

October 4, 2017

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

**Re: Notice of Exempt Modification – Facility Modification
159 Weingart Road, Harwinton, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 175-foot level of the existing 181.9-foot tower at 159 Weingart Road in Harwinton, Connecticut (the “Property”). The Property is owned by SBC Tower Holdings (c/o American Tower Corp.) and the tower is owned by American Tower Corporation (“ATC”). Cellco’s use of this tower was approved by the Council in 2003. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/2100 MHz antennas and three (3) model SBNHH-1D65B, 1900 MHz antennas, all at the same level on the tower. Cellco also intends to install nine (9) remote radio heads (“RRHs”) and one (1) HYBRIFLEX™ fiber optic antenna cable inside the monopole tower. Included in Attachment 1 are specifications for Cellco’s replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Michael R. Criss, First Selectman for the Town of Harwinton; Polly Redmond, Harwinton’s Land Use Coordinator; SBC Tower Holdings, the Property owner; 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 on Cellco’s existing

17147184-v1

Robinson+Cole

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platform at the 175-foot level on the existing tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard A cumulative General Power Density table for Cellco's modified facility in Attachment 2.

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

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

A copy of the parcel map and property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the Property owner 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 R. Criss, Harwinton First Selectman
Polly Redmond, Harwinton Land Use Coordinator
SBC Tower Holdings
American Tower Corp.
Tim Parks

ATTACHMENT 1



SBNHH-1D65B

Multiband Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

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

Electrical Specifications

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

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0° | 14.6	0° | 14.5	0° | 17.4	0° | 17.8	0° | 18.1	0° | 18.2
	7° | 14.6	7° | 14.4	3° | 17.5	3° | 17.9	3° | 18.3	3° | 18.4
	14° | 14.2	14° | 13.6	7° | 17.4	7° | 17.9	7° | 18.2	7° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

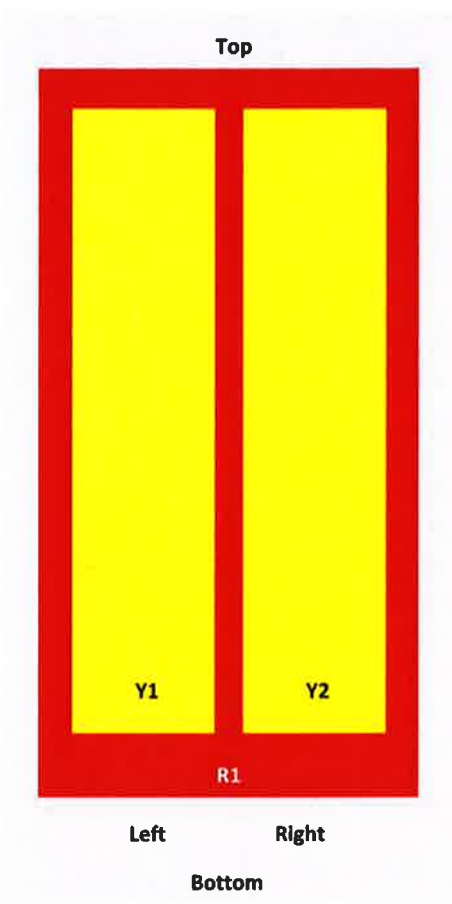
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

Array Layout

SBNHH-1D65B

SBNHH 65

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



View from the front of the antenna
(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

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

SBNHH-1D65B

Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Loading, lateral	197.0 N @ 150 km/h 44.3 lbf @ 150 km/h
Wind Loading, rear	728.0 N @ 150 km/h 163.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

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

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

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

Regulatory Compliance/Certifications

Agency

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

Classification

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



SBNHH-1D65B

Included Products

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

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance
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ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

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

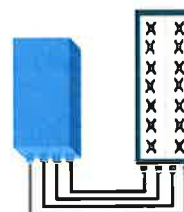


FEATURES

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

BENEFITS

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



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

TECHNICAL SPECIFICATIONS

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

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ALCATEL-LUCENT B25 RRH4X30

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

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

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

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

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

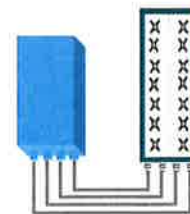


FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

TECHNICAL SPECIFICATIONS

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

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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.

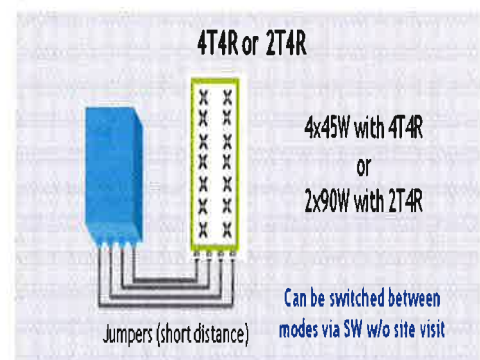
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

Dimensions			
Outer Conductor Armor	Corrugated Aluminum	(mm (in))	46.5 (1.83)
Jacket	Polyethylene, PE	(mm (in))	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Mechanical Properties			
Weight, Approximate		(kg/m (lb/ft))	1.9 (1.30)
Minimum Bending Radius, Single Bending		(mm (in))	200 (8)
Minimum Bending Radius, Repeated Bending		(mm (in))	500 (20)
Recommended/Maximum Clamp Spacing		(m (ft))	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		(Ω/km (Ω/1000ft))	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
Environmental			
Installation Temperature		(°C (°F))	-40 to +65 (-40 to 149)
Operation Temperature		(°C (°F))	-40 to +65 (-40 to 149)

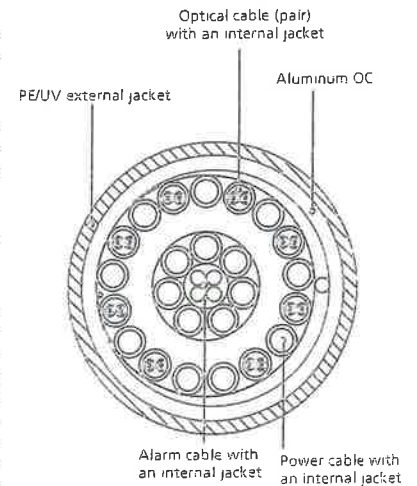


Figure 3: Construction Detail

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

ATTACHMENT 2

Site Name: Harwinton N Tower Height: 181.9Ft.	General		Power		Density		CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
	CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	HEIGHT	FREQ.					
*AT&T	2	565	185	185	880	0.0127	0.5867	0.22%			
*AT&T	2	875	185	185	1900	0.0196	1.0000	0.20%			
*AT&T	1	283	185	185	880	0.0032	0.5867	0.05%			
*AT&T	4	525	185	185	1900	0.0236	1.0000	0.24%			
*AT&T	1	1313	185	185	734	0.0147	0.4893	0.30%			
*Clearwire	2	153	145	145	2496	0.0057	1.0000	0.06%			
*Clearwire	1	211	145	145	18 GHz	0.0039	1.0000	0.04%			
*T-Mobile -PCS-UMTS	2	1167	165	165	1900	0.0332	1.0000	0.33%			
*T-Mobile -AWS-LTE	2	2334	165	165	2100	0.0664	1.0000	0.66%			
*T-Mobile -LTE	1	690	165	165	700	0.0098	0.4667	0.21%			
Verizon PCS	0	1637	175	175	0.0000	1970	1.0000	0.00%			
Verizon Cellular	9	498	175	175	0.0526	869	0.5793	9.08%			
Verizon AWS	1	8325	175	175	0.0977	2145	1.0000	9.77%			
Verizon 700	1	2062	175	175	0.0242	746	0.4973	4.87%	26.03%		
* Source: Siting Council											

ATTACHMENT 3



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 181.9 ft Monopole
ATC Site Name : Harwinton, CT
ATC Site Number : 302502
Engineering Number : OAA697310_C3_07
Proposed Carrier : Verizon
Carrier Site Name : Harwinton N, CT
Carrier Site Number : 117803
Site Location : 159 Weingart Road
Harwinton, CT 06791-1109
41.787800,-73.092500
County : Litchfield
Date : September 27, 2017
Max Usage : 100%
Result : Pass

Prepared By:
Matthew Reeves, CWI
Structural Engineer II

Reviewed By:



Sep 27 2017 5:19 PM **cosign**

COA: PEC.0001553



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Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 181.9 ft monopole to reflect the change in loading by Verizon.

Supporting Documents

Tower Drawings	Mapping by Smith Cullum Inc. Site #CT-0038, dated February 13, 2002
Foundation Drawing	Girard & Co. Engineers Job #3C237, dated April 24, 1994
Geotechnical Report	Johnson Soils Engineering Co. Report #14974-H dated January 28, 2002
Modifications	Hutter Trunkina Engineering Project # 03320B, dated August 4, 2003 ATC Project #42504234, dated February 27, 2009 ATC Job # OAA684307_C6_06, dated November 16, 2016

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:	93 mph (3-Second Gust, V_{ASD}) / 120 mph (3-Second Gust, V_{ULT})
Basic Wind Speed w/ Ice:	40 mph (3-Second Gust) w/ 1" 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					
181.9	186.0	1	Andrew ABT-DFDM-ADB	Platform w/ Handrails	(12) 1 1/4" Coax (2) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk	AT&T Mobility
		6	Powerwave LGP21401			
		1	SSB (27lb)			
		6	Powerwave 7770.00			
		3	KMW AM-X-CD-16-65-00T-RET			
	185.0	6	Ericsson RRUS 11 (Band 12)			
175.0	176.0	6	RFS FD9R6004/2C-3L (3.1 lbs)	Low Profile Platform	(10) 1 5/8" Coax	Verizon
		6	Antel LPA-80063/6CF			
164.0	164.0	3	Ericsson AIR 21, 1.3 M, B2A B4P	Platform w/ Handrails	(6) 1 5/8" Coax (1) 1 5/8" Fiber	Metro PCS
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	Andrew LNX-6515DS-A1M			
145.0	146.0	3	KMW TTA (HB-X-WM-17-65-00T)	Side Arms	(6) 1 5/8" Coax	Clearwire
		3	KMW HB-X-WM-17-65-00T			

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
175.0	175.0	3	Antel BXA-171063-12BF-EDIN-X	-	(2) 1 5/8" Coax	Verizon
		3	Antel BXA-70063-6CF-EDIN-X			

Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
175.0	175.0	3	Alcatel-Lucent B13 RRH4x30-4R	Low Profile Platform	(2) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent B66A RRH4x45-4R w/o Solar Shield			
		2	RFS DB-T1-6Z-8AB-OZ			
		6	Commscope SBNHH-1D65B (72.9")			

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	75%	Pass
Shaft	75%	Pass
Base Plate	43%	Pass
Flanges	62%	Pass
Reinforcement	100%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,860.5	93%
Axial (Kips)	102.7	34%
Shear (Kips)	31.3	20%

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) (°)
175.0	Alcatel-Lucent B13 RRH4x30-4R	Verizon	2.966	2.046
	Alcatel-Lucent B66A RRH4x45-4R w/o Solar Shield			
	RFS DB-T1-6Z-8AB-0Z			
	Commscope SBNHH-1D65B (72.9")			

*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 are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

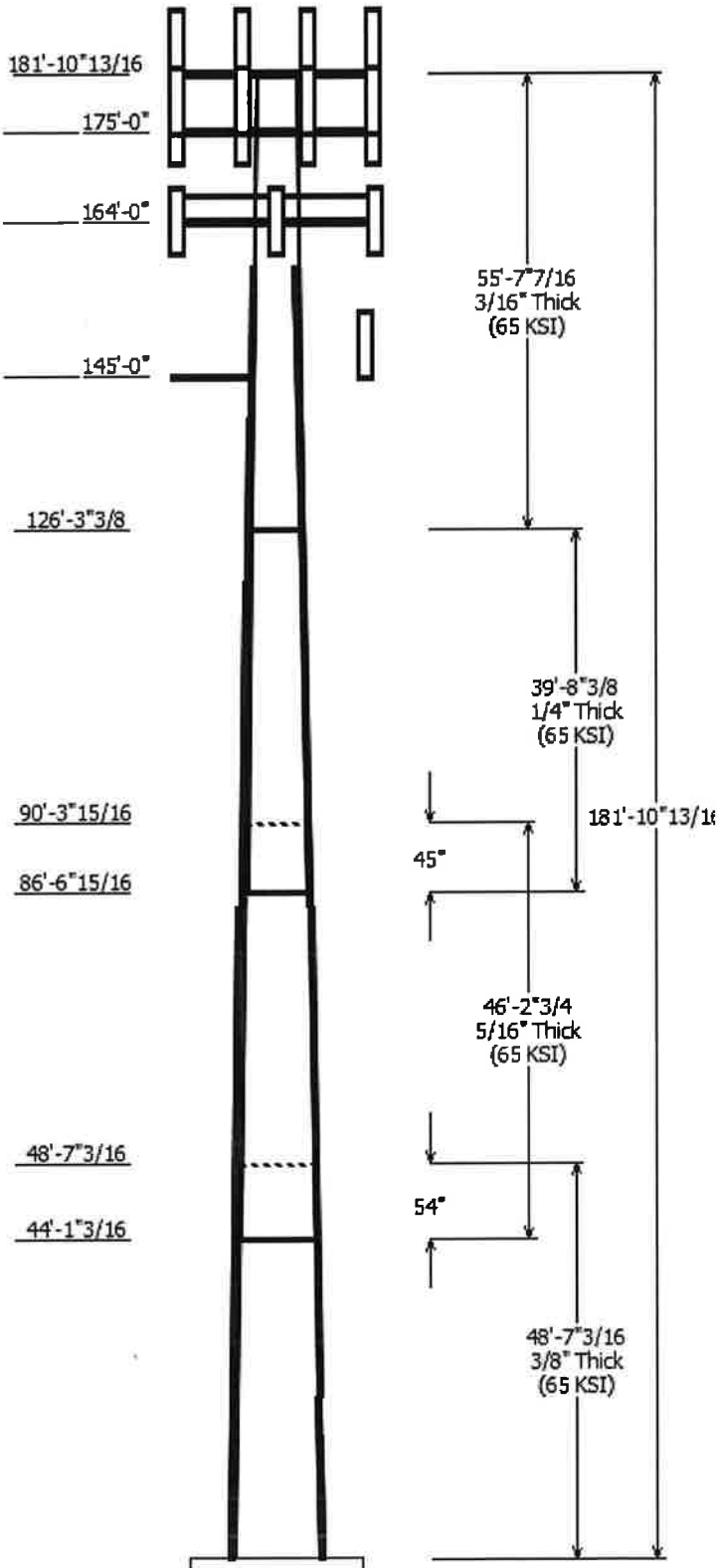
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

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. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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 we supply.

