

March 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
15 Dwight Street, North Haven, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 108-foot level of the existing 150-foot tower at 15 Dwight Street in North Haven, Connecticut (the “Property”). The tower is owned by American Tower Corporation (“ATC”). The Council approved Cellco’s use of this tower in 1999. Cellco now intends to replace six (6) of its existing antennas with three (3) model JAHH-65B-R3B, 700/2100 MHz antennas and three (3) model JAHH-65B-R3B, 850/1900 MHz antennas, all at the same level on the tower. Cellco also intends to install twelve (12) remote radio heads (“RRHs”) and two (2) HYBRIFLEX™ fiber optic antenna cables. Included in Attachment 1 are specifications for Cellco’s replacement antennas, RRHs and HYBRIFLEX™ cables.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to North Haven First Selectman, Michael J. Freda; Alan Fredricksen, North Haven’s Land Use Administrator; 15 Dwight Street LLC, the owner of the Property; and ATC, 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 tower. Cellco’s replacement antennas and RRHs will be installed at the 108-foot level of the tower.

17751332-v1

Melanie A. Bachman, Esq.

March 9, 2018

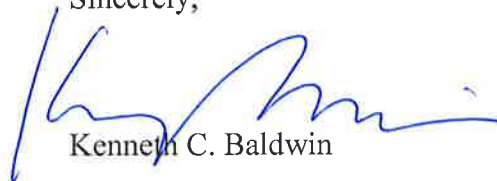
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2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included behind Attachment 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support Cellco's proposed modifications. (*See Structural Analysis Report included in Attachment 3*).

A copy of the parcel map and owner information for the Property 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:

Michael J. Freda, First Selectman
Alan Fredricksen, Land Use Administrator
15 Dwight Street LLC
ATC
Tim Parks

ATTACHMENT 1



JAHH-65B-R3B

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

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

Electrical Specifications

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

Electrical Specifications, BASTA*

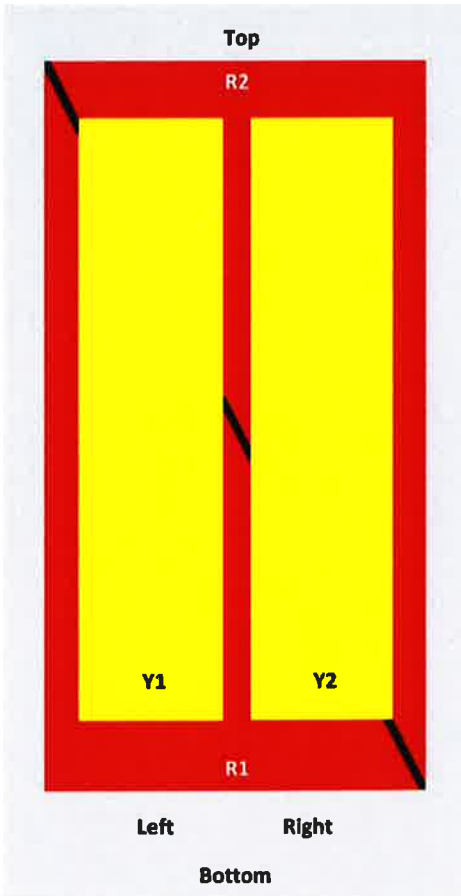
Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
Gain by Beam Tilt, average, dBi	2° 14.3	2° 15.0	0° 17.2	0° 17.6	0° 17.7	0° 17.9
	8° 14.3	8°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

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

JAHH-65B-R3B

Array Layout

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



Array	Freq (MHz)	Coors	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANXXXXXXXXXXXXX1
R2	824-894	3-4	2	ANXXXXXXXXXXXXX2
Y1	1695-2360	5-6	3	ANXXXXXXXXXXXXX3
Y2	1695-2360	7-8		

View from the front of the antenna

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

General Specifications

Operating Frequency Band	1695 – 2360 MHz 698 – 787 MHz 824 – 894 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	8
RF Connector Quantity, low band	4
RF Connector Quantity, high band	4
RF Connector Interface	4.3-10 Female

JAHH-65BR3B

Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Radiator Material	Aluminum Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	301.0 N @ 150 km/h 67.7 lbf @ 150 km/h
Wind Loading, lateral	254.0 N @ 150 km/h 57.1 lbf @ 150 km/h
Wind Loading, maximum	638.0 N @ 150 km/h 143.4 lbf @ 150 km/h
Wind Speed, maximum	241 km/h 150 mph

Dimensions

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

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

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

Regulatory Compliance/Certifications

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



JAHH-65B-R3B

Included Products

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

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

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

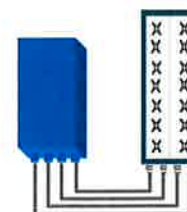


FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

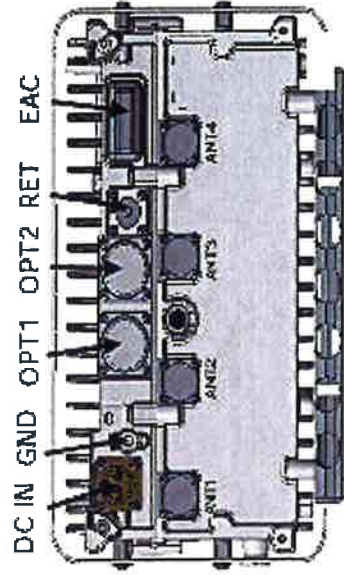
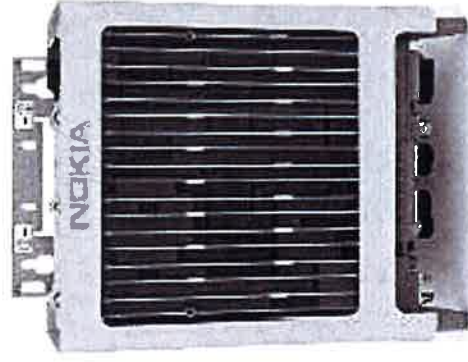
TECHNICAL SPECIFICATIONS

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

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AHCA AirScale RRH 4T4R B5 160W

Supported Frequency bands	3GPP band 5
Frequencies	DL 869-894MHz, UL 824-849MHz
Number of TX/RX paths/pipes	4TX/4RX
Instantaneous Bandwidth IBW	25MHz (Full Band)
Occupied Bandwidth OBW	25MHz (Full Band)
Output Power	4T4R @ 40W / 2T4R @ 60W
RF Sharing	LTE, WCDMA, LTE + NB-IoT supported
256 QAM Back Off	No backoff at 40W and 0.8dB at 60W.
Supply Voltage / Voltage Range	DC+8V / -36V to -60V
Typical Power Consumption	365W [50% ETSI Busy Hour Load at 4TX @ 40W]
	529W [100% RF Load at 4 TX @ 40W]
	574W [100% RF Load at 4 TX @ 40W with SBT and 215G ON]
Antenna Ports	4 Ports, 4.3-10+
Optical Ports	2x CPRI 9.8 Gbps
ALD Control Interfaces	215G.0 from ANT 1, 2, 3, 4 and RET (Power supply ANT1 and ANT3)
Other Interfaces	External Alarm MDR-26 Serial connector (4 inputs, 1 Output) DC Circular Power Connector



Operational Temperature Range	-40°C to 55°C (with solar cover)
Dimensions (mm)	337 x 295 x 165 (radio only)
Height x width x depth	13.3" x 11.7" x 6.5"
	428 x 324 x 208 (with bracket and enclosure)
	16.9" x 12.8" x 8.2"
Volume (liters)	16.5
Weight (kg)	16 / 35.3 lb - w/o bracket
Ingress protection class	IP65
Installation options	Pole or Wall, Vertical or Horizontal Book Mount
Surge protection	Class II 5kA

NOKIA

ALCATEL-LUCENT B25 RRH4X30

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

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

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

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

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

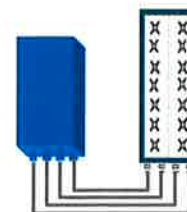


FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

TECHNICAL SPECIFICATIONS

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

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B25 RRH4x30

ALCATEL-LUCENT DATA SHEET REV1.1 – JANUARY 2015

ALCATEL-LUCENT B66A RRH4X45

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

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

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



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

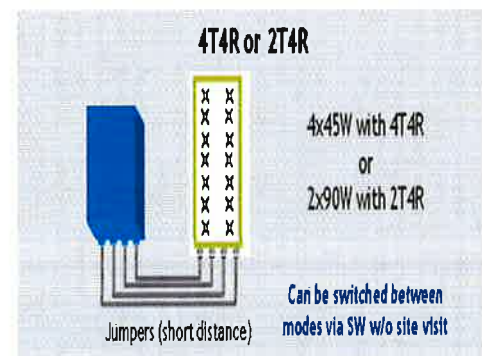
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



TECHNICAL SPECIFICATIONS

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

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

Product Description

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

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

Features/Benefits

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



Figure 1: HYBRIFLEX Series

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket:	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection:	Individual and External Jacket		Yes
Physical 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)]	0.68 (0.205)
DC-Resistance Power Cable, 8.4mm ² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Optical 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)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Operating Range			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

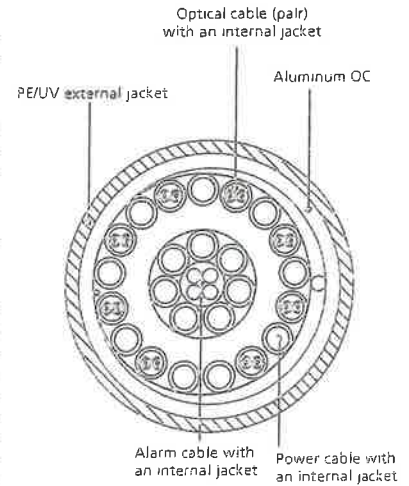


Figure 3: Construction Detail

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

ATTACHMENT 2

ATTACHMENT 3



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 150 ft Monopole
ATC Site Name : North Haven CT 1, CT
ATC Site Number : 302482
Engineering Number : OAA708185_C3_02
Proposed Carrier : Verizon Wireless
Carrier Site Name : North Haven 2
Carrier Site Number : -
Site Location : 15 Dewight Street
North Haven, CT 06473-1198
41.420800,-72.848800
County : New Haven
Date : March 1, 2018
Max Usage : 96%
Result : Pass

Prepared By:
Aaron Black
Structural Engineer II

Reviewed By:



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COA: PEC.0001553



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Supporting Documents	1
Analysis	1
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Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft monopole to reflect the change in loading by Verizon Wireless.

Supporting Documents

Tower Drawings	ITT Meyer, Type "B", Spec. AT-8935, dated April 13, 1984
Foundation Drawing	Southern New England Telephone Job #3C032, dated September 18, 1984
Geotechnical Report	S&ME Job #1261-08-0490, dated April 24, 2008
Modifications	Spectrasite Communications File #CT-0018-M1, Rev. 4, dated October 15, 2002 ATC Project #41732832, dated June 30, 2008 ATC Project #43874133, dated September 1, 2009 ATC Project #60261734, dated January 19, 2015

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	97 mph (3-Second Gust, V_{ASD}) / 125 mph (3-Second Gust, V_{ULT})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.18$, $S_1 = 0.06$
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	153.0	6	Powerwave 7020.00 Dual Band RET	Platform w/ Handrails	(6) 1 1/4" Coax (4) 0.78" 8 AWG 6 (2) 0.51" Hybrid	AT&T Mobility
		3	Kaelus DBC0061F1V51-2			
		6	Powerwave LGP21401			
		2	Raycap DC6-48-60-18-8F			
		3	Ericsson RRUS A2 B2			
		3	Ericsson RRUS 32 (50.8 lbs)			
		3	Ericsson RRUS 11 (Band 7)			
		3	Ericsson RRUS 12			
		3	Powerwave 7770.00			
		3	Quintel QS66512-2			
		3	CCI OPA-65R-LCUU-H6			
142.0	148.0	3	DragonWave Horizon Compact	Side Arms	(6) 5/16" Coax (4) 1 1/4" Hybriflex (3) 1/2" Coax (1) 2" conduit	Clearwire
		1	DragonWave A-ANT-23G-1-C			
		1	DragonWave A-ANT-11G-2-C			
		1	DragonWave A-ANT-11G-2.5-C			
		3	KMW ETCR-654L12H6			
	142.0	6	Alcatel-Lucent RRH2x50-08			
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
108.0	108.0	6	RFS FD9R6004/1C-3L	Low Profile Platform	(9) 1 5/8" Coax	Verizon Wireless
		6	RFS FD9R6004/2C-3L			
		3	Commscope HBX-6516DS-VTM			
		3	Commscope LNX-6514DS-VTM			

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
108.0	108.0	3	Commscope HBX-6517DS-VTM	-	(3) 1 5/8" Coax	Verizon Wireless
		3	Antel BXA-70063/6CF_			

Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
108.0	108.0	3	Nokia B5 RRH4x40-850	Low Profile Platform	(2) 1 5/8" Hybriflex	Verizon Wireless
		3	Alcatel-Lucent RRH 2X60-1900			
		3	Alcatel-Lucent RRH2x60 700			
		3	Alcatel-Lucent B66 RRH4x45			
		2	RFS DB-T1-6Z-8AB-0Z			
		6	Commscope JAHH-65B-R3B			

¹Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	88%	Pass
Shaft	85%	Pass
Base Plate	62%	Pass
Flanges	22%	Pass
Reinforcement	87%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,739.8	96%
Axial (Kips)	38.1	68%
Shear (Kips)	27.2	30%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
142.0	DragonWave A-ANT-23G-1-C	Clearwire	2.372	1.936
	DragonWave A-ANT-11G-2-C			
	DragonWave A-ANT-11G-2.5-C			
108.0	Nokia B5 RRH4x40-850	Verizon Wireless	1.401	1.398
	Alcatel-Lucent RRH 2X60-1900			
	Alcatel-Lucent RRH2x60 700			
	Alcatel-Lucent B66 RRH4x45			
	RFS DB-T1-6Z-8AB-0Z			
	Commscope JAHH-65B-R3B			

*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

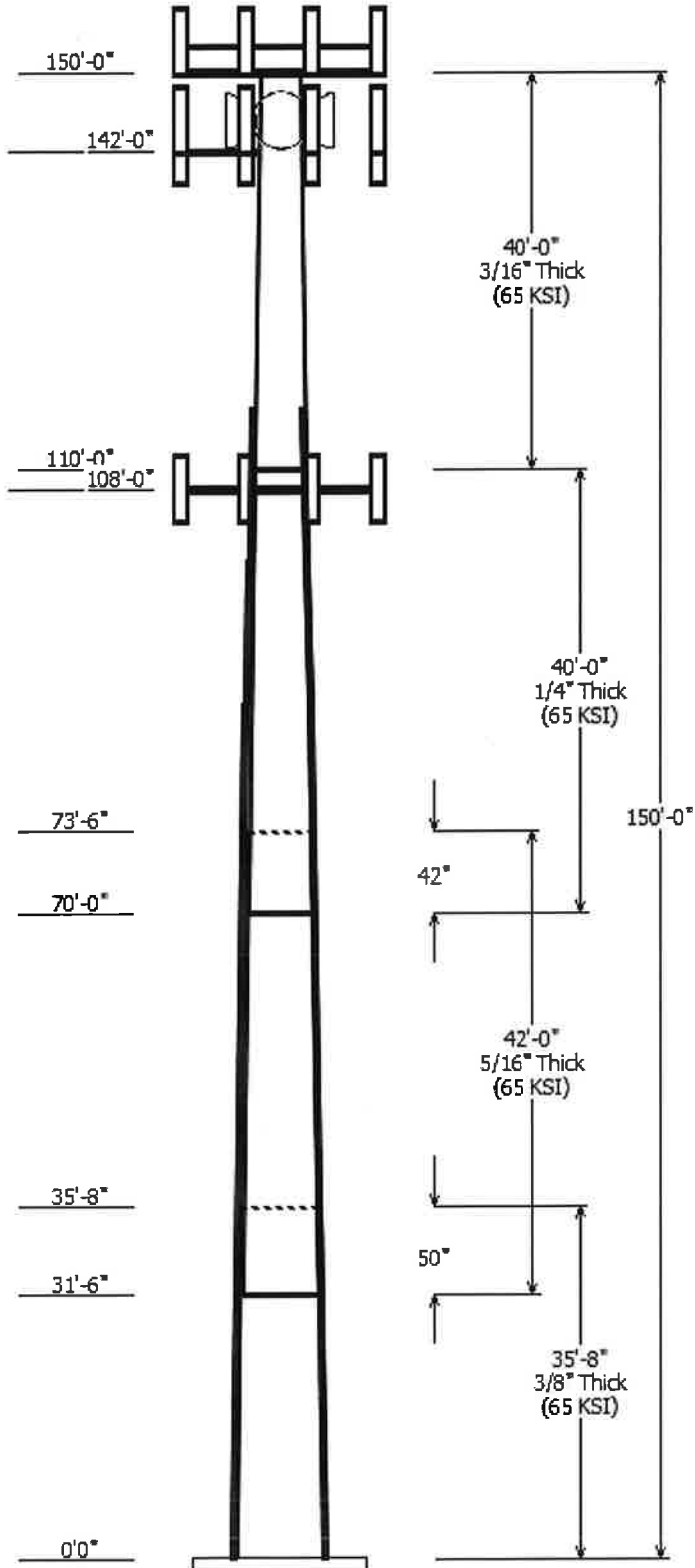
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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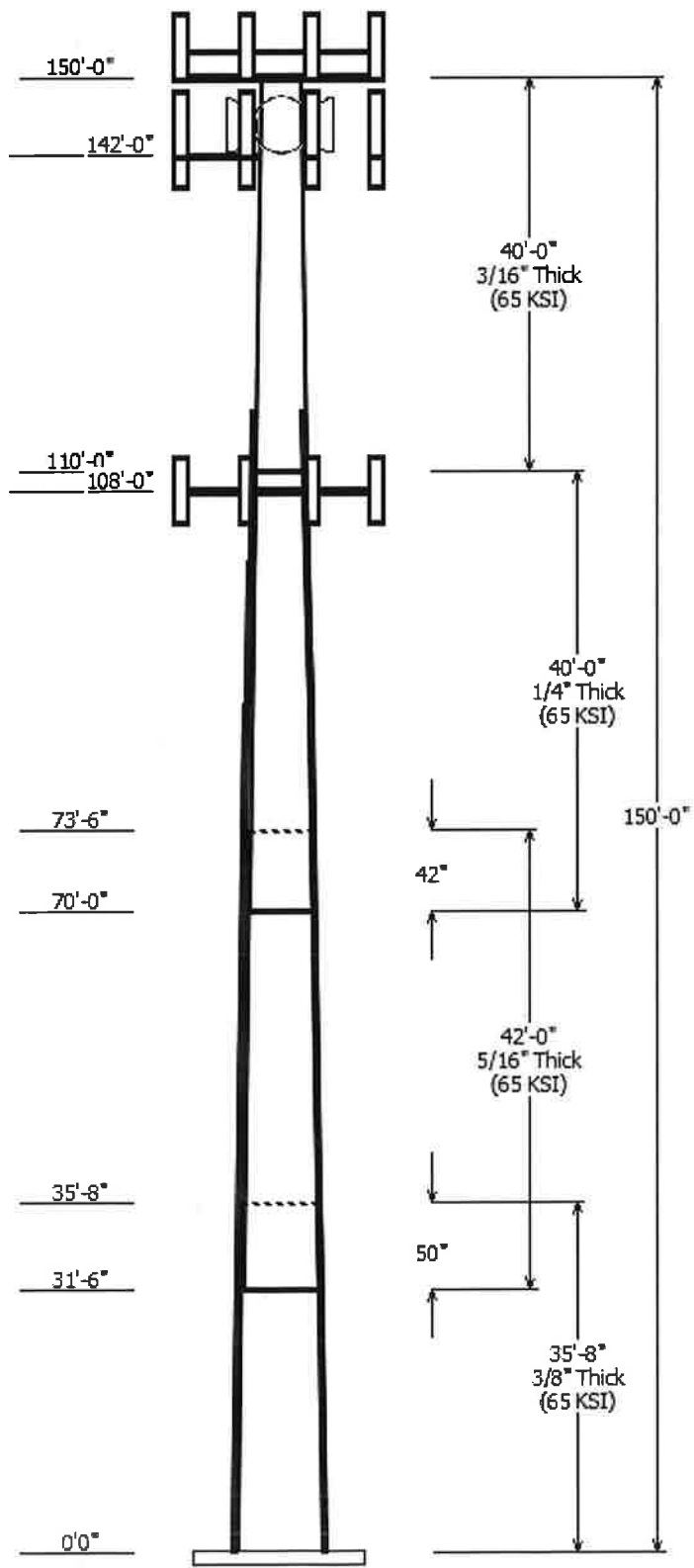


