000	1.09%	
*AT&T-WCS-LTE	4	1672	163	2300	0.0976	1.0000	0.98%	
*T-Mobile	2	2334	117	1900	0.1363	1.0000	1.36%	
*T-Mobile	4	1167	117	1900	0.1363	1.0000	1.36%	
*T-Mobile	1	865	117	700	0.0253	0.4667	0.54%	
*Clearwire	2	153	137	2496	0.0064	1.0000	0.06%	
*Clearwire	1	211	139	11 GHz	0.0043	1.0000	0.04%	
*Sprint	3	348	135	1900	0.0225	1.0000	0.23%	
*Sprint	1	195	135	850	0.0042	0.5667	0.07%	
*Sprint	2	195	135	2500	0.0084	1.0000	0.08%	
*Nextel	1	542	130	851	0.0127	0.5673	0.22%	
*XM Sat Radio	1	293	95	2330	0.0133	1.0000	0.13%	
*Page Net	1	510	110	930	0.0170	0.6200	0.27%	
Verizon PCS	**0**	**1637**	**149**	**0.0000**	**1970**	**1.0000**	**0.00%**	
Verizon Cellular	**9**	**314**	**149**	**0.0458**	**869**	**0.5793**	**7.90%**	
Verizon AWS	**1**	**7951**	**149**	**0.1288**	**2145**	**1.0000**	**12.88%**	
Verizon 700	**1**	**2583**	**149**	**0.0418**	**746**	**0.4973**	**8.41%**	
								36.83%
* Source: Siting Council								

ATTACHMENT 3

PJF PAUL J. FORD & COMPANY

Date: **March 13, 2018**

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

Paul J. Ford and Company
250 East Broad Street, Suite 600
Columbus, Ohio 43215
614-221-6679
gaustin@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	806373
	Crown Castle Site Name:	HRT 101 943232
	Crown Castle JDE Job Number:	482769
	Crown Castle Work Order Number:	1538224
	Crown Castle Application Number:	424290 Rev. 4
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-0622.002.7805
Site Data:	**4 Oliver Road, ENFIELD, Hartford County, CT** **Latitude *41° 57' 36.2"*, Longitude *-72° 35' 32.3"*** **160 Foot - Monopole Tower**	

Dear Charles McGuirt,

Paul J. Ford and Company 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 1155458, in accordance with application 424290, revision 4.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

We at *Paul J. Ford and Company* 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:

Grant J. Austin
Structural Designer TJD

STATE OF CONNECTICUT JUSTIN T. KLINE No. 30301 LICENSED PROFESSIONAL ENGINEER

3-15-18

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by VALMONT in November of 1991. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

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
149.0	149.0	3	alcatel lucent	B13 RRH 4X30	2	1-5/8	--
		3	alcatel lucent	B25 RRH4X30			
		3	alcatel lucent	B66A RRH4X45			
		2	antel	BXA-70080/4CF w/ MP			
		1	antel	BXA-80063/4CF w/ MP			
		6	commscope	SBNHH-1D65B w/ MP			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
158.0	163.0	3	powerwave tech.	7770.00 w/ MP	--	--	1
		3	cci antennas	HPA-65R-BUU-H8 w/ MP	1 4	3/8 3/4	2
		3	cci antennas	TPA-65R-LCUUUU-H8 w/ MP			
		3	ericsson	RRUS 11			
	158.0	2	raycap	DC6-48-60-18-8F			
		3	ericsson	RRUS 32			
		3	ericsson	RRUS 32 B2			
		3	ericsson	RRUS 11 B12	1 2	3/8 3/4	1
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 303-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
149.0	149.0	3	alcatel lucent	RRH2X40-AWS	2 1	7/8 1-1/4	3
		1	antel	BXA-185063/8CF w/ MP			
		2	antel	BXA-185090/8CFX2 w/ MP			
		1	antel	BXA-70063/6CF w/ MP			
		1	antel	BXA-70063/6CFX4 w/ MP			
		1	antel	BXA-70063/6CFX6 w/ MP			
		2	antel	LPA-80063/4CF w/ MP			
		4	antel	LPA-80080/4CF w/ MP			
		3	kathrein	742 213 w/ MP			
		6	rfs celwave	FD9R6004/2C-3L			
		1	rfs celwave	DB-T1-6Z-8AB-0Z	10	7/8	1
		1	tower mounts	Platform Mount [LP 602-1]			
137.0	138.0	3	alcatel lucent	TME-PCS 1900MHz 4x45W-65MHz	--	--	1
	137.0	1	tower mounts	Side Arm Mount [SO 101-3]			
	135.0	3	alcatel lucent	TME-800MHz 2X50W RRH W/FILTER			
135.0	139.0	1	andrew	VHLP2.5-11	6 1 1 3	1/4 1/2 5/8 1-1/4	1
		1	dragonwave	HORIZON COMPACT			
	135.0	3	alcatel lucent	TD-RRH8X20-25			
		3	argus tech.	LLPX310R-V1 w/ MP			
		1	motorola	TIMING 2000			
		1	rfs celwave	APXV9ERR18-C-A20 w/ MP			
		2	rfs celwave	APXVSPP18-C-A20 w/ MP			
		3	rfs celwave	APXVTM14-C-120 w/ MP			
		3	samsung telecomm.	WIMAX DAP HEAD			
		1	tower mounts	Platform Mount [LP 602-1]			
116.0	117.0	3	commscope	LNX-6515DS-VTM w/ MP	1 6	1-1/4 1-5/8	1
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ MP			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ MP			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			
	116.0	1	tower mounts	T-Arm Mount [TA 602-3]			
47.0	48.0	1	lucent	KS24019-L112A	1	1/2	1
	47.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 07-07210G, 07/26/2007	821582	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 128355, 02/12/2013	3747614	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 34889.66086, 10/26/2017	7162974	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	SAC, 1991-16, 11/06/1991	821581	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valont, 10614-91, 11/09/1991	822743	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) Monopole was modified in conformance with the referenced modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size		% Capacity	Pass / Fail
L1	160 - 155	Pole	TP20x20x0.25	Pole	21.1%	Pass
L2	155 - 150.5	Pole	TP20x20x0.25	Pole	36.0%	Pass
L3	150.5 - 150	Pole	TP20.3x20x0.25	Pole	36.6%	Pass
L4	150 - 145	Pole	TP21.325x20.3x0.25	Pole	29.3%	Pass
L5	145 - 140	Pole	TP22.35x21.325x0.25	Pole	39.5%	Pass
L6	140 - 135	Pole	TP23.375x22.35x0.25	Pole	49.5%	Pass
L7	135 - 130	Pole	TP24.4x23.375x0.25	Pole	62.9%	Pass
L8	130 - 125	Pole	TP25.425x24.4x0.25	Pole	74.9%	Pass
L9	125 - 120	Pole	TP26.45x25.425x0.25	Pole	85.8%	Pass
L10	120 - 119.75	Pole + Reinf.	TP26.501x26.45x0.3688	Reinf. 4 Tension Rupture	71.8%	Pass
L11	119.75 - 114.75	Pole + Reinf.	TP27.526x26.501x0.3625	Reinf. 4 Tension Rupture	80.8%	Pass
L12	114.75 - 111.75	Pole + Reinf.	TP28.141x27.526x0.3625	Reinf. 4 Tension Rupture	86.4%	Pass
L13	111.75 - 111.5	Pole + Reinf.	TP28.192x28.141x0.4	Reinf. 3 Tension Rupture	79.2%	Pass
L14	111.5 - 106.5	Pole + Reinf.	TP29.217x28.192x0.3938	Reinf. 3 Tension Rupture	87.4%	Pass
L15	106.5 - 102	Pole + Reinf.	TP31.13x29.217x0.3875	Reinf. 3 Tension Rupture	94.1%	Pass
L16	102 - 97	Pole + Reinf.	TP30.665x29.64x0.5125	Reinf. 3 Tension Rupture	78.9%	Pass
L17	97 - 92	Pole + Reinf.	TP31.69x30.665x0.5125	Reinf. 3 Tension Rupture	83.6%	Pass
L18	92 - 87	Pole + Reinf.	TP32.715x31.69x0.5	Reinf. 3 Tension Rupture	87.9%	Pass
L19	87 - 82	Pole + Reinf.	TP33.74x32.715x0.5	Reinf. 3 Tension Rupture	91.9%	Pass
L20	82 - 79.33	Pole + Reinf.	TP34.288x33.74x0.5	Reinf. 3 Tension Rupture	93.9%	Pass
L21	79.33 - 79.08	Pole + Reinf.	TP34.339x34.288x0.7625	Reinf. 6 Tension Rupture	74.3%	Pass
L22	79.08 - 75.25	Pole + Reinf.	TP35.124x34.339x0.75	Reinf. 6 Tension Rupture	76.9%	Pass
L23	75.25 - 75	Pole + Reinf.	TP35.176x35.124x0.75	Reinf. 6 Tension Rupture	77.1%	Pass
L24	75 - 70	Pole + Reinf.	TP36.201x35.176x0.7375	Reinf. 6 Tension Rupture	80.4%	Pass
L25	70 - 65	Pole + Reinf.	TP37.226x36.201x0.725	Reinf. 6 Tension Rupture	83.6%	Pass
L26	65 - 63.25	Pole + Reinf.	TP37.585x37.226x0.725	Reinf. 6 Tension Rupture	84.6%	Pass
L27	63.25 - 63	Pole + Reinf.	TP37.636x37.585x0.8	Reinf. 5 Compression	73.2%	Pass
L28	63 - 58	Pole + Reinf.	TP38.661x37.636x0.775	Reinf. 5 Compression	75.8%	Pass
L29	58 - 55	Pole + Reinf.	TP40.49x38.661x0.775	Reinf. 5 Compression	77.4%	Pass
L30	55 - 48.08	Pole + Reinf.	TP39.945x38.526x0.8375	Reinf. 5 Compression	76.9%	Pass
L31	48.08 - 43.08	Pole + Reinf.	TP40.97x39.945x0.8125	Reinf. 5 Compression	79.0%	Pass
L32	43.08 - 38.08	Pole + Reinf.	TP41.994x40.97x0.8125	Reinf. 5 Compression	81.0%	Pass
L33	38.08 - 37.75	Pole + Reinf.	TP42.062x41.994x0.8125	Reinf. 5 Compression	81.1%	Pass
L34	37.75 - 37.5	Pole + Reinf.	TP42.113x42.062x0.8625	Reinf. 5 Compression	76.6%	Pass
L35	37.5 - 35.75	Pole + Reinf.	TP42.472x42.113x0.8625	Reinf. 5 Compression	77.3%	Pass
L36	35.75 - 35.5	Pole + Reinf.	TP42.523x42.472x0.5875	Reinf. 1 Compression	86.9%	Pass
L37	35.5 - 30.5	Pole + Reinf.	TP43.548x42.523x0.575	Reinf. 1 Compression	88.5%	Pass
L38	30.5 - 25.5	Pole + Reinf.	TP44.573x43.548x0.575	Reinf. 1 Compression	89.9%	Pass
L39	25.5 - 20.5	Pole + Reinf.	TP45.598x44.573x0.575	Reinf. 1 Compression	91.2%	Pass
L40	20.5 - 15.5	Pole + Reinf.	TP46.623x45.598x0.5688	Reinf. 1 Compression	92.5%	Pass
L41	15.5 - 10.5	Pole + Reinf.	TP47.648x46.623x0.5625	Reinf. 1 Compression	93.6%	Pass
L42	10.5 - 5.5	Pole + Reinf.	TP48.673x47.648x0.5625	Reinf. 1 Compression	94.7%	Pass
L43	5.5 - 0.5	Pole + Reinf.	TP49.698x48.673x0.5625	Reinf. 1 Compression	95.7%	Pass
L44	0.5 - 0	Pole + Reinf.	TP49.8x49.698x0.5625	Reinf. 1 Compression	95.8%	Pass

Section No.	Elevation (ft)	Component Type	Size		% Capacity	Pass / Fail
					Summary	
				Pole	91.3%	Pass
				Reinforcement	95.8%	Pass
				Overall	95.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	97.0	Pass
1	Base Plate	0	62.2	Pass
1	Base Foundation Structural Steel	0	69.6	Pass
1	Base Foundation Soil Interaction	0	80.1	Pass
1	Extension Connection	150	20.6	Pass

Structure Rating (max from all components) =	97.0%

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

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 97 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.000 ft.
8) Nominal ice thickness of 1.0000 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56 pcf.
11) A wind speed of 50 mph is used in combination with ice.
12) Temperature drop of 50 °F.
13) Deflections calculated using a wind speed of 60 mph.
14) A non-linear (P-delta) analysis was used.
15) Pressures are calculated at each section.
16) Stress ratio used in pole design is 1.
17) 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	160.000-155.000	5.000	0.00	Round	20.0000	20.0000	0.2500		A53-B-35 (35 ksi)
L2	155.000-150.500	4.500	0.00	Round	20.0000	20.0000	0.2500		A53-B-35 (35 ksi)
L3	150.500-150.000	0.500	0.00	Round	20.0000	20.3000	0.2500		A53-B-35 (35 ksi)
L4	150.000-145.000	5.000	0.00	12	20.3000	21.3250	0.2500	1.0000	A572-65 (65 ksi)
L5	145.000-140.000	5.000	0.00	12	21.3250	22.3500	0.2500	1.0000	A572-65 (65 ksi)
L6	140.000-135.000	5.000	0.00	12	22.3500	23.3750	0.2500	1.0000	A572-65 (65 ksi)
L7	135.000-	5.000	0.00	12	23.3750	24.3999	0.2500	1.0000	A572-65

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
	130.000								(65 ksi)
L8	130.000-125.000	5.000	0.00	12	24.3999	25.4249	0.2500	1.0000	A572-65 (65 ksi)
L9	125.000-120.000	5.000	0.00	12	25.4249	26.4499	0.2500	1.0000	A572-65 (65 ksi)
L10	120.000-119.750	0.250	0.00	12	26.4499	26.5012	0.3688	1.4750	A572-65 (65 ksi)
L11	119.750-114.750	5.000	0.00	12	26.5012	27.5261	0.3625	1.4500	A572-65 (65 ksi)
L12	114.750-111.750	3.000	0.00	12	27.5261	28.1411	0.3625	1.4500	A572-65 (65 ksi)
L13	111.750-111.500	0.250	0.00	12	28.1411	28.1924	0.4000	1.6000	A572-65 (65 ksi)
L14	111.500-106.500	5.000	0.00	12	28.1924	29.2174	0.3937	1.5750	A572-65 (65 ksi)
L15	106.500-97.170	9.330	4.83	12	29.2174	31.1300	0.3875	1.5500	A572-65 (65 ksi)
L16	97.170-97.000	5.000	0.00	12	29.6399	30.6650	0.5125	2.0500	A572-65 (65 ksi)
L17	97.000-92.000	5.000	0.00	12	30.6650	31.6902	0.5125	2.0500	A572-65 (65 ksi)
L18	92.000-87.000	5.000	0.00	12	31.6902	32.7153	0.5000	2.0000	A572-65 (65 ksi)
L19	87.000-82.000	5.000	0.00	12	32.7153	33.7404	0.5000	2.0000	A572-65 (65 ksi)
L20	82.000-79.330	2.670	0.00	12	33.7404	34.2879	0.5000	2.0000	A572-65 (65 ksi)
L21	79.330-79.080	0.250	0.00	12	34.2879	34.3391	0.7625	3.0500	A572-65 (65 ksi)
L22	79.080-75.250	3.830	0.00	12	34.3391	35.1244	0.7500	3.0000	A572-65 (65 ksi)
L23	75.250-75.000	0.250	0.00	12	35.1244	35.1756	0.7500	3.0000	A572-65 (65 ksi)
L24	75.000-70.000	5.000	0.00	12	35.1756	36.2008	0.7375	2.9500	A572-65 (65 ksi)
L25	70.000-65.000	5.000	0.00	12	36.2008	37.2259	0.7250	2.9000	A572-65 (65 ksi)
L26	65.000-63.250	1.750	0.00	12	37.2259	37.5847	0.7250	2.9000	A572-65 (65 ksi)
L27	63.250-63.000	0.250	0.00	12	37.5847	37.6360	0.8000	3.2000	A572-65 (65 ksi)
L28	63.000-58.000	5.000	0.00	12	37.6360	38.6611	0.7750	3.1000	A572-65 (65 ksi)
L29	58.000-49.080	8.920	5.92	12	38.6611	40.4900	0.7750	3.1000	A572-65 (65 ksi)
L30	49.080-48.080	6.920	0.00	12	38.5262	39.9447	0.8375	3.3500	A572-65 (65 ksi)
L31	48.080-43.080	5.000	0.00	12	39.9447	40.9696	0.8125	3.2500	A572-65 (65 ksi)
L32	43.080-38.080	5.000	0.00	12	40.9696	41.9945	0.8125	3.2500	A572-65 (65 ksi)
L33	38.080-37.750	0.330	0.00	12	41.9945	42.0621	0.8125	3.2500	A572-65 (65 ksi)
L34	37.750-37.500	0.250	0.00	12	42.0621	42.1133	0.8625	3.4500	A572-65 (65 ksi)
L35	37.500-35.750	1.750	0.00	12	42.1133	42.4720	0.8625	3.4500	A572-65 (65 ksi)
L36	35.750-35.500	0.250	0.00	12	42.4720	42.5233	0.5875	2.3500	A572-65 (65 ksi)
L37	35.500-30.500	5.000	0.00	12	42.5233	43.5482	0.5750	2.3000	A572-65 (65 ksi)
L38	30.500-25.500	5.000	0.00	12	43.5482	44.5731	0.5750	2.3000	A572-65 (65 ksi)
L39	25.500-20.500	5.000	0.00	12	44.5731	45.5980	0.5750	2.3000	A572-65 (65 ksi)
L40	20.500-15.500	5.000	0.00	12	45.5980	46.6228	0.5687	2.2750	A572-65 (65 ksi)
L41	15.500-10.500	5.000	0.00	12	46.6228	47.6477	0.5625	2.2500	A572-65 (65 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
L42	10.500-5.500	5.000	0.00	12	47.6477	48.6726	0.5625	2.2500	A572-65 (65 ksi)
L43	5.500-0.500	5.000	0.00	12	48.6726	49.6975	0.5625	2.2500	A572-65 (65 ksi)
L44	0.500-0.000	0.500		12	49.6975	49.8000	0.5625	2.2500	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	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
L2	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
L3	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
	20.3000	15.7472	791.4264	7.0893	10.1500	77.9730	1582.8528	7.8689	0.0000	0
L4	21.0161	16.1403	828.1804	7.1779	10.5154	78.7588	1678.1181	7.9437	4.7704	19.082
	22.0772	16.9654	961.7976	7.5448	11.0463	87.0693	1948.8628	8.3498	5.0451	20.18
L5	22.0772	16.9654	961.7976	7.5448	11.0463	87.0693	1948.8628	8.3498	5.0451	20.18
	23.1384	17.7905	1109.0649	7.9118	11.5773	95.7966	2247.2663	8.7559	5.3198	21.279
L6	23.1384	17.7905	1109.0649	7.9118	11.5773	95.7966	2247.2663	8.7559	5.3198	21.279
	24.1995	18.6156	1270.6462	8.2787	12.1082	104.9407	2574.6738	9.1620	5.5945	22.378
L7	24.1995	18.6156	1270.6462	8.2787	12.1082	104.9407	2574.6738	9.1620	5.5945	22.378
	25.2607	19.4407	1447.2054	8.6457	12.6392	114.5016	2932.4305	9.5681	5.8692	23.477
L8	25.2607	19.4407	1447.2054	8.6457	12.6392	114.5016	2932.4305	9.5681	5.8692	23.477
	26.3218	20.2658	1639.4063	9.0126	13.1701	124.4793	3321.8816	9.9742	6.1439	24.576
L9	26.3218	20.2658	1639.4063	9.0126	13.1701	124.4793	3321.8816	9.9742	6.1439	24.576
	27.3830	21.0909	1847.9128	9.3796	13.7011	134.8737	3744.3723	10.3803	6.4186	25.674
L10	27.3830	30.9681	2688.7771	9.3371	13.7011	196.2460	5448.1914	15.2416	6.1003	16.543
	27.4360	31.0290	2704.6586	9.3554	13.7276	197.0234	5480.3715	15.2715	6.1141	16.581
L11	27.4360	30.5104	2660.7250	9.3576	13.7276	193.8230	5391.3503	15.0163	6.1308	16.913
	28.4972	31.7068	2986.1678	9.7246	14.2585	209.4300	6050.7855	15.6051	6.4055	17.67
L12	28.4972	31.7068	2986.1678	9.7246	14.2585	209.4300	6050.7855	15.6051	6.4055	17.67
	29.1339	32.4246	3193.6170	9.9448	14.5771	219.0844	6471.1340	15.9584	6.5703	18.125
L13	29.1339	35.7306	3509.7388	9.9313	14.5771	240.7705	7111.6823	17.5855	6.4698	16.175
	29.1869	35.7966	3529.2265	9.9497	14.6037	241.6673	7151.1697	17.6180	6.4836	16.209
L14	29.1869	35.2452	3476.4266	9.9519	14.6037	238.0518	7044.1829	17.3466	6.5003	16.509
	30.2481	36.5448	3875.3261	10.3189	15.1346	256.0574	7852.4613	17.9862	6.7750	17.206
L15	30.2481	35.9725	3816.2944	10.3211	15.1346	252.1569	7732.8472	17.7046	6.7918	17.527
	32.2281	38.3590	4627.3364	11.0058	16.1253	286.9605	9376.2381	18.8791	7.3043	18.85
L16	31.7107	48.0674	5205.2217	10.4276	15.3534	339.0262	10547.1903	23.6573	6.5700	12.819
	31.7468	49.7592	5774.3892	10.7946	15.8845	363.5241	11700.4781	24.4900	6.8447	13.356
L17	31.7468	49.7592	5774.3892	10.7946	15.8845	363.5241	11700.4781	24.4900	6.8447	13.356
	32.8081	51.4509	6383.6048	11.1616	16.4155	388.8767	12934.9140	25.3226	7.1195	13.892
L18	32.8081	50.2161	6235.4009	11.1661	16.4155	379.8484	12634.6128	24.7149	7.1530	14.306
	33.8694	51.8666	6870.6580	11.5331	16.9465	405.4317	13921.8159	25.5272	7.4277	14.855
L19	33.8694	51.8666	6870.6580	11.5331	16.9465	405.4317	13921.8159	25.5272	7.4277	14.855
	34.9307	53.5171	7547.6593	11.9001	17.4776	431.8488	15293.6040	26.3395	7.7024	15.405
L20	34.9307	53.5171	7547.6593	11.9001	17.4776	431.8488	15293.6040	26.3395	7.7024	15.405
	35.4974	54.3985	7926.7350	12.0961	17.7611	446.2971	16061.7142	26.7733	7.8491	15.698
L21	35.4974	82.3132	11808.7106	12.0021	17.7611	664.8630	23927.6492	40.5120	7.1456	9.371
	35.5505	82.4390	11862.9568	12.0204	17.7877	666.9203	24037.5667	40.5740	7.1594	9.389
L22	35.5505	81.1177	11681.5189	12.0249	17.7877	656.7201	23669.9243	39.9237	7.1929	9.591