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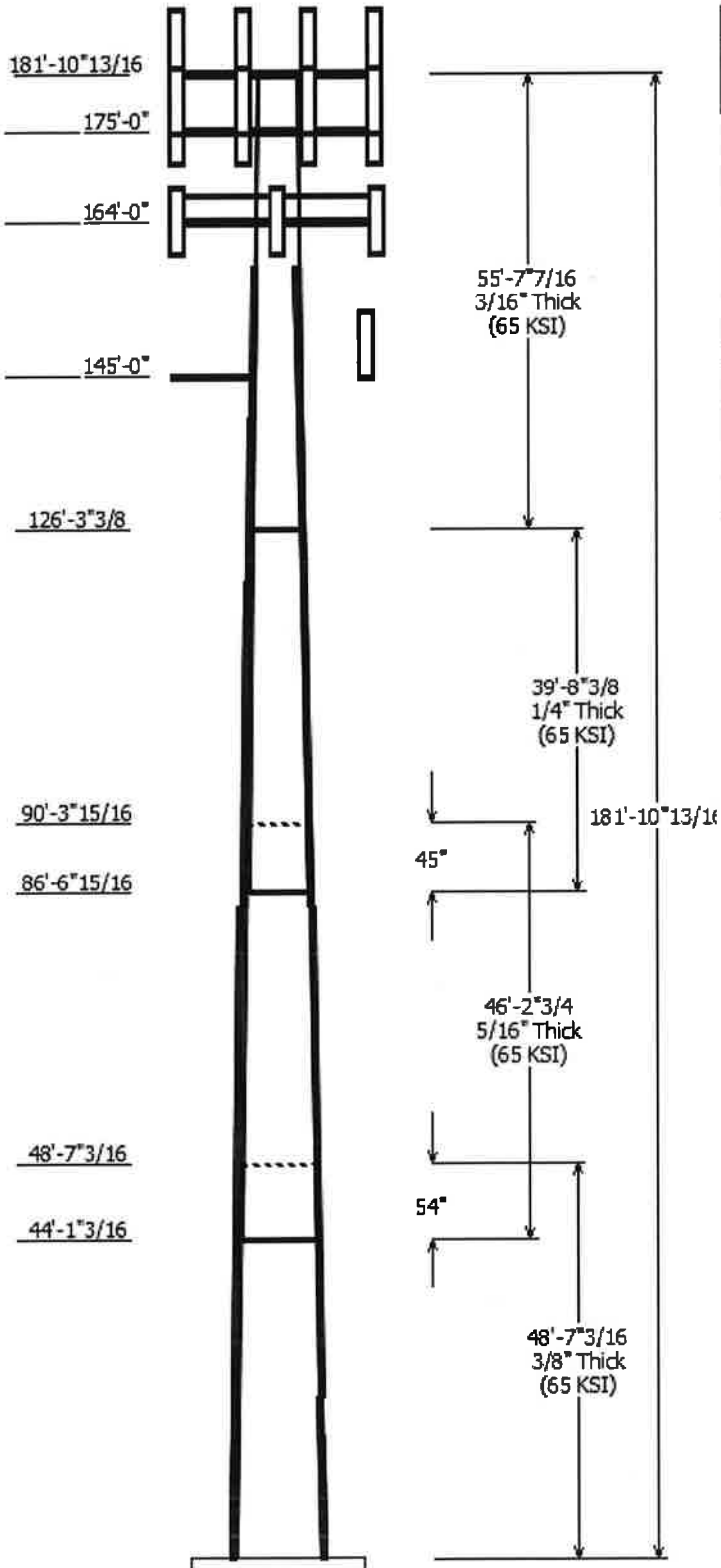


Job Information	
Pole :	302502
Code:	ANSI/TIA-222-G
Description :	182 ft Monopole
Client :	VERIZON WIRELESS
Struct Class :	II
Location :	Harwinton, CT
Shape :	12 Sides
Exposure :	B
Height :	181.90 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.162864(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
		Across Flats Top	Across Flats Bottom					
1	48.600	35.08	43.00	0.375		0.000	0.162900	65
2	46.230	28.91	36.44	0.313	Slip Joint	54.000	0.162900	65
3	39.700	23.55	30.02	0.250	Slip Joint	45.000	0.162900	65
4	55.620	14.50	23.55	0.188	Butt Joint	0.000	0.162900	65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
181.900	181.900	1	Flat Platform w/ Handrails
181.900	186.000	1	SSB (27lb)
181.900	186.000	1	Andrew ABT-DFDM-ADB
181.900	185.000	6	Ericsson RRUS 11 (Band 12)
181.900	186.000	3	KMW AM-X-CD-16-65-00T-RET
181.900	186.000	6	Powerwave Allgon LGP21401
181.900	186.000	6	Powerwave Allgon 7770.00
175.000	175.000	6	Commscope SBNHH-1D65B
175.000	175.000	2	RFS DB-T1-6Z-8AB-0Z
175.000	175.000	3	Alcatel-Lucent B66A RRH4x45-
175.000	175.000	3	Alcatel-Lucent B13 RRH4x30-4R
175.000	176.000	6	RFS FD9R6004/2C-3L (3.1 lbs)
175.000	175.000	1	Flat Low Profile Platform
175.000	176.000	6	Antel LPA-80063/6CF
164.000	164.000	1	Round Platform w/ Handrails
164.000	164.000	3	Andrew LNX-6515DS-A1M
164.000	164.000	3	Ericsson AIR 21, 1.3M, B4A B2P
164.000	164.000	3	Ericsson AIR 21, 1.3 M, B2A B4
145.000	146.000	3	KMW TTA (HB-X-WM-17-65-00T)
145.000	145.000	1	Side Arms
145.000	146.000	3	KMW HB-X-WM-17-65-00T

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
140.0	160.0	3" Solid Rod	Yes
120.0	140.0	3.5" Solid Rod	Yes
80.000	120.0	4.0" Solid Rod	Yes
5.000	145.0	1 5/8" Coax	Yes
5.000	164.0	1 5/8" Coax	No
5.000	164.0	1 5/8" Fiber	No
5.000	175.0	1 5/8" Coax	No
5.000	175.0	1 5/8" Hybriflex	No
5.000	181.9	0.39" Fiber Trunk	No
5.000	181.9	0.78" 8 AWG 6	No
5.000	181.9	1 1/4" Coax	No
0.000	19.500	#20Dywidag	Yes
0.000	80.000	4.25" Solid Rod	Yes

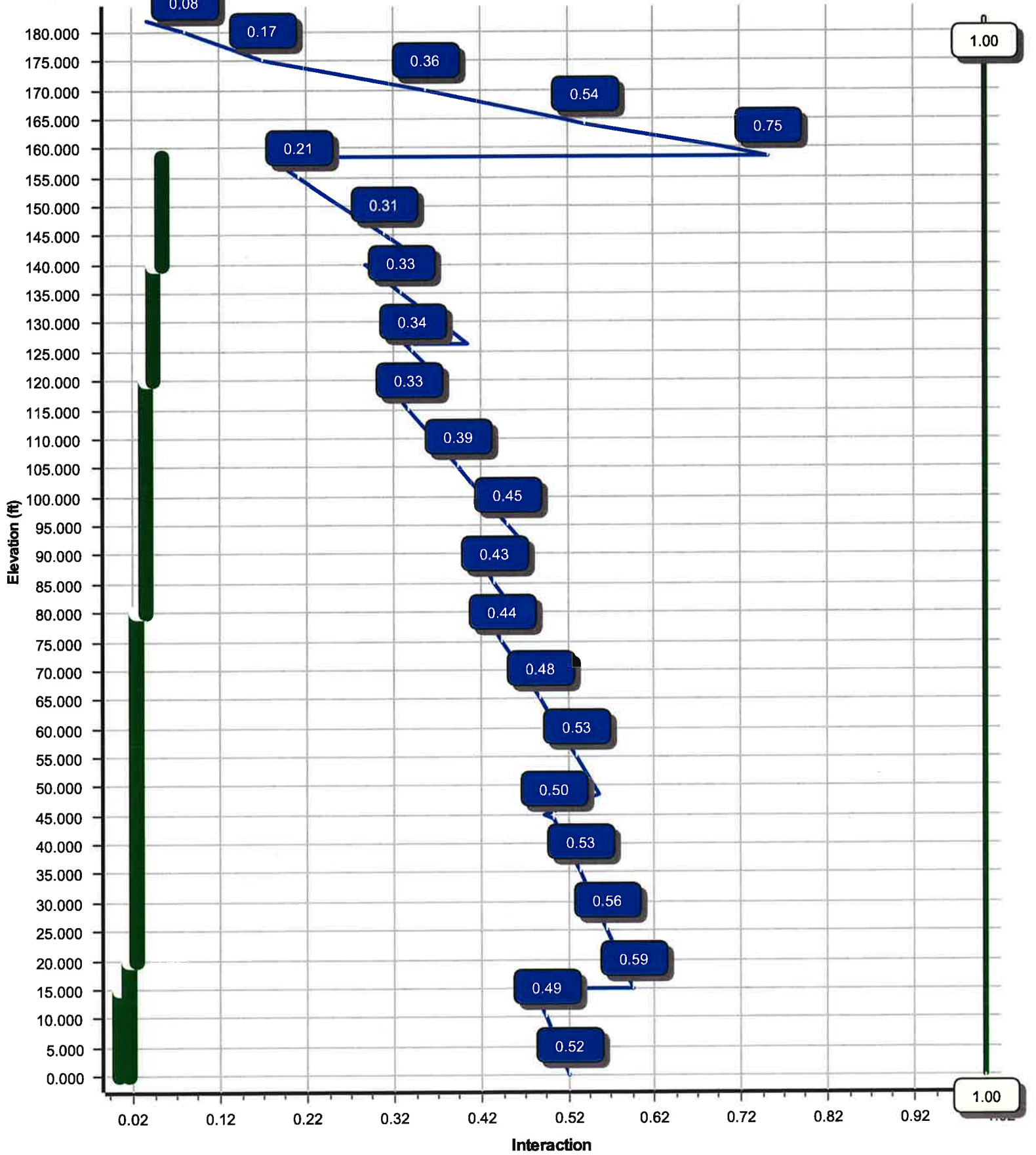


Load Cases	
1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (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	3860.46	31.28	62.66
0.9D + 1.6W	3794.89	31.25	46.99
1.2D + 1.0Di + 1.0Wi	711.18	5.18	102.66
(1.2 + 0.2Sds) * DL + E ELFM	307.14	2.05	62.46
(1.2 + 0.2Sds) * DL + E EMAM	411.04	2.96	62.46
(0.9 - 0.2Sds) * DL + E ELFM	300.50	2.04	43.42
(0.9 - 0.2Sds) * DL + E EMAM	401.75	2.96	43.42
1.0D + 1.0W	1024.78	8.50	52.26

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000

Load Case : 1.2D + 1.6W
Max Ratio 74.89% at 158.5 ft



Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:43 AM

Customer: VERIZON WIRELESS

Analysis Parameters

Location:	LITCHFIELD County, CT	Height (ft):	181.
Code:	ANSI/TIA-222-G	Base Diameter (in):	43.00
Shape:	12 Sides	Top Diameter (in):	14.50
Pole Type:	Taper	Taper (in/ft) :	0.163
Pole Manufacturer:	Mapped	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	93 mph
Exposure Category:	B	Design Wind Speed With Ice:	40 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	3.07		
T _L (sec):	6	p:	1.3
S _s :	0.182	S ₁ :	0.065
F _a :	1.600	F _v :	2.400
S _{ds} :	0.194	S _{d1} :	0.104
		C _s :	0.030
		C _s Max:	0.030
		C _s Min:	0.030

Load Cases

1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:43 AM

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	48.600	0.3750	65		0.00	7,722	43.00	0.00	51.47	11936.2	28.05	114.67	35.08	48.60	41.91	6445.1	22.39	93.56	0.162864	
2-12	46.230	0.3125	65	Slip	54.00	5,123	36.44	44.10	36.36	6057.6	28.57	116.62	28.91	90.33	28.78	3004.9	22.11	92.52	0.162864	
3-12	39.700	0.2500	65	Slip	45.00	2,886	30.02	86.58	23.97	2712.1	29.50	120.10	23.55	126.28	18.76	1301.1	22.57	94.23	0.162864	
4-12	55.620	0.1875	65	Butt	0.00	2,153	23.55	126.28	14.11	983.7	30.99	125.65	14.50	181.90	8.64	225.9	18.04	77.33	0.162864	
Shaft Weight						17,884														

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
			Weight (lb)	EPAa (sf)	Orientation Factor	Weight (lb)	EPAa (sf)	Orientation Factor		
181.90	Andrew ABT-DFDM-ADB	1	1.10	0.050	0.50	11.38	0.269	0.50	0.000	4.100
181.90	Ericsson RRUS 11 (Band 12)	6	50.00	2.570	0.50	170.44	3.484	0.50	0.000	3.100
181.90	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,934.73	70.951	1.00	0.000	0.000
181.90	KMW AM-X-CD-16-65-00T-	3	48.50	8.020	0.67	323.87	9.821	0.67	0.000	4.100
181.90	Powerwave Allgon 7770.00	6	35.00	5.510	0.65	233.76	6.976	0.65	0.000	4.100
181.90	Powerwave Allgon LGP21401	6	14.10	1.100	0.50	66.44	1.757	0.50	0.000	4.100
181.90	SSB (27lb)	1	27.00	3.200	0.67	201.13	4.231	0.67	0.000	4.100
175.00	Alcatel-Lucent B13 RRH4x30-	3	57.80	2.140	0.67	176.32	3.010	0.67	0.000	0.000
175.00	Alcatel-Lucent B66A	3	56.80	2.390	0.50	170.38	3.342	0.50	0.000	0.000
175.00	Antel LPA-80063/6CF	6	27.00	9.590	0.76	436.73	11.471	0.76	0.000	1.000
175.00	Commscope SBNHH-1D65B	6	40.60	8.200	0.69	335.32	10.015	0.69	0.000	0.000
175.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,377.81	51.967	1.00	0.000	0.000
175.00	RFS DB-T1-6Z-8AB-0Z	2	44.00	4.800	0.67	250.78	6.010	0.67	0.000	0.000
175.00	RFS FD9R6004/2C-3L (3.1 lbs)	6	3.10	0.360	0.50	24.98	0.701	0.50	0.000	1.000
164.00	Andrew LNX-6515DS-A1M	3	49.80	11.450	0.70	426.47	13.695	0.70	0.000	0.000
164.00	Ericsson AIR 21, 1.3 M, B2A	3	83.00	6.050	0.71	325.48	7.558	0.71	0.000	0.000
164.00	Ericsson AIR 21, 1.3M, B4A	3	90.40	6.090	0.70	332.82	7.604	0.70	0.000	0.000
164.00	Round Platform w/ Handrails	1	2000.00	27.200	1.00	3,744.63	60.111	1.00	0.000	0.000
145.00	KMW HB-X-WM-17-65-00T	3	30.00	3.360	0.79	189.86	4.557	0.79	0.000	1.000
145.00	KMW TTA (HB-X-WM-17-65-	3	15.90	0.650	0.50	68.24	1.599	0.50	0.000	1.000
145.00	Side Arms	1	560.00	8.500	0.67	1,182.29	17.945	0.67	0.000	0.000
Totals		68	8491.50			25,599.81			Number of Loadings : 21	

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Flat Width (in)	Exposed To Wind	Carrier
5.00	181.90	1	0.39" Fiber Trunk	0.39	0.06	N 0.00	N	AT&T Mobility
5.00	181.90	2	0.78" 8 AWG 6	0.78	0.59	N 0.00	N	AT&T Mobility
5.00	181.90	12	1 1/4" Coax	1.55	0.63	N 0.00	N	AT&T Mobility
5.00	175.00	10	1 5/8" Coax	1.98	0.82	N 0.00	N	Verizon
5.00	175.00	2	1 5/8" Hybriflex Cable	1.98	1.30	N 0.00	N	Verizon
5.00	164.00	6	1 5/8" Coax	1.98	0.82	N 0.00	N	Metro PCS
5.00	164.00	1	1 5/8" Fiber	1.63	1.61	N 0.00	N	Metro PCS
140.00	160.00	3	3" Solid Rod	3.00	0.00	N 6.00	Y	--
5.00	145.00	6	1 5/8" Coax	1.98	0.82	N 0.00	Y	Detroit Cellular Telephone Co
120.00	140.00	3	3.5" Solid Rod	3.50	0.00	N 7.00	Y	--
80.00	120.00	3	4.0" Solid Rod	4.00	0.00	N 8.00	Y	--
0.00	80.00	3	4.25" Solid Rod	4.25	0.00	N 8.50	Y	--
0.00	19.50	3	#20Dywidag	2.50	0.00	N 10.00	Y	--

Site Number: 302502

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

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Customer: VERIZON WIRELESS

Additional Steel

— Intermediate Connections —										
Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	15.00	3	SOL #20 All Thread	80	5.00	6" T Bracket	30.0	3.31	5/8" Hollo Bolt	No
0.00	20.00	3	SOL 4 1/4" SOLID	50	0.75	AJAX M20 Class	16.5	3.50	5/8" A36 U-Bolt	No
20.00	80.00	3	SOL 4 1/4" SOLID	50	0.75	AJAX M20 Class	33.0	3.50	5/8" Hollo Bolt	No
80.00	120.0	3	SOL 4" SOLID	50	0.88	AJAX M20 Class	66.0	3.50	5/8" Hollo Bolt	No
120.0	140.0	3	SOL 3 1/2" SOLID	50	1.13	AJAX M20 Class	66.0	3.50	5/8" Hollo Bolt	No
140.0	158.5	3	SOL 3" SOLID	50	1.38	AJAX M20 Class	66.0	3.50	5/8" Hollo Bolt	No