Job Information	
Pole : 302482	Code: ANSI/TIA-222-G
Location : North Haven CT 1, CT	
Description : 150' ITT Meyer Type B Monopole	
Client : VERIZON WIRELESS	Struct Class : II
Shape : 12 Sides	Exposure : B
Height : 150.00 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.156667(in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Across Top	Flats Bottom				
1	35.667	31.78	37.37	0.375		0.000	12 Sides 65
2	42.000	26.48	33.06	0.313	Slip Joint	50.000	12 Sides 65
3	40.000	21.26	27.53	0.250	Slip Joint	42.000	12 Sides 65
4	40.000	15.00	21.26	0.188	Butt Joint	0.000	12 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
150.000	153.000	3	Quintel QS66512-2
150.000	153.000	3	Ericsson RRUS 32 (50.8 lbs)
150.000	153.000	3	Kaelus DBC0061F1V51-2
150.000	153.000	6	Powerwave Allgon 7020.00
150.000	153.000	1	Raycap DC6-48-60-18-8F
150.000	153.000	3	CCI OPA-65R-LCUU-H6
150.000	153.000	3	Ericsson RRUS 12
150.000	153.000	3	Ericsson RRUS 11 (Band 7)
150.000	153.000	3	Ericsson RRUS A2 B2
150.000	153.000	1	Raycap DC6-48-60-18-8F
150.000	153.000	6	Powerwave LGP21401
150.000	153.000	3	Powerwave Allgon 7770.00
150.000	150.000	1	Round Platform w/ Handrails
142.000	148.000	3	KMW ETCR-654L12H6
142.000	148.000	1	DragonWave A-ANT-11G-2.5-C
142.000	142.000	1	Side Arms
142.000	148.000	1	DragonWave A-ANT-11G-2-C
142.000	142.000	3	Alcatel-Lucent TD-RRH8x20-25
142.000	142.000	3	Alcatel-Lucent 1900 MHz 4X45
142.000	148.000	1	DragonWave A-ANT-23G-1-C
142.000	148.000	3	DragonWave Horizon Compact
142.000	142.000	6	Alcatel-Lucent RRH2x50-08
108.000	108.000	6	RFS FD9R6004/1C-3L
108.000	108.000	6	RFS FD9R6004/2C-3L
108.000	108.000	3	Alcatel-Lucent B66 RRH4x45
108.000	108.000	3	Nokia B5 RRH4x40-850
108.000	108.000	3	Commscope HBX-6516DS-VTM
108.000	108.000	3	Commscope LNX-6514DS-VTM
108.000	108.000	2	RFS DB-T1-6Z-8AB-0Z
108.000	108.000	6	Commscope JAHH-65B-R3B
108.000	108.000	3	Alcatel-Lucent RRH 2X60-1900
108.000	108.000	3	Alcatel-Lucent RRH2x60 700
108.000	108.000	1	Round Low Profile Platform

Linear Appurtenance			
Elev From (ft)	To (ft)	Description	Exposed To Wind
101.0	121.0	Dywidag	Yes
6.000	108.0	1 5/8" Hybriflex	No
5.000	108.0	1 5/8" Coax	No
5.000	142.0	1 1/4" Hybriflex	No



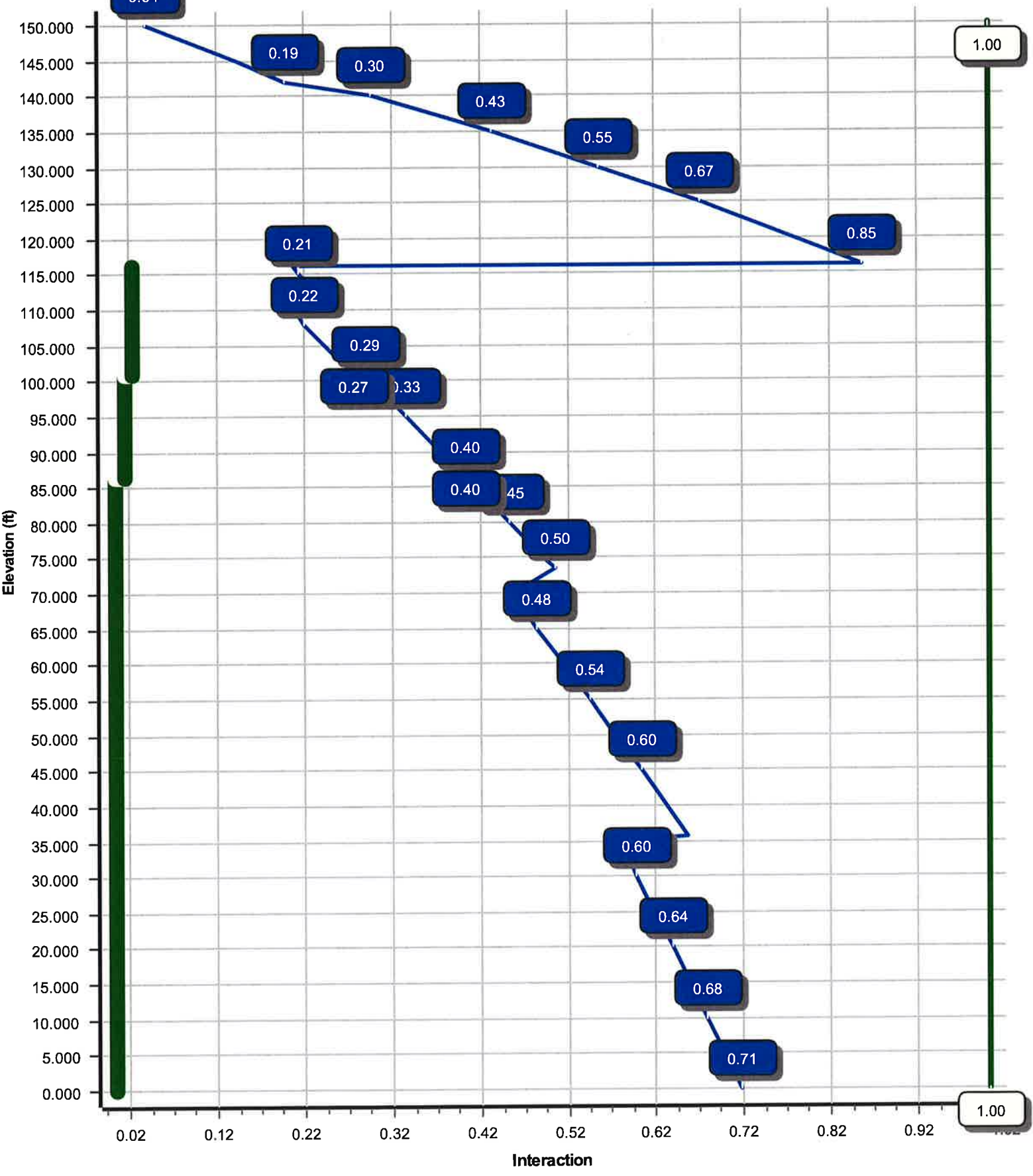
5.000	142.0	1/2" Coax	Yes
5.000	142.0	2" conduit	Yes
5.000	142.0	5/16" (0.31"-	No
5.000	150.0	0.51" (13mm)	Yes
5.000	150.0	0.51" (13mm)	Yes
5.000	150.0	0.78" (19.7mm) 8	Yes
5.000	150.0	0.78" (19.7mm) 8	No
5.000	150.0	1 1/4" Coax	Yes
5.000	150.0	1 1/4" Coax	No
0.000	101.0	Dywidag	Yes

Load Cases	
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2739.76	27.24	38.08
0.9D + 1.6W	2698.49	27.21	28.54
1.2D + 1.0Di + 1.0Wi	684.93	6.27	62.96
(1.2 + 0.2Sds) * DL + E ELFM	156.66	1.24	38.05
(1.2 + 0.2Sds) * DL + E EMAM	252.08	2.00	38.05
(0.9 - 0.2Sds) * DL + E ELFM	153.60	1.24	26.43
(0.9 - 0.2Sds) * DL + E EMAM	246.71	2.00	26.43
1.0D + 1.0W	649.97	6.51	31.79

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	142.00	28.468	1.936
1.0D + 1.0W	142.00	28.468	1.936
1.0D + 1.0W	142.00	28.468	1.936

Load Case : 1.2D + 1.6W
Max Ratio 85.36% at 116.2 ft



Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Analysis Parameters

Location :	NEW HAVEN County, CT	Height (ft) :	150
Code :	ANSI/TIA-222-G	Base Diameter (in) :	37.38
Shape :	12 Sides	Top Diameter (in) :	15.00
Pole Type :	Taper	Taper (in/ft) :	0.157
Pole Manufacturer :	ITT Meyer	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method: Equivalent Modal Analysis & Equivalent Lateral Force Methods

Site Class: D - Stiff Soil

Period Based on Rayleigh Method (sec): 2.70

T_L (sec):	6	p:	1.3	C_s :	0.030
S_s :	0.184	S_1 :	0.062	C_s Max:	0.030
F_a :	1.600	F_v :	2.400	C_s Min:	0.030
S_{ds} :	0.196	S_{d1} :	0.099		

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2S _{ds}) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S _{ds}) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S _{ds}) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S _{ds}) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip		Weight (lb)	Bottom						Top						
				Joint Type	Joint Len (in)		Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	35.667	0.3750	65		0.00	5,013	37.37	0.00	44.68	7806.9	24.03	99.67	31.78	35.67	37.93	4777.2	20.03	84.77	0.156667
2-12	42.000	0.3125	65	Slip	50.00	4,237	33.06	31.50	32.96	4512.6	25.67	105.81	26.48	73.50	26.34	2302.6	20.03	84.75	0.156667
3-12	40.000	0.2500	65	Slip	42.00	2,646	27.53	70.00	21.96	2086.8	26.83	110.13	21.26	110.00	16.92	953.8	20.11	85.07	0.156667
4-12	40.000	0.1875	65	Butt	0.00	1,475	21.26	110.00	12.73	721.8	27.71	113.42	15.00	150.00	8.94	250.5	18.76	80.00	0.156667
						Shaft Weight	13,371												

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
150.00	CCI OPA-65R-LCUU-H6	3	0.000	3.000	73.00	9.660	0.66
150.00	Ericsson RRUS 11 (Band 7)	3	0.000	3.000	50.70	2.790	0.50
150.00	Ericsson RRUS 12	3	0.000	3.000	50.00	3.150	0.50
150.00	Ericsson RRUS 32 (50.8 lbs)	3	0.000	3.000	50.80	2.690	0.50
150.00	Ericsson RRUS A2 B2	3	0.000	3.000	22.00	2.060	0.50
150.00	Kaelus DBC0061F1V51-2	3	0.000	3.000	25.50	0.510	0.50
150.00	Powerwave Allgon 7020.00 Dual	6	0.000	3.000	2.20	0.400	0.50
150.00	Powerwave Allgon 7770.00	3	0.000	3.000	35.00	5.510	0.65
150.00	Powerwave LGP21401	6	0.000	3.000	14.10	1.100	0.50
150.00	Quintel QS66512-2	3	0.000	3.000	111.00	8.130	0.74
150.00	Raycap DC6-48-60-18-8F	1	0.000	3.000	20.00	1.110	1.00
150.00	Raycap DC6-48-60-18-8F	1	0.000	3.000	20.00	1.110	1.00
150.00	Round Platform w/ Handrails	1	0.000	0.000	2000.00	27.200	1.00
142.00	Alcatel-Lucent 1900 MHz 4X45 R	3	0.000	0.000	60.00	2.320	0.50
142.00	Alcatel-Lucent RRH2x50-08	6	0.000	0.000	52.90	1.700	0.50
142.00	Alcatel-Lucent TD-RRH8x20-25 w	3	0.000	0.000	70.00	4.050	0.50
142.00	DragonWave A-ANT-11G-2-C	1	0.000	6.000	27.00	4.690	0.71
142.00	DragonWave A-ANT-11G-2.5-C	1	0.000	6.000	47.60	8.670	0.98
142.00	DragonWave A-ANT-23G-1-C	1	0.000	6.000	15.00	1.610	0.60
142.00	DragonWave Horizon Compact	3	0.000	6.000	10.60	0.430	0.50
142.00	KMW ETCR-654L12H6	3	0.000	6.000	84.90	15.710	0.61
142.00	Side Arms	1	0.000	0.000	560.00	8.500	1.00
108.00	Alcatel-Lucent B66 RRH4x45	3	0.000	0.000	67.00	2.580	0.50
108.00	Alcatel-Lucent RRH 2X60-1900	3	0.000	0.000	39.60	1.880	0.50
108.00	Alcatel-Lucent RRH2x60 700	3	0.000	0.000	56.70	2.150	0.50
108.00	Commscope HBX-6516DS-VTM	3	0.000	0.000	10.40	3.320	0.68
108.00	Commscope JAHH-65B-R3B	6	0.000	0.000	60.60	9.110	0.69
108.00	Commscope LNX-6514DS-VTM	3	0.000	0.000	38.80	8.170	0.69
108.00	Nokia B5 RRH4x40-850	3	0.000	0.000	48.50	1.320	0.50
108.00	RFS DB-T1-6Z-8AB-0Z	2	0.000	0.000	44.00	4.800	0.50
108.00	RFS FD9R6004/1C-3L	6	0.000	0.000	3.10	0.370	0.50
108.00	RFS FD9R6004/2C-3L	6	0.000	0.000	2.60	0.370	0.50
108.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
Totals	Num Loadings:33	100			7804.10		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Width Flat (in)	Exposed To Wind	Carrier
5.00	150.00	1	0.51" (13mm) Hybrid	0.51	0.14	N 0.00	Y	AT&T Mobility
5.00	150.00	1	0.51" (13mm) Hybrid	0.51	0.14	N 0.00	Y	AT&T Mobility
5.00	150.00	2	0.78" (19.7mm) 8	0.78	0.59	N 1.56	Y	AT&T Mobility
5.00	150.00	2	0.78" (19.7mm) 8	0.78	0.59	N 0.00	N	AT&T Mobility

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

3/1/2018 3:33:49 PM

Customer: VERIZON WIRELESS

5.00	150.00	2	1 1/4" Coax	1.55	0.63	N	3.10	Y	AT&T Mobility
5.00	150.00	4	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T Mobility
5.00	142.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	N	Clearwire
5.00	142.00	3	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire
5.00	142.00	1	2" conduit	2.38	3.65	N	0.00	Y	Clearwire
5.00	142.00	6	5/16" (0.31"-7.9mm)	0.31	0.05	N	0.00	N	Clearwire
101.00	121.00	3	Dywidag	2.50	0.00	N	1.34	Y	--
5.00	108.00	9	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
6.00	108.00	2	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon
0.00	101.00	4	Dywidag	2.50	0.00	N	3.34	Y	--

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	86.44	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	No
86.44	101.0	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	0.00	3.31	5/8" A36 U-Bolt	Yes
101.0	116.2	3	SOL #20 All Thread	80	5.15	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	No

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

3/1/2018 3:33:50 PM

Customer: VERIZON WIRELESS

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)	Additional Reinforcing		
												Area (in ²)	Ix (in ⁴)	Weight (lb)
0.00		0.3750	37.375	44.678	7,806.9	24.03	99.67	78.5	403.5	0.0	0.0	19.64	4,957	0.0
5.00		0.3750	36.592	43.732	7,321.5	23.47	97.58	79.1	386.5	0.0	752.1	19.64	4,780	334.0
10.00		0.3750	35.808	42.786	6,856.6	22.91	95.49	79.7	369.9	0.0	736.0	19.64	4,606	334.0
15.00		0.3750	35.025	41.840	6,411.8	22.35	93.40	80.3	353.7	0.0	719.9	19.64	4,435	334.0
20.00		0.3750	34.242	40.894	5,986.7	21.79	91.31	81.0	337.8	0.0	703.8	19.64	4,268	334.0
25.00		0.3750	33.458	39.948	5,580.9	21.23	89.22	81.6	322.2	0.0	687.7	19.64	4,104	334.0
30.00		0.3750	32.675	39.002	5,193.7	20.67	87.13	81.9	307.1	0.0	671.6	19.64	3,943	334.0
31.50	Bot - Section 2	0.3750	32.440	38.718	5,081.2	20.50	86.51	81.9	302.6	0.0	198.4	19.64	3,895	100.2
35.00		0.3750	31.892	38.056	4,825.0	20.11	85.04	81.9	292.3	0.0	846.4	19.64	3,910	233.8
35.67	Top - Section 1	0.3125	32.412	32.300	4,248.1	25.11	103.72	77.3	253.2	0.0	159.6	19.64	3,889	44.5
40.00		0.3125	31.733	31.617	3,984.2	24.53	101.55	78.0	242.6	0.0	471.2	19.64	3,753	289.5
45.00		0.3125	30.950	30.829	3,693.6	23.86	99.04	78.7	230.5	0.0	531.2	19.64	3,599	334.0
50.00		0.3125	30.167	30.041	3,417.5	23.19	96.53	79.4	218.9	0.0	517.8	19.64	3,449	334.0
55.00		0.3125	29.383	29.253	3,155.5	22.51	94.03	80.2	207.5	0.0	504.4	19.64	3,301	334.0
60.00		0.3125	28.600	28.464	2,907.2	21.84	91.52	80.9	196.4	0.0	491.0	19.64	3,157	334.0
65.00		0.3125	27.817	27.676	2,672.3	21.17	89.01	81.6	185.6	0.0	477.6	19.64	3,016	334.0
70.00	Bot - Section 3	0.3125	27.033	26.888	2,450.4	20.50	86.51	81.9	175.1	0.0	464.2	19.64	2,878	334.0
73.50	Top - Section 2	0.2500	26.985	21.522	1,963.5	26.24	107.94	76.1	140.6	0.0	575.9	19.64	2,870	233.8
75.00		0.2500	26.750	21.333	1,912.1	25.99	107.00	76.4	138.1	0.0	109.4	19.64	2,829	100.2
80.00		0.2500	25.967	20.702	1,747.5	25.15	103.87	77.3	130.0	0.0	357.6	19.64	2,696	334.0
85.00		0.2500	25.183	20.071	1,592.7	24.31	100.73	78.2	122.2	0.0	346.9	19.64	2,566	334.0
86.44	Reinf. Top Reinf	0.2500	24.958	19.890	1,549.8	24.07	99.83	78.5	120.0	0.0	97.9	19.64	2,529	96.2
90.00		0.2500	24.400	19.441	1,447.2	23.47	97.60	79.1	114.6	0.0	238.2	19.64	2,439	237.8
95.00		0.2500	23.617	18.810	1,310.9	22.63	94.47	80.0	107.2	0.0	325.4	19.64	2,315	334.0
100.0		0.2500	22.833	18.180	1,183.4	21.79	91.33	80.9	100.1	0.0	314.7	19.64	2,195	334.0
101.0	Reinf. Top Reinf	0.2500	22.677	18.053	1,159.0	21.63	90.71	81.1	98.7	0.0	61.6	19.64	2,171	66.8
105.0		0.2500	22.050	17.549	1,064.5	20.95	88.20	81.9	93.3	0.0	242.3	14.73	2,255	200.4
108.0		0.2500	21.580	17.171	997.1	20.45	86.32	81.9	89.3	0.0	177.2	14.73	2,193	150.3
110.0	Top - Section 3	0.2500	21.267	16.918	953.8	20.11	85.07	81.9	86.6	0.0	116.0	14.73	2,152	100.2
110.0	Bot - Section 4	0.1875	21.267	12.727	721.8	27.71	113.42	74.5	65.6	0.0		14.73	2,152	
115.0		0.1875	20.483	12.254	644.3	26.59	109.24	75.7	60.8	0.0	212.5	14.73	2,051	250.5
116.2	Reinf. Top	0.1875	20.294	12.139	626.4	26.32	108.23	76.0	59.6	0.0	50.2	14.73	2,027	60.6
120.0		0.1875	19.700	11.781	572.5	25.47	105.07	76.9	56.1	0.0	154.2			
125.0		0.1875	18.917	11.308	506.3	24.35	100.89	78.2	51.7	0.0	196.4			
130.0		0.1875	18.133	10.835	445.4	23.23	96.71	79.4	47.4	0.0	188.4			
135.0		0.1875	17.350	10.362	389.6	22.11	92.53	80.6	43.4	0.0	180.3			
140.0		0.1875	16.567	9.889	338.6	21.00	88.36	81.8	39.5	0.0	172.3			
142.0		0.1875	16.253	9.700	319.6	20.55	86.68	81.9	38.0	0.0	66.7			
145.0		0.1875	15.783	9.416	292.3	19.88	84.18	81.9	35.8	0.0	97.6			
150.0		0.1875	15.000	8.943	250.5	18.76	80.00	81.9	32.3	0.0	156.2			
											13,370.7			7,508.8