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
	36.3634	83.0142	12520.1086	12.3060	18.1944	688.1285	25369.1344	40.8570	7.4033	9.871
L23	36.3634	83.0142	12520.1086	12.3060	18.1944	688.1285	25369.1344	40.8570	7.4033	9.871
	36.4165	83.1379	12576.2001	12.3244	18.2210	690.2042	25482.7910	40.9180	7.4171	9.889
L24	36.4165	81.7820	12380.0726	12.3289	18.2210	679.4403	25085.3836	40.2506	7.4506	10.102
	37.4778	84.2165	13518.8894	12.6959	18.7520	720.9301	27392.9351	41.4488	7.7253	10.475
L25	37.4778	82.8182	13303.8137	12.7003	18.7520	709.4607	26957.1333	40.7606	7.7588	10.702
	38.5391	85.2114	14490.7845	13.0673	19.2830	751.4784	29362.2580	41.9385	8.0336	11.081
L26	38.5391	85.2114	14490.7845	13.0673	19.2830	751.4784	29362.2580	41.9385	8.0336	11.081
	38.9106	86.0491	14922.3280	13.1958	19.4689	766.4702	30236.6822	42.3507	8.1297	11.213
L27	38.9106	94.7575	16365.7093	13.1689	19.4689	840.6080	33161.3640	46.6368	7.9287	9.911
	38.9637	94.8895	16434.2185	13.1873	19.4954	842.9773	33300.1822	46.7017	7.9424	9.928
L28	38.9637	91.9866	15953.0864	13.1962	19.4954	818.2981	32325.2782	45.2730	8.0094	10.335
	40.0250	94.5449	17321.4658	13.5632	20.0265	864.9285	35097.9857	46.5321	8.2842	10.689
L29	40.0250	94.5449	17321.4658	13.5632	20.0265	864.9285	35097.9857	46.5321	8.2842	10.689
	41.9183	99.1088	19952.9551	14.2180	20.9738	951.3267	40430.0965	48.7783	8.7743	11.322
L30	41.1416	101.6371	18427.2736	13.4926	19.9566	923.3680	37338.6521	50.0227	8.0805	9.648
	41.3538	105.4623	20587.1356	14.0004	20.6913	994.9638	41715.1183	51.9053	8.4607	10.102
L31	41.3538	102.3795	20010.9223	14.0093	20.6913	967.1158	40547.5539	50.3881	8.5277	10.496
	42.4148	105.0609	21624.7445	14.3762	21.2222	1018.9665	43817.5950	51.7078	8.8023	10.834
L32	42.4148	105.0609	21624.7445	14.3762	21.2222	1018.9665	43817.5950	51.7078	8.8023	10.834
	43.4759	107.7423	23323.0811	14.7431	21.7531	1072.1715	47258.8855	53.0275	9.0770	11.172
L33	43.4759	107.7423	23323.0811	14.7431	21.7531	1072.1715	47258.8855	53.0275	9.0770	11.172
	43.5459	107.9192	23438.1966	14.7674	21.7882	1075.7307	47492.1408	53.1146	9.0951	11.194
L34	43.5459	114.4216	24790.1812	14.7495	21.7882	1137.7820	50231.6281	56.3148	8.9611	10.39
	43.5989	114.5639	24882.7991	14.7678	21.8147	1140.6432	50419.2969	56.3849	8.9749	10.406
L35	43.5989	114.5639	24882.7991	14.7678	21.8147	1140.6432	50419.2969	56.3849	8.9749	10.406
	43.9703	115.5601	25537.5911	14.8962	22.0005	1160.7721	51746.0832	56.8752	9.0710	10.517
L36	43.9703	79.2351	17742.3524	14.9947	22.0005	806.4515	35950.8162	38.9971	9.8080	16.694
	44.0234	79.3320	17807.5537	15.0130	22.0271	808.4397	36082.9317	39.0448	9.8217	16.718
L37	44.0234	77.6673	17444.2594	15.0175	22.0271	791.9466	35346.7989	38.2255	9.8552	17.14
	45.0844	79.5648	18754.3569	15.3844	22.5580	831.3854	38001.4116	39.1594	10.1299	17.617
L38	45.0844	79.5648	18754.3569	15.3844	22.5580	831.3854	38001.4116	39.1594	10.1299	17.617
	46.1454	81.4624	20128.4590	15.7513	23.0888	871.7827	40785.7151	40.0933	10.4046	18.095
L39	46.1454	81.4624	20128.4590	15.7513	23.0888	871.7827	40785.7151	40.0933	10.4046	18.095
	47.2065	83.3600	21568.0923	16.1182	23.6197	913.1383	43702.8024	41.0273	10.6793	18.573

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
L40	47.2065	82.4654	21342.5423	16.1205	23.6197	903.5891	43245.7769	40.5869	10.6960	18.806
	48.2675	84.3423	22833.2652	16.4874	24.1506	945.4520	46266.3857	41.5107	10.9707	19.289
L41	48.2675	83.4268	22591.5454	16.4896	24.1506	935.4431	45776.5958	41.0601	10.9874	19.533
	49.3286	85.2831	24133.4028	16.8565	24.6815	977.7921	48900.8169	41.9738	11.2621	20.021
L42	49.3286	85.2831	24133.4028	16.8565	24.6815	977.7921	48900.8169	41.9738	11.2621	20.021
	50.3896	87.1395	25743.8648	17.2234	25.2124	1021.0787	52164.0495	42.8874	11.5368	20.51
L43	50.3896	87.1395	25743.8648	17.2234	25.2124	1021.0787	52164.0495	42.8874	11.5368	20.51
	51.4506	88.9958	27424.4247	17.5903	25.7433	1065.3029	55569.3196	43.8010	11.8114	20.998
L44	51.4506	88.9958	27424.4247	17.5903	25.7433	1065.3029	55569.3196	43.8010	11.8114	20.998
	51.5568	89.1814	27596.3936	17.6270	25.7964	1069.7769	55917.7751	43.8924	11.8389	21.047

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 160.000-155.000				1	1	1			
L2 155.000-150.500				1	1	1			
L3 150.500-150.000				1	1	1			
L4 150.000-145.000				1	1	1			
L5 145.000-140.000				1	1	1			
L6 140.000-135.000				1	1	1			
L7 135.000-130.000				1	1	1			
L8 130.000-125.000				1	1	1			
L9 125.000-120.000				1	1	1			
L10 120.000-119.750				1	1	0.971514			
L11 119.750-114.750				1	1	0.976769			
L12 114.750-111.750				1	1	0.970413			
L13 111.750-111.500				1	1	0.964081			
L14 111.500-106.500				1	1	0.966922			
L15 106.500-97.170				1	1	0.971852			
L16 97.170-97.000				1	1	0.976551			
L17 97.000-92.000				1	1	0.968501			
L18 92.000-87.000				1	1	0.984604			
L19 87.000-82.000				1	1	0.977369			
L20 82.000-79.330				1	1	0.973685			
L21 79.330-79.080				1	1	0.939347			
L22 79.080-				1	1	0.944261			

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
75.250									
L23 75.250-75.000				1	1	0.9436			
L24 75.000-70.000				1	1	0.946214			
L25 70.000-65.000				1	1	0.949692			
L26 65.000-63.250				1	1	0.945483			
L27 63.250-63.000				1	1	0.937201			
L28 63.000-58.000				1	1	0.95371			
L29 58.000-49.080				1	1	0.946204			
L30 49.080-48.080				1	1	0.944353			
L31 48.080-43.080				1	1	0.961703			
L32 43.080-38.080				1	1	0.95117			
L33 38.080-37.750				1	1	0.950494			
L34 37.750-37.500				1	1	0.948443			
L35 37.500-35.750				1	1	0.94464			
L36 35.750-35.500				1	1	0.974564			
L37 35.500-30.500				1	1	0.989859			
L38 30.500-25.500				1	1	0.984525			
L39 25.500-20.500				1	1	0.979434			
L40 20.500-15.500				1	1	0.985145			
L41 15.500-10.500				1	1	0.991207			
L42 10.500-5.500				1	1	0.98666			
L43 5.500-0.500				1	1	0.982303			
L44 0.500-0.000				1	1	0.981877			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
2" (Nominal) Conduit	C	No	Inside Pole	158.000 - 0.000	1	No Ice	0.000	0.72
						1/2" Ice	0.000	0.72
						1" Ice	0.000	0.72
FB-L98B-002-75000(3/8)	C	No	Inside Pole	158.000 - 0.000	1	No Ice	0.000	0.06
						1/2" Ice	0.000	0.06
						1" Ice	0.000	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	158.000 - 0.000	2	No Ice	0.000	0.58
						1/2" Ice	0.000	0.58
						1" Ice	0.000	0.58
FB-L98B-002-75000(3/8)	C	No	Inside Pole	158.000 - 0.000	1	No Ice	0.000	0.06
						1/2" Ice	0.000	0.06
						1" Ice	0.000	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	158.000 - 0.000	4	No Ice	0.000	0.58
						1/2" Ice	0.000	0.58
						1" Ice	0.000	0.58

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
***								
LDF5-50A(7/8)	C	No	Inside Pole	149.000 - 0.000	10	No Ice	0.000	0.33
						1/2" Ice	0.000	0.33
						1" Ice	0.000	0.33
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	149.000 - 116.000	1	No Ice	0.198	1.30
						1/2" Ice	0.298	2.81
						1" Ice	0.398	4.94
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	116.000 - 0.000	1	No Ice	0.000	1.30
						1/2" Ice	0.000	2.81
						1" Ice	0.000	4.94
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	149.000 - 0.000	1	No Ice	0.000	1.30
						1/2" Ice	0.000	2.81
						1" Ice	0.000	4.94
***								
FSJ4-50B(1/2)	C	No	CaAa (Out Of Face)	135.000 - 0.000	1	No Ice	0.000	0.14
						1/2" Ice	0.000	0.77
						1" Ice	0.000	2.01
LDF1-50A(1/4)	C	No	CaAa (Out Of Face)	135.000 - 0.000	6	No Ice	0.000	0.06
						1/2" Ice	0.000	0.58
						1" Ice	0.000	1.70
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	135.000 - 0.000	1	No Ice	0.238	0.72
						1/2" Ice	0.337	2.48
						1" Ice	0.437	4.84
HB058-M12-XXXF(5/8)	C	No	Inside Pole	135.000 - 0.000	1	No Ice	0.000	0.24
						1/2" Ice	0.000	0.24
						1" Ice	0.000	0.24
HB114-1-08U4-M5J(1-1/4)	C	No	Inside Pole	135.000 - 0.000	3	No Ice	0.000	1.08
						1/2" Ice	0.000	1.08
						1" Ice	0.000	1.08
***								
AL7-50(1-5/8)	C	No	CaAa (Out Of Face)	116.000 - 0.000	2	No Ice	0.196	0.52
						1/2" Ice	0.296	2.02
						1" Ice	0.396	4.14
AL7-50(1-5/8)	C	No	CaAa (Out Of Face)	116.000 - 0.000	4	No Ice	0.000	0.52
						1/2" Ice	0.000	2.02
						1" Ice	0.000	4.14
MLE HYBRID 3POWER/6FIBER RL 2(1-1/4)	C	No	CaAa (Out Of Face)	116.000 - 0.000	1	No Ice	0.000	0.68
						1/2" Ice	0.000	1.75
						1" Ice	0.000	3.43
***								
LDF4-50A(1/2)	C	No	CaAa (Out Of Face)	47.000 - 0.000	1	No Ice	0.000	0.15
						1/2" Ice	0.000	0.84
						1" Ice	0.000	2.14
***								
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	82.083 - 32.000	1	No Ice	0.208	0.00
						1/2" Ice	0.319	0.00
						1" Ice	0.431	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	113.500 - 0.000	1	No Ice	0.167	0.00
						1/2" Ice	0.278	0.00
						1" Ice	0.389	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	121.250 - 113.500	1	No Ice	0.125	0.00
						1/2" Ice	0.236	0.00
						1" Ice	0.347	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	160.000-155.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	155.000-150.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L3	150.500-150.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		C	0.000	0.000	0.000	0.000	0.00
L4	150.000-145.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.792	0.05
L5	145.000-140.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.990	0.05
L6	140.000-135.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.990	0.05
L7	135.000-130.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.178	0.07
L8	130.000-125.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.178	0.07
L9	125.000-120.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.334	0.07
L10	120.000-119.750	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.140	0.00
L11	119.750-114.750	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.045	0.08
L12	114.750-111.750	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.336	0.06
L13	111.750-111.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.199	0.00
L14	111.500-106.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L15	106.500-97.170	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	7.428	0.17
L16	97.170-97.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.135	0.00
L17	97.000-92.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L18	92.000-87.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L19	87.000-82.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.998	0.09
L20	82.000-79.330	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.682	0.05
L21	79.330-79.080	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.251	0.00
L22	79.080-75.250	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.847	0.07
L23	75.250-75.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.251	0.00
L24	75.000-70.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.023	0.09
L25	70.000-65.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.023	0.09
L26	65.000-63.250	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

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
		C	0.000	0.000	0.000	1.758	0.03
L27	63.250-63.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.251	0.00
L28	63.000-58.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.023	0.09
L29	58.000-49.080	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.960	0.17
L30	49.080-48.080	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.005	0.02
L31	48.080-43.080	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.023	0.09
L32	43.080-38.080	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.023	0.09
L33	38.080-37.750	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.331	0.01
L34	37.750-37.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.251	0.00
L35	37.500-35.750	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.758	0.03
L36	35.750-35.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.251	0.00
L37	35.500-30.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.710	0.09
L38	30.500-25.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L39	25.500-20.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L40	20.500-15.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L41	15.500-10.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L42	10.500-5.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L43	5.500-0.500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.09
L44	0.500-0.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.398	0.01

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	160.000-155.000	A	2.338	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L2	155.000-150.500	A	2.331	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02

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
L3	150.500-150.000	A	2.327	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L4	150.000-145.000	A	2.323	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.650	0.15
L5	145.000-140.000	A	2.315	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.305	0.18
L6	140.000-135.000	A	2.307	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.297	0.18
L7	135.000-130.000	A	2.298	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.774	0.55
L8	130.000-125.000	A	2.289	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.756	0.55
L9	125.000-120.000	A	2.280	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.528	0.55
L10	120.000-119.750	A	2.275	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.494	0.03
L11	119.750-114.750	A	2.270	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.676	0.65
L12	114.750-111.750	A	2.262	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.917	0.59
L13	111.750-111.500	A	2.259	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.663	0.05
L14	111.500-106.500	A	2.254	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.246	0.97
L15	106.500-97.170	A	2.238	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	24.600	1.79
L16	97.170-97.000	A	2.228	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.448	0.03
L17	97.000-92.000	A	2.222	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.115	0.95
L18	92.000-87.000	A	2.210	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.066	0.94
L19	87.000-82.000	A	2.197	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.071	0.93
L20	82.000-79.330	A	2.187	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.781	0.49
L21	79.330-79.080	A	2.183	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.821	0.05
L22	79.080-75.250	A	2.177	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.557	0.70
L23	75.250-75.000	A	2.171	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.818	0.05
L24	75.000-70.000	A	2.164	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.322	0.90
L25	70.000-65.000	A	2.148	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.242	0.89

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L26	65.000-63.250	A	2.137	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.665	0.31
L27	63.250-63.000	A	2.134	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.808	0.04
L28	63.000-58.000	A	2.125	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.119	0.87
L29	58.000-49.080	A	2.099	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	28.516	1.52
L30	49.080-48.080	A	2.079	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.197	0.17
L31	48.080-43.080	A	2.066	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.810	0.85
L32	43.080-38.080	A	2.042	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.685	0.84
L33	38.080-37.750	A	2.028	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.030	0.05
L34	37.750-37.500	A	2.026	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.780	0.04
L35	37.500-35.750	A	2.021	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.452	0.29
L36	35.750-35.500	A	2.015	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.777	0.04
L37	35.500-30.500	A	2.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	14.487	0.81
L38	30.500-25.500	A	1.967	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.069	0.79
L39	25.500-20.500	A	1.929	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.911	0.78
L40	20.500-15.500	A	1.882	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.719	0.75
L41	15.500-10.500	A	1.822	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.471	0.73
L42	10.500-5.500	A	1.736	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.116	0.69
L43	5.500-0.500	A	1.573	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.448	0.61
L44	0.500-0.000	A	1.227	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.903	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.000-155.000	0.0000	0.0000	0.0000	0.0000
L2	155.000-150.500	0.0000	0.0000	0.0000	0.0000
L3	150.500-150.000	0.0000	0.0000	0.0000	0.0000
L4	150.000-145.000	-0.1835	0.1060	-0.4424	0.2554

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L5	145.000-140.000	-0.2248	0.1298	-0.5332	0.3078
L6	140.000-135.000	-0.2258	0.1304	-0.5410	0.3124
L7	135.000-130.000	-0.4511	0.2605	-0.9223	0.5325
L8	130.000-125.000	-0.4544	0.2623	-0.9387	0.5420
L9	125.000-120.000	-0.4851	0.2801	-1.0268	0.5928
L10	120.000-119.750	-0.5647	0.3260	-1.2208	0.7048
L11	119.750-114.750	-0.6065	0.3502	-1.2904	0.7450
L12	114.750-111.750	-0.7380	0.4261	-1.4679	0.8475
L13	111.750-111.500	-0.7525	0.4344	-1.4819	0.8556
L14	111.500-106.500	-0.7560	0.4365	-1.4964	0.8640
L15	106.500-97.170	-0.7650	0.4417	-1.5344	0.8859
L16	97.170-97.000	-0.7678	0.4433	-1.5472	0.8933
L17	97.000-92.000	-0.7708	0.4450	-1.5578	0.8994
L18	92.000-87.000	-0.7765	0.4483	-1.5816	0.9131
L19	87.000-82.000	-0.7846	0.4530	-1.6083	0.9286
L20	82.000-79.330	-0.9390	0.5421	-1.8382	1.0613
L21	79.330-79.080	-0.9411	0.5433	-1.8461	1.0659
L22	79.080-75.250	-0.9440	0.5450	-1.8570	1.0722
L23	75.250-75.000	-0.9468	0.5466	-1.8678	1.0784
L24	75.000-70.000	-0.9504	0.5487	-1.8812	1.0861
L25	70.000-65.000	-0.9569	0.5525	-1.9059	1.1004
L26	65.000-63.250	-0.9612	0.5550	-1.9218	1.1095
L27	63.250-63.000	-0.9625	0.5557	-1.9264	1.1122
L28	63.000-58.000	-0.9657	0.5575	-1.9382	1.1190
L29	58.000-49.080	-0.9739	0.5623	-1.9675	1.1359
L30	49.080-48.080	-0.9754	0.5631	-1.9742	1.1398
L31	48.080-43.080	-0.9787	0.5651	-1.9793	1.1427
L32	43.080-38.080	-0.9842	0.5682	-1.9964	1.1526
L33	38.080-37.750	-0.9870	0.5698	-2.0048	1.1575
L34	37.750-37.500	-0.9873	0.5700	-2.0057	1.1580
L35	37.500-35.750	-0.9883	0.5706	-2.0086	1.1597
L36	35.750-35.500	-0.9894	0.5712	-2.0115	1.1613
L37	35.500-30.500	-0.9423	0.5440	-1.9429	1.1218
L38	30.500-25.500	-0.8260	0.4769	-1.7596	1.0159
L39	25.500-20.500	-0.8293	0.4788	-1.7634	1.0181
L40	20.500-15.500	-0.8324	0.4806	-1.7631	1.0179
L41	15.500-10.500	-0.8354	0.4823	-1.7566	1.0142
L42	10.500-5.500	-0.8384	0.4840	-1.7384	1.0037
L43	5.500-0.500	-0.8412	0.4857	-1.6870	0.9740
L44	0.500-0.000	-0.8427	0.4865	-1.5428	0.8907