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:43 AM

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	43.000	51.470	11,936.2	28.05	114.67	74.1	536.3	0.0	0.0	57.28	18,36	0.0
5.00		0.3750	42.186	50.486	11,265.1	27.46	112.50	74.8	515.9	0.0	867.3	57.28	17,78	974.5
10.00		0.3750	41.371	49.503	10,619.6	26.88	110.32	75.4	495.9	0.0	850.6	57.28	17,20	974.5
15.00	Reinf. Top	0.3750	40.557	48.520	9,999.3	26.30	108.15	76.0	476.3	0.0	833.9	57.28	16,64	974.5
20.00	Reinf. Top Reinf	0.3750	39.743	47.537	9,403.6	25.72	105.98	76.7	457.1	0.0	817.1	42.55	11,05	724.0
25.00		0.3750	38.928	46.553	8,832.0	25.14	103.81	77.3	438.3	0.0	800.4	42.55	10,66	724.0
30.00		0.3750	38.114	45.570	8,284.1	24.55	101.64	77.9	419.9	0.0	783.7	42.55	10,28	724.0
35.00		0.3750	37.300	44.587	7,759.4	23.97	99.47	78.6	401.9	0.0	767.0	42.55	9,907	724.0
40.00		0.3750	36.485	43.603	7,257.2	23.39	97.29	79.2	384.3	0.0	750.2	42.55	9,537	724.0
44.10	Bot - Section 2	0.3750	35.818	42.797	6,862.0	22.91	95.51	79.7	370.1	0.0	602.7	42.55	9,239	593.7
45.00		0.3750	35.671	42.620	6,777.3	22.81	95.12	79.8	367.0	0.0	241.9	42.55	9,452	130.3
48.60	Top - Section 1	0.3125	35.710	35.619	5,696.4	27.94	114.27	74.2	308.2	0.0	957.7	42.55	9,192	521.3
50.00		0.3125	35.482	35.389	5,587.1	27.74	113.54	74.5	304.2	0.0	169.1	42.55	9,091	202.7
55.00		0.3125	34.667	34.570	5,207.9	27.05	110.94	75.2	290.2	0.0	595.1	42.55	8,738	724.0
60.00		0.3125	33.853	33.750	4,846.3	26.35	108.33	76.0	276.6	0.0	581.2	42.55	8,391	724.0
65.00		0.3125	33.039	32.931	4,501.8	25.65	105.72	76.7	263.2	0.0	567.3	42.55	8,052	724.0
70.00		0.3125	32.225	32.111	4,174.0	24.95	103.12	77.5	250.2	0.0	553.3	42.55	7,719	724.0
75.00		0.3125	31.410	31.292	3,862.6	24.25	100.51	78.3	237.6	0.0	539.4	42.55	7,394	724.0
80.00	Reinf. Top Reinf	0.3125	30.596	30.473	3,567.0	23.55	97.91	79.0	225.2	0.0	525.4	42.55	7,075	724.0
85.00		0.3125	29.782	29.653	3,286.9	22.86	95.30	79.8	213.2	0.0	511.5	37.69	5,986	641.4
86.58	Bot - Section 3	0.3125	29.524	29.394	3,201.6	22.64	94.48	80.0	209.5	0.0	158.7	37.69	5,901	202.7
90.00		0.3125	28.967	28.834	3,021.9	22.16	92.70	80.5	201.5	0.0	615.1	37.69	5,882	438.7
90.33	Top - Section 2	0.2500	29.413	23.477	2,548.6	28.85	117.65	73.3	167.4	0.0	58.7	37.69	5,864	42.3
95.00		0.2500	28.653	22.864	2,354.3	28.03	114.61	74.1	158.7	0.0	368.2	37.69	5,614	599.1
100.0		0.2500	27.839	22.209	2,157.6	27.16	111.35	75.1	149.7	0.0	383.4	37.69	5,354	641.4
105.0		0.2500	27.024	21.553	1,972.1	26.29	108.10	76.0	141.0	0.0	372.3	37.69	5,099	641.4
110.0		0.2500	26.210	20.898	1,797.6	25.41	104.84	77.0	132.5	0.0	361.1	37.69	4,851	641.4
115.0		0.2500	25.396	20.242	1,633.7	24.54	101.58	78.0	124.3	0.0	350.0	37.69	4,608	641.4
120.0	Reinf. Top Reinf	0.2500	24.581	19.587	1,480.1	23.67	98.33	78.9	116.3	0.0	338.8	37.69	4,372	641.4
125.0		0.2500	23.767	18.931	1,336.4	22.79	95.07	79.9	108.6	0.0	327.7	28.86	3,165	491.1
126.2	Top - Section 3	0.2500	23.559	18.763	1,301.1	22.57	94.23	80.1	106.7	0.0	82.1	28.86	3,121	125.7
126.2	Bot - Section 4	0.1875	23.559	14.110	983.7	30.99	125.65	70.9	80.7	0.0		28.86	3,121	
130.0		0.1875	22.953	13.744	909.2	30.12	122.41	71.9	76.5	0.0	176.3	28.86	2,994	365.4
135.0		0.1875	22.138	13.253	815.1	28.96	118.07	73.1	71.1	0.0	229.7	28.86	2,828	491.1
140.0	Reinf. Top Reinf	0.1875	21.324	12.761	727.7	27.79	113.73	74.4	65.9	0.0	221.3	28.86	2,666	491.1
145.0		0.1875	20.510	12.270	646.8	26.63	109.39	75.7	60.9	0.0	212.9	21.20	1,839	360.8
150.0		0.1875	19.695	11.778	572.1	25.47	105.04	76.9	56.1	0.0	204.6	21.20	1,728	360.8
155.0		0.1875	18.881	11.286	503.4	24.30	100.70	78.2	51.5	0.0	196.2	21.20	1,620	360.8
158.5	Reinf. Top	0.1875	18.311	10.942	458.7	23.49	97.66	79.1	48.4	0.0	132.4	21.20	1,546	252.5
160.0		0.1875	18.067	10.795	440.4	23.14	96.36	79.5	47.1	0.0	55.5			
164.0		0.1875	17.415	10.401	394.0	22.21	92.88	80.5	43.7	0.0	144.2			
165.0		0.1875	17.252	10.303	383.0	21.98	92.01	80.7	42.9	0.0	35.2			
170.0		0.1875	16.438	9.811	330.7	20.81	87.67	81.9	38.9	0.0	171.1			
175.0		0.1875	15.624	9.320	283.4	19.65	83.33	81.9	35.0	0.0	162.7			
180.0		0.1875	14.809	8.828	240.9	18.48	78.98	81.9	31.4	0.0	154.4			
181.9		0.1875	14.500	8.641	225.9	18.04	77.33	81.9	30.1	0.0	56.5			
											17,884.1			20,766.

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:43 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

93 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	-62.66	-31.28	0.00	-3,860.46	0.00	3,860.46	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.519
5.00	-60.36	-30.77	0.00	-3,704.07	0.00	3,704.07	3,397.00	1,698.50	5,857.04	2,892.57	0.10	-0.18	0.505
10.00	-57.89	-30.25	0.00	-3,550.23	0.00	3,550.23	3,359.11	1,679.56	5,677.90	2,804.10	0.38	-0.36	0.491
15.00	-55.45	-29.73	0.00	-3,398.97	0.00	3,398.97	3,320.10	1,660.05	5,499.48	2,715.99	0.85	-0.53	0.478
15.00	-55.45	-29.73	0.00	-3,398.97	0.00	3,398.97	3,320.10	1,660.05	5,499.48	2,715.99	0.85	-0.53	0.592
20.00	-53.32	-29.24	0.00	-3,250.30	0.00	3,250.30	3,279.97	1,639.98	5,321.88	2,628.28	1.50	-0.71	0.577
20.00	-53.32	-29.24	0.00	-3,250.30	0.00	3,250.30	3,279.97	1,639.98	5,321.88	2,628.28	1.50	-0.71	0.577
25.00	-51.20	-28.82	0.00	-3,104.09	0.00	3,104.09	3,238.71	1,619.36	5,145.22	2,541.03	2.36	-0.93	0.562
30.00	-49.11	-28.40	0.00	-2,959.97	0.00	2,959.97	3,196.33	1,598.17	4,969.60	2,454.30	3.46	-1.15	0.546
35.00	-47.04	-27.95	0.00	-2,817.99	0.00	2,817.99	3,152.83	1,576.41	4,795.15	2,368.14	4.78	-1.37	0.531
40.00	-45.00	-27.51	0.00	-2,678.25	0.00	2,678.25	3,108.20	1,554.10	4,621.97	2,282.62	6.34	-1.59	0.515
44.10	-43.37	-27.22	0.00	-2,565.48	0.00	2,565.48	3,070.77	1,535.38	4,481.00	2,213.00	7.79	-1.78	0.501
45.00	-42.85	-27.02	0.00	-2,540.98	0.00	2,540.98	3,062.45	1,531.23	4,450.19	2,197.78	8.13	-1.82	0.490
48.60	-40.90	-26.71	0.00	-2,443.70	0.00	2,443.70	2,379.97	1,189.99	3,474.54	1,715.94	9.56	-1.97	0.553
50.00	-40.35	-26.42	0.00	-2,406.31	0.00	2,406.31	2,371.43	1,185.72	3,439.58	1,698.68	10.15	-2.04	0.547
55.00	-38.51	-25.89	0.00	-2,274.19	0.00	2,274.19	2,340.22	1,170.11	3,315.01	1,637.16	12.41	-2.26	0.527
60.00	-36.68	-25.34	0.00	-2,144.75	0.00	2,144.75	2,307.88	1,153.94	3,191.02	1,575.92	14.90	-2.49	0.506
65.00	-34.88	-24.77	0.00	-2,018.07	0.00	2,018.07	2,274.42	1,137.21	3,067.70	1,515.02	17.63	-2.71	0.485
70.00	-33.10	-24.19	0.00	-1,894.22	0.00	1,894.22	2,239.83	1,119.92	2,945.16	1,454.51	20.58	-2.93	0.464
75.00	-31.34	-23.60	0.00	-1,773.28	0.00	1,773.28	2,204.12	1,102.06	2,823.54	1,394.44	23.78	-3.15	0.443
80.00	-29.61	-23.00	0.00	-1,655.28	0.00	1,655.28	2,167.29	1,083.65	2,702.93	1,334.88	27.19	-3.37	0.422
80.00	-29.61	-23.00	0.00	-1,655.28	0.00	1,655.28	2,167.29	1,083.65	2,702.93	1,334.88	27.19	-3.37	0.457
85.00	-28.01	-22.55	0.00	-1,540.29	0.00	1,540.29	2,129.34	1,064.67	2,583.46	1,275.87	30.84	-3.58	0.434
86.58	-27.50	-22.28	0.00	-1,504.66	0.00	1,504.66	2,117.11	1,058.55	2,545.96	1,257.35	32.04	-3.66	0.427
90.00	-26.09	-21.97	0.00	-1,428.48	0.00	1,428.48	2,090.26	1,045.13	2,465.23	1,217.49	34.71	-3.81	0.404
90.33	-25.93	-21.74	0.00	-1,421.23	0.00	1,421.23	1,547.78	773.89	1,862.15	919.64	34.98	-3.83	0.475
95.00	-24.56	-21.15	0.00	-1,319.72	0.00	1,319.72	1,525.71	762.86	1,787.32	882.69	38.82	-4.03	0.449
100.00	-23.11	-20.54	0.00	-1,213.95	0.00	1,213.95	1,500.99	750.50	1,707.51	843.28	43.17	-4.26	0.420
105.00	-21.68	-19.92	0.00	-1,111.25	0.00	1,111.25	1,475.16	737.58	1,628.14	804.08	47.75	-4.48	0.392
110.00	-20.28	-19.30	0.00	-1,011.65	0.00	1,011.65	1,448.19	724.10	1,549.32	765.15	52.55	-4.69	0.363
115.00	-18.89	-18.68	0.00	-915.15	0.00	915.15	1,420.11	710.05	1,471.16	726.55	57.57	-4.90	0.335
120.00	-17.52	-18.05	0.00	-821.77	0.00	821.77	1,390.90	695.45	1,393.78	688.34	62.81	-5.10	0.307
120.00	-17.52	-18.05	0.00	-821.77	0.00	821.77	1,390.90	695.45	1,393.78	688.34	62.81	-5.10	0.372
125.00	-16.35	-17.60	0.00	-731.52	0.00	731.52	1,360.57	680.28	1,317.29	650.56	68.24	-5.29	0.339
126.28	-16.05	-17.35	0.00	-708.99	0.00	708.99	1,352.62	676.31	1,297.87	640.97	69.67	-5.35	0.331
126.28	-16.05	-17.35	0.00	-708.99	0.00	708.99	900.61	450.31	868.79	429.06	69.67	-5.35	0.403
130.00	-15.25	-16.86	0.00	-644.46	0.00	644.46	888.95	444.47	835.13	412.44	73.89	-5.51	0.371
135.00	-14.20	-16.28	0.00	-560.17	0.00	560.17	872.29	436.14	789.93	390.12	79.77	-5.73	0.328
140.00	-13.16	-15.69	0.00	-478.79	0.00	478.79	854.50	427.25	744.88	367.87	85.88	-5.93	0.285
140.00	-13.16	-15.69	0.00	-478.79	0.00	478.79	854.50	427.25	744.88	367.87	85.88	-5.93	0.360
145.00	-11.52	-14.45	0.00	-399.96	0.00	399.96	835.60	417.80	700.09	345.75	92.18	-6.11	0.307
150.00	-10.70	-13.90	0.00	-327.70	0.00	327.70	815.57	407.78	655.68	323.81	98.68	-6.32	0.258
155.00	-9.90	-13.41	0.00	-258.19	0.00	258.19	794.42	397.21	611.76	302.12	105.39	-6.50	0.208
158.50	-9.34	-13.10	0.00	-211.26	0.00	211.26	778.94	389.47	581.37	287.12	110.20	-6.61	0.174
158.50	-9.34	-13.10	0.00	-211.26	0.00	211.26	778.94	389.47	581.37	287.12	110.20	-6.61	0.749
160.00	-9.20	-12.92	0.00	-191.61	0.00	191.61	772.14	386.07	568.44	280.73	112.28	-6.66	0.696
164.00	-6.02	-9.67	0.00	-139.93	0.00	139.93	753.51	376.76	534.31	263.87	118.03	-7.08	0.539
165.00	-5.94	-9.50	0.00	-130.26	0.00	130.26	748.74	374.37	525.85	259.70	119.52	-7.18	0.510
170.00	-5.60	-9.19	0.00	-82.75	0.00	82.75	723.19	361.60	483.41	238.74	127.25	-7.58	0.355

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:45 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

93 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

175.00	-3.10	-4.22	0.00	-35.23	0.00	35.23	686.95	343.48	435.91	215.28	135.32	-7.83	0.168
180.00	-2.88	-3.99	0.00	-14.16	0.00	14.16	650.71	325.36	390.87	193.04	143.57	-7.96	0.078
181.90	0.00	-3.56	0.00	-6.57	0.00	6.57	636.94	318.47	374.40	184.90	146.73	-7.98	0.036

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:45 AM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W

93 mph with No Ice (Reduced DL)