Site Number: 302482

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

3/1/2018 3:33:50 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

97 mph with No Ice

27 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		224.9	0.0					0.0	0.0	224.9	0.0	0.0	0.0
5.00		489.0	902.5					0.0	400.8	489.0	1,303.3	0.0	0.0
10.00		522.6	883.2					112.8	546.5	635.3	1,429.7	0.0	0.0
15.00		511.1	863.9					112.8	549.6	623.9	1,413.5	0.0	0.0
20.00		499.7	844.6					112.8	549.6	612.5	1,394.2	0.0	0.0
25.00		488.3	825.3					112.8	549.6	601.0	1,374.9	0.0	0.0
30.00		313.1	806.0					112.8	549.6	425.9	1,355.5	0.0	0.0
31.50	Bot - Section 2	244.5	238.0					34.1	164.9	278.6	402.9	0.0	0.0
35.00		205.7	1,015.7					81.4	384.7	287.1	1,400.4	0.0	0.0
35.67	Top - Section 1	250.0	191.5					15.8	73.3	265.8	264.8	0.0	0.0
40.00		469.7	565.5					104.5	476.3	574.2	1,041.8	0.0	0.0
45.00		507.3	637.5					124.7	549.6	632.0	1,187.1	0.0	0.0
50.00		509.6	621.4					128.7	549.6	638.3	1,171.0	0.0	0.0
55.00		510.1	605.3					132.4	549.6	642.5	1,154.9	0.0	0.0
60.00		509.0	589.2					135.9	549.6	644.9	1,138.8	0.0	0.0
65.00		506.6	573.1					139.2	549.6	645.7	1,122.7	0.0	0.0
70.00	Bot - Section 3	431.3	557.0					142.3	549.6	573.6	1,106.6	0.0	0.0
73.50	Top - Section 2	255.0	691.1					101.4	384.7	356.4	1,075.8	0.0	0.0
75.00		328.7	131.2					43.9	164.9	372.6	296.1	0.0	0.0
80.00		501.8	429.1					148.0	549.6	649.8	978.7	0.0	0.0
85.00		320.5	416.2					150.7	549.6	471.2	965.8	0.0	0.0
86.44	Reinf. Top Reinf	245.8	117.5					43.9	158.3	289.7	275.8	0.0	0.0
90.00		416.5	285.9					109.4	391.3	525.9	677.2	0.0	0.0
95.00		479.4	390.5					155.7	549.6	635.1	940.1	0.0	0.0
100.00		284.5	377.6					158.1	549.6	442.5	927.2	0.0	0.0
101.00	Reinf. Top Reinf	232.8	74.0					31.9	109.9	264.7	183.9	0.0	0.0
105.00		323.1	290.8					96.3	359.5	419.5	650.3	0.0	0.0
108.00	Appurtenance(s)	227.7	212.7	3,496.9	0.0	0.0	3,322.6	72.9	269.6	3,797.6	3,804.9	0.0	0.0
110.00	Top - Section 3	312.9	139.2					49.0	155.8	361.8	295.0	0.0	0.0
115.00		275.4	255.0					123.5	389.5	398.8	644.5	0.0	0.0
116.21	Reinf. Top	216.7	60.3					30.1	94.3	246.8	154.5	0.0	0.0
120.00		374.5	185.1					94.9	67.4	469.4	252.5	0.0	0.0
125.00		415.3	235.7					103.9	88.9	519.2	324.6	0.0	0.0
130.00		402.6	226.0					99.4	88.9	502.0	315.0	0.0	0.0
135.00		389.4	216.4					100.5	88.9	489.9	305.3	0.0	0.0
140.00		265.9	206.7					101.6	88.9	367.5	295.6	0.0	0.0
142.00	Appurtenance(s)	184.4	80.0	2,506.0	0.0	9,697.9	1,972.2	40.9	35.6	2,731.3	2,087.8	0.0	0.0
145.00		286.9	117.1					61.7	23.1	348.6	140.2	0.0	0.0
150.00	Appurtenance(s)	177.2	187.4	3,623.5	0.0	7,223.9	4,070.2	103.6	38.5	3,904.3	4,296.1	0.0	0.0
Totals:										27,359.6	38,148.5	0.00	0.00

Site Number: 302482

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

3/1/2018 3:33:55 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

97 mph with No Ice

27 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-38.08	-27.24	0.00	-2,739.76	0.00	2,739.76	3,156.90	1,578.45	4,811.22	2,376.08	0.00	0.00	0.714
5.00	-36.63	-26.93	0.00	-2,603.58	0.00	2,603.58	3,114.09	1,557.04	4,644.49	2,293.74	0.16	-0.30	0.695
10.00	-35.07	-26.47	0.00	-2,468.91	0.00	2,468.91	3,070.24	1,535.12	4,479.04	2,212.03	0.63	-0.60	0.676
15.00	-33.53	-26.00	0.00	-2,336.56	0.00	2,336.56	3,025.35	1,512.68	4,314.96	2,131.00	1.42	-0.89	0.656
20.00	-32.02	-25.53	0.00	-2,206.55	0.00	2,206.55	2,979.43	1,489.71	4,152.36	2,050.69	2.51	-1.19	0.636
25.00	-30.53	-25.06	0.00	-2,078.89	0.00	2,078.89	2,932.46	1,466.23	3,991.34	1,971.17	3.92	-1.49	0.615
30.00	-29.10	-24.69	0.00	-1,953.61	0.00	1,953.61	2,874.86	1,437.43	3,819.25	1,886.18	5.64	-1.79	0.596
31.50	-28.64	-24.47	0.00	-1,916.57	0.00	1,916.57	2,853.94	1,426.97	3,763.56	1,858.68	6.21	-1.88	0.591
35.00	-27.20	-24.20	0.00	-1,830.91	0.00	1,830.91	2,805.14	1,402.57	3,635.21	1,795.29	7.67	-2.08	0.570
35.67	-26.89	-23.99	0.00	-1,814.78	0.00	1,814.78	2,247.90	1,123.95	2,973.33	1,468.42	7.96	-2.12	0.653
40.00	-25.76	-23.50	0.00	-1,710.83	0.00	1,710.83	2,218.43	1,109.21	2,871.69	1,418.22	10.00	-2.37	0.629
45.00	-24.48	-22.95	0.00	-1,593.32	0.00	1,593.32	2,183.45	1,091.72	2,755.25	1,360.71	12.65	-2.68	0.600
50.00	-23.22	-22.37	0.00	-1,478.59	0.00	1,478.59	2,147.43	1,073.71	2,639.81	1,303.70	15.62	-2.98	0.571
55.00	-21.99	-21.78	0.00	-1,366.73	0.00	1,366.73	2,110.37	1,055.18	2,525.48	1,247.24	18.89	-3.27	0.542
60.00	-20.79	-21.17	0.00	-1,257.84	0.00	1,257.84	2,072.27	1,036.13	2,412.36	1,191.37	22.47	-3.56	0.512
65.00	-19.61	-20.55	0.00	-1,151.98	0.00	1,151.98	2,033.13	1,016.56	2,300.54	1,136.15	26.35	-3.84	0.482
70.00	-18.47	-19.98	0.00	-1,049.23	0.00	1,049.23	1,981.90	990.95	2,177.99	1,075.63	30.52	-4.12	0.454
73.50	-17.38	-19.58	0.00	-979.31	0.00	979.31	1,473.88	736.94	1,624.33	802.19	33.61	-4.31	0.503
75.00	-17.05	-19.24	0.00	-949.94	0.00	949.94	1,466.20	733.10	1,601.53	790.93	34.98	-4.39	0.491
80.00	-16.04	-18.59	0.00	-853.73	0.00	853.73	1,439.92	719.96	1,525.89	753.58	39.72	-4.66	0.452
85.00	-15.06	-18.08	0.00	-760.78	0.00	760.78	1,412.60	706.30	1,450.91	716.55	44.73	-4.92	0.413
86.44	-14.78	-17.80	0.00	-734.74	0.00	734.74	1,404.54	702.27	1,429.45	705.95	46.22	-4.99	0.401
86.44	-14.78	-17.80	0.00	-734.74	0.00	734.74	1,404.54	702.27	1,429.45	705.95	46.22	-4.99	0.401
90.00	-14.09	-17.27	0.00	-671.36	0.00	671.36	1,384.24	692.12	1,376.67	679.88	50.01	-5.17	0.373
95.00	-13.14	-16.60	0.00	-585.01	0.00	585.01	1,354.85	677.42	1,303.28	643.64	55.54	-5.39	0.334
100.00	-12.23	-16.10	0.00	-502.00	0.00	502.00	1,324.41	662.20	1,230.84	607.87	61.29	-5.61	0.294
101.00	-12.04	-15.84	0.00	-485.90	0.00	485.90	1,318.20	659.10	1,216.47	600.77	62.47	-5.65	0.286
101.00	-12.04	-15.84	0.00	-485.90	0.00	485.90	1,318.20	659.10	1,216.47	600.77	62.47	-5.65	0.273
105.00	-11.40	-15.38	0.00	-422.55	0.00	422.55	1,292.93	646.47	1,159.45	572.61	67.27	-5.81	0.242
108.00	-7.99	-11.23	0.00	-376.40	0.00	376.40	1,265.65	632.82	1,110.24	548.30	70.94	-5.91	0.218
110.00	-7.71	-10.85	0.00	-353.95	0.00	353.95	1,247.06	623.53	1,077.67	532.22	73.43	-5.97	0.208
110.00	-7.71	-10.85	0.00	-353.95	0.00	353.95	853.21	426.60	741.71	366.30	73.43	-5.97	0.247
115.00	-7.10	-10.40	0.00	-299.69	0.00	299.69	834.97	417.48	698.64	345.03	79.75	-6.12	0.212
116.21	-6.96	-10.15	0.00	-287.11	0.00	287.11	830.40	415.20	688.27	339.91	81.31	-6.16	0.204
116.21	-6.96	-10.15	0.00	-287.11	0.00	287.11	830.40	415.20	688.27	339.91	81.31	-6.16	0.854
120.00	-6.70	-9.69	0.00	-248.66	0.00	248.66	815.69	407.84	655.93	323.94	86.24	-6.27	0.776
125.00	-6.35	-9.20	0.00	-200.20	0.00	200.20	795.37	397.68	613.66	303.07	93.09	-6.83	0.669
130.00	-6.03	-8.71	0.00	-154.21	0.00	154.21	774.01	387.00	571.96	282.47	100.50	-7.32	0.554
135.00	-5.74	-8.22	0.00	-110.66	0.00	110.66	751.61	375.80	530.91	262.20	108.38	-7.75	0.430
140.00	-5.47	-7.84	0.00	-69.56	0.00	69.56	728.17	364.08	490.63	242.30	116.65	-8.08	0.295
142.00	-3.78	-4.84	0.00	-44.19	0.00	44.19	714.97	357.48	472.41	233.31	120.05	-8.18	0.195
145.00	-3.68	-4.49	0.00	-29.65	0.00	29.65	694.05	347.03	445.02	219.78	125.21	-8.28	0.140
150.00	0.00	-3.90	0.00	-7.22	0.00	7.22	659.19	329.60	401.19	198.13	133.90	-8.37	0.037

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

3/1/2018 3:33:55 PM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		224.9	0.0					0.0	0.0	224.9	0.0	0.0	0.0
5.00		489.0	676.9					0.0	300.6	489.0	977.5	0.0	0.0
10.00		522.6	662.4					112.8	409.9	635.3	1,072.3	0.0	0.0
15.00		511.1	647.9					112.8	412.2	623.9	1,060.1	0.0	0.0
20.00		499.7	633.4					112.8	412.2	612.5	1,045.6	0.0	0.0
25.00		488.3	618.9					112.8	412.2	601.0	1,031.1	0.0	0.0
30.00		313.1	604.5					112.8	412.2	425.9	1,016.7	0.0	0.0
31.50	Bot - Section 2	244.5	178.5					34.1	123.7	278.6	302.2	0.0	0.0
35.00		205.7	761.8					81.4	288.5	287.1	1,050.3	0.0	0.0
35.67	Top - Section 1	250.0	143.6					15.8	55.0	265.8	198.6	0.0	0.0
40.00		469.7	424.1					104.5	357.2	574.2	781.4	0.0	0.0
45.00		507.3	478.1					124.7	412.2	632.0	890.3	0.0	0.0
50.00		509.6	466.0					128.7	412.2	638.3	878.2	0.0	0.0
55.00		510.1	454.0					132.4	412.2	642.5	866.2	0.0	0.0
60.00		509.0	441.9					135.9	412.2	644.9	854.1	0.0	0.0
65.00		506.6	429.8					139.2	412.2	645.7	842.0	0.0	0.0
70.00	Bot - Section 3	431.3	417.8					142.3	412.2	573.6	829.9	0.0	0.0
73.50	Top - Section 2	255.0	518.3					101.4	288.5	356.4	806.8	0.0	0.0
75.00		328.7	98.4					43.9	123.7	372.6	222.1	0.0	0.0
80.00		501.8	321.8					148.0	412.2	649.8	734.0	0.0	0.0
85.00		320.5	312.2					150.7	412.2	471.2	724.4	0.0	0.0
86.44	Reinf. Top Reinf	245.8	88.1					43.9	118.7	289.7	206.8	0.0	0.0
90.00		416.5	214.4					109.4	293.5	525.9	507.9	0.0	0.0
95.00		479.4	292.9					155.7	412.2	635.1	705.0	0.0	0.0
100.00		284.5	283.2					158.1	412.2	442.5	695.4	0.0	0.0
101.00	Reinf. Top Reinf	232.8	55.5					31.9	82.4	264.7	137.9	0.0	0.0
105.00		323.1	218.1					96.3	269.6	419.5	487.7	0.0	0.0
108.00	Appurtenance(s)	227.7	159.5	3,496.9	0.0	0.0	2,491.9	72.9	202.2	3,797.6	2,853.6	0.0	0.0
110.00	Top - Section 3	312.9	104.4					49.0	116.9	361.8	221.3	0.0	0.0
115.00		275.4	191.3					123.5	292.1	398.8	483.4	0.0	0.0
116.21	Reinf. Top	216.7	45.2					30.1	70.7	246.8	115.9	0.0	0.0
120.00		374.5	138.8					94.9	50.5	469.4	189.4	0.0	0.0
125.00		415.3	176.8					103.9	66.7	519.2	243.5	0.0	0.0
130.00		402.6	169.5					99.4	66.7	502.0	236.2	0.0	0.0
135.00		389.4	162.3					100.5	66.7	489.9	229.0	0.0	0.0
140.00		265.9	155.0					101.6	66.7	367.5	221.7	0.0	0.0
142.00	Appurtenance(s)	184.4	60.0	2,506.0	0.0	9,697.9	1,479.1	40.9	26.7	2,731.3	1,565.8	0.0	0.0
145.00		286.9	87.8					61.7	17.3	348.6	105.1	0.0	0.0
150.00	Appurtenance(s)	177.2	140.6	3,623.5	0.0	7,223.9	3,052.6	103.6	28.9	3,904.3	3,222.1	0.0	0.0
Totals:										27,359.6	28,611.4	0.00	0.00