Shielding Factor Ka

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	K
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.00 5.00	0.0000	158.000	No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.00 5.00	0.0000	158.000	No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.00	0.0000	158.000	No Ice 1/2"	5.746 6.179	4.254 5.014	0.06 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			5.00			Ice	6.607	5.711	0.16
						1" Ice			
RRUS 11 B12	A	From Leg	4.000	0.0000	158.000	No Ice	2.833	1.182	0.05
			0.00			1/2"	3.043	1.330	0.07
			0.00			Ice	3.259	1.485	0.10
						1" Ice			
RRUS 11 B12	B	From Leg	4.000	0.0000	158.000	No Ice	2.833	1.182	0.05
			0.00			1/2"	3.043	1.330	0.07
			0.00			Ice	3.259	1.485	0.10
						1" Ice			
RRUS 11 B12	C	From Leg	4.000	0.0000	158.000	No Ice	2.833	1.182	0.05
			0.00			1/2"	3.043	1.330	0.07
			0.00			Ice	3.259	1.485	0.10
						1" Ice			
DC6-48-60-18-8F	A	From Leg	4.000	0.0000	158.000	No Ice	0.917	0.917	0.02
			0.00			1/2"	1.458	1.458	0.04
			0.00			Ice	1.643	1.643	0.06
						1" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.000	0.0000	158.000	No Ice	13.213	9.582	0.10
			0.00			1/2"	13.899	11.052	0.20
			5.00			Ice	14.587	12.496	0.30
						1" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.000	0.0000	158.000	No Ice	13.213	9.582	0.10
			0.00			1/2"	13.899	11.052	0.20
			5.00			Ice	14.587	12.496	0.30
						1" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.000	0.0000	158.000	No Ice	13.213	9.582	0.10
			0.00			1/2"	13.899	11.052	0.20
			5.00			Ice	14.587	12.496	0.30
						1" Ice			
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.000	0.0000	158.000	No Ice	13.535	10.960	0.11
			0.00			1/2"	14.238	12.486	0.22
			5.00			Ice	14.949	14.037	0.33
						1" Ice			
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.000	0.0000	158.000	No Ice	13.535	10.960	0.11
			0.00			1/2"	14.238	12.486	0.22
			5.00			Ice	14.949	14.037	0.33
						1" Ice			
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.000	0.0000	158.000	No Ice	13.535	10.960	0.11
			0.00			1/2"	14.238	12.486	0.22
			5.00			Ice	14.949	14.037	0.33
						1" Ice			
RRUS 11	A	From Leg	4.000	0.0000	158.000	No Ice	2.791	1.192	0.05
			0.00			1/2"	2.998	1.340	0.07
			5.00			Ice	3.213	1.496	0.10
						1" Ice			
RRUS 11	B	From Leg	4.000	0.0000	158.000	No Ice	2.791	1.192	0.05
			0.00			1/2"	2.998	1.340	0.07
			5.00			Ice	3.213	1.496	0.10
						1" Ice			
RRUS 11	C	From Leg	4.000	0.0000	158.000	No Ice	2.791	1.192	0.05
			0.00			1/2"	2.998	1.340	0.07
			5.00			Ice	3.213	1.496	0.10
						1" Ice			
RRUS 32	A	From Leg	4.000	0.0000	158.000	No Ice	2.857	1.777	0.06
			0.00			1/2"	3.083	1.968	0.08
			0.00			Ice	3.316	2.166	0.10
						1" Ice			
RRUS 32	B	From Leg	4.000	0.0000	158.000	No Ice	2.857	1.777	0.06
			0.00			1/2"	3.083	1.968	0.08
			0.00			Ice	3.316	2.166	0.10
						1" Ice			
RRUS 32	C	From Leg	4.000	0.0000	158.000	No Ice	2.857	1.777	0.06
			0.00			1/2"	3.083	1.968	0.08
			0.00			Ice	3.316	2.166	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
RRUS 32 B2	A	From Leg	4.000	0.0000	158.000	No Ice	2.731	1.668	0.05
			0.00			1/2"	2.953	1.855	0.07
			0.00			Ice	3.182	2.049	0.10
						1" Ice			
RRUS 32 B2	B	From Leg	4.000	0.0000	158.000	No Ice	2.731	1.668	0.05
			0.00			1/2"	2.953	1.855	0.07
			0.00			Ice	3.182	2.049	0.10
						1" Ice			
RRUS 32 B2	C	From Leg	4.000	0.0000	158.000	No Ice	2.731	1.668	0.05
			0.00			1/2"	2.953	1.855	0.07
			0.00			Ice	3.182	2.049	0.10
						1" Ice			
(2) DC6-48-60-18-8F	A	From Leg	4.000	0.0000	158.000	No Ice	0.917	0.917	0.02
			0.00			1/2"	1.458	1.458	0.04
			0.00			Ice	1.643	1.643	0.06
						1" Ice			
Platform Mount [LP 303-1]	C	None		0.0000	158.000	No Ice	14.660	14.660	1.25
						1/2"	18.870	18.870	1.48
						Ice	23.080	23.080	1.71
						1" Ice			
***									
DB-T1-6Z-8AB-0Z	B	From Leg	4.000	0.0000	149.000	No Ice	4.800	2.000	0.04
			0.00			1/2"	5.070	2.193	0.08
			0.00			Ice	5.348	2.393	0.12
						1" Ice			
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.000	0.0000	149.000	No Ice	4.945	3.424	0.03
			0.00			1/2"	5.324	4.022	0.07
			0.00			Ice	5.712	4.637	0.12
						1" Ice			
BXA-70080/4CF w/ Mount Pipe	B	From Leg	4.000	0.0000	149.000	No Ice	4.991	3.997	0.03
			0.00			1/2"	5.373	4.611	0.08
			0.00			Ice	5.763	5.232	0.13
						1" Ice			
BXA-70080/4CF w/ Mount Pipe	C	From Leg	4.000	0.0000	149.000	No Ice	4.991	3.997	0.03
			0.00			1/2"	5.373	4.611	0.08
			0.00			Ice	5.763	5.232	0.13
						1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.000	0.0000	149.000	No Ice	8.400	7.073	0.07
			0.00			1/2"	8.964	8.264	0.14
			0.00			Ice	9.494	9.175	0.21
						1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.000	0.0000	149.000	No Ice	8.400	7.073	0.07
			0.00			1/2"	8.964	8.264	0.14
			0.00			Ice	9.494	9.175	0.21
						1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.000	0.0000	149.000	No Ice	8.400	7.073	0.07
			0.00			1/2"	8.964	8.264	0.14
			0.00			Ice	9.494	9.175	0.21
						1" Ice			
B13 RRH 4X30	A	From Leg	4.000	0.0000	149.000	No Ice	2.055	1.320	0.06
			0.00			1/2"	2.241	1.475	0.07
			0.00			Ice	2.433	1.638	0.09
						1" Ice			
B13 RRH 4X30	B	From Leg	4.000	0.0000	149.000	No Ice	2.055	1.320	0.06
			0.00			1/2"	2.241	1.475	0.07
			0.00			Ice	2.433	1.638	0.09
						1" Ice			
B13 RRH 4X30	C	From Leg	4.000	0.0000	149.000	No Ice	2.055	1.320	0.06
			0.00			1/2"	2.241	1.475	0.07
			0.00			Ice	2.433	1.638	0.09
						1" Ice			
B25 RRH4X30	A	From Leg	4.000	0.0000	149.000	No Ice	2.200	1.742	0.06
			0.00			1/2"	2.393	1.920	0.08
			0.00			Ice	2.593	2.106	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
B25 RRH4X30	B	From Leg	4.000 0.00 0.00	0.0000	149.000	No Ice 1/2" Ice 1" Ice	2.200 2.393 2.593	1.742 1.920 2.106	0.06 0.08 0.10
B25 RRH4X30	C	From Leg	4.000 0.00 0.00	0.0000	149.000	No Ice 1/2" Ice 1" Ice	2.200 2.393 2.593	1.742 1.920 2.106	0.06 0.08 0.10
B66A RRH4X45	A	From Leg	4.000 0.00 0.00	0.0000	149.000	No Ice 1/2" Ice 1" Ice	2.580 2.794 3.015	1.630 1.811 1.999	0.07 0.09 0.11
B66A RRH4X45	B	From Leg	4.000 0.00 0.00	0.0000	149.000	No Ice 1/2" Ice 1" Ice	2.580 2.794 3.015	1.630 1.811 1.999	0.07 0.09 0.11
B66A RRH4X45	C	From Leg	4.000 0.00 0.00	0.0000	149.000	No Ice 1/2" Ice 1" Ice	2.580 2.794 3.015	1.630 1.811 1.999	0.07 0.09 0.11
DB-T1-6Z-8AB-0Z	C	From Leg	4.000 0.00 0.00	0.0000	149.000	No Ice 1/2" Ice 1" Ice	4.800 5.070 5.348	2.000 2.193 2.393	0.04 0.08 0.12
Platform Mount [LP 602-1]	C	None		0.0000	149.000	No Ice 1/2" Ice 1" Ice	32.030 38.710 45.390	32.030 38.710 45.390	1.34 1.80 2.26
***									
TME-800MHz 2X50W RRH W/FILTER	A	From Leg	4.000 0.00 -2.00	0.0000	137.000	No Ice 1/2" Ice 1" Ice	2.145 2.359 2.583	2.294 2.606 2.934	0.07 0.10 0.13
TME-800MHz 2X50W RRH W/FILTER	B	From Leg	4.000 0.00 -2.00	0.0000	137.000	No Ice 1/2" Ice 1" Ice	2.145 2.359 2.583	2.294 2.606 2.934	0.07 0.10 0.13
TME-800MHz 2X50W RRH W/FILTER	C	From Leg	4.000 0.00 -2.00	0.0000	137.000	No Ice 1/2" Ice 1" Ice	2.145 2.359 2.583	2.294 2.606 2.934	0.07 0.10 0.13
TME-PCS 1900MHz 4x45W-65MHz	A	From Leg	4.000 0.00 1.00	0.0000	137.000	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.06 0.08 0.11
TME-PCS 1900MHz 4x45W-65MHz	B	From Leg	4.000 0.00 1.00	0.0000	137.000	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.06 0.08 0.11
TME-PCS 1900MHz 4x45W-65MHz	C	From Leg	4.000 0.00 1.00	0.0000	137.000	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.06 0.08 0.11
Side Arm Mount [SO 101-3]	C	None		0.0000	137.000	No Ice 1/2" Ice 1" Ice	7.500 8.900 10.300	7.500 8.900 10.300	0.25 0.33 0.41
***									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.00 0.00	0.0000	135.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.08 0.15 0.23
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	8.262 8.822	7.471 8.656	0.09 0.16

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			Ice	9.346	9.556	0.24
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	8.262 8.822	6.946 8.127	0.08 0.15
			0.00			Ice	9.346	9.021	0.23
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	6.580 7.031	4.959 5.754	0.08 0.13
			0.00			Ice	7.473	6.472	0.19
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	6.580 7.031	4.959 5.754	0.08 0.13
			0.00			Ice	7.473	6.472	0.19
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	6.580 7.031	4.959 5.754	0.08 0.13
			0.00			Ice	7.473	6.472	0.19
						1" Ice			
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	4.538 4.891	2.983 3.526	0.05 0.08
			0.00			Ice	5.254	4.086	0.13
						1" Ice			
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	4.538 4.891	2.983 3.526	0.05 0.08
			0.00			Ice	5.254	4.086	0.13
						1" Ice			
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	4.538 4.891	2.983 3.526	0.05 0.08
			0.00			Ice	5.254	4.086	0.13
						1" Ice			
TIMING 2000	A	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	0.108 0.152	0.108 0.152	0.00 0.00
			0.00			Ice	0.203	0.203	0.01
						1" Ice			
TD-RRH8X20-25	A	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	4.045 4.298	1.535 1.714	0.07 0.10
			0.00			Ice	4.557	1.901	0.13
						1" Ice			
TD-RRH8X20-25	B	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	4.045 4.298	1.535 1.714	0.07 0.10
			0.00			Ice	4.557	1.901	0.13
						1" Ice			
TD-RRH8X20-25	C	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	4.045 4.298	1.535 1.714	0.07 0.10
			0.00			Ice	4.557	1.901	0.13
						1" Ice			
WIMAX DAP HEAD	A	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	1.547 1.704	0.684 0.800	0.03 0.04
			0.00			Ice	1.868	0.923	0.06
						1" Ice			
WIMAX DAP HEAD	B	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	1.547 1.704	0.684 0.800	0.03 0.04
			0.00			Ice	1.868	0.923	0.06
						1" Ice			
WIMAX DAP HEAD	C	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	1.547 1.704	0.684 0.800	0.03 0.04
			0.00			Ice	1.868	0.923	0.06
						1" Ice			
HORIZON COMPACT	C	From Leg	4.000 0.00	0.0000	135.000	No Ice 1/2"	0.721 0.828	0.368 0.450	0.01 0.02
			4.00			Ice	0.942	0.539	0.03
						1" Ice			
Platform Mount [LP 602-1]	C	None		0.0000	135.000	No Ice 1/2"	32.030 38.710	32.030 38.710	1.34 1.80
						Ice	45.390	45.390	2.26

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***						1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	6.319 6.765 7.203	5.633 6.416 7.121	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	6.319 6.765 7.203	5.633 6.416 7.121	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	6.319 6.765 7.203	5.633 6.416 7.121	0.11 0.17 0.23
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	11.683 12.404 13.135	9.842 11.366 12.914	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	11.683 12.404 13.135	9.842 11.366 12.914	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	11.683 12.404 13.135	9.842 11.366 12.914	0.08 0.17 0.27
KRY 112 144/1	A	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	0.350 0.426 0.509	0.175 0.234 0.301	0.01 0.01 0.02
KRY 112 144/1	B	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	0.350 0.426 0.509	0.175 0.234 0.301	0.01 0.01 0.02
KRY 112 144/1	C	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	0.350 0.426 0.509	0.175 0.234 0.301	0.01 0.01 0.02
RRUS 11 B12	A	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	2.833 3.043 3.259	1.182 1.330 1.485	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	2.833 3.043 3.259	1.182 1.330 1.485	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.000 0.00 1.00	0.0000	116.000	No Ice 1/2" Ice 1" Ice	2.833 3.043 3.259	1.182 1.330 1.485	0.05 0.07 0.10
T-Arm Mount [TA 602-3]	C	None		0.0000	116.000	No Ice 1/2" Ice	11.590 15.440 19.290	11.590 15.440 19.290	0.77 0.99 1.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***						1" Ice			
KS24019-L112A	B	From Leg	4.000 0.00 1.00	0.0000	47.000	No Ice 1/2" Ice 1" Ice	0.141 0.198 0.262	0.141 0.198 0.262	0.01 0.01 0.01
Side Arm Mount [SO 701-1]	B	None		0.0000	47.000	No Ice 1/2" Ice 1" Ice	0.850 1.140 1.430	1.670 2.340 3.010	0.07 0.08 0.09

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2.5-11	C	Paraboloid w/Shroud (HP)	From Leg	1.000 0.00 4.00	0.0000		135.000	2.917	No Ice 1/2" Ice 1" Ice	6.680 7.070 7.460	0.05 0.08 0.12

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 160.000-155.000	157.500	1.393	31.87	8.333	A	0.000	8.333	8.333	100.00	0.000	0.000
					B	0.000	8.333		100.00	0.000	0.000
					C	0.000	8.333		100.00	0.000	0.000
L2 155.000-150.500	152.750	1.384	31.66	7.500	A	0.000	7.500	7.500	100.00	0.000	0.000
					B	0.000	7.500		100.00	0.000	0.000
					C	0.000	7.500		100.00	0.000	0.000
L3 150.500-150.000	150.249	1.379	31.55	0.840	A	0.000	0.840	0.840	100.00	0.000	0.000
					B	0.000	0.840		100.00	0.000	0.000
					C	0.000	0.840		100.00	0.000	0.000
L4 150.000-145.000	147.479	1.373	31.43	8.978	A	0.000	8.978	8.978	100.00	0.000	0.000
					B	0.000	8.978		100.00	0.000	0.000
					C	0.000	8.978		100.00	0.000	0.792
L5 145.000-140.000	142.480	1.364	31.20	9.420	A	0.000	9.420	9.420	100.00	0.000	0.000
					B	0.000	9.420		100.00	0.000	0.000
					C	0.000	9.420		100.00	0.000	0.990
L6 140.000-135.000	137.481	1.353	30.97	9.862	A	0.000	9.862	9.862	100.00	0.000	0.000
					B	0.000	9.862		100.00	0.000	0.000
					C	0.000	9.862		100.00	0.000	0.990
L7 135.000-130.000	132.482	1.343	30.73	10.304	A	0.000	10.304	10.304	100.00	0.000	0.000
					B	0.000	10.304		100.00	0.000	0.000
					C	0.000	10.304		100.00	0.000	2.178
L8 130.000-125.000	127.483	1.332	30.48	10.746	A	0.000	10.746	10.746	100.00	0.000	0.000
					B	0.000	10.746		100.00	0.000	0.000
					C	0.000	10.746		100.00	0.000	2.178
L9 125.000-120.000	122.484	1.321	30.22	11.188	A	0.000	11.188	11.188	100.00	0.000	0.000
					B	0.000	11.188		100.00	0.000	0.000
					C	0.000	11.188		100.00	0.000	2.334
L10 120.000-119.750	119.875	1.315	30.09	0.571	A	0.000	0.571	0.571	100.00	0.000	0.000
					B	0.000	0.571		100.00	0.000	0.000
					C	0.000	0.571		100.00	0.000	0.140
L11 119.750-	117.234	1.309	29.95	11.653	A	0.000	11.653	11.653	100.00	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
114.750					B	0.000	11.653		100.00	0.000	0.000
					C	0.000	11.653		100.00	0.000	3.045
L12 114.750-111.750	113.244	1.299	29.73	7.204	A	0.000	7.204	7.204	100.00	0.000	0.000
					B	0.000	7.204		100.00	0.000	0.000
					C	0.000	7.204		100.00	0.000	2.336
L13 111.750-111.500	111.625	1.295	29.64	0.608	A	0.000	0.608	0.608	100.00	0.000	0.000
					B	0.000	0.608		100.00	0.000	0.000
					C	0.000	0.608		100.00	0.000	0.199
L14 111.500-106.500	108.985	1.289	29.49	12.382	A	0.000	12.382	12.382	100.00	0.000	0.000
					B	0.000	12.382		100.00	0.000	0.000
					C	0.000	12.382		100.00	0.000	3.981
L15 106.500-97.170	101.786	1.27	29.07	24.288	A	0.000	24.288	24.288	100.00	0.000	0.000
					B	0.000	24.288		100.00	0.000	0.000
					C	0.000	24.288		100.00	0.000	7.428
L16 97.170-97.000	97.085	1.258	28.78	0.449	A	0.000	0.449	0.449	100.00	0.000	0.000
					B	0.000	0.449		100.00	0.000	0.000
					C	0.000	0.449		100.00	0.000	0.135
L17 97.000-92.000	94.486	1.251	28.62	13.449	A	0.000	13.449	13.449	100.00	0.000	0.000
					B	0.000	13.449		100.00	0.000	0.000
					C	0.000	13.449		100.00	0.000	3.981
L18 92.000-87.000	89.487	1.236	28.29	13.891	A	0.000	13.891	13.891	100.00	0.000	0.000
					B	0.000	13.891		100.00	0.000	0.000
					C	0.000	13.891		100.00	0.000	3.981
L19 87.000-82.000	84.487	1.221	27.95	14.333	A	0.000	14.333	14.333	100.00	0.000	0.000
					B	0.000	14.333		100.00	0.000	0.000
					C	0.000	14.333		100.00	0.000	3.998
L20 82.000-79.330	80.661	1.21	27.68	7.835	A	0.000	7.835	7.835	100.00	0.000	0.000
					B	0.000	7.835		100.00	0.000	0.000
					C	0.000	7.835		100.00	0.000	2.682
L21 79.330-79.080	79.205	1.205	27.57	0.740	A	0.000	0.740	0.740	100.00	0.000	0.000
					B	0.000	0.740		100.00	0.000	0.000
					C	0.000	0.740		100.00	0.000	0.251
L22 79.080-75.250	77.158	1.198	27.42	11.476	A	0.000	11.476	11.476	100.00	0.000	0.000
					B	0.000	11.476		100.00	0.000	0.000
					C	0.000	11.476		100.00	0.000	3.847
L23 75.250-75.000	75.125	1.192	27.27	0.758	A	0.000	0.758	0.758	100.00	0.000	0.000
					B	0.000	0.758		100.00	0.000	0.000
					C	0.000	0.758		100.00	0.000	0.251
L24 75.000-70.000	72.488	1.183	27.06	15.395	A	0.000	15.395	15.395	100.00	0.000	0.000
					B	0.000	15.395		100.00	0.000	0.000
					C	0.000	15.395		100.00	0.000	5.023
L25 70.000-65.000	67.488	1.165	26.66	15.837	A	0.000	15.837	15.837	100.00	0.000	0.000
					B	0.000	15.837		100.00	0.000	0.000
					C	0.000	15.837		100.00	0.000	5.023
L26 65.000-63.250	64.124	1.153	26.37	5.647	A	0.000	5.647	5.647	100.00	0.000	0.000
					B	0.000	5.647		100.00	0.000	0.000
					C	0.000	5.647		100.00	0.000	1.758
L27 63.250-63.000	63.125	1.149	26.29	0.811	A	0.000	0.811	0.811	100.00	0.000	0.000
					B	0.000	0.811		100.00	0.000	0.000
					C	0.000	0.811		100.00	0.000	0.251
L28 63.000-58.000	60.489	1.139	26.05	16.456	A	0.000	16.456	16.456	100.00	0.000	0.000
					B	0.000	16.456		100.00	0.000	0.000
					C	0.000	16.456		100.00	0.000	5.023
L29 58.000-49.080	53.506	1.109	25.39	30.456	A	0.000	30.456	30.456	100.00	0.000	0.000
					B	0.000	30.456		100.00	0.000	0.000
					C	0.000	30.456		100.00	0.000	8.960
L30 49.080-48.080	48.580	1.087	24.88	3.437	A	0.000	3.437	3.437	100.00	0.000	0.000
					B	0.000	3.437		100.00	0.000	0.000
					C	0.000	3.437		100.00	0.000	1.005
L31 48.080-43.080	45.569	1.073	24.54	17.452	A	0.000	17.452	17.452	100.00	0.000	0.000
					B	0.000	17.452		100.00	0.000	0.000
					C	0.000	17.452		100.00	0.000	5.023
L32 43.080-38.080	40.570	1.047	23.95	17.894	A	0.000	17.894	17.894	100.00	0.000	0.000
					B	0.000	17.894		100.00	0.000	0.000
					C	0.000	17.894		100.00	0.000	5.023
L33 38.080-37.750	37.915	1.032	23.61	1.197	A	0.000	1.197	1.197	100.00	0.000	0.000
					B	0.000	1.197		100.00	0.000	0.000
					C	0.000	1.197		100.00	0.000	0.331

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L34 37.750-37.500	37.625	1.03	23.57	0.908	A	0.000	0.908	0.908	100.00	0.000	0.000
					B	0.000	0.908		100.00	0.000	0.000
					C	0.000	0.908		100.00	0.000	0.251
L35 37.500-35.750	36.624	1.024	23.44	6.385	A	0.000	6.385	6.385	100.00	0.000	0.000
					B	0.000	6.385		100.00	0.000	0.000
					C	0.000	6.385		100.00	0.000	1.758
L36 35.750-35.500	35.625	1.018	23.30	0.917	A	0.000	0.917	0.917	100.00	0.000	0.000
					B	0.000	0.917		100.00	0.000	0.000
					C	0.000	0.917		100.00	0.000	0.251
L37 35.500-30.500	32.990	1.002	22.93	18.564	A	0.000	18.564	18.564	100.00	0.000	0.000
					B	0.000	18.564		100.00	0.000	0.000
					C	0.000	18.564		100.00	0.000	4.710
L38 30.500-25.500	27.990	0.968	22.15	19.006	A	0.000	19.006	19.006	100.00	0.000	0.000
					B	0.000	19.006		100.00	0.000	0.000
					C	0.000	19.006		100.00	0.000	3.981
L39 25.500-20.500	22.991	0.929	21.25	19.448	A	0.000	19.448	19.448	100.00	0.000	0.000
					B	0.000	19.448		100.00	0.000	0.000
					C	0.000	19.448		100.00	0.000	3.981
L40 20.500-15.500	17.991	0.882	20.18	19.890	A	0.000	19.890	19.890	100.00	0.000	0.000
					B	0.000	19.890		100.00	0.000	0.000
					C	0.000	19.890		100.00	0.000	3.981
L41 15.500-10.500	12.991	0.85	19.45	20.333	A	0.000	20.333	20.333	100.00	0.000	0.000
					B	0.000	20.333		100.00	0.000	0.000
					C	0.000	20.333		100.00	0.000	3.981
L42 10.500-5.500	7.991	0.85	19.45	20.775	A	0.000	20.775	20.775	100.00	0.000	0.000
					B	0.000	20.775		100.00	0.000	0.000
					C	0.000	20.775		100.00	0.000	3.981
L43 5.500-0.500	2.991	0.85	19.45	21.217	A	0.000	21.217	21.217	100.00	0.000	0.000
					B	0.000	21.217		100.00	0.000	0.000
					C	0.000	21.217		100.00	0.000	3.981
L44 0.500-0.000	0.250	0.85	19.45	2.146	A	0.000	2.146	2.146	100.00	0.000	0.000
					B	0.000	2.146		100.00	0.000	0.000
					C	0.000	2.146		100.00	0.000	0.398