27 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	-46.99	-31.25	0.00	-3,794.89	0.00	3,794.89	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.508
5.00	-45.24	-30.69	0.00	-3,638.63	0.00	3,638.63	3,397.00	1,698.50	5,857.04	2,892.57	0.09	-0.17	0.494
10.00	-43.37	-30.13	0.00	-3,485.16	0.00	3,485.16	3,359.11	1,679.56	5,677.90	2,804.10	0.37	-0.35	0.481
15.00	-41.51	-29.57	0.00	-3,334.49	0.00	3,334.49	3,320.10	1,660.05	5,499.48	2,715.99	0.83	-0.52	0.467
15.00	-41.51	-29.57	0.00	-3,334.49	0.00	3,334.49	3,320.10	1,660.05	5,499.48	2,715.99	0.83	-0.52	0.579
20.00	-39.90	-29.04	0.00	-3,186.63	0.00	3,186.63	3,279.97	1,639.98	5,321.88	2,628.28	1.47	-0.70	0.564
20.00	-39.90	-29.04	0.00	-3,186.63	0.00	3,186.63	3,279.97	1,639.98	5,321.88	2,628.28	1.47	-0.70	0.564
25.00	-38.28	-28.58	0.00	-3,041.44	0.00	3,041.44	3,238.71	1,619.36	5,145.22	2,541.03	2.32	-0.91	0.549
30.00	-36.69	-28.11	0.00	-2,898.56	0.00	2,898.56	3,196.33	1,598.17	4,969.60	2,454.30	3.39	-1.13	0.533
35.00	-35.12	-27.62	0.00	-2,758.03	0.00	2,758.03	3,152.83	1,576.41	4,795.15	2,368.14	4.69	-1.35	0.518
40.00	-33.57	-27.15	0.00	-2,619.93	0.00	2,619.93	3,108.20	1,554.10	4,621.97	2,282.62	6.22	-1.56	0.502
44.10	-32.34	-26.85	0.00	-2,508.61	0.00	2,508.61	3,070.77	1,535.38	4,481.00	2,213.00	7.64	-1.74	0.489
45.00	-31.94	-26.64	0.00	-2,484.45	0.00	2,484.45	3,062.45	1,531.23	4,450.19	2,197.78	7.98	-1.78	0.478
48.60	-30.48	-26.32	0.00	-2,388.55	0.00	2,388.55	2,379.97	1,189.99	3,474.54	1,715.94	9.38	-1.94	0.539
50.00	-30.05	-26.01	0.00	-2,351.70	0.00	2,351.70	2,371.43	1,185.72	3,439.58	1,698.68	9.96	-2.00	0.533
55.00	-28.65	-25.45	0.00	-2,221.63	0.00	2,221.63	2,340.22	1,170.11	3,315.01	1,637.16	12.17	-2.22	0.513
60.00	-27.27	-24.88	0.00	-2,094.37	0.00	2,094.37	2,307.88	1,153.94	3,191.02	1,575.92	14.61	-2.44	0.492
65.00	-25.90	-24.30	0.00	-1,969.97	0.00	1,969.97	2,274.42	1,137.21	3,067.70	1,515.02	17.28	-2.66	0.472
70.00	-24.55	-23.71	0.00	-1,848.48	0.00	1,848.48	2,239.83	1,119.92	2,945.16	1,454.51	20.17	-2.87	0.451
75.00	-23.23	-23.11	0.00	-1,729.95	0.00	1,729.95	2,204.12	1,102.06	2,823.54	1,394.44	23.30	-3.09	0.431
80.00	-21.92	-22.50	0.00	-1,614.42	0.00	1,614.42	2,167.29	1,083.65	2,702.93	1,334.88	26.64	-3.30	0.410
80.00	-21.92	-22.50	0.00	-1,614.42	0.00	1,614.42	2,167.29	1,083.65	2,702.93	1,334.88	26.64	-3.30	0.444
85.00	-20.71	-22.05	0.00	-1,501.92	0.00	1,501.92	2,129.34	1,064.67	2,583.46	1,275.87	30.21	-3.51	0.422
86.58	-20.32	-21.78	0.00	-1,467.07	0.00	1,467.07	2,117.11	1,058.55	2,545.96	1,257.35	31.38	-3.58	0.415
90.00	-19.26	-21.48	0.00	-1,392.60	0.00	1,392.60	2,090.26	1,045.13	2,465.23	1,217.49	34.00	-3.73	0.393
90.33	-19.14	-21.24	0.00	-1,385.51	0.00	1,385.51	1,547.78	773.89	1,862.15	919.64	34.25	-3.75	0.462
95.00	-18.11	-20.65	0.00	-1,286.33	0.00	1,286.33	1,525.71	762.86	1,787.32	882.69	38.02	-3.95	0.436
100.00	-17.01	-20.04	0.00	-1,183.06	0.00	1,183.06	1,500.99	750.50	1,707.51	843.28	42.26	-4.17	0.408
105.00	-15.94	-19.43	0.00	-1,082.86	0.00	1,082.86	1,475.16	737.58	1,628.14	804.08	46.74	-4.38	0.380
110.00	-14.88	-18.82	0.00	-985.71	0.00	985.71	1,448.19	724.10	1,549.32	765.15	51.44	-4.59	0.353
115.00	-13.83	-18.20	0.00	-891.64	0.00	891.64	1,420.11	710.05	1,471.16	726.55	56.35	-4.79	0.325
120.00	-12.80	-17.59	0.00	-800.63	0.00	800.63	1,390.90	695.45	1,393.78	688.34	61.46	-4.98	0.298
120.00	-12.80	-17.59	0.00	-800.63	0.00	800.63	1,390.90	695.45	1,393.78	688.34	61.46	-4.98	0.361
125.00	-11.93	-17.16	0.00	-712.67	0.00	712.67	1,360.57	680.28	1,317.29	650.56	66.77	-5.17	0.329
126.28	-11.70	-16.90	0.00	-690.71	0.00	690.71	1,352.62	676.31	1,297.87	640.97	68.16	-5.22	0.321
126.28	-11.70	-16.90	0.00	-690.71	0.00	690.71	900.61	450.31	868.79	429.06	68.16	-5.22	0.391
130.00	-11.10	-16.42	0.00	-627.82	0.00	627.82	888.95	444.47	835.13	412.44	72.29	-5.38	0.360
135.00	-10.31	-15.85	0.00	-545.71	0.00	545.71	872.29	436.14	789.93	390.12	78.04	-5.59	0.318
140.00	-9.53	-15.28	0.00	-466.46	0.00	466.46	854.50	427.25	744.88	367.87	84.00	-5.79	0.277
140.00	-9.53	-15.28	0.00	-466.46	0.00	466.46	854.50	427.25	744.88	367.87	84.00	-5.79	0.349
145.00	-8.32	-14.08	0.00	-389.68	0.00	389.68	835.60	417.80	700.09	345.75	90.15	-5.97	0.298
150.00	-7.71	-13.54	0.00	-319.29	0.00	319.29	815.57	407.78	655.68	323.81	96.51	-6.17	0.250
155.00	-7.11	-13.07	0.00	-251.59	0.00	251.59	794.42	397.21	611.76	302.12	103.06	-6.35	0.202
158.50	-6.69	-12.77	0.00	-205.86	0.00	205.86	778.94	389.47	581.37	287.12	107.75	-6.46	0.168
158.50	-6.69	-12.77	0.00	-205.86	0.00	205.86	778.94	389.47	581.37	287.12	107.75	-6.46	0.727
160.00	-6.58	-12.58	0.00	-186.70	0.00	186.70	772.14	386.07	568.44	280.73	109.78	-6.50	0.675
164.00	-4.27	-9.43	0.00	-136.38	0.00	136.38	753.51	376.76	534.31	263.87	115.40	-6.92	0.523
165.00	-4.20	-9.26	0.00	-126.95	0.00	126.95	748.74	374.37	525.85	259.70	116.86	-7.01	0.495
170.00	-3.95	-8.95	0.00	-80.64	0.00	80.64	723.19	361.60	483.41	238.74	124.40	-7.40	0.344

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:47 AM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W

93 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

175.00	-2.21	-4.08	0.00	-34.33	0.00	34.33	686.95	343.48	435.91	215.28	132.28	-7.65	0.163
180.00	-2.05	-3.87	0.00	-13.92	0.00	13.92	650.71	325.36	390.87	193.04	140.34	-7.77	0.075
181.90	0.00	-3.56	0.00	-6.57	0.00	6.57	636.94	318.47	374.40	184.90	143.42	-7.79	0.036

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:47 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi

40 mph with 1.00 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	-102.66	-5.18	0.00	-711.18	0.00	711.18	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.108
5.00	-99.82	-5.13	0.00	-685.29	0.00	685.29	3,397.00	1,698.50	5,857.04	2,892.57	0.02	-0.03	0.106
10.00	-96.65	-5.07	0.00	-659.64	0.00	659.64	3,359.11	1,679.56	5,677.90	2,804.10	0.07	-0.07	0.103
15.00	-93.47	-5.02	0.00	-634.27	0.00	634.27	3,320.10	1,660.05	5,499.48	2,715.99	0.16	-0.10	0.101
15.00	-93.47	-5.02	0.00	-634.27	0.00	634.27	3,320.10	1,660.05	5,499.48	2,715.99	0.16	-0.10	0.124
20.00	-90.59	-4.97	0.00	-609.19	0.00	609.19	3,279.97	1,639.98	5,321.88	2,628.28	0.28	-0.13	0.121
20.00	-90.59	-4.97	0.00	-609.19	0.00	609.19	3,279.97	1,639.98	5,321.88	2,628.28	0.28	-0.13	0.121
25.00	-87.80	-4.94	0.00	-584.36	0.00	584.36	3,238.71	1,619.36	5,145.22	2,541.03	0.44	-0.17	0.118
30.00	-85.03	-4.91	0.00	-559.68	0.00	559.68	3,196.33	1,598.17	4,969.60	2,454.30	0.64	-0.22	0.116
35.00	-82.27	-4.87	0.00	-535.15	0.00	535.15	3,152.83	1,576.41	4,795.15	2,368.14	0.89	-0.26	0.113
40.00	-79.53	-4.83	0.00	-510.81	0.00	510.81	3,108.20	1,554.10	4,621.97	2,282.62	1.18	-0.30	0.110
44.10	-77.30	-4.79	0.00	-491.02	0.00	491.02	3,070.77	1,535.38	4,481.00	2,213.00	1.45	-0.33	0.107
45.00	-76.67	-4.78	0.00	-486.71	0.00	486.71	3,062.45	1,531.23	4,450.19	2,197.78	1.52	-0.34	0.105
48.60	-74.20	-4.74	0.00	-469.51	0.00	469.51	2,379.97	1,189.99	3,474.54	1,715.94	1.79	-0.37	0.119
50.00	-73.47	-4.72	0.00	-462.87	0.00	462.87	2,371.43	1,185.72	3,439.58	1,698.68	1.90	-0.38	0.118
55.00	-70.92	-4.66	0.00	-439.28	0.00	439.28	2,340.22	1,170.11	3,315.01	1,637.16	2.32	-0.43	0.114
60.00	-68.38	-4.60	0.00	-415.98	0.00	415.98	2,307.88	1,153.94	3,191.02	1,575.92	2.80	-0.47	0.110
65.00	-65.86	-4.53	0.00	-392.99	0.00	392.99	2,274.42	1,137.21	3,067.70	1,515.02	3.31	-0.51	0.106
70.00	-63.37	-4.46	0.00	-370.34	0.00	370.34	2,239.83	1,119.92	2,945.16	1,454.51	3.87	-0.56	0.102
75.00	-60.90	-4.38	0.00	-348.05	0.00	348.05	2,204.12	1,102.06	2,823.54	1,394.44	4.48	-0.60	0.097
80.00	-58.45	-4.30	0.00	-326.14	0.00	326.14	2,167.29	1,083.65	2,702.93	1,334.88	5.13	-0.64	0.093
80.00	-58.45	-4.30	0.00	-326.14	0.00	326.14	2,167.29	1,083.65	2,702.93	1,334.88	5.13	-0.64	0.101
85.00	-56.13	-4.23	0.00	-304.63	0.00	304.63	2,129.34	1,064.67	2,583.46	1,275.87	5.83	-0.69	0.096
86.58	-55.41	-4.20	0.00	-297.94	0.00	297.94	2,117.11	1,058.55	2,545.96	1,257.35	6.06	-0.70	0.095
90.00	-53.50	-4.15	0.00	-283.58	0.00	283.58	2,090.26	1,045.13	2,465.23	1,217.49	6.57	-0.73	0.090
90.33	-53.32	-4.13	0.00	-282.21	0.00	282.21	1,547.78	773.89	1,862.15	919.64	6.62	-0.73	0.106
95.00	-51.29	-4.05	0.00	-262.92	0.00	262.92	1,525.71	762.86	1,787.32	882.69	7.36	-0.78	0.101
100.00	-49.14	-3.96	0.00	-242.68	0.00	242.68	1,500.99	750.50	1,707.51	843.28	8.20	-0.82	0.095
105.00	-47.02	-3.87	0.00	-222.87	0.00	222.87	1,475.16	737.58	1,628.14	804.08	9.08	-0.86	0.089
110.00	-44.91	-3.77	0.00	-203.53	0.00	203.53	1,448.19	724.10	1,549.32	765.15	10.01	-0.91	0.083
115.00	-42.83	-3.68	0.00	-184.66	0.00	184.66	1,420.11	710.05	1,471.16	726.55	10.98	-0.95	0.077
120.00	-40.77	-3.57	0.00	-166.28	0.00	166.28	1,390.90	695.45	1,393.78	688.34	12.00	-0.99	0.071
120.00	-40.77	-3.57	0.00	-166.28	0.00	166.28	1,390.90	695.45	1,393.78	688.34	12.00	-0.99	0.086
125.00	-38.93	-3.49	0.00	-148.42	0.00	148.42	1,360.57	680.28	1,317.29	650.56	13.06	-1.03	0.079
126.28	-38.46	-3.46	0.00	-143.95	0.00	143.95	1,352.62	676.31	1,297.87	640.97	13.33	-1.04	0.077
126.28	-38.46	-3.46	0.00	-143.95	0.00	143.95	900.61	450.31	868.79	429.06	13.33	-1.04	0.094
130.00	-37.18	-3.38	0.00	-131.08	0.00	131.08	888.95	444.47	835.13	412.44	14.16	-1.07	0.088
135.00	-35.47	-3.29	0.00	-114.16	0.00	114.16	872.29	436.14	789.93	390.12	15.30	-1.12	0.078
140.00	-33.79	-3.19	0.00	-97.72	0.00	97.72	854.50	427.25	744.88	367.87	16.50	-1.16	0.069
140.00	-33.79	-3.19	0.00	-97.72	0.00	97.72	854.50	427.25	744.88	367.87	16.50	-1.16	0.087
145.00	-30.32	-2.93	0.00	-81.71	0.00	81.71	835.60	417.80	700.09	345.75	17.73	-1.20	0.075
150.00	-29.03	-2.84	0.00	-67.04	0.00	67.04	815.57	407.78	655.68	323.81	19.00	-1.24	0.064
155.00	-27.76	-2.75	0.00	-52.82	0.00	52.82	794.42	397.21	611.76	302.12	20.32	-1.27	0.054
158.50	-26.89	-2.70	0.00	-43.18	0.00	43.18	778.94	389.47	581.37	287.12	21.27	-1.30	0.046
158.50	-26.89	-2.70	0.00	-43.18	0.00	43.18	778.94	389.47	581.37	287.12	21.27	-1.30	0.185
160.00	-26.64	-2.67	0.00	-39.14	0.00	39.14	772.14	386.07	568.44	280.73	21.68	-1.31	0.174
164.00	-18.98	-1.97	0.00	-28.44	0.00	28.44	753.51	376.76	534.31	263.87	22.81	-1.39	0.133
165.00	-18.86	-1.95	0.00	-26.48	0.00	26.48	748.74	374.37	525.85	259.70	23.10	-1.41	0.127
170.00	-18.25	-1.90	0.00	-16.73	0.00	16.73	723.19	361.60	483.41	238.74	24.63	-1.49	0.095

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:49 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi

40 mph with 1.00 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

175.00	-8.71	-0.89	0.00	-7.01	0.00	7.01	686.95	343.48	435.91	215.28	26.22	-1.55	0.045
180.00	-8.21	-0.84	0.00	-2.57	0.00	2.57	650.71	325.36	390.87	193.04	27.86	-1.57	0.026
181.90	0.00	-0.61	0.00	-0.98	0.00	0.98	636.94	318.47	374.40	184.90	28.48	-1.57	0.005

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:49 AM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W