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

3/1/2018 3:34:00 PM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-28.54	-27.21	0.00	-2,698.49	0.00	2,698.49	3,156.90	1,578.45	4,811.22	2,376.08	0.00	0.00	0.701
5.00	-27.43	-26.86	0.00	-2,562.45	0.00	2,562.45	3,114.09	1,557.04	4,644.49	2,293.74	0.16	-0.29	0.682
10.00	-26.22	-26.35	0.00	-2,428.16	0.00	2,428.16	3,070.24	1,535.12	4,479.04	2,212.03	0.62	-0.59	0.663
15.00	-25.04	-25.84	0.00	-2,296.42	0.00	2,296.42	3,025.35	1,512.68	4,314.96	2,131.00	1.39	-0.88	0.643
20.00	-23.88	-25.33	0.00	-2,167.23	0.00	2,167.23	2,979.43	1,489.71	4,152.36	2,050.69	2.47	-1.17	0.623
25.00	-22.73	-24.82	0.00	-2,040.58	0.00	2,040.58	2,932.46	1,466.23	3,991.34	1,971.17	3.86	-1.46	0.602
30.00	-21.65	-24.44	0.00	-1,916.47	0.00	1,916.47	2,874.86	1,437.43	3,819.25	1,886.18	5.55	-1.75	0.583
31.50	-21.30	-24.21	0.00	-1,879.81	0.00	1,879.81	2,853.94	1,426.97	3,763.56	1,858.68	6.11	-1.84	0.578
35.00	-20.21	-23.93	0.00	-1,795.09	0.00	1,795.09	2,805.14	1,402.57	3,635.21	1,795.29	7.54	-2.05	0.557
35.67	-19.96	-23.70	0.00	-1,779.14	0.00	1,779.14	2,247.90	1,123.95	2,973.33	1,468.42	7.83	-2.09	0.638
40.00	-19.09	-23.19	0.00	-1,676.43	0.00	1,676.43	2,218.43	1,109.21	2,871.69	1,418.22	9.84	-2.33	0.614
45.00	-18.11	-22.61	0.00	-1,560.48	0.00	1,560.48	2,183.45	1,091.72	2,755.25	1,360.71	12.44	-2.63	0.586
50.00	-17.15	-22.02	0.00	-1,447.42	0.00	1,447.42	2,147.43	1,073.71	2,639.81	1,303.70	15.35	-2.92	0.558
55.00	-16.21	-21.41	0.00	-1,337.32	0.00	1,337.32	2,110.37	1,055.18	2,525.48	1,247.24	18.56	-3.21	0.529
60.00	-15.30	-20.80	0.00	-1,230.25	0.00	1,230.25	2,072.27	1,036.13	2,412.36	1,191.37	22.08	-3.49	0.500
65.00	-14.40	-20.17	0.00	-1,126.27	0.00	1,126.27	2,033.13	1,016.56	2,300.54	1,136.15	25.88	-3.77	0.470
70.00	-13.54	-19.59	0.00	-1,025.44	0.00	1,025.44	1,981.90	990.95	2,177.99	1,075.63	29.97	-4.04	0.443
73.50	-12.71	-19.21	0.00	-956.88	0.00	956.88	1,473.88	736.94	1,624.33	802.19	33.00	-4.22	0.490
75.00	-12.46	-18.86	0.00	-928.07	0.00	928.07	1,466.20	733.10	1,601.53	790.93	34.34	-4.30	0.478
80.00	-11.70	-18.20	0.00	-833.79	0.00	833.79	1,439.92	719.96	1,525.89	753.58	38.99	-4.57	0.440
85.00	-10.97	-17.71	0.00	-742.77	0.00	742.77	1,412.60	706.30	1,450.91	716.55	43.90	-4.82	0.402
86.44	-10.75	-17.42	0.00	-717.27	0.00	717.27	1,404.54	702.27	1,429.45	705.95	45.37	-4.89	0.391
86.44	-10.75	-17.42	0.00	-717.27	0.00	717.27	1,404.54	702.27	1,429.45	705.95	45.37	-4.89	0.391
90.00	-10.23	-16.89	0.00	-655.25	0.00	655.25	1,384.24	692.12	1,376.67	679.88	49.07	-5.06	0.363
95.00	-9.52	-16.23	0.00	-570.80	0.00	570.80	1,354.85	677.42	1,303.28	643.64	54.49	-5.29	0.325
100.00	-8.84	-15.74	0.00	-489.65	0.00	489.65	1,324.41	662.20	1,230.84	607.87	60.13	-5.49	0.286
101.00	-8.70	-15.48	0.00	-473.90	0.00	473.90	1,318.20	659.10	1,216.47	600.77	61.29	-5.53	0.278
101.00	-8.70	-15.48	0.00	-473.90	0.00	473.90	1,318.20	659.10	1,216.47	600.77	61.29	-5.53	0.265
105.00	-8.22	-15.03	0.00	-411.98	0.00	411.98	1,292.93	646.47	1,159.45	572.61	65.98	-5.69	0.235
108.00	-5.75	-10.98	0.00	-366.87	0.00	366.87	1,265.65	632.82	1,110.24	548.30	69.58	-5.79	0.212
110.00	-5.55	-10.61	0.00	-344.92	0.00	344.92	1,247.06	623.53	1,077.67	532.22	72.02	-5.85	0.202
110.00	-5.55	-10.61	0.00	-344.92	0.00	344.92	853.21	426.60	741.71	366.30	72.02	-5.85	0.240
115.00	-5.09	-10.17	0.00	-291.88	0.00	291.88	834.97	417.48	698.64	345.03	78.21	-5.99	0.206
116.21	-4.99	-9.92	0.00	-279.58	0.00	279.58	830.40	415.20	688.27	339.91	79.73	-6.03	0.197
116.21	-4.99	-9.92	0.00	-279.58	0.00	279.58	830.40	415.20	688.27	339.91	79.73	-6.03	0.829
120.00	-4.80	-9.46	0.00	-242.00	0.00	242.00	815.69	407.84	655.93	323.94	84.56	-6.14	0.753
125.00	-4.53	-8.96	0.00	-194.71	0.00	194.71	795.37	397.68	613.66	303.07	91.27	-6.68	0.649
130.00	-4.29	-8.46	0.00	-149.93	0.00	149.93	774.01	387.00	571.96	282.47	98.51	-7.16	0.537
135.00	-4.08	-7.97	0.00	-107.61	0.00	107.61	751.61	375.80	530.91	262.20	106.22	-7.58	0.416
140.00	-3.88	-7.59	0.00	-67.75	0.00	67.75	728.17	364.08	490.63	242.30	114.32	-7.90	0.285
142.00	-2.70	-4.68	0.00	-42.86	0.00	42.86	714.97	357.48	472.41	233.31	117.64	-8.00	0.188
145.00	-2.64	-4.32	0.00	-28.83	0.00	28.83	694.05	347.03	445.02	219.78	122.68	-8.09	0.135
150.00	0.00	-3.90	0.00	-7.22	0.00	7.22	659.19	329.60	401.19	198.13	131.18	-8.18	0.037

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

3/1/2018 3:34:01 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

26 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		47.5	0.0					0.0	0.0	47.5	0.0	0.0	0.0
5.00		94.4	1,185.8					0.0	464.5	94.4	1,650.3	0.0	0.0
10.00		93.0	1,193.9					36.9	734.4	129.9	1,928.3	0.0	0.0
15.00		91.4	1,184.5					37.8	750.5	129.2	1,935.0	0.0	0.0
20.00		89.7	1,169.5					38.5	759.6	128.2	1,929.0	0.0	0.0
25.00		87.9	1,151.4					39.0	766.7	126.9	1,918.1	0.0	0.0
30.00		56.5	1,131.5					39.4	772.6	95.9	1,904.1	0.0	0.0
31.50	Bot - Section 2	44.2	336.1					12.0	232.8	56.2	569.0	0.0	0.0
35.00		37.2	1,247.0					28.7	544.9	65.9	1,791.9	0.0	0.0
35.67	Top - Section 1	45.3	235.7					5.6	104.0	50.9	339.8	0.0	0.0
40.00		85.3	849.1					37.2	678.1	122.4	1,527.3	0.0	0.0
45.00		92.4	960.9					44.6	786.2	137.0	1,747.1	0.0	0.0
50.00		93.1	940.7					46.3	789.8	139.4	1,730.5	0.0	0.0
55.00		93.5	920.0					47.9	793.1	141.4	1,713.1	0.0	0.0
60.00		93.6	898.9					49.4	796.1	143.0	1,695.0	0.0	0.0
65.00		93.5	877.4					50.8	799.0	144.3	1,676.4	0.0	0.0
70.00	Bot - Section 3	79.8	855.6					52.2	801.6	132.0	1,657.2	0.0	0.0
73.50	Top - Section 2	47.2	901.1					37.3	562.6	84.5	1,463.7	0.0	0.0
75.00		61.1	220.8					16.2	241.5	77.3	462.3	0.0	0.0
80.00		93.5	720.8					54.7	806.5	148.2	1,527.3	0.0	0.0
85.00		59.9	701.5					55.9	808.7	115.7	1,510.2	0.0	0.0
86.44	Reinf. Top Reinf	46.1	199.3					16.3	233.3	62.4	432.6	0.0	0.0
90.00		78.3	484.4					40.7	577.5	119.0	1,062.0	0.0	0.0
95.00		90.5	662.3					58.1	812.9	148.6	1,475.2	0.0	0.0
100.00		53.8	642.5					59.2	814.8	113.0	1,457.3	0.0	0.0
101.00	Reinf. Top Reinf	44.3	126.8					12.0	163.2	56.2	290.0	0.0	0.0
105.00		61.5	497.1					42.9	558.1	104.4	1,055.2	0.0	0.0
108.00	Appurtenance(s)	43.5	364.9	833.9	0.0	0.0	6,315.0	32.5	419.3	910.0	7,099.2	0.0	0.0
110.00	Top - Section 3	60.0	239.6					21.9	255.9	81.9	495.5	0.0	0.0
115.00		52.9	498.2					55.3	641.0	108.2	1,139.1	0.0	0.0
116.21	Reinf. Top	41.9	118.8					13.5	155.4	55.4	274.1	0.0	0.0
120.00		72.7	363.8					42.6	259.3	115.3	623.1	0.0	0.0
125.00		81.0	463.7					43.6	283.0	124.6	746.7	0.0	0.0
130.00		79.1	446.3					40.8	269.0	119.9	715.3	0.0	0.0
135.00		77.1	428.8					41.4	270.1	118.5	698.9	0.0	0.0
140.00		53.0	411.3					41.9	271.2	94.9	682.4	0.0	0.0
142.00	Appurtenance(s)	37.0	160.6	544.3	0.0	1,866.6	4,672.6	16.9	108.8	598.1	4,941.9	0.0	0.0
145.00		57.9	235.1					25.5	92.0	83.4	327.1	0.0	0.0
150.00	Appurtenance(s)	35.9	375.8	878.0	0.0	1,484.0	8,244.5	42.9	153.9	956.8	8,774.2	0.0	0.0
Totals:										6,280.90	62,965.6	0.00	0.00

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

3/1/2018 3:34:06 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

26 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-62.96	-6.27	0.00	-684.93	0.00	684.93	3,156.90	1,578.45	4,811.22	2,376.08	0.00	0.00	0.190
5.00	-61.30	-6.26	0.00	-653.55	0.00	653.55	3,114.09	1,557.04	4,644.49	2,293.74	0.04	-0.07	0.186
10.00	-59.37	-6.20	0.00	-622.26	0.00	622.26	3,070.24	1,535.12	4,479.04	2,212.03	0.16	-0.15	0.182
15.00	-57.42	-6.14	0.00	-591.24	0.00	591.24	3,025.35	1,512.68	4,314.96	2,131.00	0.36	-0.22	0.177
20.00	-55.49	-6.08	0.00	-560.53	0.00	560.53	2,979.43	1,489.71	4,152.36	2,050.69	0.63	-0.30	0.172
25.00	-53.56	-6.01	0.00	-530.13	0.00	530.13	2,932.46	1,466.23	3,991.34	1,971.17	0.99	-0.38	0.167
30.00	-51.65	-5.95	0.00	-500.07	0.00	500.07	2,874.86	1,437.43	3,819.25	1,886.18	1.42	-0.45	0.163
31.50	-51.08	-5.92	0.00	-491.15	0.00	491.15	2,853.94	1,426.97	3,763.56	1,858.68	1.57	-0.47	0.161
35.00	-49.29	-5.87	0.00	-470.43	0.00	470.43	2,805.14	1,402.57	3,635.21	1,795.29	1.93	-0.53	0.156
35.67	-48.94	-5.84	0.00	-466.52	0.00	466.52	2,247.90	1,123.95	2,973.33	1,468.42	2.01	-0.54	0.179
40.00	-47.41	-5.77	0.00	-441.19	0.00	441.19	2,218.43	1,109.21	2,871.69	1,418.22	2.53	-0.60	0.173
45.00	-45.66	-5.67	0.00	-412.37	0.00	412.37	2,183.45	1,091.72	2,755.25	1,360.71	3.20	-0.68	0.166
50.00	-43.92	-5.57	0.00	-384.01	0.00	384.01	2,147.43	1,073.71	2,639.81	1,303.70	3.96	-0.76	0.159
55.00	-42.20	-5.46	0.00	-356.17	0.00	356.17	2,110.37	1,055.18	2,525.48	1,247.24	4.79	-0.84	0.152
60.00	-40.50	-5.34	0.00	-328.87	0.00	328.87	2,072.27	1,036.13	2,412.36	1,191.37	5.71	-0.91	0.144
65.00	-38.82	-5.22	0.00	-302.15	0.00	302.15	2,033.13	1,016.56	2,300.54	1,136.15	6.70	-0.99	0.136
70.00	-37.16	-5.10	0.00	-276.04	0.00	276.04	1,981.90	990.95	2,177.99	1,075.63	7.77	-1.06	0.129
73.50	-35.70	-5.01	0.00	-258.19	0.00	258.19	1,473.88	736.94	1,624.33	802.19	8.57	-1.11	0.143
75.00	-35.23	-4.95	0.00	-250.68	0.00	250.68	1,466.20	733.10	1,601.53	790.93	8.92	-1.13	0.140
80.00	-33.70	-4.81	0.00	-225.92	0.00	225.92	1,439.92	719.96	1,525.89	753.58	10.14	-1.20	0.130
85.00	-32.19	-4.69	0.00	-201.85	0.00	201.85	1,412.60	706.30	1,450.91	716.55	11.43	-1.27	0.119
86.44	-31.76	-4.64	0.00	-195.10	0.00	195.10	1,404.54	702.27	1,429.45	705.95	11.82	-1.29	0.116
86.44	-31.76	-4.64	0.00	-195.10	0.00	195.10	1,404.54	702.27	1,429.45	705.95	11.82	-1.29	0.116
90.00	-30.70	-4.52	0.00	-178.59	0.00	178.59	1,384.24	692.12	1,376.67	679.88	12.80	-1.33	0.109
95.00	-29.22	-4.37	0.00	-155.98	0.00	155.98	1,354.85	677.42	1,303.28	643.64	14.23	-1.40	0.098
100.00	-27.76	-4.24	0.00	-134.14	0.00	134.14	1,324.41	662.20	1,230.84	607.87	15.72	-1.45	0.087
101.00	-27.47	-4.18	0.00	-129.90	0.00	129.90	1,318.20	659.10	1,216.47	600.77	16.03	-1.46	0.085
101.00	-27.47	-4.18	0.00	-129.90	0.00	129.90	1,318.20	659.10	1,216.47	600.77	16.03	-1.46	0.083
105.00	-26.42	-4.07	0.00	-113.17	0.00	113.17	1,292.93	646.47	1,159.45	572.61	17.27	-1.51	0.075
108.00	-19.35	-2.98	0.00	-100.96	0.00	100.96	1,265.65	632.82	1,110.24	548.30	18.23	-1.53	0.066
110.00	-18.85	-2.89	0.00	-95.00	0.00	95.00	1,247.06	623.53	1,077.67	532.22	18.87	-1.55	0.063
110.00	-18.85	-2.89	0.00	-95.00	0.00	95.00	853.21	426.60	741.71	366.30	18.87	-1.55	0.075
115.00	-17.71	-2.76	0.00	-80.54	0.00	80.54	834.97	417.48	698.64	345.03	20.52	-1.59	0.065
116.21	-17.44	-2.70	0.00	-77.20	0.00	77.20	830.40	415.20	688.27	339.91	20.92	-1.60	0.063
116.21	-17.44	-2.70	0.00	-77.20	0.00	77.20	830.40	415.20	688.27	339.91	20.92	-1.60	0.248
120.00	-16.82	-2.60	0.00	-66.95	0.00	66.95	815.69	407.84	655.93	323.94	22.20	-1.63	0.227
125.00	-16.07	-2.49	0.00	-53.96	0.00	53.96	795.37	397.68	613.66	303.07	23.99	-1.78	0.198
130.00	-15.35	-2.38	0.00	-41.50	0.00	41.50	774.01	387.00	571.96	282.47	25.93	-1.91	0.167
135.00	-14.65	-2.27	0.00	-29.59	0.00	29.59	751.61	375.80	530.91	262.20	28.00	-2.03	0.132
140.00	-13.97	-2.16	0.00	-18.27	0.00	18.27	728.17	364.08	490.63	242.30	30.17	-2.11	0.095
142.00	-9.06	-1.38	0.00	-12.08	0.00	12.08	714.97	357.48	472.41	233.31	31.06	-2.14	0.064
145.00	-8.73	-1.29	0.00	-7.94	0.00	7.94	694.05	347.03	445.02	219.78	32.42	-2.17	0.049
150.00	0.00	-0.96	0.00	-1.48	0.00	1.48	659.19	329.60	401.19	198.13	34.70	-2.19	0.007

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W

Serviceability 60 mph

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		53.8	0.0					0.0	0.0	53.8	0.0	0.0	0.0
5.00		116.9	752.1					0.0	334.0	116.9	1,086.1	0.0	0.0
10.00		125.0	736.0					27.0	455.4	151.9	1,191.4	0.0	0.0
15.00		122.2	719.9					27.0	458.0	149.2	1,177.9	0.0	0.0
20.00		119.5	703.8					27.0	458.0	146.5	1,161.8	0.0	0.0
25.00		116.8	687.7					27.0	458.0	143.7	1,145.7	0.0	0.0
30.00		74.9	671.6					27.0	458.0	101.8	1,129.6	0.0	0.0
31.50	Bot - Section 2	58.5	198.4					8.2	137.4	66.6	335.7	0.0	0.0
35.00		49.2	846.4					19.5	320.6	68.7	1,167.0	0.0	0.0
35.67	Top - Section 1	59.8	159.6					3.8	61.1	63.6	220.6	0.0	0.0
40.00		112.3	471.2					25.0	396.9	137.3	868.2	0.0	0.0
45.00		121.3	531.2					29.8	458.0	151.1	989.2	0.0	0.0
50.00		121.9	517.8					30.8	458.0	152.6	975.8	0.0	0.0
55.00		122.0	504.4					31.7	458.0	153.7	962.4	0.0	0.0
60.00		121.7	491.0					32.5	458.0	154.2	949.0	0.0	0.0
65.00		121.1	477.6					33.3	458.0	154.4	935.6	0.0	0.0
70.00	Bot - Section 3	103.1	464.2					34.0	458.0	137.2	922.2	0.0	0.0
73.50	Top - Section 2	61.0	575.9					24.2	320.6	85.2	896.5	0.0	0.0
75.00		78.6	109.4					10.5	137.4	89.1	246.8	0.0	0.0
80.00		120.0	357.6					35.4	458.0	155.4	815.6	0.0	0.0
85.00		76.6	346.9					36.0	458.0	112.7	804.8	0.0	0.0
86.44	Reinf. Top Reinf	58.8	97.9					10.5	131.9	69.3	229.8	0.0	0.0
90.00		99.6	238.2					26.2	326.1	125.7	564.3	0.0	0.0
95.00		114.6	325.4					37.2	458.0	151.9	783.4	0.0	0.0
100.00		68.0	314.7					37.8	458.0	105.8	772.7	0.0	0.0
101.00	Reinf. Top Reinf	55.7	61.6					7.6	91.6	63.3	153.2	0.0	0.0
105.00		77.3	242.3					23.0	299.6	100.3	541.9	0.0	0.0
108.00	Appurtenance(s)	54.5	177.2	836.2	0.0	0.0	2,768.8	17.4	224.7	908.1	3,170.7	0.0	0.0
110.00	Top - Section 3	74.8	116.0					11.7	129.8	86.5	245.8	0.0	0.0
115.00		65.8	212.5					29.5	324.6	95.4	537.1	0.0	0.0
116.21	Reinf. Top	51.8	50.2					7.2	78.6	59.0	128.8	0.0	0.0
120.00		89.6	154.2					22.7	56.2	112.3	210.4	0.0	0.0
125.00		99.3	196.4					24.9	74.1	124.2	270.5	0.0	0.0
130.00		96.3	188.4					23.8	74.1	120.0	262.5	0.0	0.0
135.00		93.1	180.3					24.0	74.1	117.1	254.4	0.0	0.0
140.00		63.6	172.3					24.3	74.1	87.9	246.4	0.0	0.0
142.00	Appurtenance(s)	44.1	66.7	599.3	0.0	2,319.1	1,643.5	9.8	29.6	653.1	1,739.8	0.0	0.0
145.00		68.6	97.6					14.8	19.3	83.4	116.8	0.0	0.0
150.00	Appurtenance(s)	42.4	156.2	866.5	0.0	1,727.5	3,391.8	24.8	32.1	933.6	3,580.1	0.0	0.0
Totals:										6,542.59	31,790.4	0.00	0.00