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 160.000-155.000	157.500	1.393	8.47	2.3383	10.282	A	0.000	10.282	10.282	100.00	0.000	0.000
						B	0.000	10.282		100.00	0.000	0.000
						C	0.000	10.282		100.00	0.000	0.000
L2 155.000-150.500	152.750	1.384	8.41	2.3312	9.248	A	0.000	9.248	9.248	100.00	0.000	0.000
						B	0.000	9.248		100.00	0.000	0.000
						C	0.000	9.248		100.00	0.000	0.000
L3 150.500-150.000	150.249	1.379	8.38	2.3273	1.034	A	0.000	1.034	1.034	100.00	0.000	0.000
						B	0.000	1.034		100.00	0.000	0.000
						C	0.000	1.034		100.00	0.000	0.000
L4 150.000-145.000	147.479	1.373	8.35	2.3230	10.914	A	0.000	10.914	10.914	100.00	0.000	0.000
						B	0.000	10.914		100.00	0.000	0.000
						C	0.000	10.914		100.00	0.000	2.650
L5 145.000-140.000	142.480	1.364	8.29	2.3150	11.349	A	0.000	11.349	11.349	100.00	0.000	0.000
						B	0.000	11.349		100.00	0.000	0.000
						C	0.000	11.349		100.00	0.000	3.305
L6 140.000-135.000	137.481	1.353	8.23	2.3068	11.784	A	0.000	11.784	11.784	100.00	0.000	0.000
						B	0.000	11.784		100.00	0.000	0.000
						C	0.000	11.784		100.00	0.000	3.297
L7 135.000-130.000	132.482	1.343	8.16	2.2982	12.219	A	0.000	12.219	12.219	100.00	0.000	0.000
						B	0.000	12.219		100.00	0.000	0.000
						C	0.000	12.219		100.00	0.000	6.774
L8 130.000-125.000	127.483	1.332	8.10	2.2894	12.654	A	0.000	12.654	12.654	100.00	0.000	0.000
						B	0.000	12.654		100.00	0.000	0.000
						C	0.000	12.654		100.00	0.000	6.756

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L9 125.000-120.000	122.484	1.321	8.03	2.2803	13.089	A	0.000	13.089	13.089	100.00	0.000	0.000
						B	0.000	13.089		100.00	0.000	0.000
						C	0.000	13.089		100.00	0.000	7.528
L10 120.000-119.750	119.875	1.315	7.99	2.2754	0.666	A	0.000	0.666	0.666	100.00	0.000	0.000
						B	0.000	0.666		100.00	0.000	0.000
						C	0.000	0.666		100.00	0.000	0.494
L11 119.750-114.750	117.234	1.309	7.96	2.2703	13.545	A	0.000	13.545	13.545	100.00	0.000	0.000
						B	0.000	13.545		100.00	0.000	0.000
						C	0.000	13.545		100.00	0.000	10.676
L12 114.750-111.750	113.244	1.299	7.90	2.2625	8.335	A	0.000	8.335	8.335	100.00	0.000	0.000
						B	0.000	8.335		100.00	0.000	0.000
						C	0.000	8.335		100.00	0.000	7.917
L13 111.750-111.500	111.625	1.295	7.88	2.2592	0.702	A	0.000	0.702	0.702	100.00	0.000	0.000
						B	0.000	0.702		100.00	0.000	0.000
						C	0.000	0.702		100.00	0.000	0.663
L14 111.500-106.500	108.985	1.289	7.84	2.2538	14.260	A	0.000	14.260	14.260	100.00	0.000	0.000
						B	0.000	14.260		100.00	0.000	0.000
						C	0.000	14.260		100.00	0.000	13.246
L15 106.500-97.170	101.786	1.27	7.72	2.2384	27.768	A	0.000	27.768	27.768	100.00	0.000	0.000
						B	0.000	27.768		100.00	0.000	0.000
						C	0.000	27.768		100.00	0.000	24.600
L16 97.170-97.000	97.085	1.258	7.65	2.2279	0.513	A	0.000	0.513	0.513	100.00	0.000	0.000
						B	0.000	0.513		100.00	0.000	0.000
						C	0.000	0.513		100.00	0.000	0.448
L17 97.000-92.000	94.486	1.251	7.60	2.2219	15.300	A	0.000	15.300	15.300	100.00	0.000	0.000
						B	0.000	15.300		100.00	0.000	0.000
						C	0.000	15.300		100.00	0.000	13.115
L18 92.000-87.000	89.487	1.236	7.52	2.2098	15.733	A	0.000	15.733	15.733	100.00	0.000	0.000
						B	0.000	15.733		100.00	0.000	0.000
						C	0.000	15.733		100.00	0.000	13.066
L19 87.000-82.000	84.487	1.221	7.43	2.1971	16.164	A	0.000	16.164	16.164	100.00	0.000	0.000
						B	0.000	16.164		100.00	0.000	0.000
						C	0.000	16.164		100.00	0.000	13.071
L20 82.000-79.330	80.661	1.21	7.35	2.1870	8.808	A	0.000	8.808	8.808	100.00	0.000	0.000
						B	0.000	8.808		100.00	0.000	0.000
						C	0.000	8.808		100.00	0.000	8.781
L21 79.330-79.080	79.205	1.205	7.33	2.1830	0.831	A	0.000	0.831	0.831	100.00	0.000	0.000
						B	0.000	0.831		100.00	0.000	0.000
						C	0.000	0.831		100.00	0.000	0.821
L22 79.080-75.250	77.158	1.198	7.29	2.1773	12.866	A	0.000	12.866	12.866	100.00	0.000	0.000
						B	0.000	12.866		100.00	0.000	0.000
						C	0.000	12.866		100.00	0.000	12.557
L23 75.250-75.000	75.125	1.192	7.25	2.1715	0.849	A	0.000	0.849	0.849	100.00	0.000	0.000
						B	0.000	0.849		100.00	0.000	0.000
						C	0.000	0.849		100.00	0.000	0.818
L24 75.000-70.000	72.488	1.183	7.19	2.1637	17.198	A	0.000	17.198	17.198	100.00	0.000	0.000
						B	0.000	17.198		100.00	0.000	0.000
						C	0.000	17.198		100.00	0.000	16.322
L25 70.000-65.000	67.488	1.165	7.08	2.1483	17.627	A	0.000	17.627	17.627	100.00	0.000	0.000
						B	0.000	17.627		100.00	0.000	0.000
						C	0.000	17.627		100.00	0.000	16.242
L26 65.000-63.250	64.124	1.153	7.01	2.1374	6.271	A	0.000	6.271	6.271	100.00	0.000	0.000
						B	0.000	6.271		100.00	0.000	0.000
						C	0.000	6.271		100.00	0.000	5.665
L27 63.250-63.000	63.125	1.149	6.98	2.1340	0.900	A	0.000	0.900	0.900	100.00	0.000	0.000
						B	0.000	0.900		100.00	0.000	0.000
						C	0.000	0.900		100.00	0.000	0.808
L28 63.000-58.000	60.489	1.139	6.92	2.1249	18.227	A	0.000	18.227	18.227	100.00	0.000	0.000
						B	0.000	18.227		100.00	0.000	0.000
						C	0.000	18.227		100.00	0.000	16.119
L29 58.000-49.080	53.506	1.109	6.75	2.0990	33.576	A	0.000	33.576	33.576	100.00	0.000	0.000
						B	0.000	33.576		100.00	0.000	0.000
						C	0.000	33.576		100.00	0.000	28.516
L30 49.080-48.080	48.580	1.087	6.61	2.0789	3.787	A	0.000	3.787	3.787	100.00	0.000	0.000
						B	0.000	3.787		100.00	0.000	0.000
						C	0.000	3.787		100.00	0.000	3.197
L31 48.080-43.080	45.569	1.073	6.52	2.0656	19.173	A	0.000	19.173	19.173	100.00	0.000	0.000
						B	0.000	19.173		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	19.173		100.00	0.000	15.810
L32 43.080-38.080	40.570	1.047	6.36	2.0417	19.595	A	0.000	19.595	19.595	100.00	0.000	0.000
						B	0.000	19.595		100.00	0.000	0.000
						C	0.000	19.595		100.00	0.000	15.685
L33 38.080-37.750	37.915	1.032	6.27	2.0280	1.308	A	0.000	1.308	1.308	100.00	0.000	0.000
						B	0.000	1.308		100.00	0.000	0.000
						C	0.000	1.308		100.00	0.000	1.030
L34 37.750-37.500	37.625	1.03	6.26	2.0264	0.992	A	0.000	0.992	0.992	100.00	0.000	0.000
						B	0.000	0.992		100.00	0.000	0.000
						C	0.000	0.992		100.00	0.000	0.780
L35 37.500-35.750	36.624	1.024	6.23	2.0209	6.975	A	0.000	6.975	6.975	100.00	0.000	0.000
						B	0.000	6.975		100.00	0.000	0.000
						C	0.000	6.975		100.00	0.000	5.452
L36 35.750-35.500	35.625	1.018	6.19	2.0154	1.001	A	0.000	1.001	1.001	100.00	0.000	0.000
						B	0.000	1.001		100.00	0.000	0.000
						C	0.000	1.001		100.00	0.000	0.777
L37 35.500-30.500	32.990	1.002	6.09	1.9999	20.231	A	0.000	20.231	20.231	100.00	0.000	0.000
						B	0.000	20.231		100.00	0.000	0.000
						C	0.000	20.231		100.00	0.000	14.487
L38 30.500-25.500	27.990	0.968	5.89	1.9673	20.646	A	0.000	20.646	20.646	100.00	0.000	0.000
						B	0.000	20.646		100.00	0.000	0.000
						C	0.000	20.646		100.00	0.000	12.069
L39 25.500-20.500	22.991	0.929	5.65	1.9290	21.056	A	0.000	21.056	21.056	100.00	0.000	0.000
						B	0.000	21.056		100.00	0.000	0.000
						C	0.000	21.056		100.00	0.000	11.911
L40 20.500-15.500	17.991	0.882	5.36	1.8823	21.459	A	0.000	21.459	21.459	100.00	0.000	0.000
						B	0.000	21.459		100.00	0.000	0.000
						C	0.000	21.459		100.00	0.000	11.719
L41 15.500-10.500	12.991	0.85	5.17	1.8220	21.851	A	0.000	21.851	21.851	100.00	0.000	0.000
						B	0.000	21.851		100.00	0.000	0.000
						C	0.000	21.851		100.00	0.000	11.471
L42 10.500-5.500	7.991	0.85	5.17	1.7356	22.221	A	0.000	22.221	22.221	100.00	0.000	0.000
						B	0.000	22.221		100.00	0.000	0.000
						C	0.000	22.221		100.00	0.000	11.116
L43 5.500-0.500	2.991	0.85	5.17	1.5731	22.528	A	0.000	22.528	22.528	100.00	0.000	0.000
						B	0.000	22.528		100.00	0.000	0.000
						C	0.000	22.528		100.00	0.000	10.448
L44 0.500-0.000	0.250	0.85	5.17	1.2273	2.248	A	0.000	2.248	2.248	100.00	0.000	0.000
						B	0.000	2.248		100.00	0.000	0.000
						C	0.000	2.248		100.00	0.000	0.903

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 160.000-155.000	157.500	1.393	10.91	8.333	A	0.000	8.333	8.333	100.00	0.000	0.000
					B	0.000	8.333		100.00	0.000	0.000
					C	0.000	8.333		100.00	0.000	0.000
L2 155.000-150.500	152.750	1.384	10.84	7.500	A	0.000	7.500	7.500	100.00	0.000	0.000
					B	0.000	7.500		100.00	0.000	0.000
					C	0.000	7.500		100.00	0.000	0.000
L3 150.500-150.000	150.249	1.379	10.80	0.840	A	0.000	0.840	0.840	100.00	0.000	0.000
					B	0.000	0.840		100.00	0.000	0.000
					C	0.000	0.840		100.00	0.000	0.000
L4 150.000-145.000	147.479	1.373	10.76	8.978	A	0.000	8.978	8.978	100.00	0.000	0.000
					B	0.000	8.978		100.00	0.000	0.000
					C	0.000	8.978		100.00	0.000	0.792
L5 145.000-140.000	142.480	1.364	10.68	9.420	A	0.000	9.420	9.420	100.00	0.000	0.000
					B	0.000	9.420		100.00	0.000	0.000
					C	0.000	9.420		100.00	0.000	0.990
L6 140.000-135.000	137.481	1.353	10.60	9.862	A	0.000	9.862	9.862	100.00	0.000	0.000
					B	0.000	9.862		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	9.862		100.00	0.000	0.990
L7 135.000-130.000	132.482	1.343	10.52	10.304	A	0.000	10.304	10.304	100.00	0.000	0.000
					B	0.000	10.304		100.00	0.000	0.000
					C	0.000	10.304		100.00	0.000	2.178
L8 130.000-125.000	127.483	1.332	10.43	10.746	A	0.000	10.746	10.746	100.00	0.000	0.000
					B	0.000	10.746		100.00	0.000	0.000
					C	0.000	10.746		100.00	0.000	2.178
L9 125.000-120.000	122.484	1.321	10.35	11.188	A	0.000	11.188	11.188	100.00	0.000	0.000
					B	0.000	11.188		100.00	0.000	0.000
					C	0.000	11.188		100.00	0.000	2.334
L10 120.000-119.750	119.875	1.315	10.30	0.571	A	0.000	0.571	0.571	100.00	0.000	0.000
					B	0.000	0.571		100.00	0.000	0.000
					C	0.000	0.571		100.00	0.000	0.140
L11 119.750-114.750	117.234	1.309	10.25	11.653	A	0.000	11.653	11.653	100.00	0.000	0.000
					B	0.000	11.653		100.00	0.000	0.000
					C	0.000	11.653		100.00	0.000	3.045
L12 114.750-111.750	113.244	1.299	10.18	7.204	A	0.000	7.204	7.204	100.00	0.000	0.000
					B	0.000	7.204		100.00	0.000	0.000
					C	0.000	7.204		100.00	0.000	2.336
L13 111.750-111.500	111.625	1.295	10.15	0.608	A	0.000	0.608	0.608	100.00	0.000	0.000
					B	0.000	0.608		100.00	0.000	0.000
					C	0.000	0.608		100.00	0.000	0.199
L14 111.500-106.500	108.985	1.289	10.10	12.382	A	0.000	12.382	12.382	100.00	0.000	0.000
					B	0.000	12.382		100.00	0.000	0.000
					C	0.000	12.382		100.00	0.000	3.981
L15 106.500-97.170	101.786	1.27	9.95	24.288	A	0.000	24.288	24.288	100.00	0.000	0.000
					B	0.000	24.288		100.00	0.000	0.000
					C	0.000	24.288		100.00	0.000	7.428
L16 97.170-97.000	97.085	1.258	9.85	0.449	A	0.000	0.449	0.449	100.00	0.000	0.000
					B	0.000	0.449		100.00	0.000	0.000
					C	0.000	0.449		100.00	0.000	0.135
L17 97.000-92.000	94.486	1.251	9.80	13.449	A	0.000	13.449	13.449	100.00	0.000	0.000
					B	0.000	13.449		100.00	0.000	0.000
					C	0.000	13.449		100.00	0.000	3.981
L18 92.000-87.000	89.487	1.236	9.69	13.891	A	0.000	13.891	13.891	100.00	0.000	0.000
					B	0.000	13.891		100.00	0.000	0.000
					C	0.000	13.891		100.00	0.000	3.981
L19 87.000-82.000	84.487	1.221	9.57	14.333	A	0.000	14.333	14.333	100.00	0.000	0.000
					B	0.000	14.333		100.00	0.000	0.000
					C	0.000	14.333		100.00	0.000	3.998
L20 82.000-79.330	80.661	1.21	9.48	7.835	A	0.000	7.835	7.835	100.00	0.000	0.000
					B	0.000	7.835		100.00	0.000	0.000
					C	0.000	7.835		100.00	0.000	2.682
L21 79.330-79.080	79.205	1.205	9.44	0.740	A	0.000	0.740	0.740	100.00	0.000	0.000
					B	0.000	0.740		100.00	0.000	0.000
					C	0.000	0.740		100.00	0.000	0.251
L22 79.080-75.250	77.158	1.198	9.39	11.476	A	0.000	11.476	11.476	100.00	0.000	0.000
					B	0.000	11.476		100.00	0.000	0.000
					C	0.000	11.476		100.00	0.000	3.847
L23 75.250-75.000	75.125	1.192	9.33	0.758	A	0.000	0.758	0.758	100.00	0.000	0.000
					B	0.000	0.758		100.00	0.000	0.000
					C	0.000	0.758		100.00	0.000	0.251
L24 75.000-70.000	72.488	1.183	9.27	15.395	A	0.000	15.395	15.395	100.00	0.000	0.000
					B	0.000	15.395		100.00	0.000	0.000
					C	0.000	15.395		100.00	0.000	5.023
L25 70.000-65.000	67.488	1.165	9.13	15.837	A	0.000	15.837	15.837	100.00	0.000	0.000
					B	0.000	15.837		100.00	0.000	0.000
					C	0.000	15.837		100.00	0.000	5.023
L26 65.000-63.250	64.124	1.153	9.03	5.647	A	0.000	5.647	5.647	100.00	0.000	0.000
					B	0.000	5.647		100.00	0.000	0.000
					C	0.000	5.647		100.00	0.000	1.758
L27 63.250-63.000	63.125	1.149	9.00	0.811	A	0.000	0.811	0.811	100.00	0.000	0.000
					B	0.000	0.811		100.00	0.000	0.000
					C	0.000	0.811		100.00	0.000	0.251
L28 63.000-58.000	60.489	1.139	8.92	16.456	A	0.000	16.456	16.456	100.00	0.000	0.000
					B	0.000	16.456		100.00	0.000	0.000
					C	0.000	16.456		100.00	0.000	5.023
L29 58.000-	53.506	1.109	8.69	30.456	A	0.000	30.456	30.456	100.00	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
49.080					B	0.000	30.456		100.00	0.000	0.000
					C	0.000	30.456		100.00	0.000	8.960
L30 49.080-48.080	48.580	1.087	8.52	3.437	A	0.000	3.437	3.437	100.00	0.000	0.000
					B	0.000	3.437		100.00	0.000	0.000
					C	0.000	3.437		100.00	0.000	1.005
L31 48.080-43.080	45.569	1.073	8.40	17.452	A	0.000	17.452	17.452	100.00	0.000	0.000
					B	0.000	17.452		100.00	0.000	0.000
					C	0.000	17.452		100.00	0.000	5.023
L32 43.080-38.080	40.570	1.047	8.20	17.894	A	0.000	17.894	17.894	100.00	0.000	0.000
					B	0.000	17.894		100.00	0.000	0.000
					C	0.000	17.894		100.00	0.000	5.023
L33 38.080-37.750	37.915	1.032	8.08	1.197	A	0.000	1.197	1.197	100.00	0.000	0.000
					B	0.000	1.197		100.00	0.000	0.000
					C	0.000	1.197		100.00	0.000	0.331
L34 37.750-37.500	37.625	1.03	8.07	0.908	A	0.000	0.908	0.908	100.00	0.000	0.000
					B	0.000	0.908		100.00	0.000	0.000
					C	0.000	0.908		100.00	0.000	0.251
L35 37.500-35.750	36.624	1.024	8.02	6.385	A	0.000	6.385	6.385	100.00	0.000	0.000
					B	0.000	6.385		100.00	0.000	0.000
					C	0.000	6.385		100.00	0.000	1.758
L36 35.750-35.500	35.625	1.018	7.98	0.917	A	0.000	0.917	0.917	100.00	0.000	0.000
					B	0.000	0.917		100.00	0.000	0.000
					C	0.000	0.917		100.00	0.000	0.251
L37 35.500-30.500	32.990	1.002	7.85	18.564	A	0.000	18.564	18.564	100.00	0.000	0.000
					B	0.000	18.564		100.00	0.000	0.000
					C	0.000	18.564		100.00	0.000	4.710
L38 30.500-25.500	27.990	0.968	7.58	19.006	A	0.000	19.006	19.006	100.00	0.000	0.000
					B	0.000	19.006		100.00	0.000	0.000
					C	0.000	19.006		100.00	0.000	3.981
L39 25.500-20.500	22.991	0.929	7.28	19.448	A	0.000	19.448	19.448	100.00	0.000	0.000
					B	0.000	19.448		100.00	0.000	0.000
					C	0.000	19.448		100.00	0.000	3.981
L40 20.500-15.500	17.991	0.882	6.91	19.890	A	0.000	19.890	19.890	100.00	0.000	0.000
					B	0.000	19.890		100.00	0.000	0.000
					C	0.000	19.890		100.00	0.000	3.981
L41 15.500-10.500	12.991	0.85	6.66	20.333	A	0.000	20.333	20.333	100.00	0.000	0.000
					B	0.000	20.333		100.00	0.000	0.000
					C	0.000	20.333		100.00	0.000	3.981
L42 10.500-5.500	7.991	0.85	6.66	20.775	A	0.000	20.775	20.775	100.00	0.000	0.000
					B	0.000	20.775		100.00	0.000	0.000
					C	0.000	20.775		100.00	0.000	3.981
L43 5.500-0.500	2.991	0.85	6.66	21.217	A	0.000	21.217	21.217	100.00	0.000	0.000
					B	0.000	21.217		100.00	0.000	0.000
					C	0.000	21.217		100.00	0.000	3.981
L44 0.500-0.000	0.250	0.85	6.66	2.146	A	0.000	2.146	2.146	100.00	0.000	0.000
					B	0.000	2.146		100.00	0.000	0.000
					C	0.000	2.146		100.00	0.000	0.398

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

Comb. No.	Description
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
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	160 - 155	Pole	Max Tension	42	0.00	0.00	-0.00
			Max. Compression	26	-11.31	0.03	1.90
			Max. Mx	8	-2.44	-49.13	0.25
			Max. My	2	-2.45	-0.00	49.47
			Max. Vy	8	7.78	-49.13	0.25
			Max. Vx	2	-7.78	-0.00	49.47
			Max. Torque	20			-0.66
L2	155 - 150.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.91	0.07	1.89
			Max. Mx	8	-2.72	-84.79	0.26
			Max. My	2	-2.73	-0.01	85.12
			Max. Vy	8	8.07	-84.79	0.26
			Max. Vx	2	-8.07	-0.01	85.12
			Max. Torque	20			-0.66
L3	150.5 - 150	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.97	0.08	1.89
			Max. Mx	8	-2.75	-88.83	0.26
			Max. My	2	-2.76	-0.01	89.16
			Max. Vy	8	8.10	-88.83	0.26
			Max. Vx	2	-8.10	-0.01	89.16
			Max. Torque	20			-0.66
L4	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.66	0.24	0.45
			Max. Mx	20	-5.21	154.51	0.05
			Max. My	2	-5.24	-0.02	154.18
			Max. Vy	8	14.62	-154.50	0.12