Serviceability 60 mph

26 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	-52.26	-8.50	0.00	-1,024.78	0.00	1,024.78	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.143
5.00	-50.41	-8.34	0.00	-982.29	0.00	982.29	3,397.00	1,698.50	5,857.04	2,892.57	0.03	-0.05	0.139
10.00	-48.42	-8.18	0.00	-940.59	0.00	940.59	3,359.11	1,679.56	5,677.90	2,804.10	0.10	-0.09	0.135
15.00	-46.45	-8.02	0.00	-899.68	0.00	899.68	3,320.10	1,660.05	5,499.48	2,715.99	0.22	-0.14	0.131
15.00	-46.45	-8.02	0.00	-899.68	0.00	899.68	3,320.10	1,660.05	5,499.48	2,715.99	0.22	-0.14	0.162
20.00	-44.75	-7.87	0.00	-859.57	0.00	859.57	3,279.97	1,639.98	5,321.88	2,628.28	0.40	-0.19	0.158
20.00	-44.75	-7.87	0.00	-859.57	0.00	859.57	3,279.97	1,639.98	5,321.88	2,628.28	0.40	-0.19	0.158
25.00	-43.06	-7.75	0.00	-820.22	0.00	820.22	3,238.71	1,619.36	5,145.22	2,541.03	0.63	-0.25	0.153
30.00	-41.39	-7.62	0.00	-781.48	0.00	781.48	3,196.33	1,598.17	4,969.60	2,454.30	0.92	-0.31	0.149
35.00	-39.74	-7.49	0.00	-743.38	0.00	743.38	3,152.83	1,576.41	4,795.15	2,368.14	1.27	-0.36	0.144
40.00	-38.10	-7.36	0.00	-705.93	0.00	705.93	3,108.20	1,554.10	4,621.97	2,282.62	1.68	-0.42	0.140
44.10	-36.78	-7.28	0.00	-675.75	0.00	675.75	3,070.77	1,535.38	4,481.00	2,213.00	2.06	-0.47	0.136
45.00	-36.37	-7.22	0.00	-669.20	0.00	669.20	3,062.45	1,531.23	4,450.19	2,197.78	2.15	-0.48	0.133
48.60	-34.78	-7.13	0.00	-643.20	0.00	643.20	2,379.97	1,189.99	3,474.54	1,715.94	2.53	-0.52	0.150
50.00	-34.36	-7.05	0.00	-633.21	0.00	633.21	2,371.43	1,185.72	3,439.58	1,698.68	2.69	-0.54	0.148
55.00	-32.88	-6.90	0.00	-597.94	0.00	597.94	2,340.22	1,170.11	3,315.01	1,637.16	3.28	-0.60	0.143
60.00	-31.42	-6.75	0.00	-563.44	0.00	563.44	2,307.88	1,153.94	3,191.02	1,575.92	3.94	-0.66	0.137
65.00	-29.97	-6.59	0.00	-529.71	0.00	529.71	2,274.42	1,137.21	3,067.70	1,515.02	4.66	-0.72	0.131
70.00	-28.53	-6.42	0.00	-496.78	0.00	496.78	2,239.83	1,119.92	2,945.16	1,454.51	5.44	-0.77	0.125
75.00	-27.11	-6.26	0.00	-464.66	0.00	464.66	2,204.12	1,102.06	2,823.54	1,394.44	6.28	-0.83	0.120
80.00	-25.70	-6.09	0.00	-433.36	0.00	433.36	2,167.29	1,083.65	2,702.93	1,334.88	7.18	-0.89	0.114
80.00	-25.70	-6.09	0.00	-433.36	0.00	433.36	2,167.29	1,083.65	2,702.93	1,334.88	7.18	-0.89	0.123
85.00	-24.39	-5.97	0.00	-402.90	0.00	402.90	2,129.34	1,064.67	2,583.46	1,275.87	8.14	-0.94	0.117
86.58	-23.98	-5.89	0.00	-393.48	0.00	393.48	2,117.11	1,058.55	2,545.96	1,257.35	8.46	-0.96	0.115
90.00	-22.82	-5.81	0.00	-373.33	0.00	373.33	2,090.26	1,045.13	2,465.23	1,217.49	9.17	-1.00	0.109
90.33	-22.70	-5.74	0.00	-371.41	0.00	371.41	1,547.78	773.89	1,862.15	919.64	9.24	-1.01	0.128
95.00	-21.59	-5.58	0.00	-344.59	0.00	344.59	1,525.71	762.86	1,787.32	882.69	10.25	-1.06	0.121
100.00	-20.41	-5.41	0.00	-316.67	0.00	316.67	1,500.99	750.50	1,707.51	843.28	11.39	-1.12	0.113
105.00	-19.24	-5.24	0.00	-289.61	0.00	289.61	1,475.16	737.58	1,628.14	804.08	12.60	-1.18	0.105
110.00	-18.08	-5.07	0.00	-263.39	0.00	263.39	1,448.19	724.10	1,549.32	765.15	13.86	-1.23	0.098
115.00	-16.93	-4.90	0.00	-238.03	0.00	238.03	1,420.11	710.05	1,471.16	726.55	15.18	-1.29	0.090
120.00	-15.79	-4.73	0.00	-213.52	0.00	213.52	1,390.90	695.45	1,393.78	688.34	16.56	-1.34	0.082
120.00	-15.79	-4.73	0.00	-213.52	0.00	213.52	1,390.90	695.45	1,393.78	688.34	16.56	-1.34	0.100
125.00	-14.82	-4.60	0.00	-189.87	0.00	189.87	1,360.57	680.28	1,317.29	650.56	17.99	-1.39	0.091
126.28	-14.57	-4.54	0.00	-183.98	0.00	183.98	1,352.62	676.31	1,297.87	640.97	18.36	-1.40	0.089
126.28	-14.57	-4.54	0.00	-183.98	0.00	183.98	900.61	450.31	868.79	429.06	18.36	-1.40	0.108
130.00	-13.91	-4.40	0.00	-167.10	0.00	167.10	888.95	444.47	835.13	412.44	19.47	-1.45	0.100
135.00	-13.04	-4.24	0.00	-145.09	0.00	145.09	872.29	436.14	789.93	390.12	21.02	-1.50	0.088
140.00	-12.17	-4.08	0.00	-123.88	0.00	123.88	854.50	427.25	744.88	367.87	22.62	-1.55	0.077
140.00	-12.17	-4.08	0.00	-123.88	0.00	123.88	854.50	427.25	744.88	367.87	22.62	-1.55	0.097
145.00	-10.75	-3.75	0.00	-103.37	0.00	103.37	835.60	417.80	700.09	345.75	24.28	-1.60	0.083
150.00	-10.06	-3.60	0.00	-84.61	0.00	84.61	815.57	407.78	655.68	323.81	25.98	-1.66	0.069
155.00	-9.37	-3.47	0.00	-66.60	0.00	66.60	794.42	397.21	611.76	302.12	27.75	-1.70	0.056
158.50	-8.90	-3.38	0.00	-54.47	0.00	54.47	778.94	389.47	581.37	287.12	29.00	-1.73	0.047
158.50	-8.90	-3.38	0.00	-54.47	0.00	54.47	778.94	389.47	581.37	287.12	29.00	-1.73	0.201
160.00	-8.80	-3.33	0.00	-49.40	0.00	49.40	772.14	386.07	568.44	280.73	29.55	-1.74	0.187
164.00	-5.90	-2.49	0.00	-36.09	0.00	36.09	753.51	376.76	534.31	263.87	31.06	-1.85	0.145
165.00	-5.85	-2.45	0.00	-33.60	0.00	33.60	748.74	374.37	525.85	259.70	31.45	-1.88	0.137
170.00	-5.58	-2.37	0.00	-21.34	0.00	21.34	723.19	361.60	483.41	238.74	33.47	-1.98	0.097

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

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Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W

Serviceability 60 mph

26 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

175.00	-3.00	-1.08	0.00	-9.08	0.00	9.08	686.95	343.48	435.91	215.28	35.59	-2.05	0.047
180.00	-2.81	-1.03	0.00	-3.66	0.00	3.66	650.71	325.36	390.87	193.04	37.75	-2.08	0.023
181.90	0.00	-0.93	0.00	-1.71	0.00	1.71	636.94	318.47	374.40	184.90	38.58	-2.08	0.009

Site Number: 302502
 Site Name: Harwinton, CT
 Customer: VERIZON WIRELESS

Code: ANSI/TIA-222-G
 Engineering Number: OAA697310_C3_07

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Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	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}):	0.19
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):	3.07
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	52.26 k
Seismic Base Shear (E):	2.04 k

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

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
44	180.95	73	2,396	0.004	9	91
43	177.50	198	6,250	0.011	23	246
42	172.50	261	7,758	0.014	29	323
41	167.50	269	7,550	0.014	28	333
40	164.50	55	1,484	0.003	5	68
39	162.00	249	6,528	0.012	24	308
38	159.25	95	2,401	0.004	9	117
37	156.75	476	11,704	0.021	43	590
36	152.50	688	15,991	0.029	59	852
35	147.50	696	15,141	0.027	56	862
34	142.50	729	14,802	0.027	55	903
33	137.50	868	16,404	0.030	60	1,075
32	132.50	876	15,379	0.028	57	1,085
31	128.14	657	10,791	0.019	40	814
30	125.64	248	3,908	0.007	14	307
29	122.50	974	14,616	0.026	54	1,207
28	117.50	1,135	15,676	0.028	58	1,407
27	112.50	1,147	14,512	0.026	53	1,420
26	107.50	1,158	13,379	0.024	49	1,434
25	102.50	1,169	12,281	0.022	45	1,448
24	97.50	1,180	11,218	0.020	41	1,462
23	92.67	1,112	9,551	0.017	35	1,378
22	90.17	111	905	0.002	3	138

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

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Customer: VERIZON WIRELESS

21	88.29	1,160	9,043	0.016	33	1,437
20	85.79	410	3,021	0.005	11	508
19	82.50	1,308	8,903	0.016	33	1,621
18	77.50	1,405	8,437	0.015	31	1,740
17	72.50	1,419	7,457	0.013	27	1,757
16	67.50	1,433	6,527	0.012	24	1,775
15	62.50	1,447	5,651	0.010	21	1,792
14	57.50	1,460	4,829	0.009	18	1,809
13	52.50	1,474	4,064	0.007	15	1,827
12	49.30	415	1,009	0.002	4	515
11	46.80	1,591	3,484	0.006	13	1,971
10	44.55	400	794	0.001	3	496
9	42.05	1,324	2,341	0.004	9	1,640
8	37.50	1,630	2,291	0.004	8	2,019
7	32.50	1,646	1,739	0.003	6	2,039
6	27.50	1,663	1,258	0.002	5	2,060
5	22.50	1,680	850	0.002	3	2,081
4	17.50	1,696	520	0.001	2	2,102
3	12.50	1,964	307	0.001	1	2,433
2	7.50	1,980	111	0.000	0	2,453
1	2.50	1,842	12	0.000	0	2,282
Andrew ABT-DFDM-ADB	181.90	1	36	0.000	0	1
Powerwave Allgon LGP	181.90	85	2,799	0.005	10	105
Ericsson RRUS 11 (Ba	181.90	300	9,926	0.018	37	372
SSB (271b)	181.90	27	893	0.002	3	33
Powerwave Allgon 777	181.90	210	6,948	0.013	26	260
KMW AM-X-CD-16-65-00	181.90	146	4,814	0.009	18	180
Flat Platform w/ Han	181.90	2,000	66,175	0.120	244	2,478
RFS FD9R6004/2C-3L (	175.00	19	570	0.001	2	23
Alcatel-Lucent B13 R	175.00	173	5,310	0.010	20	215
Alcatel-Lucent B66A	175.00	170	5,219	0.009	19	211
RFS DB-T1-6Z-8AB-0Z	175.00	88	2,695	0.005	10	109
Commscope SBNHH-1D65	175.00	244	7,460	0.013	27	302
Antel LPA-80063/6CF	175.00	162	4,961	0.009	18	201
Flat Low Profile Pla	175.00	1,500	45,938	0.083	169	1,858
Ericsson AIR 21, 1.3	164.00	249	6,697	0.012	25	308
Ericsson AIR 21, 1.3	164.00	271	7,294	0.013	27	336
Andrew LNX-6515DS-A1	164.00	149	4,018	0.007	15	185
Round Platform w/ Ha	164.00	2,000	53,792	0.097	198	2,478
KMW TTA (HB-X-WM-17-	145.00	48	1,003	0.002	4	59
KMW HB-X-WM-17-65-00	145.00	90	1,892	0.003	7	111
Side Arms	145.00	560	11,774	0.021	43	694
		52,261	553,488	1.000	2,038	64,743

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)
44	180.95	73	2,396	0.004	9	63
43	177.50	198	6,250	0.011	23	171
42	172.50	261	7,758	0.014	29	225
41	167.50	269	7,550	0.014	28	232
40	164.50	55	1,484	0.003	5	47
39	162.00	249	6,528	0.012	24	214
38	159.25	95	2,401	0.004	9	82
37	156.75	476	11,704	0.021	43	410
36	152.50	688	15,991	0.029	59	592
35	147.50	696	15,141	0.027	56	599
34	142.50	729	14,802	0.027	55	628
33	137.50	868	16,404	0.030	60	747

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

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Customer: VERIZON WIRELESS

32	132.50	876	15,379	0.028	57	754
31	128.14	657	10,791	0.019	40	566
30	125.64	248	3,908	0.007	14	213
29	122.50	974	14,616	0.026	54	839
28	117.50	1,135	15,676	0.028	58	978
27	112.50	1,147	14,512	0.026	53	987
26	107.50	1,158	13,379	0.024	49	997
25	102.50	1,169	12,281	0.022	45	1,007
24	97.50	1,180	11,218	0.020	41	1,016
23	92.67	1,112	9,551	0.017	35	958
22	90.17	111	905	0.002	3	96
21	88.29	1,160	9,043	0.016	33	999
20	85.79	410	3,021	0.005	11	353
19	82.50	1,308	8,903	0.016	33	1,127
18	77.50	1,405	8,437	0.015	31	1,210
17	72.50	1,419	7,457	0.013	27	1,222
16	67.50	1,433	6,527	0.012	24	1,234
15	62.50	1,447	5,651	0.010	21	1,246
14	57.50	1,460	4,829	0.009	18	1,258
13	52.50	1,474	4,064	0.007	15	1,270
12	49.30	415	1,009	0.002	4	358
11	46.80	1,591	3,484	0.006	13	1,370
10	44.55	400	794	0.001	3	345
9	42.05	1,324	2,341	0.004	9	1,140
8	37.50	1,630	2,291	0.004	8	1,403
7	32.50	1,646	1,739	0.003	6	1,418
6	27.50	1,663	1,258	0.002	5	1,432
5	22.50	1,680	850	0.002	3	1,447
4	17.50	1,696	520	0.001	2	1,461
3	12.50	1,964	307	0.001	1	1,691
2	7.50	1,980	111	0.000	0	1,705
1	2.50	1,842	12	0.000	0	1,586
Andrew ABT-DFDM-ADB	181.90	1	36	0.000	0	1
Powerwave Allgon LGP	181.90	85	2,799	0.005	10	73
Ericsson RRUS 11 (Ba	181.90	300	9,926	0.018	37	258
SSB (27lb)	181.90	27	893	0.002	3	23
Powerwave Allgon 777	181.90	210	6,948	0.013	26	181
KMW AM-X-CD-16-65-00	181.90	146	4,814	0.009	18	125
Flat Platform w/ Han	181.90	2,000	66,175	0.120	244	1,722
RFS FD9R6004/2C-3L (	175.00	19	570	0.001	2	16
Alcatel-Lucent B13 R	175.00	173	5,310	0.010	20	149
Alcatel-Lucent B66A	175.00	170	5,219	0.009	19	147
RFS DB-T1-6Z-8AB-0Z	175.00	88	2,695	0.005	10	76
Commscope SBNHH-1D65	175.00	244	7,460	0.013	27	210
Antel LPA-80063/6CF	175.00	162	4,961	0.009	18	140
Flat Low Profile Pla	175.00	1,500	45,938	0.083	169	1,292
Ericsson AIR 21, 1.3	164.00	249	6,697	0.012	25	214
Ericsson AIR 21, 1.3	164.00	271	7,294	0.013	27	234
Andrew LNX-6515DS-A1	164.00	149	4,018	0.007	15	129
Round Platform w/ Ha	164.00	2,000	53,792	0.097	198	1,722
KMW TTA (HB-X-WM-17-	145.00	48	1,003	0.002	4	41
KMW HB-X-WM-17-65-00	145.00	90	1,892	0.003	7	78
Side Arms	145.00	560	11,774	0.021	43	482
		52,261	553,488	1.000	2,038	45,006