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W

Serviceability 60 mph

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-31.79	-6.51	0.00	-649.97	0.00	649.97	3,156.90	1,578.45	4,811.22	2,376.08	0.00	0.00	0.174
5.00	-30.69	-6.43	0.00	-617.43	0.00	617.43	3,114.09	1,557.04	4,644.49	2,293.74	0.04	-0.07	0.170
10.00	-29.49	-6.31	0.00	-585.28	0.00	585.28	3,070.24	1,535.12	4,479.04	2,212.03	0.15	-0.14	0.165
15.00	-28.31	-6.19	0.00	-553.73	0.00	553.73	3,025.35	1,512.68	4,314.96	2,131.00	0.34	-0.21	0.160
20.00	-27.14	-6.07	0.00	-522.77	0.00	522.77	2,979.43	1,489.71	4,152.36	2,050.69	0.60	-0.28	0.155
25.00	-25.99	-5.96	0.00	-492.40	0.00	492.40	2,932.46	1,466.23	3,991.34	1,971.17	0.93	-0.35	0.150
30.00	-24.85	-5.87	0.00	-462.62	0.00	462.62	2,874.86	1,437.43	3,819.25	1,886.18	1.34	-0.42	0.145
31.50	-24.52	-5.81	0.00	-453.82	0.00	453.82	2,853.94	1,426.97	3,763.56	1,858.68	1.47	-0.44	0.144
35.00	-23.35	-5.75	0.00	-433.47	0.00	433.47	2,805.14	1,402.57	3,635.21	1,795.29	1.82	-0.49	0.139
35.67	-23.12	-5.69	0.00	-429.64	0.00	429.64	2,247.90	1,123.95	2,973.33	1,468.42	1.89	-0.50	0.159
40.00	-22.25	-5.57	0.00	-404.97	0.00	404.97	2,218.43	1,109.21	2,871.69	1,418.22	2.37	-0.56	0.153
45.00	-21.25	-5.44	0.00	-377.09	0.00	377.09	2,183.45	1,091.72	2,755.25	1,360.71	3.00	-0.63	0.146
50.00	-20.27	-5.30	0.00	-349.89	0.00	349.89	2,147.43	1,073.71	2,639.81	1,303.70	3.70	-0.71	0.139
55.00	-19.31	-5.16	0.00	-323.39	0.00	323.39	2,110.37	1,055.18	2,525.48	1,247.24	4.48	-0.77	0.132
60.00	-18.36	-5.01	0.00	-297.60	0.00	297.60	2,072.27	1,036.13	2,412.36	1,191.37	5.33	-0.84	0.125
65.00	-17.42	-4.86	0.00	-272.54	0.00	272.54	2,033.13	1,016.56	2,300.54	1,136.15	6.25	-0.91	0.118
70.00	-16.49	-4.73	0.00	-248.23	0.00	248.23	1,981.90	990.95	2,177.99	1,075.63	7.23	-0.98	0.111
73.50	-15.59	-4.63	0.00	-231.68	0.00	231.68	1,473.88	736.94	1,624.33	802.19	7.97	-1.02	0.123
75.00	-15.35	-4.55	0.00	-224.73	0.00	224.73	1,466.20	733.10	1,601.53	790.93	8.29	-1.04	0.120
80.00	-14.53	-4.40	0.00	-201.97	0.00	201.97	1,439.92	719.96	1,525.89	753.58	9.41	-1.10	0.111
85.00	-13.72	-4.28	0.00	-179.98	0.00	179.98	1,412.60	706.30	1,450.91	716.55	10.60	-1.16	0.101
86.44	-13.49	-4.21	0.00	-173.82	0.00	173.82	1,404.54	702.27	1,429.45	705.95	10.96	-1.18	0.098
86.44	-13.49	-4.21	0.00	-173.82	0.00	173.82	1,404.54	702.27	1,429.45	705.95	10.96	-1.18	0.098
90.00	-12.93	-4.08	0.00	-158.83	0.00	158.83	1,384.24	692.12	1,376.67	679.88	11.85	-1.22	0.092
95.00	-12.14	-3.93	0.00	-138.41	0.00	138.41	1,354.85	677.42	1,303.28	643.64	13.16	-1.28	0.082
100.00	-11.37	-3.81	0.00	-118.77	0.00	118.77	1,324.41	662.20	1,230.84	607.87	14.53	-1.33	0.073
101.00	-11.22	-3.75	0.00	-114.96	0.00	114.96	1,318.20	659.10	1,216.47	600.77	14.81	-1.34	0.071
101.00	-11.22	-3.75	0.00	-114.96	0.00	114.96	1,318.20	659.10	1,216.47	600.77	14.81	-1.34	0.068
105.00	-10.68	-3.64	0.00	-99.97	0.00	99.97	1,292.93	646.47	1,159.45	572.61	15.94	-1.37	0.060
108.00	-7.53	-2.66	0.00	-89.05	0.00	89.05	1,265.65	632.82	1,110.24	548.30	16.82	-1.40	0.054
110.00	-7.28	-2.57	0.00	-83.74	0.00	83.74	1,247.06	623.53	1,077.67	532.22	17.41	-1.41	0.051
110.00	-7.28	-2.57	0.00	-83.74	0.00	83.74	853.21	426.60	741.71	366.30	17.41	-1.41	0.061
115.00	-6.75	-2.46	0.00	-70.90	0.00	70.90	834.97	417.48	698.64	345.03	18.91	-1.45	0.053
116.21	-6.62	-2.40	0.00	-67.92	0.00	67.92	830.40	415.20	688.27	339.91	19.27	-1.46	0.051
116.21	-6.62	-2.40	0.00	-67.92	0.00	67.92	830.40	415.20	688.27	339.91	19.27	-1.46	0.208
120.00	-6.41	-2.29	0.00	-58.81	0.00	58.81	815.69	407.84	655.93	323.94	20.44	-1.48	0.189
125.00	-6.14	-2.18	0.00	-47.34	0.00	47.34	795.37	397.68	613.66	303.07	22.07	-1.62	0.164
130.00	-5.88	-2.06	0.00	-36.47	0.00	36.47	774.01	387.00	571.96	282.47	23.83	-1.73	0.137
135.00	-5.62	-1.94	0.00	-26.17	0.00	26.17	751.61	375.80	530.91	262.20	25.70	-1.83	0.107
140.00	-5.38	-1.85	0.00	-16.46	0.00	16.46	728.17	364.08	490.63	242.30	27.66	-1.91	0.075
142.00	-3.66	-1.14	0.00	-10.43	0.00	10.43	714.97	357.48	472.41	233.31	28.47	-1.94	0.050
145.00	-3.55	-1.06	0.00	-7.01	0.00	7.01	694.05	347.03	445.02	219.78	29.69	-1.96	0.037
150.00	0.00	-0.93	0.00	-1.73	0.00	1.73	659.19	329.60	401.19	198.13	31.76	-1.98	0.009

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_g):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.06
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.70
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	31.79 k
Seismic Base Shear (E):	1.24 k

Load Case (1.2 + 0.2Sds) * DL + E ELM

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
38	147.50	188	4,096	0.016	20	233
37	143.50	117	2,406	0.010	12	145
36	141.00	96	1,914	0.008	9	119
35	137.50	246	4,658	0.018	23	305
34	132.50	254	4,467	0.018	22	315
33	127.50	262	4,267	0.017	21	325
32	122.50	271	4,059	0.016	20	335
31	118.10	210	2,935	0.012	14	261
30	115.60	129	1,721	0.007	8	160
29	112.50	537	6,798	0.027	33	666
28	109.00	246	2,921	0.012	14	305
27	106.50	402	4,559	0.018	22	498
26	103.00	542	5,749	0.023	28	672
25	100.50	153	1,548	0.006	8	190
24	97.50	773	7,345	0.029	36	958
23	92.50	783	6,703	0.026	33	971
22	88.22	564	4,392	0.017	22	699
21	85.72	230	1,689	0.007	8	285
20	82.50	805	5,478	0.022	27	997
19	77.50	816	4,899	0.019	24	1,011
18	74.25	247	1,360	0.005	7	306
17	71.75	896	4,615	0.018	23	1,111
16	67.50	922	4,202	0.017	21	1,143

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

15	62.50	936	3,655	0.014	18	1,159
14	57.50	949	3,138	0.012	15	1,176
13	52.50	962	2,653	0.010	13	1,193
12	47.50	976	2,202	0.009	11	1,209
11	42.50	989	1,787	0.007	9	1,226
10	37.83	868	1,243	0.005	6	1,076
9	35.33	221	275	0.001	1	273
8	33.25	1,167	1,290	0.005	6	1,446
7	30.75	336	317	0.001	2	416
6	27.50	1,130	854	0.003	4	1,400
5	22.50	1,146	580	0.002	3	1,420
4	17.50	1,162	356	0.001	2	1,440
3	12.50	1,178	184	0.001	1	1,460
2	7.50	1,191	67	0.000	0	1,476
1	2.50	1,086	7	0.000	0	1,346
Powerwave Allgon 702	150.00	13	297	0.001	1	16
Kaelus DBC0061F1V51-	150.00	76	1,721	0.007	8	95
Powerwave LGP21401	150.00	85	1,904	0.008	9	105
Raycap DC6-48-60-18-	150.00	20	450	0.002	2	25
Raycap DC6-48-60-18-	150.00	20	450	0.002	2	25
Ericsson RRUS A2 B2	150.00	66	1,485	0.006	7	82
Ericsson RRUS 32 (50	150.00	152	3,429	0.014	17	189
Ericsson RRUS 11 (Ba	150.00	152	3,422	0.014	17	188
Ericsson RRUS 12	150.00	150	3,375	0.013	17	186
Powerwave Allgon 777	150.00	105	2,363	0.009	12	130
Quintel QS66512-2	150.00	333	7,493	0.030	37	413
CCI OPA-65R-LCUU-H6	150.00	219	4,928	0.019	24	271
Round Platform w/ Ha	150.00	2,000	45,000	0.178	220	2,479
DragonWave Horizon C	142.00	32	641	0.003	3	39
DragonWave A-ANT-23G	142.00	15	302	0.001	1	19
Alcatel-Lucent RRH2x	142.00	317	6,400	0.025	31	393
Alcatel-Lucent 1900	142.00	180	3,630	0.014	18	223
Alcatel-Lucent TD-RR	142.00	210	4,234	0.017	21	260
DragonWave A-ANT-11G	142.00	27	544	0.002	3	33
Side Arms	142.00	560	11,292	0.045	55	694
DragonWave A-ANT-11G	142.00	48	960	0.004	5	59
KMW ETCR-654L12H6	142.00	255	5,136	0.020	25	316
RFS FD9R6004/2C-3L	108.00	16	182	0.001	1	19
RFS FD9R6004/1C-3L	108.00	19	217	0.001	1	23
Nokia B5 RRH4x40-850	108.00	146	1,697	0.007	8	180
Alcatel-Lucent RRH 2	108.00	119	1,386	0.005	7	147
Alcatel-Lucent RRH2x	108.00	170	1,984	0.008	10	211
Alcatel-Lucent B66 R	108.00	201	2,344	0.009	11	249
Commscope HBX-6516DS	108.00	31	364	0.001	2	39
RFS DB-T1-6Z-8AB-0Z	108.00	88	1,026	0.004	5	109
Commscope LNX-6514DS	108.00	116	1,358	0.005	7	144
Commscope JAHH-65B-R	108.00	364	4,241	0.017	21	451
Round Low Profile PI	108.00	1,500	17,496	0.069	86	1,859
		31,790	253,136	1.000	1,240	39,396

Load Case (0.9 - 0.2Sds) * DL + E ELFM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
38	147.50	188	4,096	0.016	20	162
37	143.50	117	2,406	0.010	12	101
36	141.00	96	1,914	0.008	9	83
35	137.50	246	4,658	0.018	23	212
34	132.50	254	4,467	0.018	22	219
33	127.50	262	4,267	0.017	21	226

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

32	122.50	271	4,059	0.016	20	233
31	118.10	210	2,935	0.012	14	181
30	115.60	129	1,721	0.007	8	111
29	112.50	537	6,798	0.027	33	462
28	109.00	246	2,921	0.012	14	212
27	106.50	402	4,559	0.018	22	346
26	103.00	542	5,749	0.023	28	466
25	100.50	153	1,548	0.006	8	132
24	97.50	773	7,345	0.029	36	665
23	92.50	783	6,703	0.026	33	674
22	88.22	564	4,392	0.017	22	486
21	85.72	230	1,689	0.007	8	198
20	82.50	805	5,478	0.022	27	693
19	77.50	816	4,899	0.019	24	702
18	74.25	247	1,360	0.005	7	212
17	71.75	896	4,615	0.018	23	772
16	67.50	922	4,202	0.017	21	794
15	62.50	936	3,655	0.014	18	805
14	57.50	949	3,138	0.012	15	817
13	52.50	962	2,653	0.010	13	828
12	47.50	976	2,202	0.009	11	840
11	42.50	989	1,787	0.007	9	851
10	37.83	868	1,243	0.005	6	747
9	35.33	221	275	0.001	1	190
8	33.25	1,167	1,290	0.005	6	1,004
7	30.75	336	317	0.001	2	289
6	27.50	1,130	854	0.003	4	972
5	22.50	1,146	580	0.002	3	986
4	17.50	1,162	356	0.001	2	1,000
3	12.50	1,178	184	0.001	1	1,014
2	7.50	1,191	67	0.000	0	1,025
1	2.50	1,086	7	0.000	0	935
Powerwave Allgon 702	150.00	13	297	0.001	1	11
Kaelus DBC0061F1V51-	150.00	76	1,721	0.007	8	66
Powerwave LGP21401	150.00	85	1,904	0.008	9	73
Raycap DC6-48-60-18-	150.00	20	450	0.002	2	17
Raycap DC6-48-60-18-	150.00	20	450	0.002	2	17
Ericsson RRUS A2 B2	150.00	66	1,485	0.006	7	57
Ericsson RRUS 32 (50	150.00	152	3,429	0.014	17	131
Ericsson RRUS 11 (Ba	150.00	152	3,422	0.014	17	131
Ericsson RRUS 12	150.00	150	3,375	0.013	17	129
Powerwave Allgon 777	150.00	105	2,363	0.009	12	90
Quintel QS66512-2	150.00	333	7,493	0.030	37	287
CCI OPA-65R-LCUU-H6	150.00	219	4,928	0.019	24	189
Round Platform w/ Ha	150.00	2,000	45,000	0.178	220	1,721
DragonWave Horizon C	142.00	32	641	0.003	3	27
DragonWave A-ANT-23G	142.00	15	302	0.001	1	13
Alcatel-Lucent RRH2x	142.00	317	6,400	0.025	31	273
Alcatel-Lucent 1900	142.00	180	3,630	0.014	18	155
Alcatel-Lucent TD-RR	142.00	210	4,234	0.017	21	181
DragonWave A-ANT-11G	142.00	27	544	0.002	3	23
Side Arms	142.00	560	11,292	0.045	55	482
DragonWave A-ANT-11G	142.00	48	960	0.004	5	41
KMW ETCR-654L12H6	142.00	255	5,136	0.020	25	219
RFS FD9R6004/2C-3L	108.00	16	182	0.001	1	13
RFS FD9R6004/1C-3L	108.00	19	217	0.001	1	16
Nokia B5 RRH4x40-850	108.00	146	1,697	0.007	8	125
Alcatel-Lucent RRH 2	108.00	119	1,386	0.005	7	102
Alcatel-Lucent RRH2x	108.00	170	1,984	0.008	10	146
Alcatel-Lucent B66 R	108.00	201	2,344	0.009	11	173
Commscope HBX-6516DS	108.00	31	364	0.001	2	27
RFS DB-T1-6Z-8AB-OZ	108.00	88	1,026	0.004	5	76
Commscope LNX-6514DS	108.00	116	1,358	0.005	7	100
Commscope JAHH-65B-R	108.00	364	4,241	0.017	21	313

Site Number: 302482

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Round Low Profile PI	108.00	1,500	17,496	0.069	86	1,291
		31,790	253,136	1.000	1,240	27,364

Site Number: 302482

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Load Case (1.2 + 0.2Sds) * DL + E ELMF

Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-38.05	-1.24	0.00	-156.66	0.00	156.66	3,156.90	1,578.45	4,811.22	2,376.08	0.00	0.00	0.049
5.00	-36.57	-1.26	0.00	-150.43	0.00	150.43	3,114.09	1,557.04	4,644.49	2,293.74	0.01	-0.02	0.048
10.00	-35.11	-1.26	0.00	-144.16	0.00	144.16	3,070.24	1,535.12	4,479.04	2,212.03	0.04	-0.03	0.047
15.00	-33.67	-1.27	0.00	-137.83	0.00	137.83	3,025.35	1,512.68	4,314.96	2,131.00	0.08	-0.05	0.046
20.00	-32.25	-1.28	0.00	-131.47	0.00	131.47	2,979.43	1,489.71	4,152.36	2,050.69	0.15	-0.07	0.045
25.00	-30.85	-1.28	0.00	-125.09	0.00	125.09	2,932.46	1,466.23	3,991.34	1,971.17	0.23	-0.09	0.044
30.00	-30.44	-1.29	0.00	-118.68	0.00	118.68	2,874.86	1,437.43	3,819.25	1,886.18	0.33	-0.11	0.043
31.50	-28.99	-1.28	0.00	-116.75	0.00	116.75	2,853.94	1,426.97	3,763.56	1,858.68	0.36	-0.11	0.042
35.00	-28.72	-1.28	0.00	-112.27	0.00	112.27	2,805.14	1,402.57	3,635.21	1,795.29	0.45	-0.12	0.041
35.67	-27.64	-1.28	0.00	-111.42	0.00	111.42	2,247.90	1,123.95	2,973.33	1,468.42	0.47	-0.13	0.047
40.00	-26.41	-1.27	0.00	-105.88	0.00	105.88	2,218.43	1,109.21	2,871.69	1,418.22	0.59	-0.14	0.046
45.00	-25.20	-1.27	0.00	-99.50	0.00	99.50	2,183.45	1,091.72	2,755.25	1,360.71	0.75	-0.16	0.044
50.00	-24.01	-1.26	0.00	-93.16	0.00	93.16	2,147.43	1,073.71	2,639.81	1,303.70	0.92	-0.18	0.042
55.00	-22.84	-1.25	0.00	-86.86	0.00	86.86	2,110.37	1,055.18	2,525.48	1,247.24	1.12	-0.20	0.041
60.00	-21.68	-1.23	0.00	-80.62	0.00	80.62	2,072.27	1,036.13	2,412.36	1,191.37	1.34	-0.22	0.039
65.00	-20.53	-1.21	0.00	-74.45	0.00	74.45	2,033.13	1,016.56	2,300.54	1,136.15	1.57	-0.23	0.037
70.00	-19.42	-1.19	0.00	-68.38	0.00	68.38	1,981.90	990.95	2,177.99	1,075.63	1.83	-0.25	0.035
73.50	-19.12	-1.19	0.00	-64.20	0.00	64.20	1,473.88	736.94	1,624.33	802.19	2.02	-0.26	0.039
75.00	-18.10	-1.16	0.00	-62.42	0.00	62.42	1,466.20	733.10	1,601.53	790.93	2.10	-0.27	0.038
80.00	-17.11	-1.14	0.00	-56.61	0.00	56.61	1,439.92	719.96	1,525.89	753.58	2.40	-0.29	0.036
85.00	-16.82	-1.13	0.00	-50.93	0.00	50.93	1,412.60	706.30	1,450.91	716.55	2.71	-0.30	0.033
86.44	-16.12	-1.11	0.00	-49.30	0.00	49.30	1,404.54	702.27	1,429.45	705.95	2.80	-0.31	0.032
86.44	-16.12	-1.11	0.00	-49.30	0.00	49.30	1,404.54	702.27	1,429.45	705.95	2.80	-0.31	0.032
90.00	-15.15	-1.07	0.00	-45.36	0.00	45.36	1,384.24	692.12	1,376.67	679.88	3.03	-0.32	0.030
95.00	-14.19	-1.03	0.00	-40.00	0.00	40.00	1,354.85	677.42	1,303.28	643.64	3.38	-0.34	0.028
100.00	-14.00	-1.03	0.00	-34.83	0.00	34.83	1,324.41	662.20	1,230.84	607.87	3.74	-0.35	0.025
101.00	-13.33	-1.00	0.00	-33.80	0.00	33.80	1,318.20	659.10	1,216.47	600.77	3.81	-0.35	0.024
101.00	-13.33	-1.00	0.00	-33.80	0.00	33.80	1,318.20	659.10	1,216.47	600.77	3.81	-0.35	0.024
105.00	-12.83	-0.97	0.00	-29.82	0.00	29.82	1,292.93	646.47	1,159.45	572.61	4.12	-0.37	0.022
108.00	-9.10	-0.78	0.00	-26.89	0.00	26.89	1,265.65	632.82	1,110.24	548.30	4.35	-0.37	0.019
110.00	-8.43	-0.74	0.00	-25.34	0.00	25.34	1,247.06	623.53	1,077.67	532.22	4.51	-0.38	0.018
110.00	-8.43	-0.74	0.00	-25.34	0.00	25.34	853.21	426.60	741.71	366.30	4.51	-0.38	0.022
115.00	-8.27	-0.73	0.00	-21.63	0.00	21.63	834.97	417.48	698.64	345.03	4.91	-0.39	0.019
116.21	-8.01	-0.72	0.00	-20.74	0.00	20.74	830.40	415.20	688.27	339.91	5.01	-0.39	0.019
116.21	-8.01	-0.72	0.00	-20.74	0.00	20.74	830.40	415.20	688.27	339.91	5.01	-0.39	0.071
120.00	-7.68	-0.70	0.00	-18.02	0.00	18.02	815.69	407.84	655.93	323.94	5.32	-0.40	0.065
125.00	-7.35	-0.68	0.00	-14.53	0.00	14.53	795.37	397.68	613.66	303.07	5.76	-0.44	0.057
130.00	-7.04	-0.66	0.00	-11.13	0.00	11.13	774.01	387.00	571.96	282.47	6.24	-0.48	0.048
135.00	-6.73	-0.64	0.00	-7.82	0.00	7.82	751.61	375.80	530.91	262.20	6.75	-0.51	0.039
140.00	-6.61	-0.63	0.00	-4.63	0.00	4.63	728.17	364.08	490.63	242.30	7.30	-0.53	0.028
142.00	-4.43	-0.44	0.00	-3.38	0.00	3.38	714.97	357.48	472.41	233.31	7.52	-0.54	0.021
145.00	-4.20	-0.41	0.00	-2.07	0.00	2.07	694.05	347.03	445.02	219.78	7.86	-0.54	0.015
150.00	0.00	-0.37	0.00	0.00	0.00	0.00	659.19	329.60	401.19	198.13	8.43	-0.55	0.000