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-14.51	-0.02	154.18
			Max. Torque	20			-0.66
L5	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.55	0.45	0.34
			Max. Mx	20	-5.61	229.08	0.02
			Max. My	2	-5.63	-0.03	228.21
			Max. Vy	8	15.22	-229.06	0.13
			Max. Vx	2	-15.11	-0.03	228.21
			Max. Torque	36			-0.13
L6	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.78	1.04	0.01
			Max. Mx	8	-6.65	-310.19	0.69
			Max. My	2	-6.70	-0.91	308.32
			Max. Vy	8	17.36	-310.19	0.69
			Max. Vx	2	-17.12	-0.91	308.32
			Max. Torque	12			-0.67
L7	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.62	1.80	-0.41
			Max. Mx	8	-9.25	-423.33	1.51
			Max. My	2	-9.30	-2.19	420.17
			Max. Vy	8	23.01	-423.33	1.51
			Max. Vx	2	-22.77	-2.19	420.17
			Max. Torque	12			-0.80
L8	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.98	2.38	-0.74
			Max. Mx	8	-9.81	-540.30	2.34
			Max. My	2	-9.86	-3.46	535.95
			Max. Vy	8	23.80	-540.30	2.34
			Max. Vx	2	-23.56	-3.46	535.95
			Max. Torque	12			-0.91
L9	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.37	2.98	-1.08
			Max. Mx	8	-10.41	-661.28	3.18
			Max. My	2	-10.46	-4.72	655.73
			Max. Vy	8	24.62	-661.28	3.18
			Max. Vx	2	-24.38	-4.72	655.73
			Max. Torque	12			-1.04
L10	120 - 119.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.45	3.01	-1.10
			Max. Mx	8	-10.47	-667.44	3.22
			Max. My	2	-10.52	-4.79	661.82
			Max. Vy	8	24.65	-667.44	3.22
			Max. Vx	2	-24.41	-4.79	661.82
			Max. Torque	12			-1.05
L11	119.75 - 114.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.33	3.74	-1.51
			Max. Mx	8	-13.01	-801.04	4.05
			Max. My	2	-13.07	-6.05	794.23
			Max. Vy	8	29.56	-801.04	4.05
			Max. Vx	2	-29.31	-6.05	794.23
			Max. Torque	12			-1.23
L12	114.75 - 111.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.57	4.39	-1.88
			Max. Mx	8	-13.52	-890.51	4.55
			Max. My	2	-13.57	-6.80	882.98
			Max. Vy	8	30.12	-890.51	4.55
			Max. Vx	2	-29.88	-6.80	882.98
			Max. Torque	12			-1.37
L13	111.75 - 111.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.67	4.45	-1.91
			Max. Mx	8	-13.58	-898.04	4.59
			Max. My	2	-13.63	-6.86	890.46
			Max. Vy	8	30.17	-898.04	4.59
			Max. Vx	2	-29.92	-6.86	890.46
			Max. Torque	12			-1.38
L14	111.5 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	106.5						
			Max. Compression	26	-51.81	5.56	-2.54
			Max. Mx	8	-14.48	-1051.22	5.42
			Max. My	2	-14.53	-8.12	1042.44
			Max. Vy	8	31.14	-1051.22	5.42
			Max. Vx	2	-30.90	-8.12	1042.44
			Max. Torque	12			-1.62
L15	106.5 - 97.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.75	6.59	-3.13
			Max. Mx	8	-15.34	-1193.19	6.16
			Max. My	2	-15.38	-9.24	1183.34
			Max. Vy	8	32.01	-1193.19	6.16
			Max. Vx	2	-31.76	-9.24	1183.34
			Max. Torque	12			-1.85
L16	97.17 - 97	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.32	7.74	-3.79
			Max. Mx	8	-17.17	-1355.94	6.99
			Max. My	2	-17.22	-10.49	1344.88
			Max. Vy	8	33.13	-1355.94	6.99
			Max. Vx	2	-32.88	-10.49	1344.88
			Max. Torque	12			-2.10
L17	97 - 92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.75	8.90	-4.45
			Max. Mx	8	-18.37	-1524.00	7.82
			Max. My	2	-18.41	-11.74	1511.74
			Max. Vy	8	34.14	-1524.00	7.82
			Max. Vx	2	-33.89	-11.74	1511.74
			Max. Torque	12			-2.36
L18	92 - 87	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.20	10.08	-5.13
			Max. Mx	8	-19.63	-1697.07	8.64
			Max. My	2	-19.67	-12.99	1683.62
			Max. Vy	8	35.14	-1697.07	8.64
			Max. Vx	2	-34.90	-12.99	1683.62
			Max. Torque	12			-2.62
L19	87 - 82	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.69	11.28	-5.82
			Max. Mx	8	-20.93	-1875.16	9.46
			Max. My	2	-20.97	-14.23	1860.51
			Max. Vy	8	36.15	-1875.16	9.46
			Max. Vx	2	-35.90	-14.23	1860.51
			Max. Torque	12			-2.89
L20	82 - 79.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.03	11.92	-6.19
			Max. Mx	8	-21.63	-1972.35	9.91
			Max. My	2	-21.67	-14.90	1957.07
			Max. Vy	8	36.71	-1972.35	9.91
			Max. Vx	2	-36.47	-14.90	1957.07
			Max. Torque	12			-3.07
L21	79.33 - 79.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.18	11.99	-6.22
			Max. Mx	8	-21.75	-1981.53	9.94
			Max. My	2	-21.78	-14.96	1966.19
			Max. Vy	8	36.76	-1981.53	9.94
			Max. Vx	2	-36.51	-14.96	1966.19
			Max. Torque	12			-3.09
L22	79.08 - 75.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.49	12.92	-6.76
			Max. Mx	8	-23.09	-2123.90	10.58
			Max. My	2	-23.12	-15.91	2107.64
			Max. Vy	8	37.63	-2123.90	10.58
			Max. Vx	2	-37.39	-15.91	2107.64
			Max. Torque	12			-3.36
L23	75.25 - 75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.64	12.98	-6.80
			Max. Mx	8	-23.19	-2133.31	10.62

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-23.22	-15.97	2116.99
			Max. Vy	8	37.68	-2133.31	10.62
			Max. Vx	2	-37.43	-15.97	2116.99
			Max. Torque	12			-3.37
L24	75 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.67	14.21	-7.50
			Max. Mx	8	-24.98	-2324.42	11.44
			Max. My	2	-25.01	-17.21	2306.91
			Max. Vy	8	38.81	-2324.42	11.44
			Max. Vx	2	-38.56	-17.21	2306.91
			Max. Torque	12			-3.73
L25	70 - 65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.73	15.46	-8.22
			Max. Mx	8	-26.82	-2521.13	12.26
			Max. My	2	-26.85	-18.45	2502.43
			Max. Vy	8	39.93	-2521.13	12.26
			Max. Vx	2	-39.68	-18.45	2502.43
			Max. Torque	12			-4.09
L26	65 - 63.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.81	15.90	-8.47
			Max. Mx	8	-27.46	-2591.31	12.55
			Max. My	2	-27.49	-18.89	2572.18
			Max. Vy	8	40.33	-2591.31	12.55
			Max. Vx	2	-40.08	-18.89	2572.18
			Max. Torque	12			-4.21
L27	63.25 - 63	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.98	15.96	-8.51
			Max. Mx	8	-27.59	-2601.39	12.59
			Max. My	2	-27.62	-18.95	2582.20
			Max. Vy	8	40.37	-2601.39	12.59
			Max. Vx	2	-40.13	-18.95	2582.20
			Max. Torque	12			-4.23
L28	63 - 58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.22	17.22	-9.23
			Max. Mx	8	-29.61	-2805.94	13.41
			Max. My	2	-29.63	-20.19	2785.57
			Max. Vy	8	41.50	-2805.94	13.41
			Max. Vx	2	-41.25	-20.19	2785.57
			Max. Torque	12			-4.59
L29	58 - 49.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.17	17.98	-9.67
			Max. Mx	8	-30.84	-2931.35	13.90
			Max. My	2	-30.87	-20.92	2910.26
			Max. Vy	8	42.16	-2931.35	13.90
			Max. Vx	2	-41.92	-20.92	2910.26
			Max. Torque	12			-4.81
L30	49.08 - 48.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.78	19.74	-10.68
			Max. Mx	8	-36.05	-3229.00	15.03
			Max. My	2	-36.07	-22.63	3206.26
			Max. Vy	8	43.89	-3229.00	15.03
			Max. Vx	2	-43.64	-22.63	3206.26
			Max. Torque	12			-5.32
L31	48.08 - 43.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.39	20.94	-11.48
			Max. Mx	8	-38.40	-3451.32	15.83
			Max. My	2	-38.42	-23.89	3427.34
			Max. Vy	8	45.04	-3451.32	15.83
			Max. Vx	2	-44.80	-23.89	3427.34
			Max. Torque	12			-5.67
L32	43.08 - 38.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.88	22.24	-12.23
			Max. Mx	8	-40.71	-3678.98	16.64
			Max. My	2	-40.73	-25.12	3653.82
			Max. Vy	8	46.09	-3678.98	16.64
			Max. Vx	2	-45.85	-25.12	3653.82

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	12			-6.03
L33	38.08 - 37.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96.11	22.33	-12.28
			Max. Mx	8	-40.88	-3694.20	16.69
			Max. My	2	-40.90	-25.20	3668.95
			Max. Vy	8	46.15	-3694.20	16.69
			Max. Vx	2	-45.91	-25.20	3668.95
			Max. Torque	12			-6.06
L34	37.75 - 37.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96.29	22.39	-12.32
			Max. Mx	8	-41.00	-3705.73	16.73
			Max. My	2	-41.02	-25.26	3680.43
			Max. Vy	8	46.21	-3705.73	16.73
			Max. Vx	2	-45.96	-25.26	3680.43
			Max. Torque	12			-6.08
L35	37.5 - 35.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.56	22.84	-12.58
			Max. Mx	8	-41.84	-3786.87	17.02
			Max. My	2	-41.86	-25.69	3761.15
			Max. Vy	8	46.59	-3786.87	17.02
			Max. Vx	2	-46.34	-25.69	3761.15
			Max. Torque	12			-6.20
L36	35.75 - 35.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.71	22.91	-12.62
			Max. Mx	8	-41.96	-3798.51	17.06
			Max. My	2	-41.98	-25.75	3772.73
			Max. Vy	8	46.62	-3798.51	17.06
			Max. Vx	2	-46.37	-25.75	3772.73
			Max. Torque	12			-6.22
L37	35.5 - 30.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-100.69	24.19	-13.35
			Max. Mx	8	-43.85	-4033.77	17.87
			Max. My	2	-43.87	-26.98	4006.80
			Max. Vy	8	47.55	-4033.77	17.87
			Max. Vx	2	-47.31	-26.98	4006.80
			Max. Torque	12			-6.56
L38	30.5 - 25.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.69	25.46	-14.09
			Max. Mx	8	-45.81	-4273.45	18.68
			Max. My	2	-45.82	-28.19	4245.31
			Max. Vy	8	48.41	-4273.45	18.68
			Max. Vx	2	-48.16	-28.19	4245.31
			Max. Torque	12			-6.84
L39	25.5 - 20.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-106.70	26.72	-14.81
			Max. Mx	8	-47.80	-4517.32	19.48
			Max. My	2	-47.81	-29.40	4488.00
			Max. Vy	8	49.22	-4517.32	19.48
			Max. Vx	2	-48.98	-29.40	4488.00
			Max. Torque	12			-7.12
L40	20.5 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-109.72	27.95	-15.52
			Max. Mx	8	-49.83	-4765.15	20.27
			Max. My	2	-49.84	-30.60	4734.67
			Max. Vy	8	49.99	-4765.15	20.27
			Max. Vx	2	-49.75	-30.60	4734.67
			Max. Torque	12			-7.39
L41	15.5 - 10.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-112.73	29.12	-16.19
			Max. Mx	8	-51.90	-5016.71	21.06
			Max. My	2	-51.91	-31.79	4985.07
			Max. Vy	8	50.72	-5016.71	21.06
			Max. Vx	2	-50.48	-31.79	4985.07
			Max. Torque	12			-7.65
L42	10.5 - 5.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-115.71	30.23	-16.83
			Max. Mx	8	-54.00	-5271.87	21.84
			Max. My	2	-54.01	-32.97	5239.09

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	51.44	-5271.87	21.84
			Max. Vx	2	-51.20	-32.97	5239.09
			Max. Torque	12			-7.93
L43	5.5 - 0.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-118.61	31.22	-17.41
			Max. Mx	8	-56.14	-5530.61	22.62
			Max. My	2	-56.14	-34.14	5496.69
			Max. Vy	8	52.15	-5530.61	22.62
			Max. Vx	2	-51.92	-34.14	5496.69
			Max. Torque	12			-8.21
L44	0.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-118.87	31.29	-17.45
			Max. Mx	8	-56.37	-5556.68	22.70
			Max. My	2	-56.37	-34.26	5522.64
			Max. Vy	8	52.21	-5556.68	22.70
			Max. Vx	2	-51.97	-34.26	5522.64
			Max. Torque	12			-8.23

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	118.87	-0.00	0.00
	Max. H_x	21	42.29	52.10	-0.14
	Max. H_z	2	56.38	-0.25	51.96
	Max. M_x	2	5522.64	-0.25	51.96
	Max. M_z	8	5556.68	-52.19	0.16
	Max. Torsion	24	8.22	26.02	44.92
	Min. Vert	9	42.29	-52.19	0.16
	Min. H_x	8	56.38	-52.19	0.16
	Min. H_z	14	56.38	0.16	-51.94
	Min. M_x	14	-5521.64	0.16	-51.94
	Min. M_z	20	-5547.07	52.10	-0.14
	Min. Torsion	12	-8.23	-25.95	-44.96

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	46.99	-0.00	0.00	0.78	1.39	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	56.38	0.25	-51.96	-5522.64	-34.26	-6.91
0.9 Dead+1.6 Wind 0 deg - No Ice	42.29	0.25	-51.96	-5465.54	-34.29	-6.91
1.2 Dead+1.6 Wind 30 deg - No Ice	56.38	26.24	-45.05	-4790.23	-2798.05	-3.93
0.9 Dead+1.6 Wind 30 deg - No Ice	42.29	26.24	-45.05	-4740.75	-2769.38	-3.92
1.2 Dead+1.6 Wind 60 deg - No Ice	56.38	45.24	-26.08	-2775.24	-4817.62	0.05
0.9 Dead+1.6 Wind 60 deg - No Ice	42.29	45.24	-26.08	-2746.66	-4768.00	0.05
1.2 Dead+1.6 Wind 90 deg - No Ice	56.38	52.19	-0.16	-22.70	-5556.68	4.02
0.9 Dead+1.6 Wind 90 deg - No Ice	42.29	52.19	-0.16	-22.67	-5499.36	4.02
1.2 Dead+1.6 Wind 120 deg - No Ice	56.38	45.19	25.76	2731.59	-4810.65	6.97
0.9 Dead+1.6 Wind 120 deg - No Ice	42.29	45.19	25.76	2703.04	-4761.10	6.97
1.2 Dead+1.6 Wind 150 deg - No Ice	56.38	25.95	44.96	4778.73	-2756.33	8.23

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
0.9 Dead+1.6 Wind 150 deg - No Ice	42.29	25.95	44.96	4728.90	-2728.13	8.23
1.2 Dead+1.6 Wind 180 deg - No Ice	56.38	-0.16	51.94	5521.64	25.05	7.04
0.9 Dead+1.6 Wind 180 deg - No Ice	42.29	-0.16	51.94	5464.08	24.35	7.04
1.2 Dead+1.6 Wind 210 deg - No Ice	56.38	-26.17	44.99	4782.85	2791.43	3.97
0.9 Dead+1.6 Wind 210 deg - No Ice	42.29	-26.17	44.99	4732.97	2762.00	3.97
1.2 Dead+1.6 Wind 240 deg - No Ice	56.38	-45.16	26.03	2770.70	4809.87	-0.06
0.9 Dead+1.6 Wind 240 deg - No Ice	42.29	-45.16	26.03	2741.70	4759.48	-0.06
1.2 Dead+1.6 Wind 270 deg - No Ice	56.38	-52.10	0.14	20.56	5547.07	-4.07
0.9 Dead+1.6 Wind 270 deg - No Ice	42.29	-52.10	0.14	20.10	5489.05	-4.08
1.2 Dead+1.6 Wind 300 deg - No Ice	56.38	-45.13	-25.83	-2739.15	4805.21	-7.09
0.9 Dead+1.6 Wind 300 deg - No Ice	42.29	-45.13	-25.83	-2710.97	4754.87	-7.09
1.2 Dead+1.6 Wind 330 deg - No Ice	56.38	-26.02	-44.92	-4771.05	2769.73	-8.22
0.9 Dead+1.6 Wind 330 deg - No Ice	42.29	-26.02	-44.92	-4721.77	2740.55	-8.22
1.2 Dead+1.0 Ice+1.0 Temp	118.87	0.00	-0.00	17.45	31.29	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	118.87	0.05	-13.45	-1567.68	23.15	-3.59
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	118.87	6.78	-11.66	-1357.05	-769.80	-2.13
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	118.87	11.70	-6.74	-778.38	-1349.47	-0.10
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	118.87	13.50	-0.03	12.11	-1561.64	1.95
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	118.87	11.69	6.68	802.97	-1347.88	3.49
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	118.87	6.72	11.64	1388.96	-760.28	4.15
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	118.87	-0.03	13.44	1601.98	36.67	3.63
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	118.87	-6.76	11.64	1389.89	830.21	2.14
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	118.87	-11.68	6.74	811.87	1409.61	0.10
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	118.87	-13.48	0.03	21.94	1621.34	-1.97
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	118.87	-11.67	-6.69	-770.15	1408.57	-3.53
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	118.87	-6.73	-11.63	-1352.66	825.30	-4.14
Dead+Wind 0 deg - Service	46.99	0.05	-11.12	-1175.59	-6.22	-0.05
Dead+Wind 30 deg - Service	46.99	5.61	-9.64	-1019.81	-594.96	-0.01
Dead+Wind 60 deg - Service	46.99	9.68	-5.58	-590.59	-1025.19	0.01
Dead+Wind 90 deg - Service	46.99	11.17	-0.03	-4.23	-1182.42	0.03
Dead+Wind 120 deg - Service	46.99	9.67	5.51	582.48	-1023.67	0.06
Dead+Wind 150 deg - Service	46.99	5.55	9.62	1018.53	-586.05	0.11
Dead+Wind 180 deg - Service	46.99	-0.03	11.11	1176.57	6.41	0.08
Dead+Wind 210 deg - Service	46.99	-5.60	9.63	1019.42	595.69	0.03
Dead+Wind 240 deg - Service	46.99	-9.66	5.57	590.81	1025.66	-0.01
Dead+Wind 270 deg - Service	46.99	-11.15	0.03	4.98	1182.49	-0.05
Dead+Wind 300 deg - Service	46.99	-9.66	-5.53	-582.87	1024.66	-0.09

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg - Service	46.99	-5.57	-9.61	-1015.69	591.06	-0.11

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-46.99	0.00	0.00	46.99	-0.00	0.000%
2	0.25	-56.38	-51.96	-0.25	56.38	51.96	0.000%
3	0.25	-42.29	-51.96	-0.25	42.29	51.96	0.001%
4	26.24	-56.38	-45.05	-26.24	56.38	45.05	0.000%
5	26.24	-42.29	-45.05	-26.24	42.29	45.05	0.000%
6	45.24	-56.38	-26.08	-45.24	56.38	26.08	0.000%
7	45.24	-42.29	-26.08	-45.24	42.29	26.08	0.000%
8	52.19	-56.38	-0.16	-52.19	56.38	0.16	0.001%
9	52.19	-42.29	-0.16	-52.19	42.29	0.16	0.001%
10	45.19	-56.38	25.76	-45.19	56.38	-25.76	0.000%
11	45.19	-42.29	25.76	-45.19	42.29	-25.76	0.000%
12	25.95	-56.38	44.96	-25.95	56.38	-44.96	0.000%
13	25.95	-42.29	44.96	-25.95	42.29	-44.96	0.000%
14	-0.16	-56.38	51.94	0.16	56.38	-51.94	0.000%
15	-0.16	-42.29	51.94	0.16	42.29	-51.94	0.000%
16	-26.17	-56.38	44.99	26.17	56.38	-44.99	0.000%
17	-26.17	-42.29	44.99	26.17	42.29	-44.99	0.000%
18	-45.16	-56.38	26.03	45.16	56.38	-26.03	0.000%
19	-45.16	-42.29	26.03	45.16	42.29	-26.03	0.000%
20	-52.10	-56.38	0.14	52.10	56.38	-0.14	0.000%
21	-52.10	-42.29	0.14	52.10	42.29	-0.14	0.000%
22	-45.13	-56.38	-25.83	45.13	56.38	25.83	0.000%
23	-45.13	-42.29	-25.83	45.13	42.29	25.83	0.000%
24	-26.02	-56.38	-44.92	26.02	56.38	44.92	0.000%
25	-26.02	-42.29	-44.92	26.02	42.29	44.92	0.000%
26	0.00	-118.87	0.00	-0.00	118.87	0.00	0.000%
27	0.05	-118.87	-13.45	-0.05	118.87	13.45	0.000%
28	6.78	-118.87	-11.66	-6.78	118.87	11.66	0.000%
29	11.70	-118.87	-6.74	-11.70	118.87	6.74	0.000%
30	13.50	-118.87	-0.03	-13.50	118.87	0.03	0.000%
31	11.69	-118.87	6.68	-11.69	118.87	-6.68	0.000%
32	6.72	-118.87	11.64	-6.72	118.87	-11.64	0.000%
33	-0.03	-118.87	13.44	0.03	118.87	-13.44	0.000%
34	-6.76	-118.87	11.64	6.76	118.87	-11.64	0.000%
35	-11.68	-118.87	6.74	11.68	118.87	-6.74	0.000%
36	-13.48	-118.87	0.03	13.48	118.87	-0.03	0.000%
37	-11.67	-118.87	-6.69	11.67	118.87	6.69	0.000%
38	-6.73	-118.87	-11.63	6.73	118.87	11.63	0.000%
39	0.05	-46.99	-11.12	-0.05	46.99	11.12	0.004%
40	5.61	-46.99	-9.64	-5.61	46.99	9.64	0.000%
41	9.68	-46.99	-5.58	-9.68	46.99	5.58	0.000%
42	11.17	-46.99	-0.03	-11.17	46.99	0.03	0.004%
43	9.67	-46.99	5.51	-9.67	46.99	-5.51	0.000%
44	5.55	-46.99	9.62	-5.55	46.99	-9.62	0.000%
45	-0.03	-46.99	11.11	0.03	46.99	-11.11	0.004%
46	-5.60	-46.99	9.63	5.60	46.99	-9.63	0.000%
47	-9.66	-46.99	5.57	9.66	46.99	-5.57	0.000%
48	-11.15	-46.99	0.03	11.15	46.99	-0.03	0.004%
49	-9.66	-46.99	-5.53	9.66	46.99	5.53	0.000%
50	-5.57	-46.99	-9.61	5.57	46.99	9.61	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	21	0.00000001	0.00009530
3	Yes	20	0.00000001	0.00013733
4	Yes	26	0.00000001	0.00000000
5	Yes	25	0.00000001	0.00000000
6	Yes	26	0.00000001	0.00000000
7	Yes	25	0.00000001	0.00000000
8	Yes	20	0.00000001	0.00010290
9	Yes	19	0.00000001	0.00014745
10	Yes	26	0.00000001	0.00000000
11	Yes	25	0.00000001	0.00000000
12	Yes	26	0.00000001	0.00000000
13	Yes	25	0.00000001	0.00000000
14	Yes	22	0.00000001	0.00008912
15	Yes	21	0.00000001	0.00012647
16	Yes	26	0.00000001	0.00000000
17	Yes	25	0.00000001	0.00000000
18	Yes	26	0.00000001	0.00000000
19	Yes	25	0.00000001	0.00000000
20	Yes	21	0.00000001	0.00010920
21	Yes	21	0.00000001	0.00007891
22	Yes	26	0.00000001	0.00000000
23	Yes	25	0.00000001	0.00000000
24	Yes	26	0.00000001	0.00000000
25	Yes	25	0.00000001	0.00000000
26	Yes	17	0.00000001	0.00010247
27	Yes	24	0.00000001	0.00009457
28	Yes	24	0.00000001	0.00013565
29	Yes	24	0.00000001	0.00013769
30	Yes	24	0.00000001	0.00009293
31	Yes	24	0.00000001	0.00014361
32	Yes	24	0.00000001	0.00013624
33	Yes	24	0.00000001	0.00009679
34	Yes	25	0.00000001	0.00008356
35	Yes	24	0.00000001	0.00014745
36	Yes	24	0.00000001	0.00009646
37	Yes	24	0.00000001	0.00013984
38	Yes	24	0.00000001	0.00014804
39	Yes	16	0.00009936	0.00009036
40	Yes	20	0.00000001	0.00008944
41	Yes	20	0.00000001	0.00008951
42	Yes	16	0.00009936	0.00009086
43	Yes	20	0.00000001	0.00008836
44	Yes	20	0.00000001	0.00008638
45	Yes	16	0.00009935	0.00009749
46	Yes	20	0.00000001	0.00008993
47	Yes	20	0.00000001	0.00008974
48	Yes	16	0.00009936	0.00009390
49	Yes	20	0.00000001	0.00008695
50	Yes	20	0.00000001	0.00008939