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

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Customer: VERIZON WIRELESS

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

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	-62.46	-2.05	0.00	-307.14	0.00	307.14	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.049
5.00	-60.01	-2.06	0.00	-296.92	0.00	296.92	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.01	0.048
10.00	-57.57	-2.07	0.00	-286.62	0.00	286.62	3,359.11	1,679.56	5,677.90	2,804.10	0.03	-0.03	0.047
15.00	-55.47	-2.08	0.00	-276.26	0.00	276.26	3,320.10	1,660.05	5,499.48	2,715.99	0.07	-0.04	0.046
15.00	-55.47	-2.08	0.00	-276.26	0.00	276.26	3,320.10	1,660.05	5,499.48	2,715.99	0.07	-0.04	0.056
20.00	-53.39	-2.09	0.00	-265.84	0.00	265.84	3,279.97	1,639.98	5,321.88	2,628.28	0.12	-0.06	0.055
20.00	-53.39	-2.09	0.00	-265.84	0.00	265.84	3,279.97	1,639.98	5,321.88	2,628.28	0.12	-0.06	0.055
25.00	-51.33	-2.10	0.00	-255.38	0.00	255.38	3,238.71	1,619.36	5,145.22	2,541.03	0.19	-0.08	0.054
30.00	-49.29	-2.11	0.00	-244.87	0.00	244.87	3,196.33	1,598.17	4,969.60	2,454.30	0.28	-0.09	0.052
35.00	-47.27	-2.11	0.00	-234.32	0.00	234.32	3,152.83	1,576.41	4,795.15	2,368.14	0.39	-0.11	0.051
40.00	-45.63	-2.11	0.00	-223.77	0.00	223.77	3,108.20	1,554.10	4,621.97	2,282.62	0.51	-0.13	0.050
44.10	-45.13	-2.12	0.00	-215.10	0.00	215.10	3,070.77	1,535.38	4,481.00	2,213.00	0.63	-0.15	0.049
45.00	-43.16	-2.10	0.00	-213.20	0.00	213.20	3,062.45	1,531.23	4,450.19	2,197.78	0.66	-0.15	0.048
48.60	-42.65	-2.11	0.00	-205.62	0.00	205.62	2,379.97	1,189.99	3,474.54	1,715.94	0.78	-0.16	0.054
50.00	-40.82	-2.09	0.00	-202.67	0.00	202.67	2,371.43	1,185.72	3,439.58	1,698.68	0.83	-0.17	0.053
55.00	-39.01	-2.08	0.00	-192.20	0.00	192.20	2,340.22	1,170.11	3,315.01	1,637.16	1.01	-0.19	0.051
60.00	-37.22	-2.07	0.00	-181.78	0.00	181.78	2,307.88	1,153.94	3,191.02	1,575.92	1.22	-0.21	0.049
65.00	-35.44	-2.05	0.00	-171.43	0.00	171.43	2,274.42	1,137.21	3,067.70	1,515.02	1.44	-0.22	0.047
70.00	-33.68	-2.03	0.00	-161.17	0.00	161.17	2,239.83	1,119.92	2,945.16	1,454.51	1.69	-0.24	0.045
75.00	-31.94	-2.00	0.00	-151.04	0.00	151.04	2,204.12	1,102.06	2,823.54	1,394.44	1.95	-0.26	0.043
80.00	-30.32	-1.97	0.00	-141.04	0.00	141.04	2,167.29	1,083.65	2,702.93	1,334.88	2.24	-0.28	0.041
80.00	-30.32	-1.97	0.00	-141.04	0.00	141.04	2,167.29	1,083.65	2,702.93	1,334.88	2.24	-0.28	0.045
85.00	-29.81	-1.96	0.00	-131.20	0.00	131.20	2,129.34	1,064.67	2,583.46	1,275.87	2.54	-0.30	0.043
86.58	-28.38	-1.92	0.00	-128.10	0.00	128.10	2,117.11	1,058.55	2,545.96	1,257.35	2.64	-0.31	0.042
90.00	-28.24	-1.92	0.00	-121.52	0.00	121.52	2,090.26	1,045.13	2,465.23	1,217.49	2.87	-0.32	0.040
90.33	-26.86	-1.89	0.00	-120.89	0.00	120.89	1,547.78	773.89	1,862.15	919.64	2.89	-0.32	0.046
95.00	-25.40	-1.84	0.00	-112.08	0.00	112.08	1,525.71	762.86	1,787.32	882.69	3.21	-0.34	0.044
100.00	-23.95	-1.80	0.00	-102.86	0.00	102.86	1,500.99	750.50	1,707.51	843.28	3.57	-0.36	0.041
105.00	-22.52	-1.75	0.00	-93.87	0.00	93.87	1,475.16	737.58	1,628.14	804.08	3.96	-0.38	0.038
110.00	-21.10	-1.69	0.00	-85.13	0.00	85.13	1,448.19	724.10	1,549.32	765.15	4.36	-0.39	0.035
115.00	-19.69	-1.63	0.00	-76.68	0.00	76.68	1,420.11	710.05	1,471.16	726.55	4.78	-0.41	0.032
120.00	-18.48	-1.57	0.00	-68.53	0.00	68.53	1,390.90	695.45	1,393.78	688.34	5.22	-0.43	0.030
120.00	-18.48	-1.57	0.00	-68.53	0.00	68.53	1,390.90	695.45	1,393.78	688.34	5.22	-0.43	0.036
125.00	-18.18	-1.56	0.00	-60.68	0.00	60.68	1,360.57	680.28	1,317.29	650.56	5.68	-0.44	0.033
126.28	-17.36	-1.51	0.00	-58.68	0.00	58.68	1,352.62	676.31	1,297.87	640.97	5.80	-0.45	0.032
126.28	-17.36	-1.51	0.00	-58.68	0.00	58.68	900.61	450.31	868.79	429.06	5.80	-0.45	0.039
130.00	-16.28	-1.45	0.00	-53.05	0.00	53.05	888.95	444.47	835.13	412.44	6.15	-0.46	0.036
135.00	-15.20	-1.39	0.00	-45.78	0.00	45.78	872.29	436.14	789.93	390.12	6.64	-0.48	0.032
140.00	-14.30	-1.33	0.00	-38.83	0.00	38.83	854.50	427.25	744.88	367.87	7.15	-0.50	0.028
140.00	-14.30	-1.33	0.00	-38.83	0.00	38.83	854.50	427.25	744.88	367.87	7.15	-0.50	0.035
145.00	-12.57	-1.21	0.00	-32.18	0.00	32.18	835.60	417.80	700.09	345.75	7.68	-0.51	0.030
150.00	-11.72	-1.15	0.00	-26.13	0.00	26.13	815.57	407.78	655.68	323.81	8.22	-0.53	0.025
155.00	-11.13	-1.10	0.00	-20.40	0.00	20.40	794.42	397.21	611.76	302.12	8.78	-0.54	0.021
158.50	-11.01	-1.09	0.00	-16.55	0.00	16.55	778.94	389.47	581.37	287.12	9.18	-0.55	0.018
158.50	-11.01	-1.09	0.00	-16.55	0.00	16.55	778.94	389.47	581.37	287.12	9.18	-0.55	0.072
160.00	-10.71	-1.07	0.00	-14.91	0.00	14.91	772.14	386.07	568.44	280.73	9.36	-0.55	0.067
164.00	-7.33	-0.77	0.00	-10.64	0.00	10.64	753.51	376.76	534.31	263.87	9.84	-0.59	0.050
165.00	-7.00	-0.74	0.00	-9.88	0.00	9.88	748.74	374.37	525.85	259.70	9.96	-0.59	0.047
170.00	-6.68	-0.71	0.00	-6.19	0.00	6.19	723.19	361.60	483.41	238.74	10.60	-0.62	0.035
175.00	-3.52	-0.39	0.00	-2.64	0.00	2.64	686.95	343.48	435.91	215.28	11.26	-0.64	0.017
180.00	-3.43	-0.38	0.00	-0.71	0.00	0.71	650.71	325.36	390.87	193.04	11.94	-0.65	0.009
181.90	0.00	-0.34	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	12.20	-0.65	0.000

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:51 AM

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	-43.42	-2.04	0.00	-300.50	0.00	300.50	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.046
5.00	-41.71	-2.05	0.00	-290.29	0.00	290.29	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.01	0.045
10.00	-40.02	-2.06	0.00	-280.03	0.00	280.03	3,359.11	1,679.56	5,677.90	2,804.10	0.03	-0.03	0.044
15.00	-38.56	-2.07	0.00	-269.73	0.00	269.73	3,320.10	1,660.05	5,499.48	2,715.99	0.07	-0.04	0.043
15.00	-38.56	-2.07	0.00	-269.73	0.00	269.73	3,320.10	1,660.05	5,499.48	2,715.99	0.07	-0.04	0.052
20.00	-37.11	-2.07	0.00	-259.40	0.00	259.40	3,279.97	1,639.98	5,321.88	2,628.28	0.12	-0.06	0.051
20.00	-37.11	-2.07	0.00	-259.40	0.00	259.40	3,279.97	1,639.98	5,321.88	2,628.28	0.12	-0.06	0.051
25.00	-35.68	-2.08	0.00	-249.04	0.00	249.04	3,238.71	1,619.36	5,145.22	2,541.03	0.19	-0.07	0.050
30.00	-34.26	-2.08	0.00	-238.66	0.00	238.66	3,196.33	1,598.17	4,969.60	2,454.30	0.27	-0.09	0.049
35.00	-32.86	-2.08	0.00	-228.26	0.00	228.26	3,152.83	1,576.41	4,795.15	2,368.14	0.38	-0.11	0.048
40.00	-31.72	-2.08	0.00	-217.87	0.00	217.87	3,108.20	1,554.10	4,621.97	2,282.62	0.50	-0.13	0.046
44.10	-31.37	-2.08	0.00	-209.35	0.00	209.35	3,070.77	1,535.38	4,481.00	2,213.00	0.62	-0.14	0.045
45.00	-30.00	-2.07	0.00	-207.48	0.00	207.48	3,062.45	1,531.23	4,450.19	2,197.78	0.65	-0.15	0.044
48.60	-29.65	-2.07	0.00	-200.05	0.00	200.05	2,379.97	1,189.99	3,474.54	1,715.94	0.76	-0.16	0.050
50.00	-28.37	-2.05	0.00	-197.15	0.00	197.15	2,371.43	1,185.72	3,439.58	1,698.68	0.81	-0.16	0.050
55.00	-27.12	-2.04	0.00	-186.89	0.00	186.89	2,340.22	1,170.11	3,315.01	1,637.16	0.99	-0.18	0.048
60.00	-25.87	-2.02	0.00	-176.68	0.00	176.68	2,307.88	1,153.94	3,191.02	1,575.92	1.19	-0.20	0.046
65.00	-24.64	-2.00	0.00	-166.56	0.00	166.56	2,274.42	1,137.21	3,067.70	1,515.02	1.41	-0.22	0.044
70.00	-23.41	-1.98	0.00	-156.55	0.00	156.55	2,239.83	1,119.92	2,945.16	1,454.51	1.65	-0.24	0.042
75.00	-22.20	-1.95	0.00	-146.66	0.00	146.66	2,204.12	1,102.06	2,823.54	1,394.44	1.91	-0.26	0.040
80.00	-21.08	-1.92	0.00	-136.91	0.00	136.91	2,167.29	1,083.65	2,702.93	1,334.88	2.18	-0.27	0.038
80.00	-21.08	-1.92	0.00	-136.91	0.00	136.91	2,167.29	1,083.65	2,702.93	1,334.88	2.18	-0.27	0.042
85.00	-20.72	-1.91	0.00	-127.32	0.00	127.32	2,129.34	1,064.67	2,583.46	1,275.87	2.48	-0.29	0.040
86.58	-19.72	-1.87	0.00	-124.31	0.00	124.31	2,117.11	1,058.55	2,545.96	1,257.35	2.58	-0.30	0.039
90.00	-19.63	-1.87	0.00	-117.90	0.00	117.90	2,090.26	1,045.13	2,465.23	1,217.49	2.79	-0.31	0.037
90.33	-18.67	-1.84	0.00	-117.28	0.00	117.28	1,547.78	773.89	1,862.15	919.64	2.82	-0.31	0.043
95.00	-17.65	-1.79	0.00	-108.71	0.00	108.71	1,525.71	762.86	1,787.32	882.69	3.13	-0.33	0.041
100.00	-16.65	-1.75	0.00	-99.74	0.00	99.74	1,500.99	750.50	1,707.51	843.28	3.48	-0.35	0.038
105.00	-15.65	-1.70	0.00	-91.00	0.00	91.00	1,475.16	737.58	1,628.14	804.08	3.86	-0.36	0.035
110.00	-14.66	-1.64	0.00	-82.51	0.00	82.51	1,448.19	724.10	1,549.32	765.15	4.25	-0.38	0.033
115.00	-13.68	-1.58	0.00	-74.31	0.00	74.31	1,420.11	710.05	1,471.16	726.55	4.66	-0.40	0.030
120.00	-12.84	-1.53	0.00	-66.40	0.00	66.40	1,390.90	695.45	1,393.78	688.34	5.08	-0.42	0.028
120.00	-12.84	-1.53	0.00	-66.40	0.00	66.40	1,390.90	695.45	1,393.78	688.34	5.08	-0.42	0.033
125.00	-12.63	-1.51	0.00	-58.77	0.00	58.77	1,360.57	680.28	1,317.29	650.56	5.53	-0.43	0.030
126.28	-12.07	-1.47	0.00	-56.84	0.00	56.84	1,352.62	676.31	1,297.87	640.97	5.64	-0.44	0.030
126.28	-12.07	-1.47	0.00	-56.84	0.00	56.84	900.61	450.31	868.79	429.06	5.64	-0.44	0.036
130.00	-11.31	-1.41	0.00	-51.37	0.00	51.37	888.95	444.47	835.13	412.44	5.99	-0.45	0.033
135.00	-10.56	-1.35	0.00	-44.32	0.00	44.32	872.29	436.14	789.93	390.12	6.47	-0.47	0.029
140.00	-9.94	-1.29	0.00	-37.59	0.00	37.59	854.50	427.25	744.88	367.87	6.96	-0.48	0.025
140.00	-9.94	-1.29	0.00	-37.59	0.00	37.59	854.50	427.25	744.88	367.87	6.96	-0.48	0.032
145.00	-8.74	-1.17	0.00	-31.14	0.00	31.14	835.60	417.80	700.09	345.75	7.48	-0.50	0.027
150.00	-8.15	-1.11	0.00	-25.28	0.00	25.28	815.57	407.78	655.68	323.81	8.00	-0.51	0.023
155.00	-7.74	-1.06	0.00	-19.73	0.00	19.73	794.42	397.21	611.76	302.12	8.55	-0.53	0.019
158.50	-7.65	-1.06	0.00	-16.00	0.00	16.00	778.94	389.47	581.37	287.12	8.94	-0.53	0.016
158.50	-7.65	-1.06	0.00	-16.00	0.00	16.00	778.94	389.47	581.37	287.12	8.94	-0.53	0.066
160.00	-7.44	-1.03	0.00	-14.42	0.00	14.42	772.14	386.07	568.44	280.73	9.11	-0.54	0.061
164.00	-5.10	-0.74	0.00	-10.29	0.00	10.29	753.51	376.76	534.31	263.87	9.57	-0.57	0.046
165.00	-4.86	-0.71	0.00	-9.54	0.00	9.54	748.74	374.37	525.85	259.70	9.69	-0.58	0.043
170.00	-4.64	-0.68	0.00	-5.98	0.00	5.98	723.19	361.60	483.41	238.74	10.31	-0.61	0.031
175.00	-2.44	-0.37	0.00	-2.55	0.00	2.55	686.95	343.48	435.91	215.28	10.96	-0.62	0.015
180.00	-2.38	-0.36	0.00	-0.69	0.00	0.69	650.71	325.36	390.87	193.04	11.61	-0.63	0.007
181.90	0.00	-0.34	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	11.87	-0.63	0.000

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

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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}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	3.07
Redundancy Factor (ρ):	1.30

Load Case (1.2 + 0.2S_{ds}) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	S _{az}	Horizontal Force (lb)	Vertical Force (lb)
44	180.95	73	1.870	1.878	1.103	0.353	22	91
43	177.50	198	1.800	1.537	0.977	0.308	53	246
42	172.50	261	1.700	1.121	0.814	0.248	56	323
41	167.50	269	1.603	0.787	0.674	0.193	45	333
40	164.50	55	1.546	0.620	0.599	0.163	8	68
39	162.00	249	1.499	0.499	0.542	0.140	30	308
38	159.25	95	1.449	0.382	0.484	0.115	9	117
37	156.75	476	1.403	0.290	0.435	0.095	39	590
36	152.50	688	1.328	0.162	0.362	0.063	37	852
35	147.50	696	1.243	0.049	0.288	0.030	18	862
34	142.50	729	1.160	-0.030	0.226	0.002	1	903
33	137.50	868	1.080	-0.081	0.175	-0.020	-15	1,075
32	132.50	876	1.003	-0.109	0.133	-0.038	-29	1,085
31	128.14	657	0.938	-0.120	0.103	-0.049	-28	814
30	125.64	248	0.902	-0.122	0.088	-0.053	-11	307
29	122.50	974	0.857	-0.120	0.072	-0.057	-48	1,207
28	117.50	1,135	0.789	-0.110	0.051	-0.059	-58	1,407
27	112.50	1,147	0.723	-0.094	0.035	-0.055	-54	1,420
26	107.50	1,158	0.660	-0.074	0.023	-0.045	-46	1,434
25	102.50	1,169	0.600	-0.053	0.015	-0.032	-32	1,448
24	97.50	1,180	0.543	-0.032	0.009	-0.015	-15	1,462
23	92.67	1,112	0.490	-0.013	0.007	0.002	2	1,378
22	90.17	111	0.464	-0.003	0.006	0.011	1	138
21	88.29	1,160	0.445	0.003	0.006	0.017	17	1,437
20	85.79	410	0.420	0.012	0.006	0.025	9	508
19	82.50	1,308	0.389	0.022	0.007	0.034	38	1,621
18	77.50	1,405	0.343	0.035	0.009	0.044	54	1,740
17	72.50	1,419	0.300	0.045	0.012	0.051	63	1,757
16	67.50	1,433	0.260	0.053	0.016	0.055	69	1,775
15	62.50	1,447	0.223	0.060	0.020	0.057	72	1,792
14	57.50	1,460	0.189	0.064	0.025	0.058	73	1,809
13	52.50	1,474	0.157	0.067	0.029	0.057	73	1,827
12	49.30	415	0.139	0.069	0.032	0.057	20	515
11	46.80	1,591	0.125	0.070	0.034	0.056	78	1,971

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

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Customer: VERIZON WIRELESS

10	44.55	400	0.113	0.070	0.035	0.056	19	496
9	42.05	1,324	0.101	0.071	0.037	0.055	63	1,640
8	37.50	1,630	0.080	0.072	0.040	0.054	77	2,019
7	32.50	1,646	0.060	0.072	0.041	0.053	76	2,039
6	27.50	1,663	0.043	0.071	0.042	0.052	75	2,060
5	22.50	1,680	0.029	0.068	0.040	0.050	73	2,081
4	17.50	1,696	0.017	0.062	0.037	0.047	69	2,102
3	12.50	1,964	0.009	0.053	0.031	0.042	72	2,433
2	7.50	1,980	0.003	0.038	0.021	0.033	56	2,453
1	2.50	1,842	0.000	0.015	0.008	0.015	24	2,282
Andrew ABT-DFDM-ADB	181.90	1	1.890	1.980	1.140	0.366	0	1
Powerwave Allgon LGP	181.90	85	1.890	1.980	1.140	0.366	27	105
Ericsson RRUS 11 (Ba	181.90	300	1.890	1.980	1.140	0.366	95	372
SSB (27lb)	181.90	27	1.890	1.980	1.140	0.366	9	33
Powerwave Allgon 777	181.90	210	1.890	1.980	1.140	0.366	67	260
KMW AM-X-CD-16-65-00	181.90	146	1.890	1.980	1.140	0.366	46	180
Flat Platform w/ Ha	181.90	2,000	1.890	1.980	1.140	0.366	634	2,478
RFS FD9R6004/2C-3L (	175.00	19	1.749	1.318	0.892	0.277	4	23
Alcatel-Lucent B13 R	175.00	173	1.749	1.318	0.892	0.277	42	215
Alcatel-Lucent B66A	175.00	170	1.749	1.318	0.892	0.277	41	211
RFS DB-T1-6Z-8AB-0Z	175.00	88	1.749	1.318	0.892	0.277	21	109
Commscope SBNHH-	175.00	244	1.749	1.318	0.892	0.277	59	302
Antel LPA-80063/6CF	175.00	162	1.749	1.318	0.892	0.277	39	201
Flat Low Profile Pla	175.00	1,500	1.749	1.318	0.892	0.277	360	1,858
Ericsson AIR 21, 1.3	164.00	249	1.536	0.595	0.587	0.158	34	308
Ericsson AIR 21, 1.3	164.00	271	1.536	0.595	0.587	0.158	37	336
Andrew LNX-6515DS-A1	164.00	149	1.536	0.595	0.587	0.158	21	185
Round Platform w/ Ha	164.00	2,000	1.536	0.595	0.587	0.158	275	2,478
KMW TTA (HB-X-WM-17-	145.00	48	1.201	0.006	0.256	0.015	1	59
KMW HB-X-WM-17-65-00	145.00	90	1.201	0.006	0.256	0.015	1	111
Side Arms	145.00	560	1.201	0.006	0.256	0.015	7	694
		52,261	64.322	32.939	25.088	7.448	2,975	64,743