Site Number: 302482

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.43	-1.24	0.00	-153.60	0.00	153.60	3,156.90	1,578.45	4,811.22	2,376.08	0.00	0.00	0.045
5.00	-25.40	-1.25	0.00	-147.38	0.00	147.38	3,114.09	1,557.04	4,644.49	2,293.74	0.01	-0.02	0.045
10.00	-24.39	-1.26	0.00	-141.13	0.00	141.13	3,070.24	1,535.12	4,479.04	2,212.03	0.04	-0.03	0.044
15.00	-23.39	-1.26	0.00	-134.85	0.00	134.85	3,025.35	1,512.68	4,314.96	2,131.00	0.08	-0.05	0.043
20.00	-22.40	-1.26	0.00	-128.55	0.00	128.55	2,979.43	1,489.71	4,152.36	2,050.69	0.14	-0.07	0.042
25.00	-21.43	-1.26	0.00	-122.23	0.00	122.23	2,932.46	1,466.23	3,991.34	1,971.17	0.22	-0.09	0.041
30.00	-21.14	-1.27	0.00	-115.91	0.00	115.91	2,874.86	1,437.43	3,819.25	1,886.18	0.32	-0.10	0.040
31.50	-20.13	-1.26	0.00	-114.01	0.00	114.01	2,853.94	1,426.97	3,763.56	1,858.68	0.36	-0.11	0.039
35.00	-19.94	-1.26	0.00	-109.60	0.00	109.60	2,805.14	1,402.57	3,635.21	1,795.29	0.44	-0.12	0.038
35.67	-19.20	-1.26	0.00	-108.75	0.00	108.75	2,247.90	1,123.95	2,973.33	1,468.42	0.46	-0.12	0.044
40.00	-18.35	-1.25	0.00	-103.30	0.00	103.30	2,218.43	1,109.21	2,871.69	1,418.22	0.58	-0.14	0.043
45.00	-17.51	-1.25	0.00	-97.04	0.00	97.04	2,183.45	1,091.72	2,755.25	1,360.71	0.73	-0.16	0.041
50.00	-16.68	-1.24	0.00	-90.82	0.00	90.82	2,147.43	1,073.71	2,639.81	1,303.70	0.90	-0.17	0.039
55.00	-15.86	-1.22	0.00	-84.64	0.00	84.64	2,110.37	1,055.18	2,525.48	1,247.24	1.10	-0.19	0.038
60.00	-15.05	-1.21	0.00	-78.53	0.00	78.53	2,072.27	1,036.13	2,412.36	1,191.37	1.31	-0.21	0.036
65.00	-14.26	-1.19	0.00	-72.50	0.00	72.50	2,033.13	1,016.56	2,300.54	1,136.15	1.54	-0.23	0.034
70.00	-13.49	-1.16	0.00	-66.57	0.00	66.57	1,981.90	990.95	2,177.99	1,075.63	1.79	-0.25	0.032
73.50	-13.28	-1.16	0.00	-62.49	0.00	62.49	1,473.88	736.94	1,624.33	802.19	1.97	-0.26	0.036
75.00	-12.57	-1.13	0.00	-60.75	0.00	60.75	1,466.20	733.10	1,601.53	790.93	2.06	-0.26	0.035
80.00	-11.88	-1.11	0.00	-55.08	0.00	55.08	1,439.92	719.96	1,525.89	753.58	2.34	-0.28	0.033
85.00	-11.68	-1.10	0.00	-49.55	0.00	49.55	1,412.60	706.30	1,450.91	716.55	2.64	-0.30	0.031
86.44	-11.20	-1.08	0.00	-47.96	0.00	47.96	1,404.54	702.27	1,429.45	705.95	2.73	-0.30	0.030
86.44	-11.20	-1.08	0.00	-47.96	0.00	47.96	1,404.54	702.27	1,429.45	705.95	2.73	-0.30	0.030
90.00	-10.52	-1.04	0.00	-44.12	0.00	44.12	1,384.24	692.12	1,376.67	679.88	2.96	-0.31	0.028
95.00	-9.86	-1.01	0.00	-38.90	0.00	38.90	1,354.85	677.42	1,303.28	643.64	3.30	-0.33	0.025
100.00	-9.73	-1.00	0.00	-33.87	0.00	33.87	1,324.41	662.20	1,230.84	607.87	3.65	-0.34	0.023
101.00	-9.26	-0.97	0.00	-32.87	0.00	32.87	1,318.20	659.10	1,216.47	600.77	3.73	-0.35	0.022
101.00	-9.26	-0.97	0.00	-32.87	0.00	32.87	1,318.20	659.10	1,216.47	600.77	3.73	-0.35	0.022
105.00	-8.91	-0.95	0.00	-28.99	0.00	28.99	1,292.93	646.47	1,159.45	572.61	4.02	-0.36	0.020
108.00	-6.32	-0.76	0.00	-26.15	0.00	26.15	1,265.65	632.82	1,110.24	548.30	4.25	-0.36	0.018
110.00	-5.86	-0.72	0.00	-24.63	0.00	24.63	1,247.06	623.53	1,077.67	532.22	4.40	-0.37	0.017
110.00	-5.86	-0.72	0.00	-24.63	0.00	24.63	853.21	426.60	741.71	366.30	4.40	-0.37	0.020
115.00	-5.75	-0.71	0.00	-21.01	0.00	21.01	834.97	417.48	698.64	345.03	4.79	-0.38	0.018
116.21	-5.56	-0.70	0.00	-20.15	0.00	20.15	830.40	415.20	688.27	339.91	4.89	-0.38	0.017
116.21	-5.56	-0.70	0.00	-20.15	0.00	20.15	830.40	415.20	688.27	339.91	4.89	-0.38	0.066
120.00	-5.33	-0.68	0.00	-17.50	0.00	17.50	815.69	407.84	655.93	323.94	5.19	-0.39	0.061
125.00	-5.11	-0.66	0.00	-14.09	0.00	14.09	795.37	397.68	613.66	303.07	5.62	-0.43	0.053
130.00	-4.89	-0.64	0.00	-10.78	0.00	10.78	774.01	387.00	571.96	282.47	6.09	-0.46	0.044
135.00	-4.67	-0.62	0.00	-7.58	0.00	7.58	751.61	375.80	530.91	262.20	6.59	-0.49	0.035
140.00	-4.59	-0.61	0.00	-4.49	0.00	4.49	728.17	364.08	490.63	242.30	7.12	-0.51	0.025
142.00	-3.08	-0.42	0.00	-3.27	0.00	3.27	714.97	357.48	472.41	233.31	7.34	-0.52	0.018
145.00	-2.92	-0.40	0.00	-2.00	0.00	2.00	694.05	347.03	445.02	219.78	7.67	-0.53	0.013
150.00	0.00	-0.37	0.00	0.00	0.00	0.00	659.19	329.60	401.19	198.13	8.22	-0.53	0.000

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.70
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
38	147.50	188	1.828	1.667	1.025	0.330	54	233
37	143.50	117	1.730	1.238	0.861	0.269	27	145
36	141.00	96	1.670	1.012	0.769	0.234	20	119
35	137.50	246	1.588	0.742	0.654	0.189	40	305
34	132.50	254	1.475	0.441	0.513	0.131	29	315
33	127.50	262	1.366	0.222	0.397	0.080	18	325
32	122.50	271	1.261	0.069	0.302	0.038	9	335
31	118.10	210	1.172	-0.020	0.234	0.008	1	261
30	115.60	129	1.123	-0.056	0.201	-0.007	-1	160
29	112.50	537	1.063	-0.088	0.165	-0.022	-10	666
28	109.00	246	0.998	-0.110	0.130	-0.036	-8	305
27	106.50	402	0.953	-0.119	0.109	-0.044	-15	498
26	103.00	542	0.891	-0.122	0.084	-0.051	-24	672
25	100.50	153	0.848	-0.119	0.069	-0.054	-7	190
24	97.50	773	0.799	-0.112	0.053	-0.055	-37	958
23	92.50	783	0.719	-0.092	0.034	-0.050	-34	971
22	88.22	564	0.654	-0.072	0.022	-0.040	-20	699
21	85.72	230	0.617	-0.059	0.017	-0.032	-6	285
20	82.50	805	0.572	-0.043	0.012	-0.020	-14	997
19	77.50	816	0.505	-0.018	0.007	0.000	0	1,011
18	74.25	247	0.463	-0.003	0.006	0.013	3	306
17	71.75	896	0.432	0.008	0.006	0.022	17	1,111
16	67.50	922	0.383	0.023	0.007	0.035	28	1,143
15	62.50	936	0.328	0.039	0.010	0.046	38	1,159
14	57.50	949	0.278	0.050	0.014	0.053	43	1,176
13	52.50	962	0.232	0.058	0.019	0.056	47	1,193
12	47.50	976	0.190	0.064	0.025	0.057	48	1,209
11	42.50	989	0.152	0.068	0.030	0.056	48	1,226
10	37.83	868	0.120	0.070	0.034	0.055	42	1,076
9	35.33	221	0.105	0.071	0.037	0.055	10	273
8	33.25	1,167	0.093	0.071	0.038	0.054	55	1,446
7	30.75	336	0.079	0.072	0.040	0.053	16	416
6	27.50	1,130	0.064	0.072	0.041	0.053	51	1,400
5	22.50	1,146	0.043	0.070	0.042	0.051	51	1,420

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

4	17.50	1,162	0.026	0.067	0.040	0.049	49	1,440
3	12.50	1,178	0.013	0.059	0.034	0.044	45	1,460
2	7.50	1,191	0.005	0.044	0.025	0.035	36	1,476
1	2.50	1,086	0.001	0.018	0.010	0.017	16	1,346
Powerwave Allgon 702	150.00	13	1.890	1.980	1.140	0.370	4	16
Kaelus DBC0061F1V51-	150.00	76	1.890	1.980	1.140	0.370	25	95
Powerwave LGP21401	150.00	85	1.890	1.980	1.140	0.370	27	105
Raycap DC6-48-60-18-	150.00	20	1.890	1.980	1.140	0.370	6	25
Raycap DC6-48-60-18-	150.00	20	1.890	1.980	1.140	0.370	6	25
Ericsson RRUS A2 B2	150.00	66	1.890	1.980	1.140	0.370	21	82
Ericsson RRUS 32 (50	150.00	152	1.890	1.980	1.140	0.370	49	189
Ericsson RRUS 11 (Ba	150.00	152	1.890	1.980	1.140	0.370	49	188
Ericsson RRUS 12	150.00	150	1.890	1.980	1.140	0.370	48	186
Powerwave Allgon 777	150.00	105	1.890	1.980	1.140	0.370	34	130
Quintel QS66512-2	150.00	333	1.890	1.980	1.140	0.370	107	413
CCI OPA-65R-LCUU-H6	150.00	219	1.890	1.980	1.140	0.370	70	271
Round Platform w/ Ha	150.00	2,000	1.890	1.980	1.140	0.370	642	2,479
DragonWave Horizon C	142.00	32	1.694	1.099	0.805	0.248	7	39
DragonWave A-ANT-23G	142.00	15	1.694	1.099	0.805	0.248	3	19
Alcatel-Lucent RRH2x	142.00	317	1.694	1.099	0.805	0.248	68	393
Alcatel-Lucent 1900	142.00	180	1.694	1.099	0.805	0.248	39	223
Alcatel-Lucent TD-RR	142.00	210	1.694	1.099	0.805	0.248	45	260
DragonWave A-ANT-11G	142.00	27	1.694	1.099	0.805	0.248	6	33
Side Arms	142.00	560	1.694	1.099	0.805	0.248	120	694
DragonWave A-ANT-11G	142.00	48	1.694	1.099	0.805	0.248	10	59
KMW ETCR-654L12H6	142.00	255	1.694	1.099	0.805	0.248	55	316
RFS FD9R6004/2C-3L	108.00	16	0.980	-0.114	0.122	-0.040	-1	19
RFS FD9R6004/1C-3L	108.00	19	0.980	-0.114	0.122	-0.040	-1	23
Nokia B5 RRH4x40-850	108.00	146	0.980	-0.114	0.122	-0.040	-5	180
Alcatel-Lucent RRH 2	108.00	119	0.980	-0.114	0.122	-0.040	-4	147
Alcatel-Lucent RRH2x	108.00	170	0.980	-0.114	0.122	-0.040	-6	211
Alcatel-Lucent B66 R	108.00	201	0.980	-0.114	0.122	-0.040	-7	249
Commscope HBX-	108.00	31	0.980	-0.114	0.122	-0.040	-1	39
RFS DB-T1-6Z-8AB-0Z	108.00	88	0.980	-0.114	0.122	-0.040	-3	109
Commscope LNX-	108.00	116	0.980	-0.114	0.122	-0.040	-4	144
Commscope JAHH-65B-	108.00	364	0.980	-0.114	0.122	-0.040	-13	451
Round Low Profile PI	108.00	1,500	0.980	-0.114	0.122	-0.040	-52	1,859
		31,790	75.424	39.652	29.519	8.280	2,011	39,396

Load Case (0.9 - 0.2Sds) * DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
38	147.50	188	1.828	1.667	1.025	0.330	54	162
37	143.50	117	1.730	1.238	0.861	0.269	27	101
36	141.00	96	1.670	1.012	0.769	0.234	20	83
35	137.50	246	1.588	0.742	0.654	0.189	40	212
34	132.50	254	1.475	0.441	0.513	0.131	29	219
33	127.50	262	1.366	0.222	0.397	0.080	18	226
32	122.50	271	1.261	0.069	0.302	0.038	9	233
31	118.10	210	1.172	-0.020	0.234	0.008	1	181
30	115.60	129	1.123	-0.056	0.201	-0.007	-1	111
29	112.50	537	1.063	-0.088	0.165	-0.022	-10	462
28	109.00	246	0.998	-0.110	0.130	-0.036	-8	212
27	106.50	402	0.953	-0.119	0.109	-0.044	-15	346
26	103.00	542	0.891	-0.122	0.084	-0.051	-24	466
25	100.50	153	0.848	-0.119	0.069	-0.054	-7	132
24	97.50	773	0.799	-0.112	0.053	-0.055	-37	665
23	92.50	783	0.719	-0.092	0.034	-0.050	-34	674

Site Number: 302482

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

22	88.22	564	0.654	-0.072	0.022	-0.040	-20	486
21	85.72	230	0.617	-0.059	0.017	-0.032	-6	198
20	82.50	805	0.572	-0.043	0.012	-0.020	-14	693
19	77.50	816	0.505	-0.018	0.007	0.000	0	702
18	74.25	247	0.463	-0.003	0.006	0.013	3	212
17	71.75	896	0.432	0.008	0.006	0.022	17	772
16	67.50	922	0.383	0.023	0.007	0.035	28	794
15	62.50	936	0.328	0.039	0.010	0.046	38	805
14	57.50	949	0.278	0.050	0.014	0.053	43	817
13	52.50	962	0.232	0.058	0.019	0.056	47	828
12	47.50	976	0.190	0.064	0.025	0.057	48	840
11	42.50	989	0.152	0.068	0.030	0.056	48	851
10	37.83	868	0.120	0.070	0.034	0.055	42	747
9	35.33	221	0.105	0.071	0.037	0.055	10	190
8	33.25	1,167	0.093	0.071	0.038	0.054	55	1,004
7	30.75	336	0.079	0.072	0.040	0.053	16	289
6	27.50	1,130	0.064	0.072	0.041	0.053	51	972
5	22.50	1,146	0.043	0.070	0.042	0.051	51	986
4	17.50	1,162	0.026	0.067	0.040	0.049	49	1,000
3	12.50	1,178	0.013	0.059	0.034	0.044	45	1,014
2	7.50	1,191	0.005	0.044	0.025	0.035	36	1,025
1	2.50	1,086	0.001	0.018	0.010	0.017	16	935
Powerwave Allgon 702	150.00	13	1.890	1.980	1.140	0.370	4	11
Kaelus DBC0061F1V51-	150.00	76	1.890	1.980	1.140	0.370	25	66
Powerwave LGP21401	150.00	85	1.890	1.980	1.140	0.370	27	73
Raycap DC6-48-60-18-	150.00	20	1.890	1.980	1.140	0.370	6	17
Raycap DC6-48-60-18-	150.00	20	1.890	1.980	1.140	0.370	6	17
Ericsson RRUS A2 B2	150.00	66	1.890	1.980	1.140	0.370	21	57
Ericsson RRUS 32 (50	150.00	152	1.890	1.980	1.140	0.370	49	131
Ericsson RRUS 11 (Ba	150.00	152	1.890	1.980	1.140	0.370	49	131
Ericsson RRUS 12	150.00	150	1.890	1.980	1.140	0.370	48	129
Powerwave Allgon 777	150.00	105	1.890	1.980	1.140	0.370	34	90
Quintel QS66512-2	150.00	333	1.890	1.980	1.140	0.370	107	287
CCI OPA-65R-LCUU-H6	150.00	219	1.890	1.980	1.140	0.370	70	189
Round Platform w/ Ha	150.00	2,000	1.890	1.980	1.140	0.370	642	1,721
DragonWave Horizon C	142.00	32	1.694	1.099	0.805	0.248	7	27
DragonWave A-ANT-23G	142.00	15	1.694	1.099	0.805	0.248	3	13
Alcatel-Lucent RRH2x	142.00	317	1.694	1.099	0.805	0.248	68	273
Alcatel-Lucent 1900	142.00	180	1.694	1.099	0.805	0.248	39	155
Alcatel-Lucent TD-RR	142.00	210	1.694	1.099	0.805	0.248	45	181
DragonWave A-ANT-11G	142.00	27	1.694	1.099	0.805	0.248	6	23
Side Arms	142.00	560	1.694	1.099	0.805	0.248	120	482
DragonWave A-ANT-11G	142.00	48	1.694	1.099	0.805	0.248	10	41
KMW ETCR-654L12H6	142.00	255	1.694	1.099	0.805	0.248	55	219
RFS FD9R6004/2C-3L	108.00	16	0.980	-0.114	0.122	-0.040	-1	13
RFS FD9R6004/1C-3L	108.00	19	0.980	-0.114	0.122	-0.040	-1	16
Nokia B5 RRH4x40-850	108.00	146	0.980	-0.114	0.122	-0.040	-5	125
Alcatel-Lucent RRH 2	108.00	119	0.980	-0.114	0.122	-0.040	-4	102
Alcatel-Lucent RRH2x	108.00	170	0.980	-0.114	0.122	-0.040	-6	146
Alcatel-Lucent B66 R	108.00	201	0.980	-0.114	0.122	-0.040	-7	173
Commscope HBX-	108.00	31	0.980	-0.114	0.122	-0.040	-1	27
RFS DB-T1-6Z-8AB-0Z	108.00	88	0.980	-0.114	0.122	-0.040	-3	76
Commscope LNX-	108.00	116	0.980	-0.114	0.122	-0.040	-4	100
Commscope JAHH-65B-	108.00	364	0.980	-0.114	0.122	-0.040	-13	313
Round Low Profile PI	108.00	1,500	0.980	-0.114	0.122	-0.040	-52	1,291
		31,790	75.424	39.652	29.519	8.280	2,011	27,364