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	32.185	47	1.9352	0.0008
L2	155 - 150.5	30.163	47	1.9260	0.0009
L3	150.5 - 150	28.359	47	1.9015	0.0010
L4	150 - 145	28.160	47	1.8982	0.0011
L5	145 - 140	26.193	47	1.8579	0.0011
L6	140 - 135	24.276	47	1.8019	0.0011
L7	135 - 130	22.424	47	1.7334	0.0010
L8	130 - 125	20.651	47	1.6516	0.0008

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L9	125 - 120	18.970	47	1.5570	0.0007
L10	120 - 119.75	17.394	47	1.4526	0.0005
L11	119.75 - 114.75	17.318	47	1.4489	0.0005
L12	114.75 - 111.75	15.842	47	1.3704	0.0005
L13	111.75 - 111.5	14.996	47	1.3206	0.0004
L14	111.5 - 106.5	14.927	47	1.3168	0.0004
L15	106.5 - 97.17	13.590	47	1.2365	0.0004
L16	102 - 97	12.461	47	1.1601	0.0003
L17	97 - 92	11.266	47	1.1200	0.0003
L18	92 - 87	10.131	47	1.0483	0.0002
L19	87 - 82	9.072	47	0.9738	0.0002
L20	82 - 79.33	8.092	47	0.8988	0.0002
L21	79.33 - 79.08	7.600	47	0.8586	0.0002
L22	79.08 - 75.25	7.556	47	0.8561	0.0002
L23	75.25 - 75	6.885	47	0.8167	0.0002
L24	75 - 70	6.842	47	0.8142	0.0002
L25	70 - 65	6.017	47	0.7620	0.0001
L26	65 - 63.25	5.246	47	0.7092	0.0001
L27	63.25 - 63	4.990	47	0.6911	0.0001
L28	63 - 58	4.954	47	0.6887	0.0001
L29	58 - 49.08	4.258	47	0.6395	0.0001
L30	55 - 48.08	3.866	47	0.6101	0.0001
L31	48.08 - 43.08	3.006	47	0.5721	0.0001
L32	43.08 - 38.08	2.432	47	0.5235	0.0001
L33	38.08 - 37.75	1.909	47	0.4755	0.0001
L34	37.75 - 37.5	1.877	47	0.4723	0.0001
L35	37.5 - 35.75	1.852	47	0.4701	0.0001
L36	35.75 - 35.5	1.682	47	0.4545	0.0001
L37	35.5 - 30.5	1.659	47	0.4513	0.0001
L38	30.5 - 25.5	1.221	47	0.3858	0.0001
L39	25.5 - 20.5	0.851	47	0.3211	0.0000
L40	20.5 - 15.5	0.548	47	0.2572	0.0000
L41	15.5 - 10.5	0.312	47	0.1936	0.0000
L42	10.5 - 5.5	0.142	47	0.1302	0.0000
L43	5.5 - 0.5	0.039	47	0.0677	0.0000
L44	0.5 - 0	0.000	47	0.0061	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.000	7770.00 w/ Mount Pipe	47	31.375	1.9330	0.0008	14624
149.000	DB-T1-6Z-8AB-0Z	47	27.764	1.8912	0.0011	7824
139.000	VHLP2.5-11	47	23.900	1.7892	0.0011	4412
137.000	TME-800MHz 2X50W RRH W/FILTER	47	23.156	1.7624	0.0010	4104
135.000	APXVSPP18-C-A20 w/ Mount Pipe	47	22.424	1.7334	0.0010	3830
116.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	47	16.203	1.3910	0.0005	3564
47.000	KS24019-L112A	47	2.878	0.5633	0.0001	6850

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	150.858	8	9.0869	0.0165
L2	155 - 150.5	141.398	8	9.0443	0.0169
L3	150.5 - 150	132.961	8	8.9308	0.0176
L4	150 - 145	132.031	8	8.9152	0.0177
L5	145 - 140	122.827	8	8.7266	0.0178
L6	140 - 135	113.857	8	8.4641	0.0177
L7	135 - 130	105.191	8	8.1435	0.0168

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L8	130 - 125	96.888	8	7.7604	0.0158
L9	125 - 120	89.016	8	7.3167	0.0148
L10	120 - 119.75	81.630	8	6.8267	0.0137
L11	119.75 - 114.75	81.274	8	6.8093	0.0137
L12	114.75 - 111.75	74.353	8	6.4407	0.0129
L13	111.75 - 111.5	70.390	8	6.2070	0.0125
L14	111.5 - 106.5	70.066	8	6.1890	0.0124
L15	106.5 - 97.17	63.796	8	5.8117	0.0117
L16	102 - 97	58.500	6	5.4528	0.0110
L17	97 - 92	52.898	6	5.2647	0.0106
L18	92 - 87	47.573	6	4.9275	0.0099
L19	87 - 82	42.606	6	4.5777	0.0093
L20	82 - 79.33	38.005	6	4.2249	0.0086
L21	79.33 - 79.08	35.698	6	4.0360	0.0082
L22	79.08 - 75.25	35.488	6	4.0241	0.0082
L23	75.25 - 75	32.338	6	3.8391	0.0078
L24	75 - 70	32.138	6	3.8271	0.0078
L25	70 - 65	28.263	6	3.5820	0.0073
L26	65 - 63.25	24.646	6	3.3338	0.0068
L27	63.25 - 63	23.441	6	3.2485	0.0066
L28	63 - 58	23.271	6	3.2372	0.0066
L29	58 - 49.08	20.005	6	3.0059	0.0061
L30	55 - 48.08	18.161	6	2.8678	0.0058
L31	48.08 - 43.08	14.122	6	2.6890	0.0054
L32	43.08 - 38.08	11.428	6	2.4606	0.0049
L33	38.08 - 37.75	8.971	6	2.2347	0.0045
L34	37.75 - 37.5	8.817	6	2.2199	0.0044
L35	37.5 - 35.75	8.701	6	2.2093	0.0044
L36	35.75 - 35.5	7.905	6	2.1363	0.0043
L37	35.5 - 30.5	7.794	6	2.1211	0.0042
L38	30.5 - 25.5	5.735	6	1.8131	0.0036
L39	25.5 - 20.5	3.996	6	1.5089	0.0030
L40	20.5 - 15.5	2.574	6	1.2087	0.0024
L41	15.5 - 10.5	1.465	6	0.9096	0.0018
L42	10.5 - 5.5	0.669	6	0.6115	0.0012
L43	5.5 - 0.5	0.183	6	0.3178	0.0006
L44	0.5 - 0	0.001	6	0.0286	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.000	7770.00 w/ Mount Pipe	8	147.069	9.0768	0.0166	3338
149.000	DB-T1-6Z-8AB-0Z	8	130.175	8.8825	0.0177	1760
139.000	VHLP2.5-11	8	112.098	8.4046	0.0176	982
137.000	TME-800MHz 2X50W RRH W/FILTER	8	108.617	8.2792	0.0172	912
135.000	APXVSPP18-C-A20 w/ Mount Pipe	8	105.191	8.1435	0.0168	850
116.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	8	76.047	6.5375	0.0131	778
47.000	KS24019-L112A	6	13.522	2.6478	0.0053	1463

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	160 - 155 (1)	TP20x20x0.25	5.000	0.000	0.0	15.5116	-2.45
L2	155 - 150.5 (2)	TP20x20x0.25	4.500	0.000	0.0	15.5116	-2.73
L3	150.5 - 150 (3)	TP20.3x20x0.25	0.500	0.000	0.0	15.7472	-2.76
L4	150 - 145 (4)	TP21.325x20.3x0.25	5.000	0.000	0.0	16.9654	-5.21
L5	145 - 140 (5)	TP22.35x21.325x0.25	5.000	0.000	0.0	17.7905	-5.61
L6	140 - 135 (6)	TP23.375x22.35x0.25	5.000	0.000	0.0	18.6156	-6.65
L7	135 - 130 (7)	TP24.3999x23.375x0.25	5.000	0.000	0.0	19.4407	-9.25
L8	130 - 125 (8)	TP25.4249x24.3999x0.25	5.000	0.000	0.0	20.2658	-9.80
L9	125 - 120 (9)	TP26.4499x25.4249x0.25	5.000	0.000	0.0	21.0909	-10.41
L10	120 - 119.75 (10)	TP26.5012x26.4499x0.3688	0.250	0.000	0.0	31.0290	-10.47
L11	119.75 - 114.75 (11)	TP27.5261x26.5012x0.3625	5.000	0.000	0.0	31.7068	-13.01
L12	114.75 - 111.75 (12)	TP28.1411x27.5261x0.3625	3.000	0.000	0.0	32.4246	-13.51
L13	111.75 - 111.5 (13)	TP28.1924x28.1411x0.4	0.250	0.000	0.0	35.7966	-13.57
L14	111.5 - 106.5 (14)	TP29.2174x28.1924x0.3938	5.000	0.000	0.0	36.5448	-14.47
L15	106.5 - 97.17 (15)	TP31.13x29.2174x0.3875	9.330	0.000	0.0	37.1235	-15.33
L16	97.17 - 97 (16)	TP30.665x29.6399x0.5125	5.000	0.000	0.0	49.7592	-17.17
L17	97 - 92 (17)	TP31.6902x30.665x0.5125	5.000	0.000	0.0	51.4509	-18.37
L18	92 - 87 (18)	TP32.7153x31.6902x0.5	5.000	0.000	0.0	51.8666	-19.63
L19	87 - 82 (19)	TP33.7404x32.7153x0.5	5.000	0.000	0.0	53.5171	-20.93
L20	82 - 79.33 (20)	TP34.2879x33.7404x0.5	2.670	0.000	0.0	54.3985	-21.63
L21	79.33 - 79.08 (21)	TP34.3391x34.2879x0.7625	0.250	0.000	0.0	82.4390	-21.74
L22	79.08 - 75.25 (22)	TP35.1244x34.3391x0.75	3.830	0.000	0.0	83.0142	-23.08
L23	75.25 - 75 (23)	TP35.1756x35.1244x0.75	0.250	0.000	0.0	83.1379	-23.19
L24	75 - 70 (24)	TP36.2008x35.1756x0.7375	5.000	0.000	0.0	84.2165	-24.98
L25	70 - 65 (25)	TP37.2259x36.2008x0.725	5.000	0.000	0.0	85.2114	-26.82
L26	65 - 63.25 (26)	TP37.5847x37.2259x0.725	1.750	0.000	0.0	86.0491	-27.46
L27	63.25 - 63 (27)	TP37.636x37.5847x0.8	0.250	0.000	0.0	94.8895	-27.59
L28	63 - 58 (28)	TP38.6611x37.636x0.775	5.000	0.000	0.0	94.5449	-29.60
L29	58 - 49.08 (29)	TP40.49x38.6611x0.775	8.920	0.000	0.0	96.0798	-30.84
L30	49.08 - 48.08 (30)	TP39.9447x38.5262x0.8375	6.920	0.000	0.0	105.4620	-36.04
L31	48.08 - 43.08 (31)	TP40.9696x39.9447x0.8125	5.000	0.000	0.0	105.0610	-38.40

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L32	43.08 - 38.08 (32)	TP41.9945x40.9696x0.8125	5.000	0.000	0.0	107.7420	-40.71
L33	38.08 - 37.75 (33)	TP42.0621x41.9945x0.8125	0.330	0.000	0.0	107.9190	-40.88
L34	37.75 - 37.5 (34)	TP42.1133x42.0621x0.8625	0.250	0.000	0.0	114.5640	-41.00
L35	37.5 - 35.75 (35)	TP42.472x42.1133x0.8625	1.750	0.000	0.0	115.5600	-41.84
L36	35.75 - 35.5 (36)	TP42.5233x42.472x0.5875	0.250	0.000	0.0	79.3320	-41.95
L37	35.5 - 30.5 (37)	TP43.5482x42.5233x0.575	5.000	0.000	0.0	79.5648	-43.85
L38	30.5 - 25.5 (38)	TP44.5731x43.5482x0.575	5.000	0.000	0.0	81.4624	-45.81
L39	25.5 - 20.5 (39)	TP45.598x44.5731x0.575	5.000	0.000	0.0	83.3600	-47.80
L40	20.5 - 15.5 (40)	TP46.6228x45.598x0.5688	5.000	0.000	0.0	84.3423	-49.83
L41	15.5 - 10.5 (41)	TP47.6477x46.6228x0.5625	5.000	0.000	0.0	85.2831	-51.90
L42	10.5 - 5.5 (42)	TP48.6726x47.6477x0.5625	5.000	0.000	0.0	87.1395	-54.00
L43	5.5 - 0.5 (43)	TP49.6975x48.6726x0.5625	5.000	0.000	0.0	88.9958	-56.14
L44	0.5 - 0 (44)	TP49.8x49.6975x0.5625	0.500	0.000	0.0	89.1814	-56.37

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L1	160 - 155 (1)	TP20x20x0.25	49.47	0.00
L2	155 - 150.5 (2)	TP20x20x0.25	85.12	0.00
L3	150.5 - 150 (3)	TP20.3x20x0.25	89.16	0.00
L4	150 - 145 (4)	TP21.325x20.3x0.25	154.51	0.00
L5	145 - 140 (5)	TP22.35x21.325x0.25	229.08	0.00
L6	140 - 135 (6)	TP23.375x22.35x0.25	310.19	0.00
L7	135 - 130 (7)	TP24.3999x23.375x0.25	423.33	0.00
L8	130 - 125 (8)	TP25.4249x24.3999x0.25	540.38	0.00
L9	125 - 120 (9)	TP26.4499x25.4249x0.25	661.48	0.00
L10	120 - 119.75 (10)	TP26.5012x26.4499x0.3688	667.65	0.00
L11	119.75 - 114.75 (11)	TP27.5261x26.5012x0.3625	801.38	0.00
L12	114.75 - 111.75 (12)	TP28.1411x27.5261x0.3625	890.92	0.00
L13	111.75 - 111.5 (13)	TP28.1924x28.1411x0.4	898.46	0.00
L14	111.5 - 106.5 (14)	TP29.2174x28.1924x0.3938	1051.76	0.00
L15	106.5 - 97.17 (15)	TP31.13x29.2174x0.3875	1193.84	0.00
L16	97.17 - 97 (16)	TP30.665x29.6399x0.5125	1356.72	0.00
L17	97 - 92 (17)	TP31.6902x30.665x0.5125	1524.90	0.00
L18	92 - 87 (18)	TP32.7153x31.6902x0.5	1698.09	0.00
L19	87 - 82 (19)	TP33.7404x32.7153x0.5	1876.31	0.00
L20	82 - 79.33 (20)	TP34.2879x33.7404x0.5	1973.57	0.00
L21	79.33 - 79.08 (21)	TP34.3391x34.2879x0.7625	1982.76	0.00
L22	79.08 - 75.25	TP35.1244x34.3391x0.75	2125.22	0.00

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L23	75.25 - 75 (22)	TP35.1756x35.1244x0.75	2134.63	0.00
L24	75 - 70 (23)	TP36.2008x35.1756x0.73 75	2325.87	0.00
L25	70 - 65 (24)	TP37.2259x36.2008x0.72 5	2522.70	0.00
L26	65 - 63.25 (25)	TP37.5847x37.2259x0.72 5	2592.92	0.00
L27	63.25 - 63 (26)	TP37.636x37.5847x0.8	2603.01	0.00
L28	63 - 58 (27)	TP38.6611x37.636x0.775	2807.68	0.00
L29	58 - 49.08 (28)	TP40.49x38.6611x0.775	2933.16	0.00
L30	49.08 - 48.08 (29)	TP39.9447x38.5262x0.83 75	3230.98	0.00
L31	48.08 - 43.08 (30)	TP40.9696x39.9447x0.81 25	3453.42	0.00
L32	43.08 - 38.08 (31)	TP41.9945x40.9696x0.81 25	3681.20	0.00
L33	38.08 - 37.75 (32)	TP42.0621x41.9945x0.81 25	3696.43	0.00
L34	37.75 - 37.5 (33)	TP42.1133x42.0621x0.86 25	3707.97	0.00
L35	37.5 - 35.75 (34)	TP42.472x42.1133x0.862 5	3789.14	0.00
L36	35.75 - 35.5 (35)	TP42.5233x42.472x0.587 5	3800.79	0.00
L37	35.5 - 30.5 (36)	TP43.5482x42.5233x0.57 5	4036.17	0.00
L38	30.5 - 25.5 (37)	TP44.5731x43.5482x0.57 5	4275.98	0.00
L39	25.5 - 20.5 (38)	TP45.598x44.5731x0.575	4519.97	0.00
L40	20.5 - 15.5 (39)	TP46.6228x45.598x0.568 8	4767.92	0.00
L41	15.5 - 10.5 (40)	TP47.6477x46.6228x0.56 25	5019.59	0.00
L42	10.5 - 5.5 (41)	TP48.6726x47.6477x0.56 25	5274.87	0.00
L43	5.5 - 0.5 (42)	TP49.6975x48.6726x0.56 25	5533.72	0.00
L44	0.5 - 0 (43)	TP49.8x49.6975x0.5625	5559.80	0.00

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	160 - 155 (1)	TP20x20x0.25	7.78	0.03
L2	155 - 150.5 (2)	TP20x20x0.25	8.07	0.03
L3	150.5 - 150 (3)	TP20.3x20x0.25	8.10	0.03
L4	150 - 145 (4)	TP21.325x20.3x0.25	14.61	0.06
L5	145 - 140 (5)	TP22.35x21.325x0.25	15.22	0.04
L6	140 - 135 (6)	TP23.375x22.35x0.25	17.36	0.14
L7	135 - 130 (7)	TP24.3999x23.375x0.25	23.01	0.28
L8	130 - 125 (8)	TP25.4249x24.3999x0.25	23.83	0.03
L9	125 - 120 (9)	TP26.4499x25.4249x0.25	24.64	0.03
L10	120 - 119.75 (10)	TP26.5012x26.4499x0.36 88	24.69	0.03
L11	119.75 - 114.75 (11)	TP27.5261x26.5012x0.36 25	29.58	0.03
L12	114.75 - 111.75 (12)	TP28.1411x27.5261x0.36 25	30.15	0.03

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L13	111.75 - 111.5 (13)	TP28.1924x28.1411x0.4	30.21	0.03
L14	111.5 - 106.5 (14)	TP29.2174x28.1924x0.3938	31.17	0.03
L15	106.5 - 97.17 (15)	TP31.13x29.2174x0.3875	32.03	0.03
L16	97.17 - 97 (16)	TP30.665x29.6399x0.5125	33.18	0.03
L17	97 - 92 (17)	TP31.6902x30.665x0.5125	34.16	0.03
L18	92 - 87 (18)	TP32.7153x31.6902x0.5	35.17	0.03
L19	87 - 82 (19)	TP33.7404x32.7153x0.5	36.17	0.03
L20	82 - 79.33 (20)	TP34.2879x33.7404x0.5	36.74	0.03
L21	79.33 - 79.08 (21)	TP34.3391x34.2879x0.7625	36.79	0.03
L22	79.08 - 75.25 (22)	TP35.1244x34.3391x0.75	37.66	0.03
L23	75.25 - 75 (23)	TP35.1756x35.1244x0.75	37.71	0.03
L24	75 - 70 (24)	TP36.2008x35.1756x0.7375	38.84	0.03
L25	70 - 65 (25)	TP37.2259x36.2008x0.725	39.95	0.03
L26	65 - 63.25 (26)	TP37.5847x37.2259x0.725	40.35	0.03
L27	63.25 - 63 (27)	TP37.636x37.5847x0.8	40.40	0.03
L28	63 - 58 (28)	TP38.6611x37.636x0.775	41.53	0.03
L29	58 - 49.08 (29)	TP40.49x38.6611x0.775	42.19	0.03
L30	49.08 - 48.08 (30)	TP39.9447x38.5262x0.8375	43.92	0.03
L31	48.08 - 43.08 (31)	TP40.9696x39.9447x0.8125	45.07	0.05
L32	43.08 - 38.08 (32)	TP41.9945x40.9696x0.8125	46.12	0.05
L33	38.08 - 37.75 (33)	TP42.0621x41.9945x0.8125	46.18	0.05
L34	37.75 - 37.5 (34)	TP42.1133x42.0621x0.8625	46.23	0.05
L35	37.5 - 35.75 (35)	TP42.472x42.1133x0.8625	46.61	0.05
L36	35.75 - 35.5 (36)	TP42.5233x42.472x0.5875	46.64	0.05
L37	35.5 - 30.5 (37)	TP43.5482x42.5233x0.575	47.57	0.05
L38	30.5 - 25.5 (38)	TP44.5731x43.5482x0.575	48.43	0.05
L39	25.5 - 20.5 (39)	TP45.598x44.5731x0.575	49.25	0.05
L40	20.5 - 15.5 (40)	TP46.6228x45.598x0.5688	50.02	0.05
L41	15.5 - 10.5 (41)	TP47.6477x46.6228x0.5625	50.74	0.05
L42	10.5 - 5.5 (42)	TP48.6726x47.6477x0.5625	51.46	0.05
L43	5.5 - 0.5 (43)	TP49.6975x48.6726x0.5625	52.17	0.05
L44	0.5 - 0 (44)	TP49.8x49.6975x0.5625	52.23	0.05