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)
44	180.95	73	1.870	1.878	1.103	0.353	22	63
43	177.50	198	1.800	1.537	0.977	0.308	53	171
42	172.50	261	1.700	1.121	0.814	0.248	56	225
41	167.50	269	1.603	0.787	0.674	0.193	45	232
40	164.50	55	1.546	0.620	0.599	0.163	8	47
39	162.00	249	1.499	0.499	0.542	0.140	30	214
38	159.25	95	1.449	0.382	0.484	0.115	9	82
37	156.75	476	1.403	0.290	0.435	0.095	39	410
36	152.50	688	1.328	0.162	0.362	0.063	37	592
35	147.50	696	1.243	0.049	0.288	0.030	18	599
34	142.50	729	1.160	-0.030	0.226	0.002	1	628
33	137.50	868	1.080	-0.081	0.175	-0.020	-15	747
32	132.50	876	1.003	-0.109	0.133	-0.038	-29	754
31	128.14	657	0.938	-0.120	0.103	-0.049	-28	566
30	125.64	248	0.902	-0.122	0.088	-0.053	-11	213
29	122.50	974	0.857	-0.120	0.072	-0.057	-48	839
28	117.50	1,135	0.789	-0.110	0.051	-0.059	-58	978
27	112.50	1,147	0.723	-0.094	0.035	-0.055	-54	987
26	107.50	1,158	0.660	-0.074	0.023	-0.045	-46	997
25	102.50	1,169	0.600	-0.053	0.015	-0.032	-32	1,007
24	97.50	1,180	0.543	-0.032	0.009	-0.015	-15	1,016
23	92.67	1,112	0.490	-0.013	0.007	0.002	2	958

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:51 AM

Customer: VERIZON WIRELESS

22	90.17	111	0.464	-0.003	0.006	0.011	1	96
21	88.29	1,160	0.445	0.003	0.006	0.017	17	999
20	85.79	410	0.420	0.012	0.006	0.025	9	353
19	82.50	1,308	0.389	0.022	0.007	0.034	38	1,127
18	77.50	1,405	0.343	0.035	0.009	0.044	54	1,210
17	72.50	1,419	0.300	0.045	0.012	0.051	63	1,222
16	67.50	1,433	0.260	0.053	0.016	0.055	69	1,234
15	62.50	1,447	0.223	0.060	0.020	0.057	72	1,246
14	57.50	1,460	0.189	0.064	0.025	0.058	73	1,258
13	52.50	1,474	0.157	0.067	0.029	0.057	73	1,270
12	49.30	415	0.139	0.069	0.032	0.057	20	358
11	46.80	1,591	0.125	0.070	0.034	0.056	78	1,370
10	44.55	400	0.113	0.070	0.035	0.056	19	345
9	42.05	1,324	0.101	0.071	0.037	0.055	63	1,140
8	37.50	1,630	0.080	0.072	0.040	0.054	77	1,403
7	32.50	1,646	0.060	0.072	0.041	0.053	76	1,418
6	27.50	1,663	0.043	0.071	0.042	0.052	75	1,432
5	22.50	1,680	0.029	0.068	0.040	0.050	73	1,447
4	17.50	1,696	0.017	0.062	0.037	0.047	69	1,461
3	12.50	1,964	0.009	0.053	0.031	0.042	72	1,691
2	7.50	1,980	0.003	0.038	0.021	0.033	56	1,705
1	2.50	1,842	0.000	0.015	0.008	0.015	24	1,586
Andrew ABT-DFDM-ADB	181.90	1	1.890	1.980	1.140	0.366	0	1
Powerwave Allgon LGP	181.90	85	1.890	1.980	1.140	0.366	27	73
Ericsson RRUS 11 (Ba	181.90	300	1.890	1.980	1.140	0.366	95	258
SSB (27lb)	181.90	27	1.890	1.980	1.140	0.366	9	23
Powerwave Allgon 777	181.90	210	1.890	1.980	1.140	0.366	67	181
KMW AM-X-CD-16-65-00	181.90	146	1.890	1.980	1.140	0.366	46	125
Flat Platform w/ Han	181.90	2,000	1.890	1.980	1.140	0.366	634	1,722
RFS FD9R6004/2C-3L (	175.00	19	1.749	1.318	0.892	0.277	4	16
Alcatel-Lucent B13 R	175.00	173	1.749	1.318	0.892	0.277	42	149
Alcatel-Lucent B66A	175.00	170	1.749	1.318	0.892	0.277	41	147
RFS DB-T1-6Z-8AB-0Z	175.00	88	1.749	1.318	0.892	0.277	21	76
Commscope SBNHH-	175.00	244	1.749	1.318	0.892	0.277	59	210
Antel LPA-80063/6CF	175.00	162	1.749	1.318	0.892	0.277	39	140
Flat Low Profile Pla	175.00	1,500	1.749	1.318	0.892	0.277	360	1,292
Ericsson AIR 21, 1.3	164.00	249	1.536	0.595	0.587	0.158	34	214
Ericsson AIR 21, 1.3	164.00	271	1.536	0.595	0.587	0.158	37	234
Andrew LNX-6515DS-A1	164.00	149	1.536	0.595	0.587	0.158	21	129
Round Platform w/ Ha	164.00	2,000	1.536	0.595	0.587	0.158	275	1,722
KMW TTA (HB-X-WM-17-	145.00	48	1.201	0.006	0.256	0.015	1	41
KMW HB-X-WM-17-65-00	145.00	90	1.201	0.006	0.256	0.015	1	78
Side Arms	145.00	560	1.201	0.006	0.256	0.015	7	482
		52,261	64.322	32.939	25.088	7.448	2,975	45,006

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:51 AM

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	-62.46	-2.96	0.00	-411.04	0.00	411.04	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.063
5.00	-60.01	-2.92	0.00	-396.24	0.00	396.24	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.02	0.061
10.00	-57.57	-2.87	0.00	-381.62	0.00	381.62	3,359.11	1,679.56	5,677.90	2,804.10	0.04	-0.04	0.060
15.00	-55.47	-2.82	0.00	-367.27	0.00	367.27	3,320.10	1,660.05	5,499.48	2,715.99	0.09	-0.06	0.058
15.00	-55.47	-2.82	0.00	-367.27	0.00	367.27	3,320.10	1,660.05	5,499.48	2,715.99	0.09	-0.06	0.072
20.00	-53.39	-2.76	0.00	-353.18	0.00	353.18	3,279.97	1,639.98	5,321.88	2,628.28	0.16	-0.08	0.070
20.00	-53.39	-2.76	0.00	-353.18	0.00	353.18	3,279.97	1,639.98	5,321.88	2,628.28	0.16	-0.08	0.070
25.00	-51.33	-2.71	0.00	-339.36	0.00	339.36	3,238.71	1,619.36	5,145.22	2,541.03	0.25	-0.10	0.069
30.00	-49.29	-2.65	0.00	-325.83	0.00	325.83	3,196.33	1,598.17	4,969.60	2,454.30	0.37	-0.12	0.067
35.00	-47.27	-2.59	0.00	-312.60	0.00	312.60	3,152.83	1,576.41	4,795.15	2,368.14	0.52	-0.15	0.066
40.00	-45.63	-2.54	0.00	-299.67	0.00	299.67	3,108.20	1,554.10	4,621.97	2,282.62	0.68	-0.17	0.064
44.10	-45.13	-2.52	0.00	-289.27	0.00	289.27	3,070.77	1,535.38	4,481.00	2,213.00	0.84	-0.19	0.063
45.00	-43.16	-2.45	0.00	-287.00	0.00	287.00	3,062.45	1,531.23	4,450.19	2,197.78	0.88	-0.20	0.062
48.60	-42.64	-2.44	0.00	-278.18	0.00	278.18	2,379.97	1,189.99	3,474.54	1,715.94	1.04	-0.22	0.070
50.00	-40.82	-2.37	0.00	-274.77	0.00	274.77	2,371.43	1,185.72	3,439.58	1,698.68	1.10	-0.22	0.069
55.00	-39.01	-2.30	0.00	-262.94	0.00	262.94	2,340.22	1,170.11	3,315.01	1,637.16	1.35	-0.25	0.067
60.00	-37.21	-2.24	0.00	-251.42	0.00	251.42	2,307.88	1,153.94	3,191.02	1,575.92	1.63	-0.28	0.066
65.00	-35.44	-2.18	0.00	-240.21	0.00	240.21	2,274.42	1,137.21	3,067.70	1,515.02	1.93	-0.30	0.064
70.00	-33.68	-2.12	0.00	-229.31	0.00	229.31	2,239.83	1,119.92	2,945.16	1,454.51	2.26	-0.33	0.062
75.00	-31.94	-2.07	0.00	-218.69	0.00	218.69	2,204.12	1,102.06	2,823.54	1,394.44	2.62	-0.36	0.060
80.00	-30.32	-2.04	0.00	-208.32	0.00	208.32	2,167.29	1,083.65	2,702.93	1,334.88	3.01	-0.38	0.058
80.00	-30.32	-2.04	0.00	-208.32	0.00	208.32	2,167.29	1,083.65	2,702.93	1,334.88	3.01	-0.38	0.063
85.00	-29.81	-2.04	0.00	-198.12	0.00	198.12	2,129.34	1,064.67	2,583.46	1,275.87	3.42	-0.41	0.061
86.58	-28.37	-2.02	0.00	-194.90	0.00	194.90	2,117.11	1,058.55	2,545.96	1,257.35	3.56	-0.42	0.060
90.00	-28.23	-2.02	0.00	-188.01	0.00	188.01	2,090.26	1,045.13	2,465.23	1,217.49	3.87	-0.44	0.058
90.33	-26.86	-2.01	0.00	-187.34	0.00	187.34	1,547.78	773.89	1,862.15	919.64	3.90	-0.44	0.068
95.00	-25.39	-2.03	0.00	-177.93	0.00	177.93	1,525.71	762.86	1,787.32	882.69	4.34	-0.47	0.066
100.00	-23.94	-2.06	0.00	-167.77	0.00	167.77	1,500.99	750.50	1,707.51	843.28	4.85	-0.50	0.063
105.00	-22.51	-2.11	0.00	-157.45	0.00	157.45	1,475.16	737.58	1,628.14	804.08	5.39	-0.53	0.060
110.00	-21.09	-2.16	0.00	-146.91	0.00	146.91	1,448.19	724.10	1,549.32	765.15	5.96	-0.56	0.057
115.00	-19.68	-2.21	0.00	-136.10	0.00	136.10	1,420.11	710.05	1,471.16	726.55	6.57	-0.59	0.054
120.00	-18.47	-2.26	0.00	-125.03	0.00	125.03	1,390.90	695.45	1,393.78	688.34	7.20	-0.62	0.050
120.00	-18.47	-2.26	0.00	-125.03	0.00	125.03	1,390.90	695.45	1,393.78	688.34	7.20	-0.62	0.061
125.00	-18.16	-2.27	0.00	-113.73	0.00	113.73	1,360.57	680.28	1,317.29	650.56	7.87	-0.65	0.057
126.28	-17.35	-2.30	0.00	-110.82	0.00	110.82	1,352.62	676.31	1,297.87	640.97	8.05	-0.66	0.056
126.28	-17.35	-2.30	0.00	-110.82	0.00	110.82	900.61	450.31	868.79	429.06	8.05	-0.66	0.068
130.00	-16.26	-2.32	0.00	-102.27	0.00	102.27	888.95	444.47	835.13	412.44	8.57	-0.69	0.064
135.00	-15.18	-2.33	0.00	-90.66	0.00	90.66	872.29	436.14	789.93	390.12	9.31	-0.72	0.057
140.00	-14.28	-2.33	0.00	-79.00	0.00	79.00	854.50	427.25	744.88	367.87	10.08	-0.75	0.051
140.00	-14.28	-2.33	0.00	-79.00	0.00	79.00	854.50	427.25	744.88	367.87	10.08	-0.75	0.065
145.00	-12.55	-2.29	0.00	-67.35	0.00	67.35	835.60	417.80	700.09	345.75	10.89	-0.78	0.056
150.00	-11.70	-2.24	0.00	-55.93	0.00	55.93	815.57	407.78	655.68	323.81	11.73	-0.82	0.048
155.00	-11.11	-2.20	0.00	-44.71	0.00	44.71	794.42	397.21	611.76	302.12	12.60	-0.85	0.040
158.50	-10.99	-2.19	0.00	-37.01	0.00	37.01	778.94	389.47	581.37	287.12	13.24	-0.87	0.034
158.50	-10.99	-2.19	0.00	-37.01	0.00	37.01	778.94	389.47	581.37	287.12	13.24	-0.87	0.143
160.00	-10.68	-2.16	0.00	-33.73	0.00	33.73	772.14	386.07	568.44	280.73	13.51	-0.88	0.134
164.00	-7.31	-1.74	0.00	-25.07	0.00	25.07	753.51	376.76	534.31	263.87	14.28	-0.95	0.105
165.00	-6.98	-1.70	0.00	-23.32	0.00	23.32	748.74	374.37	525.85	259.70	14.48	-0.97	0.099
170.00	-6.65	-1.64	0.00	-14.84	0.00	14.84	723.19	361.60	483.41	238.74	15.54	-1.04	0.071
175.00	-3.50	-0.97	0.00	-6.63	0.00	6.63	686.95	343.48	435.91	215.28	16.66	-1.09	0.036
180.00	-3.41	-0.94	0.00	-1.79	0.00	1.79	650.71	325.36	390.87	193.04	17.81	-1.11	0.015
181.90	0.00	-0.88	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	18.25	-1.11	0.000