Site Number: 302482

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Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-38.05	-2.00	0.00	-252.08	0.00	252.08	3,156.90	1,578.45	4,811.22	2,376.08	0.00	0.00	0.073
5.00	-36.57	-1.98	0.00	-242.07	0.00	242.07	3,114.09	1,557.04	4,644.49	2,293.74	0.01	-0.03	0.072
10.00	-35.11	-1.95	0.00	-232.15	0.00	232.15	3,070.24	1,535.12	4,479.04	2,212.03	0.06	-0.06	0.071
15.00	-33.67	-1.92	0.00	-222.38	0.00	222.38	3,025.35	1,512.68	4,314.96	2,131.00	0.13	-0.08	0.069
20.00	-32.25	-1.88	0.00	-212.77	0.00	212.77	2,979.43	1,489.71	4,152.36	2,050.69	0.23	-0.11	0.068
25.00	-30.85	-1.84	0.00	-203.35	0.00	203.35	2,932.46	1,466.23	3,991.34	1,971.17	0.37	-0.14	0.067
30.00	-30.43	-1.84	0.00	-194.13	0.00	194.13	2,874.86	1,437.43	3,819.25	1,886.18	0.53	-0.17	0.066
31.50	-28.99	-1.79	0.00	-191.37	0.00	191.37	2,853.94	1,426.97	3,763.56	1,858.68	0.59	-0.18	0.065
35.00	-28.71	-1.78	0.00	-185.12	0.00	185.12	2,805.14	1,402.57	3,635.21	1,795.29	0.72	-0.20	0.064
35.67	-27.64	-1.74	0.00	-183.93	0.00	183.93	2,247.90	1,123.95	2,973.33	1,468.42	0.75	-0.20	0.073
40.00	-26.41	-1.70	0.00	-176.37	0.00	176.37	2,218.43	1,109.21	2,871.69	1,418.22	0.95	-0.23	0.071
45.00	-25.20	-1.66	0.00	-167.85	0.00	167.85	2,183.45	1,091.72	2,755.25	1,360.71	1.21	-0.26	0.070
50.00	-24.01	-1.63	0.00	-159.53	0.00	159.53	2,147.43	1,073.71	2,639.81	1,303.70	1.50	-0.29	0.068
55.00	-22.83	-1.59	0.00	-151.40	0.00	151.40	2,110.37	1,055.18	2,525.48	1,247.24	1.82	-0.33	0.066
60.00	-21.67	-1.56	0.00	-143.46	0.00	143.46	2,072.27	1,036.13	2,412.36	1,191.37	2.18	-0.36	0.064
65.00	-20.53	-1.53	0.00	-135.68	0.00	135.68	2,033.13	1,016.56	2,300.54	1,136.15	2.57	-0.39	0.062
70.00	-19.42	-1.52	0.00	-128.01	0.00	128.01	1,981.90	990.95	2,177.99	1,075.63	3.00	-0.42	0.060
73.50	-19.11	-1.52	0.00	-122.70	0.00	122.70	1,473.88	736.94	1,624.33	802.19	3.32	-0.45	0.069
75.00	-18.10	-1.52	0.00	-120.43	0.00	120.43	1,466.20	733.10	1,601.53	790.93	3.46	-0.46	0.068
80.00	-17.10	-1.53	0.00	-112.84	0.00	112.84	1,439.92	719.96	1,525.89	753.58	3.96	-0.49	0.065
85.00	-16.81	-1.54	0.00	-105.17	0.00	105.17	1,412.60	706.30	1,450.91	716.55	4.49	-0.53	0.062
86.44	-16.11	-1.56	0.00	-102.95	0.00	102.95	1,404.54	702.27	1,429.45	705.95	4.65	-0.54	0.061
86.44	-16.11	-1.56	0.00	-102.95	0.00	102.95	1,404.54	702.27	1,429.45	705.95	4.65	-0.54	0.061
90.00	-15.14	-1.60	0.00	-97.39	0.00	97.39	1,384.24	692.12	1,376.67	679.88	5.06	-0.56	0.059
95.00	-14.18	-1.63	0.00	-89.41	0.00	89.41	1,354.85	677.42	1,303.28	643.64	5.67	-0.60	0.055
100.00	-13.99	-1.64	0.00	-81.26	0.00	81.26	1,324.41	662.20	1,230.84	607.87	6.31	-0.63	0.052
101.00	-13.32	-1.66	0.00	-79.61	0.00	79.61	1,318.20	659.10	1,216.47	600.77	6.45	-0.64	0.051
101.00	-13.32	-1.66	0.00	-79.61	0.00	79.61	1,318.20	659.10	1,216.47	600.77	6.45	-0.64	0.049
105.00	-12.82	-1.68	0.00	-72.97	0.00	72.97	1,292.93	646.47	1,159.45	572.61	6.99	-0.66	0.046
108.00	-9.08	-1.74	0.00	-67.94	0.00	67.94	1,265.65	632.82	1,110.24	548.30	7.41	-0.68	0.043
110.00	-8.42	-1.74	0.00	-64.46	0.00	64.46	1,247.06	623.53	1,077.67	532.22	7.70	-0.69	0.041
110.00	-8.42	-1.74	0.00	-64.46	0.00	64.46	853.21	426.60	741.71	366.30	7.70	-0.69	0.049
115.00	-8.26	-1.74	0.00	-55.75	0.00	55.75	834.97	417.48	698.64	345.03	8.44	-0.72	0.043
116.21	-8.00	-1.74	0.00	-53.64	0.00	53.64	830.40	415.20	688.27	339.91	8.62	-0.73	0.042
116.21	-8.00	-1.74	0.00	-53.64	0.00	53.64	830.40	415.20	688.27	339.91	8.62	-0.73	0.167
120.00	-7.66	-1.74	0.00	-47.03	0.00	47.03	815.69	407.84	655.93	323.94	9.21	-0.75	0.155
125.00	-7.33	-1.73	0.00	-38.35	0.00	38.35	795.37	397.68	613.66	303.07	10.05	-0.85	0.136
130.00	-7.01	-1.70	0.00	-29.71	0.00	29.71	774.01	387.00	571.96	282.47	11.00	-0.95	0.114
135.00	-6.71	-1.67	0.00	-21.19	0.00	21.19	751.61	375.80	530.91	262.20	12.04	-1.03	0.090
140.00	-6.59	-1.65	0.00	-12.85	0.00	12.85	728.17	364.08	490.63	242.30	13.15	-1.09	0.062
142.00	-4.41	-1.23	0.00	-9.55	0.00	9.55	714.97	357.48	472.41	233.31	13.61	-1.11	0.047
145.00	-4.18	-1.17	0.00	-5.86	0.00	5.86	694.05	347.03	445.02	219.78	14.32	-1.13	0.033
150.00	0.00	-1.09	0.00	0.00	0.00	0.00	659.19	329.60	401.19	198.13	15.52	-1.15	0.000

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.43	-2.00	0.00	-246.71	0.00	246.71	3,156.90	1,578.45	4,811.22	2,376.08	0.00	0.00	0.069
5.00	-25.40	-1.98	0.00	-236.71	0.00	236.71	3,114.09	1,557.04	4,644.49	2,293.74	0.01	-0.03	0.068
10.00	-24.39	-1.94	0.00	-226.83	0.00	226.83	3,070.24	1,535.12	4,479.04	2,212.03	0.06	-0.05	0.067
15.00	-23.39	-1.90	0.00	-217.13	0.00	217.13	3,025.35	1,512.68	4,314.96	2,131.00	0.13	-0.08	0.065
20.00	-22.40	-1.86	0.00	-207.62	0.00	207.62	2,979.43	1,489.71	4,152.36	2,050.69	0.23	-0.11	0.064
25.00	-21.43	-1.82	0.00	-198.31	0.00	198.31	2,932.46	1,466.23	3,991.34	1,971.17	0.36	-0.14	0.063
30.00	-21.14	-1.81	0.00	-189.22	0.00	189.22	2,874.86	1,437.43	3,819.25	1,886.18	0.52	-0.17	0.062
31.50	-20.13	-1.76	0.00	-186.51	0.00	186.51	2,853.94	1,426.97	3,763.56	1,858.68	0.57	-0.17	0.061
35.00	-19.94	-1.75	0.00	-180.36	0.00	180.36	2,805.14	1,402.57	3,635.21	1,795.29	0.71	-0.20	0.060
35.67	-19.19	-1.71	0.00	-179.19	0.00	179.19	2,247.90	1,123.95	2,973.33	1,468.42	0.74	-0.20	0.069
40.00	-18.34	-1.67	0.00	-171.78	0.00	171.78	2,218.43	1,109.21	2,871.69	1,418.22	0.93	-0.22	0.067
45.00	-17.50	-1.63	0.00	-163.45	0.00	163.45	2,183.45	1,091.72	2,755.25	1,360.71	1.18	-0.25	0.066
50.00	-16.67	-1.58	0.00	-155.32	0.00	155.32	2,147.43	1,073.71	2,639.81	1,303.70	1.46	-0.29	0.064
55.00	-15.85	-1.54	0.00	-147.40	0.00	147.40	2,110.37	1,055.18	2,525.48	1,247.24	1.78	-0.32	0.062
60.00	-15.05	-1.51	0.00	-139.68	0.00	139.68	2,072.27	1,036.13	2,412.36	1,191.37	2.13	-0.35	0.061
65.00	-14.25	-1.49	0.00	-132.12	0.00	132.12	2,033.13	1,016.56	2,300.54	1,136.15	2.51	-0.38	0.059
70.00	-13.48	-1.47	0.00	-124.69	0.00	124.69	1,981.90	990.95	2,177.99	1,075.63	2.93	-0.41	0.057
73.50	-13.27	-1.47	0.00	-119.55	0.00	119.55	1,473.88	736.94	1,624.33	802.19	3.24	-0.44	0.065
75.00	-12.57	-1.47	0.00	-117.34	0.00	117.34	1,466.20	733.10	1,601.53	790.93	3.38	-0.45	0.064
80.00	-11.87	-1.48	0.00	-110.00	0.00	110.00	1,439.92	719.96	1,525.89	753.58	3.86	-0.48	0.062
85.00	-11.67	-1.49	0.00	-102.58	0.00	102.58	1,412.60	706.30	1,450.91	716.55	4.38	-0.51	0.059
86.44	-11.19	-1.51	0.00	-100.43	0.00	100.43	1,404.54	702.27	1,429.45	705.95	4.54	-0.52	0.058
86.44	-11.19	-1.51	0.00	-100.43	0.00	100.43	1,404.54	702.27	1,429.45	705.95	4.54	-0.52	0.058
90.00	-10.51	-1.55	0.00	-95.04	0.00	95.04	1,384.24	692.12	1,376.67	679.88	4.94	-0.55	0.056
95.00	-9.85	-1.58	0.00	-87.31	0.00	87.31	1,354.85	677.42	1,303.28	643.64	5.53	-0.58	0.053
100.00	-9.71	-1.59	0.00	-79.40	0.00	79.40	1,324.41	662.20	1,230.84	607.87	6.16	-0.61	0.049
101.00	-9.25	-1.61	0.00	-77.81	0.00	77.81	1,318.20	659.10	1,216.47	600.77	6.29	-0.62	0.048
101.00	-9.25	-1.61	0.00	-77.81	0.00	77.81	1,318.20	659.10	1,216.47	600.77	6.29	-0.62	0.047
105.00	-8.90	-1.63	0.00	-71.36	0.00	71.36	1,292.93	646.47	1,159.45	572.61	6.82	-0.65	0.044
108.00	-6.30	-1.70	0.00	-66.48	0.00	66.48	1,265.65	632.82	1,110.24	548.30	7.23	-0.66	0.041
110.00	-5.84	-1.71	0.00	-63.07	0.00	63.07	1,247.06	623.53	1,077.67	532.22	7.51	-0.68	0.039
110.00	-5.84	-1.71	0.00	-63.07	0.00	63.07	853.21	426.60	741.71	366.30	7.51	-0.68	0.046
115.00	-5.73	-1.71	0.00	-54.52	0.00	54.52	834.97	417.48	698.64	345.03	8.23	-0.70	0.041
116.21	-5.55	-1.71	0.00	-52.45	0.00	52.45	830.40	415.20	688.27	339.91	8.41	-0.71	0.039
116.21	-5.55	-1.71	0.00	-52.45	0.00	52.45	830.40	415.20	688.27	339.91	8.41	-0.71	0.161
120.00	-5.31	-1.70	0.00	-45.98	0.00	45.98	815.69	407.84	655.93	323.94	8.98	-0.73	0.148
125.00	-5.09	-1.69	0.00	-37.46	0.00	37.46	795.37	397.68	613.66	303.07	9.80	-0.83	0.130
130.00	-4.86	-1.67	0.00	-29.01	0.00	29.01	774.01	387.00	571.96	282.47	10.73	-0.93	0.109
135.00	-4.65	-1.63	0.00	-20.69	0.00	20.69	751.61	375.80	530.91	262.20	11.74	-1.01	0.085
140.00	-4.57	-1.61	0.00	-12.55	0.00	12.55	728.17	364.08	490.63	242.30	12.83	-1.07	0.058
142.00	-3.06	-1.20	0.00	-9.33	0.00	9.33	714.97	357.48	472.41	233.31	13.28	-1.08	0.044
145.00	-2.90	-1.15	0.00	-5.73	0.00	5.73	694.05	347.03	445.02	219.78	13.97	-1.10	0.030
150.00	0.00	-1.09	0.00	0.00	0.00	0.00	659.19	329.60	401.19	198.13	15.14	-1.12	0.000

Site Number: 302482

Code: ANSI/TIA-222-G

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Site Name: North Haven CT 1, CT

Engineering Number: OAA708185_C3_02

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Customer: VERIZON WIRELESS

Analysis Summary

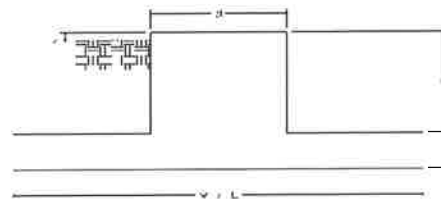
Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	27.24	0.00	38.08	0.00	0.00	2739.76	116.21	0.85
0.9D + 1.6W	27.21	0.00	28.54	0.00	0.00	2698.49	116.21	0.83
1.2D + 1.0Di + 1.0Wi	6.27	0.00	62.96	0.00	0.00	684.93	116.21	0.25
(1.2 + 0.2Sds) * DL + E ELFM	1.24	0.00	38.05	0.00	0.00	156.66	116.21	0.07
(1.2 + 0.2Sds) * DL + E EMAM	2.00	0.00	38.05	0.00	0.00	252.08	116.21	0.17
(0.9 - 0.2Sds) * DL + E ELFM	1.24	0.00	26.43	0.00	0.00	153.60	116.21	0.07
(0.9 - 0.2Sds) * DL + E EMAM	2.00	0.00	26.43	0.00	0.00	246.71	116.21	0.16
1.0D + 1.0W	6.51	0.00	31.79	0.00	0.00	649.97	116.21	0.21

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Applied (kips)	phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	86.4	(4) SOL-#20 All Thre	344.6	10.3	16.8	0.0	12.0	0	12	0.0	12.0	0	0	286.8	330.5	0.868
86.4	101.	(4) SOL-#20 All Thre	0.0	0.0	16.8	127.6	12.0	11	16	0.0	12.0	0	0	171.9	353.5	0.486
101.	116.	(3) SOL-#20 All Thre	397.6	11.9	16.8	105.6	12.0	9	12	145.7	12.0	13	14	147.5	330.5	0.446

Site Name: North Haven CT 1, CT
 Site Number: 302482
 Engineering Number: OAA708185
 Engineer: Aaron.Black
 Date: 03/01/18
 Tower Type: MP

Program Last Updated: 5/13/2014



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

Design / Analysis / Mapping:

Compression/Leg:	38.1 k	Concrete Strength (f'_c):	3000 psi
Uplift/Leg:	0.0 k	Pad Tension Steel Depth:	32.00 in
Total Shear:	27.2 k	ϕ_{Shear} :	0.75
Moment:	2739.8 k-ft	$\phi_{\text{Flexure / Tension}}$:	0.90
Tower + Appurtenance Weight:	38.1 k	$\phi_{\text{Compression}}$:	0.65
Depth to Base of Foundation (l + t - h):	10.50 ft	β :	0.85
Diameter of Pier (d):	6.00 ft	Bottom Pad Rebar Size #:	10
Height of Pier above Ground (h):	0.50	# of Bottom Pad Rebar:	36
Width of Pad (W):	18.00 ft	Pad Bottom Steel Area:	45.72 in ²
Length of Pad (L):	22.00 ft	Pad Steel F_y :	60000 psi
Thickness of Pad (t):	3.00 ft	Top Pad Rebar Size #:	5
Tower Leg Center to Center:	0.00 ft	# of Top Pad Rebar:	36
Number of Tower Legs:	1.0 (1 if MP or GT)	Pad Top Steel Area:	11.16 in ²
Tower Center from Mat Center:	0.00 ft	Pier Rebar Size #:	11
Depth Below Ground Surface to Water Table:	7.00 ft	Pier Steel Area (Single Bar):	1.56 in ²
Unit Weight of Concrete:	150.0 pcf	# of Pier Rebar:	14
Unit Weight of Soil Above Water Table:	125.0 pcf	Pier Steel F_y :	60000 psi
Unit Weight of Water:	62.4 pcf	Pier Cage Diameter:	64.0 in
Unit Weight of Soil Below Water Table:	62.6 pcf	Rebar Strain Limit:	0.008
Friction Angle of Uplift:	15.0 Degrees	Steel Elastic Modulus:	29000 ksi
Ultimate Coefficient of Shear Friction:	0.35	Tie Rebar Size #:	4
Ultimate Compressive Bearing Pressure:	8000.0 psf	Tie Steel Area (Single Bar):	0.20 in ²
Ultimate Passive Pressure on Pad Face:	0.0 psf	Tie Spacing:	12 in
$\phi_{\text{Soil and Concrete Weight}}$:	0.9	Tie Steel F_y :	60000 psi
ϕ_{Soil} :	0.75		

Overturning Moment Usage

Design OTM:	3039.4 k-ft
OTM Resistance:	4721.1 k-ft
Design OTM / OTM Resistance:	0.64 Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	4102 psf
Factored Nominal Bearing Pressure:	6000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.68 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