CCIpole

per TIA-222- G

Site BU: 806373

Work Order: _____

CROWN CASTLE

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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	160	9.5	0	0	20	20	0.25	n/a	A53-B-35
2	150.5	0.5	0	0	20.00	20.3	0.25	n/a	A53-B-35
3	150	52.83	4.83	12	20.30	31.13	0.25	1	A572-65
4	102	52.92	5.92	12	29.64	40.49	0.375	1.5	A572-65
5	55	55	0	12	38.53	49.8	0.4375	1.75	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	37.75	plate	100FP-060100	3				o				o				o
2	37.75	75.25	plate	100FP-040100	3	o				o				o			
3	75.25	111.75	plate	100FP-040100	3				o				o				o
4	111.75	120	plate	100FP-040075	3	o				o				o			
5	35.75	63.25	plate	CCI-SFP-085125	3		o				o				o		
6	63.25	79.33	plate	CCI-SFP-065125	3		o				o				o		
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	35.000	35.000	17.000	4.750	1.1875	A514-GR100
2	4	1	4	0.5	20.000	20.000	20.000	2.750	1.1875	A514-GR100
3	4	1	4	0.5	20.000	20.000	20.000	2.750	1.1875	A514-GR100
4	4	0.75	3	0.375	17.000	17.000	15.000	2.063	1.1875	A514-GR100
5	8.5	1.25	10.625	0.625	45.000	45.000	17.000	9.063	1.1875	A572-65
6	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	160 - 155	5		0	20.000	20.000	0.25	A53-B-35	1.000
2	155 - 150.5	4.5	0	0	20.000	20.000	0.25	A53-B-35	1.000
3	150.5 - 150	0.5	0	0	20.000	20.300	0.25	A53-B-35	1.000
4	150 - 145	5		12	20.300	21.325	0.25	A572-65	1.000
5	145 - 140	5		12	21.325	22.350	0.25	A572-65	1.000
6	140 - 135	5		12	22.350	23.375	0.25	A572-65	1.000
7	135 - 130	5		12	23.375	24.400	0.25	A572-65	1.000
8	130 - 125	5		12	24.400	25.425	0.25	A572-65	1.000
9	125 - 120	5		12	25.425	26.450	0.25	A572-65	1.000
10	120 - 119.75	0.25		12	26.450	26.501	0.36875	A572-65	0.972
11	119.75 - 114.75	5		12	26.501	27.526	0.3625	A572-65	0.977
12	114.75 - 111.75	3		12	27.526	28.141	0.3625	A572-65	0.970
13	111.75 - 111.5	0.25		12	28.141	28.192	0.4	A572-65	0.964
14	111.5 - 106.5	5		12	28.192	29.217	0.39375	A572-65	0.967
15	106.5 - 102	9.33	4.83	12	29.217	31.130	0.3875	A572-65	0.972
16	102 - 97	5		12	29.640	30.665	0.5125	A572-65	0.977
17	97 - 92	5		12	30.665	31.690	0.5125	A572-65	0.969
18	92 - 87	5		12	31.690	32.715	0.5	A572-65	0.985
19	87 - 82	5		12	32.715	33.740	0.5	A572-65	0.977
20	82 - 79.33	2.67		12	33.740	34.288	0.5	A572-65	0.974
21	79.33 - 79.08	0.25		12	34.288	34.339	0.7625	A572-65	0.939
22	79.08 - 75.25	3.83		12	34.339	35.124	0.75	A572-65	0.944
23	75.25 - 75	0.25		12	35.124	35.176	0.75	A572-65	0.944
24	75 - 70	5		12	35.176	36.201	0.7375	A572-65	0.946
25	70 - 65	5		12	36.201	37.226	0.725	A572-65	0.950
26	65 - 63.25	1.75		12	37.226	37.585	0.725	A572-65	0.945
27	63.25 - 63	0.25		12	37.585	37.636	0.8	A572-65	0.937
28	63 - 58	5		12	37.636	38.661	0.775	A572-65	0.954
29	58 - 55	8.92	5.92	12	38.661	40.490	0.775	A572-65	0.946
30	55 - 48.08	6.92		12	38.526	39.945	0.8375	A572-65	0.944
31	48.08 - 43.08	5		12	39.945	40.970	0.8125	A572-65	0.962
32	43.08 - 38.08	5		12	40.970	41.994	0.8125	A572-65	0.951
33	38.08 - 37.75	0.33		12	41.994	42.062	0.8125	A572-65	0.950
34	37.75 - 37.5	0.25		12	42.062	42.113	0.8625	A572-65	0.948
35	37.5 - 35.75	1.75		12	42.113	42.472	0.8625	A572-65	0.945
36	35.75 - 35.5	0.25		12	42.472	42.523	0.5875	A572-65	0.975
37	35.5 - 30.5	5		12	42.523	43.548	0.575	A572-65	0.990
38	30.5 - 25.5	5		12	43.548	44.573	0.575	A572-65	0.985
39	25.5 - 20.5	5		12	44.573	45.598	0.575	A572-65	0.979
40	20.5 - 15.5	5		12	45.598	46.623	0.56875	A572-65	0.985
41	15.5 - 10.5	5		12	46.623	47.648	0.5625	A572-65	0.991
42	10.5 - 5.5	5		12	47.648	48.673	0.5625	A572-65	0.987
43	5.5 - 0.5	5		12	48.673	49.698	0.5625	A572-65	0.982
44	0.5 - 0	0.5		12	49.698	49.800	0.5625	A572-65	0.982

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	160 - 155	2.45	49.47	7.78
2	155 - 150.5	2.73	85.12	8.07
3	150.5 - 150	2.76	89.16	8.10
4	150 - 145	5.21	154.51	14.61
5	145 - 140	5.61	229.08	15.22
6	140 - 135	6.65	310.19	17.36
7	135 - 130	9.25	423.33	23.01
8	130 - 125	9.80	540.38	23.83
9	125 - 120	10.41	661.48	24.64
10	120 - 119.75	10.47	667.65	24.69
11	119.75 - 114.75	13.01	801.38	29.58
12	114.75 - 111.75	13.51	890.92	30.15
13	111.75 - 111.5	13.57	898.46	30.21
14	111.5 - 106.5	14.47	1051.76	31.17
15	106.5 - 102	15.33	1193.84	32.03
16	102 - 97	17.17	1356.71	33.18
17	97 - 92	18.37	1524.90	34.16
18	92 - 87	19.63	1698.09	35.17
19	87 - 82	20.93	1876.31	36.17
20	82 - 79.33	21.63	1973.57	36.74
21	79.33 - 79.08	21.74	1982.75	36.79
22	79.08 - 75.25	23.08	2125.22	37.66
23	75.25 - 75	23.19	2134.63	37.71
24	75 - 70	24.98	2325.86	38.84
25	70 - 65	26.82	2522.70	39.95
26	65 - 63.25	27.46	2592.92	40.35
27	63.25 - 63	27.59	2603.01	40.40
28	63 - 58	29.60	2807.68	41.53
29	58 - 55	30.84	2933.16	42.19
30	55 - 48.08	36.04	3230.98	43.92
31	48.08 - 43.08	38.40	3453.41	45.07
32	43.08 - 38.08	40.71	3681.20	46.12
33	38.08 - 37.75	40.88	3696.42	46.18
34	37.75 - 37.5	41.00	3707.97	46.23
35	37.5 - 35.75	41.84	3789.14	46.61
36	35.75 - 35.5	41.95	3800.79	46.64
37	35.5 - 30.5	43.85	4036.17	47.57
38	30.5 - 25.5	45.81	4275.97	48.43
39	25.5 - 20.5	47.80	4519.96	49.25
40	20.5 - 15.5	49.83	4767.91	50.02
41	15.5 - 10.5	51.90	5019.59	50.74
42	10.5 - 5.5	54.00	5274.87	51.46
43	5.5 - 0.5	56.14	5533.72	52.17
44	0.5 - 0	56.37	5559.80	52.23

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20x20x0.25	Pole	21.1%	Pass
155 - 150.5	Pole	TP20x20x0.25	Pole	36.0%	Pass
150.5 - 150	Pole	TP20.3x20x0.25	Pole	36.6%	Pass
150 - 145	Pole	TP21.325x20.3x0.25	Pole	29.3%	Pass
145 - 140	Pole	TP22.35x21.325x0.25	Pole	39.5%	Pass
140 - 135	Pole	TP23.375x22.35x0.25	Pole	49.5%	Pass
135 - 130	Pole	TP24.4x23.375x0.25	Pole	62.9%	Pass
130 - 125	Pole	TP25.425x24.4x0.25	Pole	74.9%	Pass
125 - 120	Pole	TP26.45x25.425x0.25	Pole	85.8%	Pass
120 - 119.75	Pole + Reinf.	TP26.501x26.45x0.3688	Reinf. 4 Tension Rupture	71.8%	Pass
119.75 - 114.75	Pole + Reinf.	TP27.526x26.501x0.3625	Reinf. 4 Tension Rupture	80.8%	Pass
114.75 - 111.75	Pole + Reinf.	TP28.141x27.526x0.3625	Reinf. 4 Tension Rupture	86.4%	Pass
111.75 - 111.5	Pole + Reinf.	TP28.192x28.141x0.4	Reinf. 3 Tension Rupture	79.2%	Pass
111.5 - 106.5	Pole + Reinf.	TP29.217x28.192x0.3938	Reinf. 3 Tension Rupture	87.4%	Pass
106.5 - 102	Pole + Reinf.	TP31.13x29.217x0.3875	Reinf. 3 Tension Rupture	94.1%	Pass
102 - 97	Pole + Reinf.	TP30.665x29.64x0.5125	Reinf. 3 Tension Rupture	78.9%	Pass
97 - 92	Pole + Reinf.	TP31.69x30.665x0.5125	Reinf. 3 Tension Rupture	83.6%	Pass
92 - 87	Pole + Reinf.	TP32.715x31.69x0.5	Reinf. 3 Tension Rupture	87.9%	Pass
87 - 82	Pole + Reinf.	TP33.74x32.715x0.5	Reinf. 3 Tension Rupture	91.9%	Pass
82 - 79.33	Pole + Reinf.	TP34.288x33.74x0.5	Reinf. 3 Tension Rupture	93.9%	Pass
79.33 - 79.08	Pole + Reinf.	TP34.339x34.288x0.7625	Reinf. 6 Tension Rupture	74.3%	Pass
79.08 - 75.25	Pole + Reinf.	TP35.124x34.339x0.75	Reinf. 6 Tension Rupture	76.9%	Pass
75.25 - 75	Pole + Reinf.	TP35.176x35.124x0.75	Reinf. 6 Tension Rupture	77.1%	Pass
75 - 70	Pole + Reinf.	TP36.201x35.176x0.7375	Reinf. 6 Tension Rupture	80.4%	Pass
70 - 65	Pole + Reinf.	TP37.226x36.201x0.725	Reinf. 6 Tension Rupture	83.6%	Pass
65 - 63.25	Pole + Reinf.	TP37.585x37.226x0.725	Reinf. 6 Tension Rupture	84.6%	Pass
63.25 - 63	Pole + Reinf.	TP37.636x37.585x0.8	Reinf. 5 Compression	73.2%	Pass
63 - 58	Pole + Reinf.	TP38.661x37.636x0.775	Reinf. 5 Compression	75.8%	Pass
58 - 55	Pole + Reinf.	TP40.49x38.661x0.775	Reinf. 5 Compression	77.4%	Pass
55 - 48.08	Pole + Reinf.	TP39.945x38.526x0.8375	Reinf. 5 Compression	76.9%	Pass
48.08 - 43.08	Pole + Reinf.	TP40.97x39.945x0.8125	Reinf. 5 Compression	79.0%	Pass
43.08 - 38.08	Pole + Reinf.	TP41.994x40.97x0.8125	Reinf. 5 Compression	81.0%	Pass
38.08 - 37.75	Pole + Reinf.	TP42.062x41.994x0.8125	Reinf. 5 Compression	81.1%	Pass
37.75 - 37.5	Pole + Reinf.	TP42.113x42.062x0.8625	Reinf. 5 Compression	76.6%	Pass
37.5 - 35.75	Pole + Reinf.	TP42.472x42.113x0.8625	Reinf. 5 Compression	77.3%	Pass
35.75 - 35.5	Pole + Reinf.	TP42.523x42.472x0.5875	Reinf. 1 Compression	86.9%	Pass
35.5 - 30.5	Pole + Reinf.	TP43.548x42.523x0.575	Reinf. 1 Compression	88.5%	Pass
30.5 - 25.5	Pole + Reinf.	TP44.573x43.548x0.575	Reinf. 1 Compression	89.9%	Pass
25.5 - 20.5	Pole + Reinf.	TP45.598x44.573x0.575	Reinf. 1 Compression	91.2%	Pass
20.5 - 15.5	Pole + Reinf.	TP46.623x45.598x0.5688	Reinf. 1 Compression	92.5%	Pass
15.5 - 10.5	Pole + Reinf.	TP47.648x46.623x0.5625	Reinf. 1 Compression	93.6%	Pass
10.5 - 5.5	Pole + Reinf.	TP48.673x47.648x0.5625	Reinf. 1 Compression	94.7%	Pass
5.5 - 0.5	Pole + Reinf.	TP49.698x48.673x0.5625	Reinf. 1 Compression	95.7%	Pass
0.5 - 0	Pole + Reinf.	TP49.8x49.698x0.5625	Reinf. 1 Compression	95.8%	Pass
				Summary	
			Pole	91.3%	Pass
			Reinforcement	95.8%	Pass
			Overall	95.8%	Pass

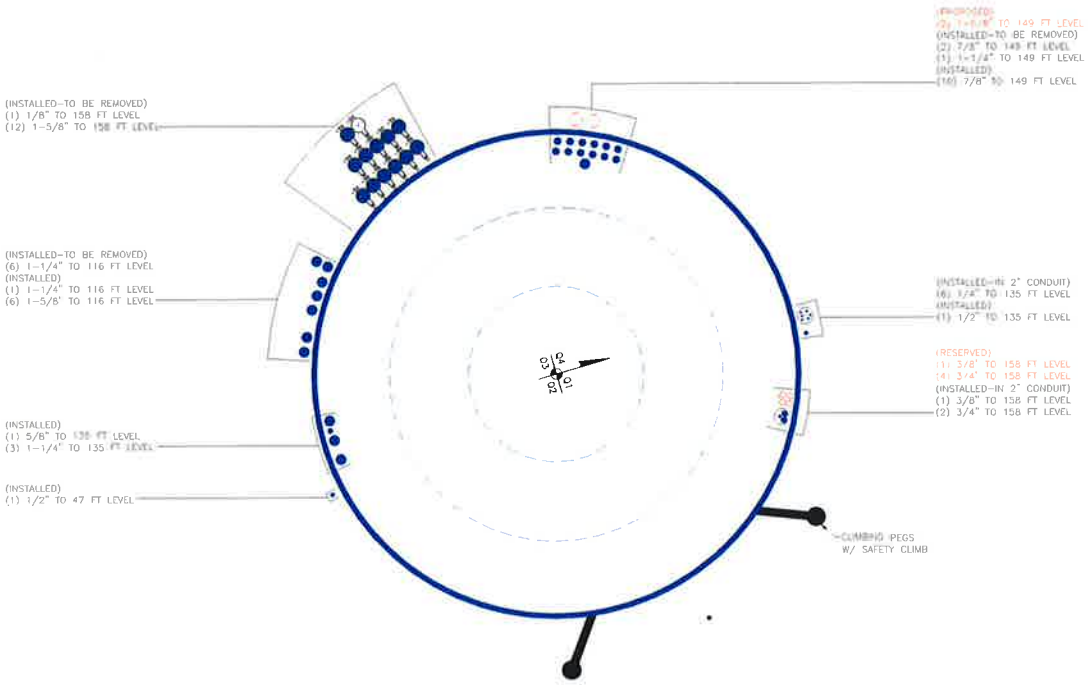
Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
160 - 155	756	n/a	756	15.51	n/a	15.51	21.1%						
155 - 150.5	756	n/a	756	15.51	n/a	15.51	36.0%						
150.5 - 150	791	n/a	791	15.75	n/a	15.75	36.6%						
150 - 145	963	n/a	963	16.94	n/a	16.94	29.3%						
145 - 140	1111	n/a	1111	17.77	n/a	17.77	39.5%						
140 - 135	1272	n/a	1272	18.59	n/a	18.59	49.5%						
135 - 130	1449	n/a	1449	19.41	n/a	19.41	62.9%						
130 - 125	1642	n/a	1642	20.24	n/a	20.24	74.9%						
125 - 120	1850	n/a	1850	21.06	n/a	21.06	85.8%						
120 - 119.75	1861	842	2703	21.10	9.00	30.10	57.5%				71.8%		
119.75 - 114.75	2088	906	2994	21.93	9.00	30.93	65.8%				80.8%		
114.75 - 111.75	2232	945	3178	22.42	9.00	31.42	71.1%				86.4%		
111.75 - 111.5	2245	1287	3531	22.46	12.00	34.46	64.7%			79.2%			
111.5 - 106.5	2501	1378	3879	23.29	12.00	35.29	72.6%			87.4%			
106.5 - 102	2747	1463	4211	24.03	12.00	36.03	79.4%			94.1%			
102 - 97	4289	1513	5802	36.52	12.00	48.52	58.9%			78.9%			
97 - 92	4739	1611	6351	37.76	12.00	49.76	62.5%			83.6%			
92 - 87	5220	1714	6934	39.00	12.00	51.00	65.8%			87.9%			
87 - 82	5733	1819	7551	40.23	12.00	52.23	69.3%			91.9%			
82 - 79.33	6019	1876	7896	40.89	12.00	52.89	71.2%			93.9%			
79.33 - 79.08	6047	5785	11832	40.95	36.38	77.33	47.9%			63.1%			74.3%
79.08 - 75.25	6476	6042	12518	41.90	36.38	78.27	50.0%			65.4%			76.9%
75.25 - 75	6505	6059	12563	41.96	36.38	78.34	50.2%		65.5%				77.1%
75 - 70	7097	6402	13499	43.20	36.38	79.57	52.9%		68.3%				80.4%
70 - 65	7723	6755	14479	44.43	36.38	80.81	55.5%		71.0%				83.6%
65 - 63.25	7951	6881	14832	44.87	36.38	81.24	56.5%		71.9%				84.6%
63.25 - 63	7984	8370	16355	44.93	43.88	88.80	51.5%		65.6%			73.2%	
63 - 58	8661	8813	17474	46.16	43.88	90.04	54.0%		68.0%			75.8%	
58 - 55	9086	9084	18169	46.91	43.88	90.78	55.4%		69.4%			77.4%	
55 - 48.08	11103	9383	20486	55.58	43.88	99.45	52.5%		68.9%			76.9%	
48.08 - 43.08	11990	9851	21840	57.02	43.88	100.89	54.4%		70.8%			79.0%	
43.08 - 38.08	12922	10330	23253	58.46	43.88	102.33	56.3%		72.6%			81.0%	
38.08 - 37.75	12985	10362	23348	58.55	43.88	102.43	56.5%		72.8%			81.1%	
37.75 - 37.5	13034	11800	24834	58.63	49.88	108.50	53.3%	60.0%				76.6%	
37.5 - 35.75	13373	11994	25367	59.13	49.88	109.01	54.0%	60.5%				77.3%	
35.75 - 35.5	13422	4290	17712	59.20	18.00	77.20	77.6%	86.9%					
35.5 - 30.5	14427	4493	18920	60.65	18.00	78.65	79.7%	88.5%					
30.5 - 25.5	15480	4701	20181	62.09	18.00	80.09	81.7%	89.9%					
25.5 - 20.5	16584	4913	21497	63.53	18.00	81.53	83.7%	91.2%					
20.5 - 15.5	17739	5131	22869	64.97	18.00	82.97	85.6%	92.5%					
15.5 - 10.5	18946	5353	24298	66.41	18.00	84.41	87.5%	93.6%					
10.5 - 5.5	20207	5579	25786	67.85	18.00	85.85	89.3%	94.7%					
5.5 - 0.5	21522	5811	27333	69.30	18.00	87.30	91.1%	95.7%					
0.5 - 0	21657	5834	27491	69.44	18.00	87.44	91.3%	95.8%					

Note: Section capacity checked in 5 degree increments.

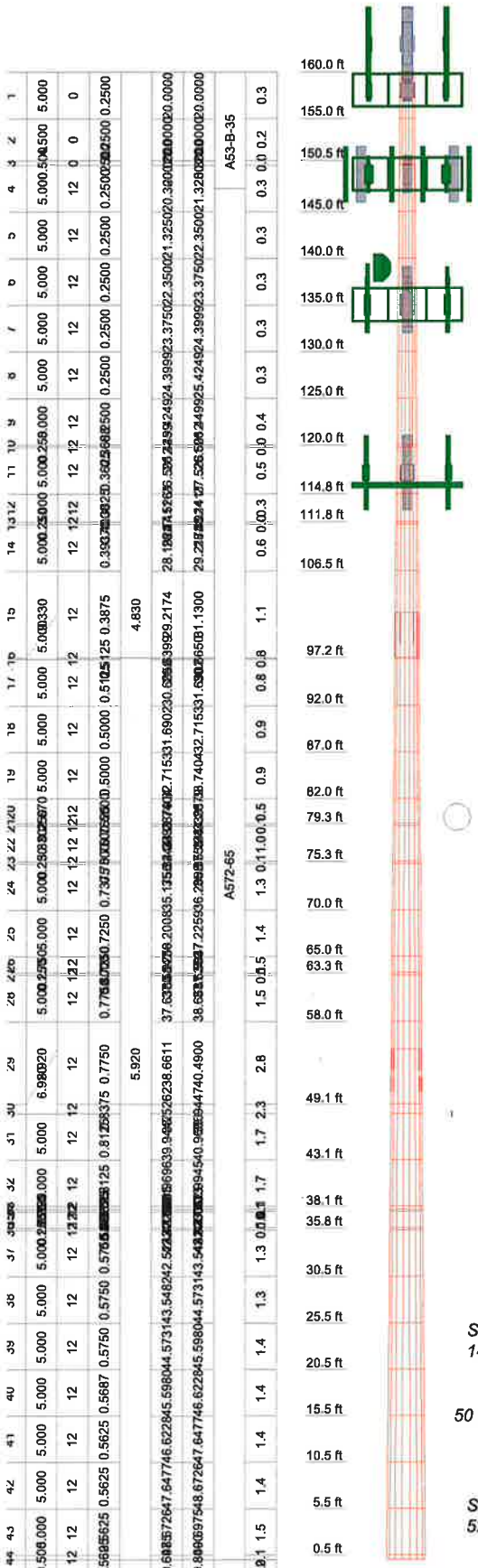
APPENDIX B

BASE LEVEL DRAWING


(INSTALLED-TO BE REMOVED)
(1) 1/8" TO 158 FT LEVEL
(12) 1-5/8" TO 158 FT LEVEL
(INSTALLED-TO BE REMOVED)
(6) 1-1/4" TO 116 FT LEVEL
(INSTALLED)
(1) 1-1/4" TO 116 FT LEVEL
(6) 1-5/8" TO 116 FT LEVEL
(INSTALLED)
(1) 5/8" TO 135 FT LEVEL
(3) 1-1/4" TO 135 FT LEVEL
(INSTALLED)
(1) 1/2" TO 47 FT LEVEL
(INSTALLED-TO BE REMOVED)
(2) 7/8" TO 149 FT LEVEL
(1) 1-1/4" TO 149 FT LEVEL
(INSTALLED)
(16) 7/8" TO 149 FT LEVEL
(INSTALLED-IN 2" CONDUIT)
(6) 1/2" TO 135 FT LEVEL
(INSTALLED)
(1) 1/2" TO 135 FT LEVEL
(RESERVED)
(1) 3/8" TO 158 FT LEVEL
(4) 3/4" TO 158 FT LEVEL
(INSTALLED-IN 2" CONDUIT)
(1) 3/8" TO 158 FT LEVEL
(2) 3/4" TO 158 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB

APPENDIX C

ADDITIONAL CALCULATIONS



Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Length (ft)	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	6.980	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	0.508
Number of Sides	0	0	0	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.3125	0.3125	0.3125	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.7750	0.8125	0.8125	0.8125	0.5750	0.5750	0.5750	0.5687	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625
Socket Length (ft)															4.830														5.920																
Top Dia (in)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Bot Dia (in)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.3125	0.3125	0.3125	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.7750	0.8125	0.8125	0.8125	0.5750	0.5750	0.5750	0.5687	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625
Grade	A53-B-35																												A572-65																
Weight (K)	0.3	0.2	0.0	0.3	0.3	0.3	0.3	0.3	0.4	0.0	0.5	0.0	0.3	0.6	1.1	0.8	0.8	0.9	0.9	0.5	1.3	1.4	0.5	1.3	2.8	2.3	1.7	1.7	0.1	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.7	1.7	1.8	1.8	1.9	2.0	2.1

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
7770.00 w/ Mount Pipe	158	TME-PCS 1900MHz 4x45W-65MHz	137
7770.00 w/ Mount Pipe	158	TME-PCS 1900MHz 4x45W-65MHz	137
7770.00 w/ Mount Pipe	158	Side Arm Mount [SO 101-3]	137
RRUS 11 B12	158	APXVSPP18-C-A20 w/ Mount Pipe	135
RRUS 11 B12	158	APXV9ERR18-C-A20 w/ Mount Pipe	135
RRUS 11 B12	158	APXVSPP18-C-A20 w/ Mount Pipe	135
DC6-48-60-18-8F	158	APXVTM14-C-120 w/ Mount Pipe	135
HPA-65R-BUU-H8 w/ Mount Pipe	158	APXVTM14-C-120 w/ Mount Pipe	135
HPA-65R-BUU-H8 w/ Mount Pipe	158	APXVTM14-C-120 w/ Mount Pipe	135
HPA-65R-BUU-H8 w/ Mount Pipe	158	LLPX310R-V1 w/ Mount Pipe	135
TPA-65R-LCUUUU-H8 w/ Mount Pipe	158	LLPX310R-V1 w/ Mount Pipe	135
TPA-65R-LCUUUU-H8 w/ Mount Pipe	158	LLPX310R-V1 w/ Mount Pipe	135
TPA-65R-LCUUUU-H8 w/ Mount Pipe	158	TIMING 2000	135
RRUS 11	158	TD-RRH8X20-25	135
RRUS 11	158	TD-RRH8X20-25	135
RRUS 11	158	TD-RRH8X20-25	135
RRUS 32	158	WIMAX DAP HEAD	135
RRUS 32	158	WIMAX DAP HEAD	135
RRUS 32	158	WIMAX DAP HEAD	135
RRUS 32 B2	158	HORIZON COMPACT	135
RRUS 32 B2	158	Platform Mount [LP 602-1]	135
RRUS 32 B2	158	VHLP2.5-11	135
(2) DC6-48-60-18-8F	158	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
Platform Mount [LP 303-1]	158		
DB-T1-6Z-8AB-0Z	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
BXA-80063/4CF w/ Mount Pipe	149		
BXA-70080/4CF w/ Mount Pipe	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
BXA-70080/4CF w/ Mount Pipe	149		
(2) SBNHH-1D65B w/ Mount Pipe	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
(2) SBNHH-1D65B w/ Mount Pipe	149		
(2) SBNHH-1D65B w/ Mount Pipe	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
B13 RRH 4X30	149	LNX-6515DS-VTM w/ Mount Pipe	116
B13 RRH 4X30	149	LNX-6515DS-VTM w/ Mount Pipe	116
B13 RRH 4X30	149	LNX-6515DS-VTM w/ Mount Pipe	116
B25 RRH4X30	149	KRY 112 144/1	116
B25 RRH4X30	149	KRY 112 144/1	116
B25 RRH4X30	149	KRY 112 144/1	116
B66A RRH4X45	149	RRUS 11 B12	116
B66A RRH4X45	149	RRUS 11 B12	116
B66A RRH4X45	149	RRUS 11 B12	116
DB-T1-6Z-8AB-0Z	149	T-Arm Mount [TA 602-3]	116
Platform Mount [LP 602-1]	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
TME-800MHz 2X50W RRH W/FILTER	137	Side Arm Mount [SO 701-1]	47
TME-800MHz 2X50W RRH W/FILTER	137	KS24019-L112A	47
TME-800MHz 2X50W RRH W/FILTER	137		
TME-PCS 1900MHz 4x45W-65MHz	137		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A572-65	65 ksi	80 ksi

ALL REACTIONS ARE FACTORED

AXIAL 119 K

SHEAR 14 K

MOMENT 1627 kip-ft

TORQUE 4 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 56 K

SHEAR 52 K

MOMENT 5560 kip-ft

TORQUE 8 kip-ft
REACTIONS - 97 mph WIND

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft

Paul J. Ford and Company
250 East Broad Street, Suite 600
Columbus, Ohio 43215
PJF
Phone: 614-221-6679
FAX:

Job:	*151-Ft Monopole / HRT 101 943232*		
Project:	*PJF 37518-0622.002.7805 / BU# 806373*		
Client: Crown Castle	Drawn by: gaustin	App'd:	
Code: TIA-222-G	Date: 03/13/18	Scale: N	
Path:		Dwg No.	

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Job Number:	37518-0622.002.7805	Page:	1
Site Number:	806373	Date:	3/13/2018
Site Name:	HRT 101 943232	Version:	2.6
By:	GJA	Effective:	12/10/2015

Channel Jump Analysis

Revision= LRFD Passing= 100% Design/Analysis = Analysis @ 150 ft - in elevation

TNX Tower Output @ Connection:			
Moment	=	89.16	k-ft
Axial	=	2.76	kips
Shear	=	8.10	kips
Design Capacity	=		
Pole Geometry:			
Diameter	=	20.3	in
Thickness	=	1/4	in
Pole Grade	=	A572 Gr. 65	
Extension Geometry:			
Diameter	=	20	in
Thickness	=	1/4	in
Height	=	10	ft
Extension Grade	=	A53 Gr. B	
Channel Jump Information			
Number of Legs	=	3	
Unbraced Length	=	22	in
Channel Grade	=	A572 Gr. 50	
K	=	2.10	
Channel Circle	=	22.54	in
Circle Override	=		in
Type	=	MC10X28.5	

	Extension	Pole
Blind Bolt	EXISTING AJAX	EXISTING AJAX
Bolt Method	Case 1	Case 1
Bolt Qty.	6	6
Spacing (in)	3	3
End Dist. (in)	2	2

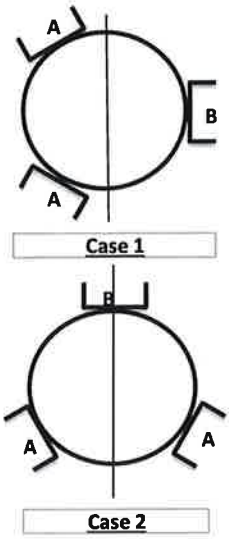
New Port Information			
Elevation #1	=		ft
Elevation #2	=		ft
Elevation #3	=		ft
Elevation #4	=		ft

Design Reactions

Moment k-ft	Axial kips	Shear kips
89.16	2.76	8.10

Load Distribution

Moment of Inertia, I in⁴	Axial / Leg kips
190.52	0.920



Member Forces

Case	d	Tension (kips)	Comp. (kips)	Mx (k-in)	My (k-in)	M (k-in)
1a	5.64	30.73	32.57	72.93	42.11	84.21
1b	11.27	62.37	64.21	0.00	9.78	9.78
2a	9.76	53.89	55.73	17.29	29.95	34.59
2b	0.00	0.92	0.92	109.02	0.00	109.02

Tensile Strength

Case	P_{n1} kips	P_{n2} kips	øtPnt kips	P_{rt} kips	Capacity
1a	418.5	508.655	376.65	30.73	8.2%
1b	418.5	508.655	376.65	62.37	16.6%
2a	418.5	508.655	376.65	53.89	14.3%
2b	418.5	508.655	376.65	0.92	0.2%

Compression Strength

Case	$4.71*\sqrt{(E/F_y)}$	KL/r	F_e ksi	F_{cr} ksi	øcPnc kips	P_{rc} kips	Capacity
1a	113.43	39.83	180.44	44.52	335.40	32.57	9.7%
1b	113.43	39.83	180.44	44.52	335.40	64.21	19.1%
2a	113.43	39.83	180.44	44.52	335.40	55.73	16.6%
2b	113.43	39.83	180.44	44.52	335.40	0.92	0.3%

Flexural Strength

Case	ø	I_3 in⁴	∑I in⁴	M k-in	f_A ksi	F_A ksi	øbMn k-in	Capacity
1a	60	97.325	205.95	84.21	7.06732	45	-	15.7%
1b	0	11.3	205.95	9.78	-	-	287.28	3.4%
2a	30	39.975	205.95	34.59	3.65525	45	-	8.1%
2b	90	126	205.95	109.02	-	-	1350	8.1%

Combined Strength

Case	Flexure + Tension (H1) Prt / Pnt	Mr / Mn	Capacity
1a	0.041	0.157	19.8%
1b	0.083	0.034	11.7%
2a	0.072	0.081	15.3%
2b	0.001	0.081	8.2%

Case	Flexure + Compression (H1) Prc / Pnc	Mr / Mn	Capacity
1a	0.049	0.157	20.6%
1b	0.096	0.034	13.0%
2a	0.083	0.081	16.4%
2b	0.001	0.081	8.2%

Bolt Check

Case	Location	Channel Comp. kips	e in	Shear on Bolt kips	Bearing Capacity kips	Shear Capacity kips	Tension on Bolt kips	Tension Capacity kips	Limit Capacity
1a	Ext	32.57	1.27	5.44	24.36	37.00	1.49	30.00	5.2%
	Pole	32.57	1.12	6.66	32.48	37.00	2.62	30.00	5.0%
1b	Ext	64.21	1.27	10.70	24.36	37.00	2.94	30.00	20.3%
	Pole	64.21	1.12	10.70	32.48	37.00	2.95	30.00	11.8%
2a	Ext	55.73	1.27	9.29	24.36	37.00	2.55	30.00	15.3%
	Pole	55.73	1.12	9.35	32.48	37.00	3.21	30.00	9.4%
2b	Ext	0.92	1.27	0.48	24.36	37.00	0.04	30.00	0.0%
	Pole	0.92	1.12	5.64	32.48	37.00	0.03	30.00	3.0%

PAUL J. FORD & COMPANY
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v4.4 - Effective 7-12-13

Date: 3/13/2018
PJF Project: 37518-0622.002.7805
Client Ref. # 806373
Site Name: HRT 101 943232
Description: 160' Pole
Owner: Crown Castle
Engineer: GJA

Asymmetric Anchor Rod Analysis

Moment =	5560	k-ft	TIA Ref.	G	Location =	Base Plate	
Axial =	56.0	kips	ASIF =	1.0000	η =	0.50	for BP, Rev. G Sect. 4.9.9
Shear =	52.0	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G
Anchor Qty =	19						

** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. **

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	58.06	0.00	3.98	238.50	232.60	243.97	0.00	260.00	93.8%
2	2.250	#18J A615 Gr 75	75	100	22.5	58.06	0.00	3.98	234.20	228.30	239.67	0.00	260.00	92.2%
3	2.250	#18J A615 Gr 75	75	100	45.0	58.06	0.00	3.98	232.74	226.85	238.22	0.00	260.00	91.6%
4	2.250	#18J A615 Gr 75	75	100	67.5	58.06	0.00	3.98	234.51	228.61	239.98	0.00	260.00	92.3%
5	2.250	#18J A615 Gr 75	75	100	90.0	58.06	0.00	3.98	237.92	232.02	243.39	0.00	260.00	93.6%
6	2.250	#18J A615 Gr 75	75	100	112.5	58.06	0.00	3.98	240.58	234.69	246.06	0.00	260.00	94.6%
7	2.250	#18J A615 Gr 75	75	100	135.0	58.06	0.00	3.98	240.77	234.88	246.25	0.00	260.00	94.7%
8	2.250	#18J A615 Gr 75	75	100	157.5	58.06	0.00	3.98	238.37	232.47	243.84	0.00	260.00	93.8%
9	2.250	#18J A615 Gr 75	75	100	180.0	58.06	0.00	3.98	234.92	229.02	240.39	0.00	260.00	92.5%
10	2.250	#18J A615 Gr 75	75	100	202.5	58.06	0.00	3.98	232.81	226.92	238.29	0.00	260.00	91.6%
11	2.250	#18J A615 Gr 75	75	100	225.0	58.06	0.00	3.98	233.81	227.91	239.29	0.00	260.00	92.0%
12	2.250	#18J A615 Gr 75	75	100	247.5	58.06	0.00	3.98	237.82	231.93	243.30	0.00	260.00	93.6%
13	2.250	#18J A615 Gr 75	75	100	270.0	58.06	0.00	3.98	242.90	237.01	248.38	0.00	260.00	95.5%
14	2.250	#18J A615 Gr 75	75	100	292.5	58.06	0.00	3.98	246.46	240.57	251.94	0.00	260.00	96.9%
15	2.250	#18J A615 Gr 75	75	100	315.0	58.06	0.00	3.98	246.71	240.81	252.18	0.00	260.00	97.0%
16	2.250	#18J A615 Gr 75	75	100	337.5	58.06	0.00	3.98	243.52	237.62	248.99	0.00	260.00	95.8%
17	2.250	A193 Gr B7	105	125	12.3	63.00	0.00	3.98	255.37	249.48	260.83	0.00	325.00	80.3%
18	2.250	A193 Gr B7	105	125	125.3	63.00	0.00	3.98	261.30	255.41	266.77	0.00	325.00	82.1%
19	2.250	A193 Gr B7	105	125	238.3	63.00	0.00	3.98	255.37	249.48	260.83	0.00	325.00	80.3%
								75.61						

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Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *806373*
Site Name: *HRT 101 943232*
App #:

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	58.06	in

Plate Data		
Diam:	64.06	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	10.01	in

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

Pole Data		
Diam:	49.8	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	4717.6	ft-kips
Axial, Pu:	47.2	kips
Shear, Vu:	43.8	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Reactions adjusted to account for post installed anchors

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

		Rigid
Max Rod (Cu+ Vu/ń):	252.2 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	97.0% **Pass**	

Base Plate Results

	Flexural Check	Rigid
Base Plate Stress:	33.6 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	62.2% **Pass**	Y.L. Length: 29.85

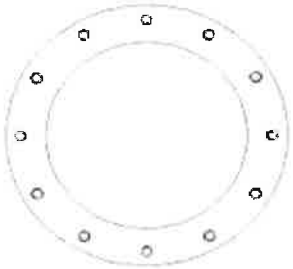
n/a

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

Drilled Pier Foundation

BU # :	806373
Site Name:	HRT 101 943232
App. Number:	

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	5560	
Axial Force (kips)	56	
Shear Force (kips)	52	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	24.5	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 24.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	36	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	4	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.58	-
Soil Safety Factor	1.66	-
Max Moment (kip-ft)	5903.48	-
Rating	*80.1%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	358.56	-
End Bearing (kips)	490.68	-
Weight of Concrete (kips)	117.57	-
Total Capacity (kips)	849.23	-
Axial (kips)	173.57	-
Rating	*20.4%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.60	-
Critical Moment (kip-ft)	5903.47	-
Critical Moment Capacity	8483.50	-
Rating	*69.6%*	-

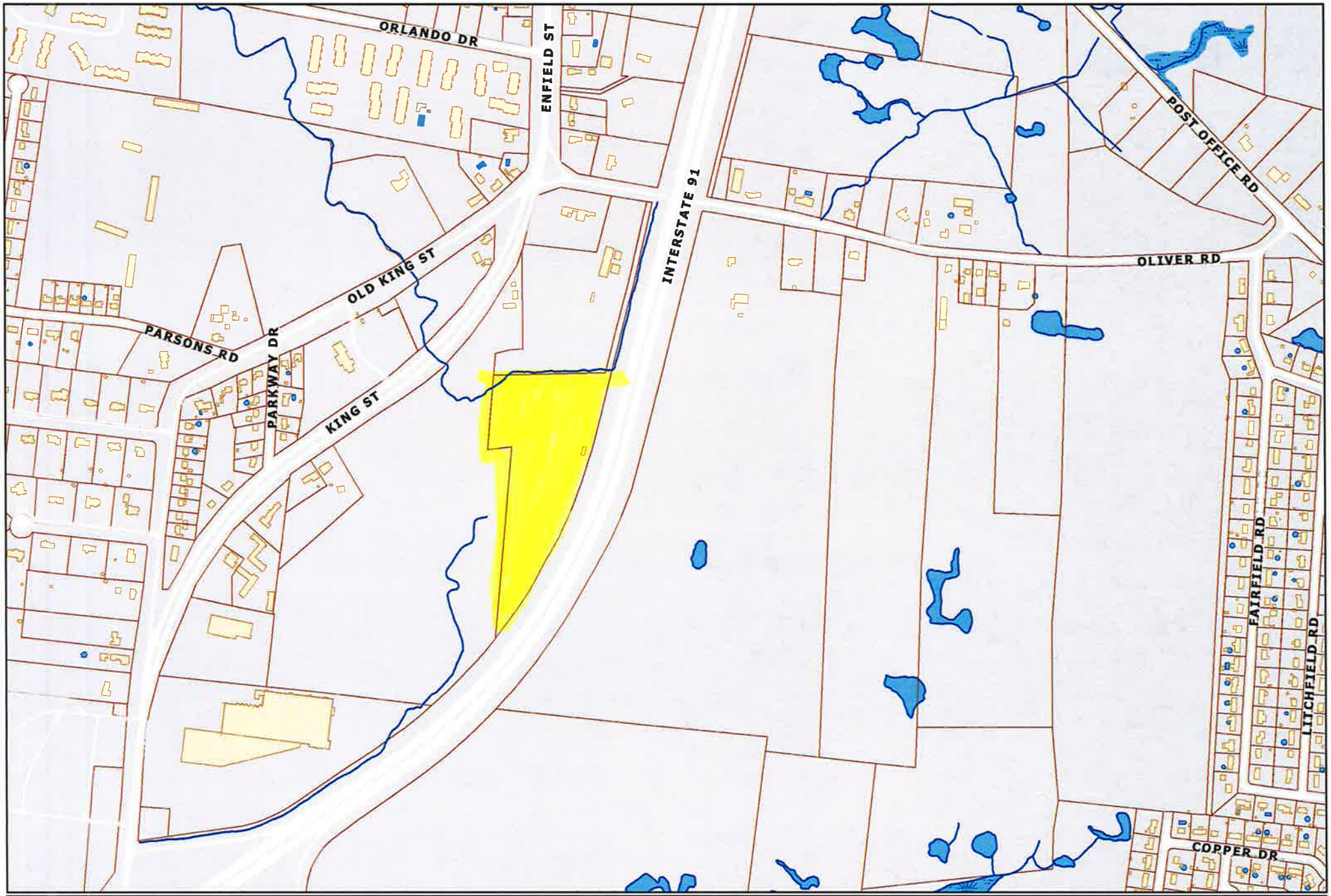
Soil Interaction Rating	**80.1%**
Structural Foundation Rating	**69.6%**

Soil Profile

Groundwater Depth	4	ft	# of Layers: 4

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	4	0.5	100	150	0	28	0.464	0.464				38	Cohesionless
3	4	5	1	62.6	87.6	0	42	0.523	0.523				38	Cohesionless
4	5	24.5	19.5	65	87.6	0	42	1.076	1.076			17	60	Cohesionless

ATTACHMENT 4



Enfield, CT

N
W E
S

Feet
0 100200 400 600 800
1 inch = 631 feet

The Town of Enfield, CT shall assume no liability for any errors,omissions, or inaccuracies in the information provided regardless of how caused or any decision made or action taken or not taken by reader in reliance upon any information or data furnished hereunder.

OLIVER RD

Location	OLIVER RD	**Mblu**	017/ / 0094/ /
Acct#	002100020005	**Owner**	OLIVER ROAD HOLDING LLC
Assessment	$761,910	**Appraisal**	$1,121,510
PID	4299	**Building Count**	1
Fire District	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$884,020	$237,490	$1,121,510

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$618,810	$143,100	$761,910

Owner of Record

Owner	OLIVER ROAD HOLDING LLC
Co-Owner	C/O CROWN CASTLE
Address	PMB 353 - 4017 WASHINGTON RD MCMURRAY, PA 15317

Sale Price	$150,000
Certificate	
Book & Page	2520/ 875
Sale Date	10/25/2010
Instrument	28

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
OLIVER ROAD HOLDING LLC	$150,000		2520/ 875	28	10/25/2010
SMYTH MICHAEL E	$0	1	454/ 889		12/05/1980

Building Information

Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	

No Data for Extra Features

Land

Land Use

Use Code	300
Description	Ind Land
Zone	I-1
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	10.22
Frontage	
Depth	
Assessed Value	$143,100
Appraised Value	$237,490

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN2	FENCE-6' CHAIN			220 L.F.	$1,870	1
SHD1	Shed	FR	Frame	120 S.F.	$1,130	1
BRN8	Pole Barn	TY	Typical	11050 S.F.	$140,390	1
TWR5	Cell Twr5 Carriers			1 UNITS	$740,630	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$884,020	$237,490	$1,121,510
2016	$1,062,140	$237,490	$1,299,630
2015	$1,062,140	$237,490	$1,299,630

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$618,810	$143,100	$761,910
2016	$743,500	$143,100	$886,600
2015	$743,500	$131,370	$874,870

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ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender

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

TOTAL NO. of Pieces Listed by Sender: 3

TOTAL NO. of Pieces Received at Post Office™: 3

Postmaster, per *(name of receiving employee)*

Affix Stamp Here
Postmark with Date of Receipt.

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Bryan Chodkowski, Town Manager Town of Enfield 820 Enfield Street Enfield, CT 06082				
2.	Roger J. O'Brien, Director of Planning Town of Enfield 820 Enfield Street Enfield, CT 06082				
3.	Oliver Road Holding LLC 4 Oliver Road Enfield, CT 06082				
4.					
5.					
6.					

See Reverse for Instructions