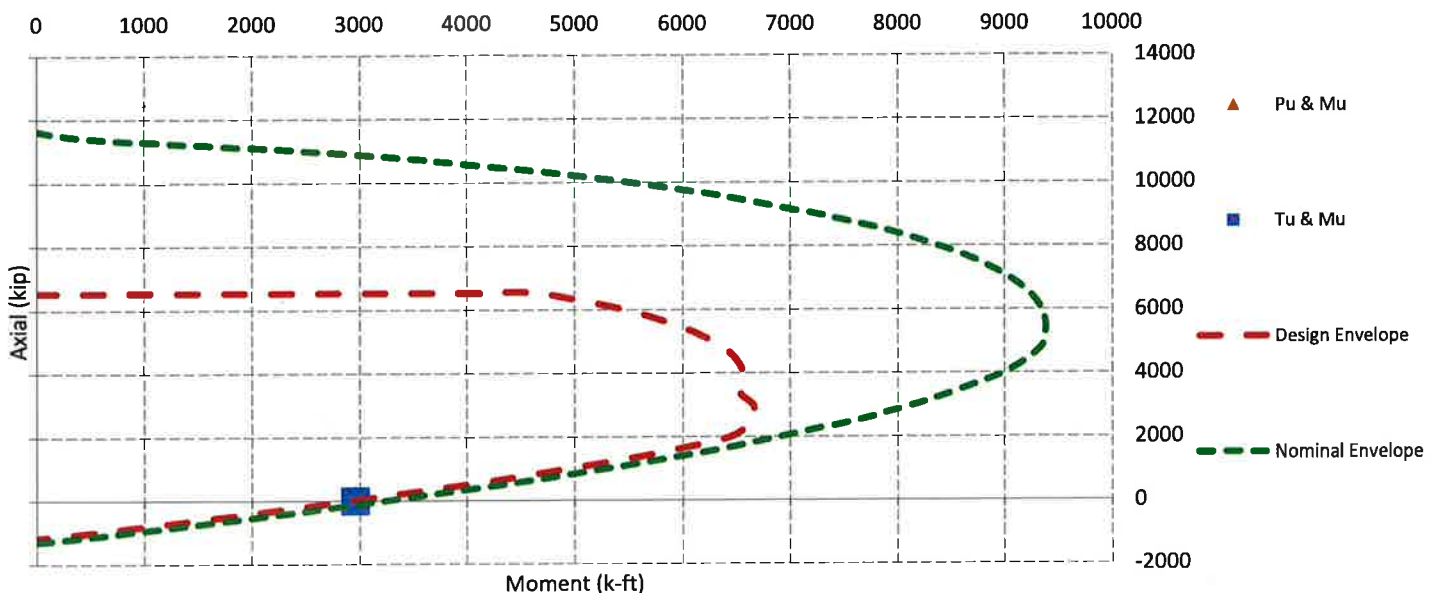
Sliding Factor of Safety

Total Factored Sliding Resistance:	131.8 k
Sliding Design / Sliding Resistance:	0.21 Result: OK

One Way Shear, Flexural Capacity, and Punching Shear

Factored One Way Shear (V_u):	132.7 k
One Way Shear Capacity (ϕV_c):	445.5 k - ACI11.3.1.1
$V_u / \phi V_c$:	0.30 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment (M_u):	801.9 k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	5335.9 k-ft - ACI10.3
$M_u / \phi M_n$:	0.15 Result: OK
Load Direction Controlling Flexural Capacity:	Diagonal to Pad Edge
Upper Steel Pad Factored Moment (M_u):	688.2 k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	1585.8 k-ft
$M_u / \phi M_n$:	0.43 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0054 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0013 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	7 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	7 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0 k
Nominal Punching Shear Capacity ($\phi_c V_n$):	1718.0 k - ACI11.12.2.1
$V_u / \phi V_c$:	0.00 Result: OK
Factored Moment in Pier (M_u):	2957.7 k-ft
Pier Moment Capacity (ϕM_n):	3087.5 k-ft
$M_u / \phi M_n$:	0.96 Result: OK
Factored Shear in Pier (V_u):	27.2 k
Pier Shear Capacity (ϕV_n):	336.1 k
$V_u / \phi V_c$:	0.08 Result: OK
Pier Shear Reinforcement Ratio:	0.0005 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0 k
Pier Tension Capacity (ϕT_n):	1179.4 k
$T_u / \phi T_n$:	0.00 Result: OK
Factored Compression in Pier (P_u):	38.1 k
Pier Compression Capacity (ϕP_n):	5369.9 k - ACI10.3.6.2
$P_u / \phi P_n$:	0.01 Result: OK
Pier Compression Reinforcement Ratio:	0.005 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$:	0.96 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads





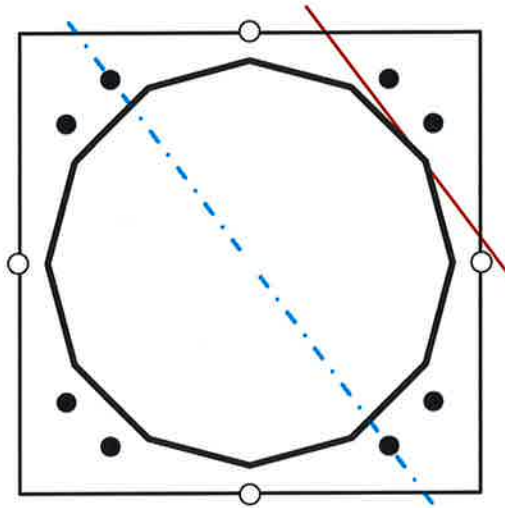
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	12	-
Diameter	37.38	in
Thickness	0.375	in
Orientation Offset		*

Base Reactions		
Moment, Mu	2739.8	k-ft
Axial, Pu	38.1	k
Shear, Vu	27.2	k
Neutral Axis	307	*

Report Capacities		
Component	Capacity	Result
Base Plate	62%	Pass
Anchor Rods	88%	Pass
Dwywidag	61%	Pass

Base Plate		
Shape	Square	-
Width	44	in
Thickness	2 1/2	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip		in
Orientation Offset	0	*
Anchor Rod Detail	c	$\eta=0.55$
Clear Distance	N/A	in
Applied Moment, Mu	1303.5	k
Bending Stress, ϕMn	2096.8	k



Dwywidag Reinforcement		
Quantity	4	-
Bar Size	#20	in
Diameter, ϕ	2.5	in
Bracket Type	Angle	-
Circle	44.26	in
Orientation Offset	0	*
Applied Force, Pu	237.7	k
Dwywidag Bar, ϕPn	392.7	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	8	-
Diameter, ϕ	2 1/4	in
Bolt Circle	44	in
Grade	A615-75	-
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	*
Applied Force, Pu	228.7	k
Anchor Rods, ϕPn	259.8	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
	k	k-ft	-
Base Forces	27.2	1657.7	0.61
Anchor Rod Forces	27.2	1657.7	0.61
Additional Bolt (Grp1) Forces			
Additional Bolt (Grp2) Forces			
Dywidag Forces		1082.0	0.39
Stiffener Forces			

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
	in ²	in ²	in ⁴	#	in ⁴
Pole	43.0934	3.5911	0.1692		7376.38
Bolt	3.9761	3.2477	0.8393	4.5	6294.24
Bolt1					
Bolt2					
Dywidag	4.9087	4.9087	1.9175		4814.56
Stiffener					

Base Plate		
Shape	Square	-
Width, W	44	in
Thickness, t	2.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	23.219	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

Anchor Rods		
Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	44	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	228.7	k
Applied Shear, Vu	0.0	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.880	OK
Interaction Capacity	0.880	OK

Base Plate Stiffeners		
Applied Axial Force, Pu	0.0	k
Applied Horizontal Force, Vu	0.00	k
Vertical Weld		
Vert.-to-Stiffener a=e _v /l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Compressive Capacity, φPn	#DIV/0!	k
Vert.-to-Plate a=e _v /l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, φVn	#DIV/0!	k
$P_u/\phi_p P_n + V_u/\phi_v V_n$		

External Base Plate		
Chord Length AA	24.850	in
Additional AA	0.000	in
Section Modulus, Z	38.829	in ³
Applied Moment, Mu	1303.5	k-ft
Bending Capacity, φMn	2096.8	k-ft
Capacity, Mu/φMn	0.622	OK
Chord Length AB	23.532	in
Additional AB	0.000	in
Section Modulus, Z	36.769	in ³
Applied Moment, Mu	1007.6	k-ft
Bending Capacity, φMn	1985.5	k-ft
Capacity, Mu/φMn	0.507	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in ³
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Additional Bolt Group 1		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, φPn	0.0	k
Compressive Capacity, φPn		
Interaction Capacity		

Horizontal Weld		
Horz.-to-Stiffener a=e _h /l	0.000	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Effective Fillet	0.000	in
Compressive Capacity, φPn	#DIV/0!	k
Horz.-to-Pole a=e _h /l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, φVn	#DIV/0!	k
$P_u/\phi_p P_n + V_u/\phi_v V_n$		

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in ³
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Additional Bolt Group 2		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, φPn	0.0	k
Compressive Capacity, φPn		
Interaction Capacity		

Plate Tension		
Gross Cross Section	0.000	in ²
Net Cross Section	0.000	in ²
Tensile Capacity, φTn	0.0	k
Capacity, Tu/φTn		

Dywidag Reinforcement		
Dywidag Quantity, N	4	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	44.255	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	237.7	k
Compressive Capacity, φPn	392.7	k
Capacity, Pu/φPn	0.605	OK

Plate Compression		
Radius of Gyration	#DIV/0!	in ³
kl/r	#DIV/0!	-
$4.71 \sqrt{E/F_y}$	0.00	-
Buckling Stress(F _e)	0.0	-
Crit. Buckling Stress(F _{cr})	0.0	ksi
Compressive Capacity, φPn	0.0	k
Capacity, Pu/φPn		

Base/Flange Plate	Plate Type	Flange @ 110.0 ft
	Pole Diameter	21.25 in
	Pole Thickness	0.1875 in
	Plate Diameter	28.5 in
	Plate Thickness	1 in
	Plate Fy	50 ksi
	Weld Length	0.1875 in
	ϕ_s Resistance Applied	117.26 k-in
		17.51 k-in
	Stiffeners	#
Thickness		0.5 in
Length		4 in
Height		3 in
Chamfer		0.25 in
Offset Angle		0°
Fy		36 ksi

Code Rev. **G**

Moment **354.0 k-ft**

Axial **7.7 k**

Date **3/1/2018**

Engineer **Aaron.Black**

Site # **302482**

Carrier **VERIZON WIRELESS**

Bolts	#	12
	Bolt Circle	25.75 in
	(R)adial / (S)quare	R
	Diameter	1 in
	Hole Diameter	1.25 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	ϕ_s Resistance Applied	54.52 k
		12.18 k
Reinforcement	#	3
	DYW. Circle	35 in
	Offset Angle	0°
	Type	#20
	Diameter	2.5 in
	Fu	100 ksi
ϕ_s Resistance Applied	392.70 k	
	107.16 k	
Extra Bolts O	#	0

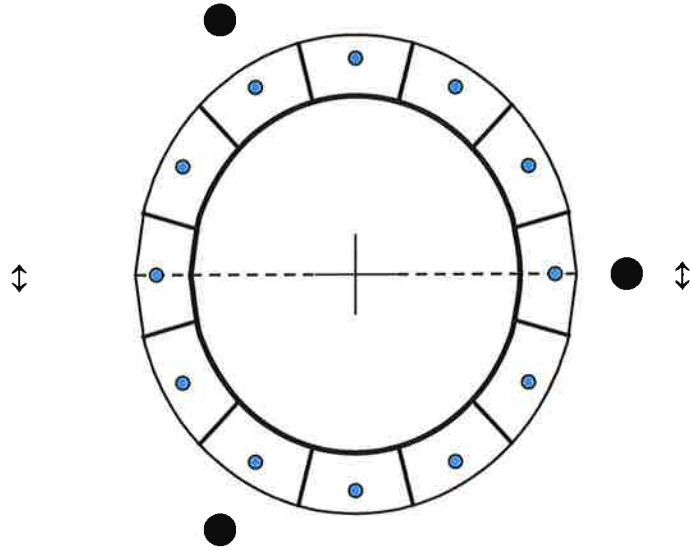
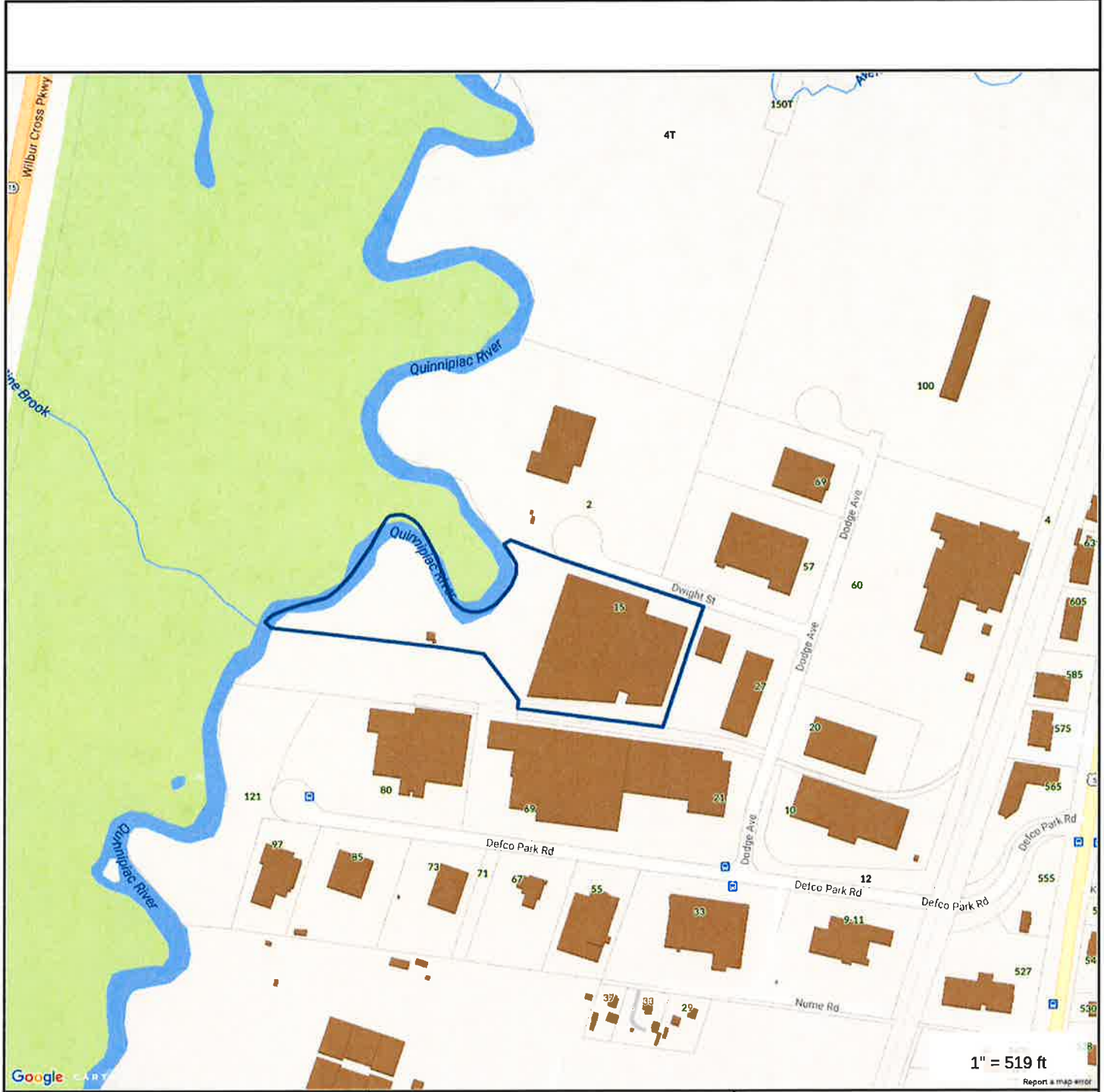


Plate Stress Ratio: **0.15** (Pass)

Bolt Stress Ratio: **0.22** (Pass)

Reinforcement Stress Ratio: **0.27** (Pass)

ATTACHMENT 4



Property Information

Property ID 100/1
Location 15 DWIGHT ST
Owner 15 DWIGHT STREET LLC



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

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

Parcels updated 10/1/2016
 Properties updated 02/15/2018

Report & Map Error

15 DWIGHT ST

Location 15 DWIGHT ST

Mblu 100 / / 001 / /

Acct# 338330

Owner 15 DWIGHT STREET LLC

Assessment \$3,523,590

Appraisal \$5,033,700

PID 9010

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2014	\$3,451,000	\$1,582,700	\$5,033,700

Assessment			
Valuation Year	Improvements	Land	Total
2014	\$2,415,700	\$1,107,890	\$3,523,590

Owner of Record

Owner 15 DWIGHT STREET LLC
Co-Owner C/O NEIL F CARRANO
Address 11 SAGAMORE TERR SO
WESTBROOK, CT 06498-2107

Sale Price \$0
Certificate 1
Book & Page 529/ 23
Sale Date 09/28/1998

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
15 DWIGHT STREET LLC	\$0	1	529/ 23	09/28/1998
V J C REALTY % CARRANOS	\$0	3	318/ 434	10/02/1981
V J C REALTY	\$0	4	310/ 253	11/15/1979

Building Information

Building 1 : Section 1

Year Built: 1981
Living Area: 171,555
Replacement Cost: \$4,921,913
Building Percent 67
Good:
Replacement Cost
Less Depreciation: \$3,297,700

Building Attributes

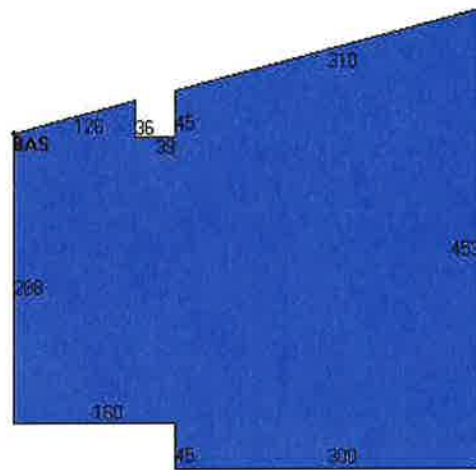
Field	Description
STYLE	Warehouse
MODEL	Ind/Comm
Grade	C
Stories:	1
Occupancy	1
Exterior Wall 1	Metal
Exterior Wall 2	Concr/Cinder
Roof Structure	Gable/Hip
Roof Cover	Metal/Tin
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Average
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Unit Heat
AC Type	None
Bldg Use	IND WHSES M96
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	HEAT/AC PKGS
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	22
% Conn Wall	

Building Photo



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

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	171,555	171,555
		171,555	171,555

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
SPR1	SPRINKLERS-WET	172908 S.F.	\$104,300	1
OVHD	OVER HEADDOOR	2320 S.F.	\$0	1
LDL1	LOAD LEVELERS	29 UNITS	\$56,300	1
A/C	AIR CONDITION	2780 S.F.	\$3,700	1
OVHD	OVER HEADDOOR	140 S.F.	\$0	1
MEZ2	FINISHED	2500 S.F.	\$25,100	1

Land**Land Use**

Use Code 4010
Description IND WHSES M96
Zone IL80
Neighborhood 307
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 11.99
Frontage
Depth
Assessed Value \$1,107,890
Appraised Value \$1,582,700

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FN1	FENCE-4' CHAIN			16000 L.F.	\$48,000	1
PAV1	PAVING-ASPHALT			80000 S.F.	\$54,000	1
TWR1	COMMU-TOWER			1 UNITS	\$112,500	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2013	\$4,359,100	\$1,678,700	\$6,037,800
2008	\$4,011,900	\$1,217,600	\$5,229,500
2007		\$852,320	\$3,660,650

Assessment			
Valuation Year	Improvements	Land	Total
2013	\$3,051,370	\$1,175,090	\$4,226,460
2008	\$2,808,330	\$852,320	\$3,660,650
2007		\$852,320	\$3,660,650

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ATTACHMENT 5



Certificate of Mailing — Firm

Name and Address of Sender

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

TOTAL NO. of Pieces Listed by Sender

3

TOTAL NO. of Pieces Received at Post Office™

3

Affix Stamp Here
Postmark with Date of Receipt.

neopost®
03/09/2018
US POSTAGE \$002.38
ZIP 06103
041L122083E

Postmaster, per (name of receiving employee)

USPS® Tracking Number
Firm-specific Identifier

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

Postage

Fee

Special Handling

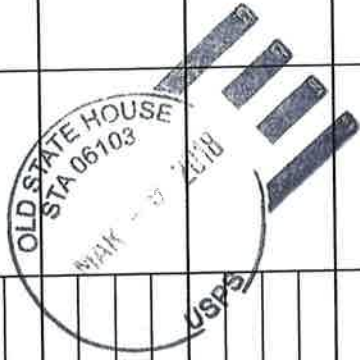
Parcel Airlift

1.

Michael J. Freda, First Selectman
Town of North Haven
18 Church Street
North Haven, CT 06473

2.

Alan Fredricksen, Land Use Administrator
Town of North Haven
18 Church Street
North Haven, CT 06473



3.

15 Dwight Street LLC
c/o Neil F. Carrano
11 Sagamore Terrace S
Westbrook, CT 06498

4.

5.

6.