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

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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	-43.42	-2.96	0.00	-401.75	0.00	401.75	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.059
5.00	-41.71	-2.91	0.00	-386.96	0.00	386.96	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.02	0.058
10.00	-40.02	-2.86	0.00	-372.39	0.00	372.39	3,359.11	1,679.56	5,677.90	2,804.10	0.04	-0.04	0.056
15.00	-38.56	-2.80	0.00	-358.11	0.00	358.11	3,320.10	1,660.05	5,499.48	2,715.99	0.09	-0.06	0.055
15.00	-38.56	-2.80	0.00	-358.11	0.00	358.11	3,320.10	1,660.05	5,499.48	2,715.99	0.09	-0.06	0.068
20.00	-37.11	-2.74	0.00	-344.13	0.00	344.13	3,279.97	1,639.98	5,321.88	2,628.28	0.16	-0.07	0.066
20.00	-37.11	-2.74	0.00	-344.13	0.00	344.13	3,279.97	1,639.98	5,321.88	2,628.28	0.16	-0.07	0.066
25.00	-35.68	-2.67	0.00	-330.45	0.00	330.45	3,238.71	1,619.36	5,145.22	2,541.03	0.25	-0.10	0.065
30.00	-34.26	-2.61	0.00	-317.08	0.00	317.08	3,196.33	1,598.17	4,969.60	2,454.30	0.36	-0.12	0.063
35.00	-32.86	-2.54	0.00	-304.03	0.00	304.03	3,152.83	1,576.41	4,795.15	2,368.14	0.50	-0.15	0.062
40.00	-31.72	-2.49	0.00	-291.32	0.00	291.32	3,108.20	1,554.10	4,621.97	2,282.62	0.67	-0.17	0.060
44.10	-31.37	-2.47	0.00	-281.11	0.00	281.11	3,070.77	1,535.38	4,481.00	2,213.00	0.82	-0.19	0.059
45.00	-30.00	-2.40	0.00	-278.89	0.00	278.89	3,062.45	1,531.23	4,450.19	2,197.78	0.86	-0.19	0.058
48.60	-29.64	-2.38	0.00	-270.25	0.00	270.25	2,379.97	1,189.99	3,474.54	1,715.94	1.01	-0.21	0.066
50.00	-28.37	-2.31	0.00	-266.92	0.00	266.92	2,371.43	1,185.72	3,439.58	1,698.68	1.07	-0.22	0.065
55.00	-27.11	-2.25	0.00	-255.35	0.00	255.35	2,340.22	1,170.11	3,315.01	1,637.16	1.32	-0.24	0.063
60.00	-25.87	-2.18	0.00	-244.12	0.00	244.12	2,307.88	1,153.94	3,191.02	1,575.92	1.58	-0.27	0.062
65.00	-24.63	-2.12	0.00	-233.22	0.00	233.22	2,274.42	1,137.21	3,067.70	1,515.02	1.88	-0.29	0.060
70.00	-23.41	-2.06	0.00	-222.64	0.00	222.64	2,239.83	1,119.92	2,945.16	1,454.51	2.20	-0.32	0.058
75.00	-22.20	-2.01	0.00	-212.34	0.00	212.34	2,204.12	1,102.06	2,823.54	1,394.44	2.55	-0.35	0.057
80.00	-21.07	-1.97	0.00	-202.31	0.00	202.31	2,167.29	1,083.65	2,702.93	1,334.88	2.93	-0.37	0.055
80.00	-21.07	-1.97	0.00	-202.31	0.00	202.31	2,167.29	1,083.65	2,702.93	1,334.88	2.93	-0.37	0.059
85.00	-20.72	-1.97	0.00	-192.45	0.00	192.45	2,129.34	1,064.67	2,583.46	1,275.87	3.33	-0.40	0.058
86.58	-19.72	-1.95	0.00	-189.34	0.00	189.34	2,117.11	1,058.55	2,545.96	1,257.35	3.46	-0.41	0.057
90.00	-19.62	-1.95	0.00	-182.68	0.00	182.68	2,090.26	1,045.13	2,465.23	1,217.49	3.76	-0.43	0.055
90.33	-18.67	-1.95	0.00	-182.03	0.00	182.03	1,547.78	773.89	1,862.15	919.64	3.79	-0.43	0.065
95.00	-17.65	-1.96	0.00	-172.95	0.00	172.95	1,525.71	762.86	1,787.32	882.69	4.23	-0.46	0.062
100.00	-16.64	-1.99	0.00	-163.14	0.00	163.14	1,500.99	750.50	1,707.51	843.28	4.72	-0.49	0.060
105.00	-15.64	-2.04	0.00	-153.17	0.00	153.17	1,475.16	737.58	1,628.14	804.08	5.25	-0.52	0.057
110.00	-14.65	-2.09	0.00	-142.97	0.00	142.97	1,448.19	724.10	1,549.32	765.15	5.80	-0.55	0.054
115.00	-13.67	-2.15	0.00	-132.51	0.00	132.51	1,420.11	710.05	1,471.16	726.55	6.39	-0.58	0.051
120.00	-12.83	-2.19	0.00	-121.77	0.00	121.77	1,390.90	695.45	1,393.78	688.34	7.01	-0.60	0.048
120.00	-12.83	-2.19	0.00	-121.77	0.00	121.77	1,390.90	695.45	1,393.78	688.34	7.01	-0.60	0.058
125.00	-12.62	-2.21	0.00	-110.80	0.00	110.80	1,360.57	680.28	1,317.29	650.56	7.66	-0.63	0.054
126.28	-12.05	-2.23	0.00	-107.98	0.00	107.98	1,352.62	676.31	1,297.87	640.97	7.83	-0.64	0.053
126.28	-12.05	-2.23	0.00	-107.98	0.00	107.98	900.61	450.31	868.79	429.06	7.83	-0.64	0.065
130.00	-11.30	-2.26	0.00	-99.68	0.00	99.68	888.95	444.47	835.13	412.44	8.34	-0.67	0.060
135.00	-10.55	-2.27	0.00	-88.39	0.00	88.39	872.29	436.14	789.93	390.12	9.06	-0.70	0.055
140.00	-9.92	-2.27	0.00	-77.04	0.00	77.04	854.50	427.25	744.88	367.87	9.81	-0.73	0.048
140.00	-9.92	-2.27	0.00	-77.04	0.00	77.04	854.50	427.25	744.88	367.87	9.81	-0.73	0.061
145.00	-8.72	-2.23	0.00	-65.71	0.00	65.71	835.60	417.80	700.09	345.75	10.59	-0.76	0.053
150.00	-8.12	-2.19	0.00	-54.57	0.00	54.57	815.57	407.78	655.68	323.81	11.41	-0.80	0.045
155.00	-7.71	-2.15	0.00	-43.63	0.00	43.63	794.42	397.21	611.76	302.12	12.26	-0.83	0.038
158.50	-7.63	-2.14	0.00	-36.12	0.00	36.12	778.94	389.47	581.37	287.12	12.88	-0.85	0.032
158.50	-7.63	-2.14	0.00	-36.12	0.00	36.12	778.94	389.47	581.37	287.12	12.88	-0.85	0.136
160.00	-7.42	-2.11	0.00	-32.91	0.00	32.91	772.14	386.07	568.44	280.73	13.15	-0.85	0.127
164.00	-5.08	-1.70	0.00	-24.48	0.00	24.48	753.51	376.76	534.31	263.87	13.89	-0.93	0.100
165.00	-4.84	-1.66	0.00	-22.77	0.00	22.77	748.74	374.37	525.85	259.70	14.09	-0.94	0.094
170.00	-4.62	-1.60	0.00	-14.49	0.00	14.49	723.19	361.60	483.41	238.74	15.12	-1.01	0.067
175.00	-2.43	-0.95	0.00	-6.48	0.00	6.48	686.95	343.48	435.91	215.28	16.21	-1.06	0.034
180.00	-2.37	-0.92	0.00	-1.75	0.00	1.75	650.71	325.36	390.87	193.04	17.33	-1.08	0.013
181.90	0.00	-0.88	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	17.76	-1.08	0.000

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA697310_C3_07

9/27/2017 8:29:51 AM

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	31.28	0.00	62.66	0.00	0.00	3860.46	158.50	0.75
0.9D + 1.6W	31.25	0.00	46.99	0.00	0.00	3794.89	158.50	0.73
1.2D + 1.0Di + 1.0Wi	5.18	0.00	102.66	0.00	0.00	711.18	158.50	0.18
(1.2 + 0.2Sds) * DL + E ELFM	2.05	0.00	62.46	0.00	0.00	307.14	158.50	0.07
(1.2 + 0.2Sds) * DL + E EMAM	2.96	0.00	62.46	0.00	0.00	411.04	158.50	0.14
(0.9 - 0.2Sds) * DL + E ELFM	2.04	0.00	43.42	0.00	0.00	300.50	158.50	0.07
(0.9 - 0.2Sds) * DL + E EMAM	2.96	0.00	43.42	0.00	0.00	401.75	158.50	0.14
1.0D + 1.0W	8.50	0.00	52.26	0.00	0.00	1024.78	158.50	0.20

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Req'd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Req'd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	15.0	(3) SOL-#20 All Thre	145.4	4.4	16.8	199.4	25.3	8	12	0.0	25.3	0	0	211.1	330.5	0.639
0.00	20.0	(3) SOL-4 1/4" SOLID	461.2	7.6	38.3	615.1	12.0	52	0	0.0	12.0	0	0	633.1	635.6	0.996
20.0	80.0	(3) SOL-4 1/4" SOLID	557.1	18.4	38.3	481.2	25.3	20	0	615.1	25.3	25	0	623.5	627.2	0.994
80.0	120.	(3) SOL-4" SOLID	587.7	38.8	38.3	321.1	25.3	13	0	461.5	25.3	19	0	466.9	522.2	0.894
120.	140.	(3) SOL-3 1/2" SOLID	602.1	39.7	38.3	220.4	25.3	9	0	298.4	25.3	12	0	301.9	390.2	0.774
140.	158.	(3) SOL-3" SOLID	559.8	36.9	38.3	107.5	25.3	5	0	204.9	25.3	9	0	207.7	276.1	0.752

Reinforcement Splice Connection Calcs

Date	9/27/2017
Engineer	MER
Site #	302502
Carrier	Verizon

Bolt	1.25" A325
ϕR_v / bolt	31.8 k

Double Shear Connections

Elevation (ft)	# Bolts	Total Bolt ϕR_v (k)	MQ/I Bottom (k)	MQ/I Top (k)	Stress Ratio
80	8	508.8	481.200	461.500	0.95
120	6	381.6	321.100	298.400	0.84
140	6	381.6	107.500	204.900	0.54

Intermediate Connectors

length	4 in
C	8.63 per Table 8-4 AISC 14th Edition

Elevation (ft)	Weld Size (in)	ϕR_n (k)	Shear Applied (k)	Stress Ratio
0-80	0.25	103.56	18.4	0.18
80-120	0.25	103.56	38.8	0.37
120-140	0.1875	77.67	39.7	0.51
140-160	0.1875	77.67	36.9	0.48

Top Termination

length	18 in
C	3.63889 per Table 8-4 AISC 14th Edition
Weld Size	0.1875 in
ϕR_v	147.375 k
MQ/I	107.5 k
Stress Ratio	0.73

Base/Flange Plate	Plate Type	Baseplate
	Pole Diameter	43 in
	Pole Thickness	0.375 in
	Plate Diameter	55 in
	Plate Thickness	2.5 in
	Plate Fy	50 ksi
	Weld Length	0.25 in
	ϕ_s Resistance	700.26 k-in
	Applied	301.61 k-in
	Stiffeners	#	0

Code Rev. **G**

Date **9/27/2017**
 Engineer **Matthew.Reeves**
 Site # **302502**
 Carrier **VERIZON WIRELESS**

Moment **3860.5 k-ft**
 Axial **62.7 k**

Bolts	#	12
	Bolt Circle (R)adial / (S)quare	49.25 in R
	Diameter	2.25 in
	Hole Diameter	2.625 in
	Type	A615-75
	Fy	75 ksi
	Fu	100 ksi
	ϕ_s Resistance Applied	259.82 k 193.03 k
Reinforcement	#	3
	DYW. Circle	55.5 in
	Offset Angle	45°
	Type	#20
	Diameter	2.5 in
Fu	100 ksi	
Extra Bolts O	#	3
	Bolt Circle (R)adial / (S)quare	63 in R
	Offset Angle	15°
	Diameter	1.212 in
	Type	A354-BC
	Fy	105 ksi
	Fu	125 ksi
	ϕ_s Resistance Applied	90.39 k 85.48 k

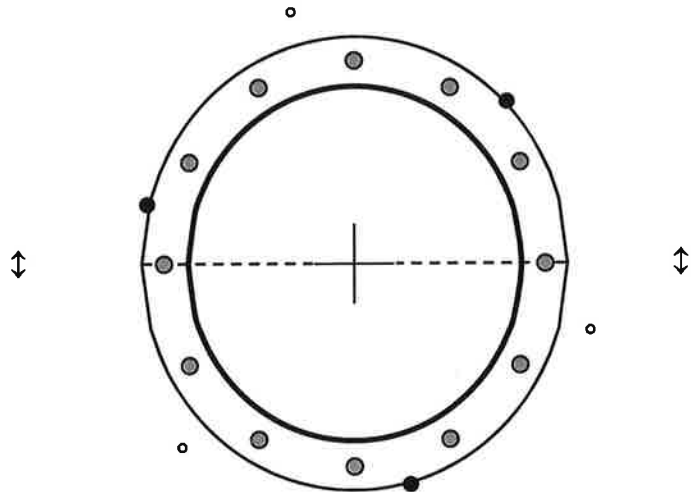


Plate Stress Ratio:
0.43 (Pass)

Bolt Stress Ratio:
0.74 (Pass)

Extra Bolt Stress Ratio:
0.95 (Pass)

[(2) 1" BOLTS]
 1.212

Base/Flange Plate	Plate Type	Flange @ 126.3 ft
	Pole Diameter	23.55 in
	Pole Thickness	0.1875 in
	Plate Diameter	30 in
	Plate Thickness	1 in
	Plate Fy	36 ksi
	Weld Length	0.1875 in
	ϕ_s Resistance	43.14 k-in
	Applied	26.78 k-in
	Stiffeners	#	0

Code Rev. **G**

Date **9/27/2017**
 Engineer **Matthew.Reeves**
 Site # **302502**
 Carrier **VERIZON WIRELESS**

Moment **709.0 k-ft**
 Axial **16.1 k**

Required Flange Thickness:

0.79 in OK

Bolts	#	10
	Bolt Circle (R)adial / (S)quare	27 in R
	Diameter	1 in
	Hole Diameter	1.125 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	ϕ_s Resistance	54.52 k
	Applied	27.47 k
	Reinforcement	#	3
DYW. Circle		29.35 in
Offset Angle		0°
Type		Other
Diameter		3.5 in
Fu		65 ksi
Extra Bolts O	#	0

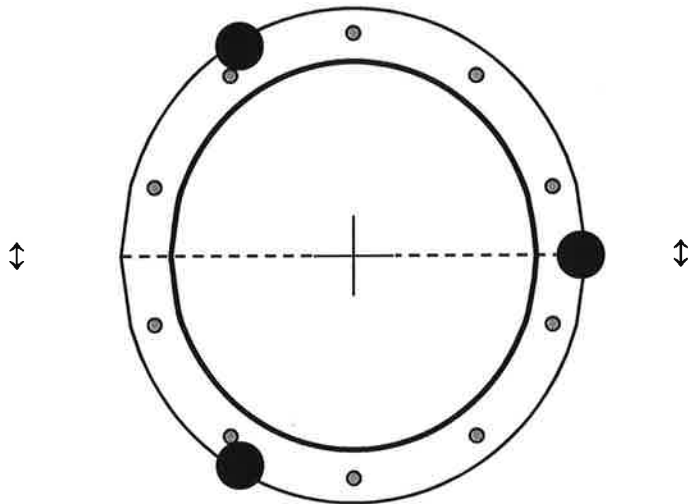


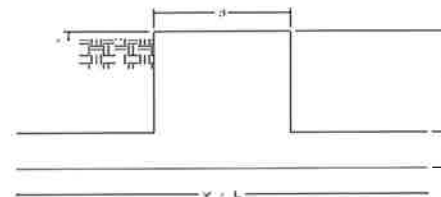
Plate Stress Ratio:
0.62 (Pass)

Bolt Stress Ratio:
0.50 (Pass)

Reinforcement Stress Ratio:
0.51 (Pass)

Site Name: Harwinton, CT
 Site Number: 302502
 Engineering Number: OAA697310
 Engineer: Matthew.Reeves
 Date: 09/27/17
 Tower Type: MP

Program Last Updated: 5/13/2014



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

Design / Analysis / Mapping:

Compression/Leg:	62.7 k	Concrete Strength (f'_c):	3000 psi
Uplift/Leg:	0.0 k	Pad Tension Steel Depth:	32.00 in
Total Shear:	31.3 k	ϕ_{Shear} :	0.75
Moment:	3860.5 k-ft	$\phi_{\text{Flexure / Tension}}$:	0.90
Tower + Appurtenance Weight:	52.3 k	$\phi_{\text{Compression}}$:	0.65
Depth to Base of Foundation (l + t - h):	8.00 ft	β :	0.85
Diameter of Pier (d):	10.16 ft	Bottom Pad Rebar Size #:	10
Height of Pier above Ground (h):	0.50	# of Bottom Pad Rebar:	40
Width of Pad (W):	20.00 ft	Pad Bottom Steel Area:	50.80 in ²
Length of Pad (L):	20.00 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:	40
Number of Tower Legs:	1.0 (1 if MP or GT)	Pad Top Steel Area:	12.40 in ²
Tower Center from Mat Center:	0.00 ft	Pier Rebar Size #:	11
Depth Below Ground Surface to Water Table:	1000.00 ft	Pier Steel Area (Single Bar):	1.56 in ²
Unit Weight of Concrete:	150.0 pcf	# of Pier Rebar:	52
Unit Weight of Soil Above Water Table:	100.0 pcf	Pier Steel F_y :	60000 psi
Unit Weight of Water:	62.4 pcf	Pier Cage Diameter:	113.9 in
Unit Weight of Soil Below Water Table:	50.0 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:	24000.0 psf	Tie Steel Area (Single Bar):	0.20 in ²
Ultimate Passive Pressure on Pad Face:	1000.0 psf	Tie Spacing:	12 in
$\phi_{\text{Soil and Concrete Weight}}$:	0.9	Tie Steel F_y :	60000 psi
ϕ_{Soil} :	0.75		

Overtuning Moment Usage

Design OTM:	4126.3 k-ft
OTM Resistance:	4441.7 k-ft
Design OTM / OTM Resistance:	0.93 Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	6170 psf
Factored Nominal Bearing Pressure:	18000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.34 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

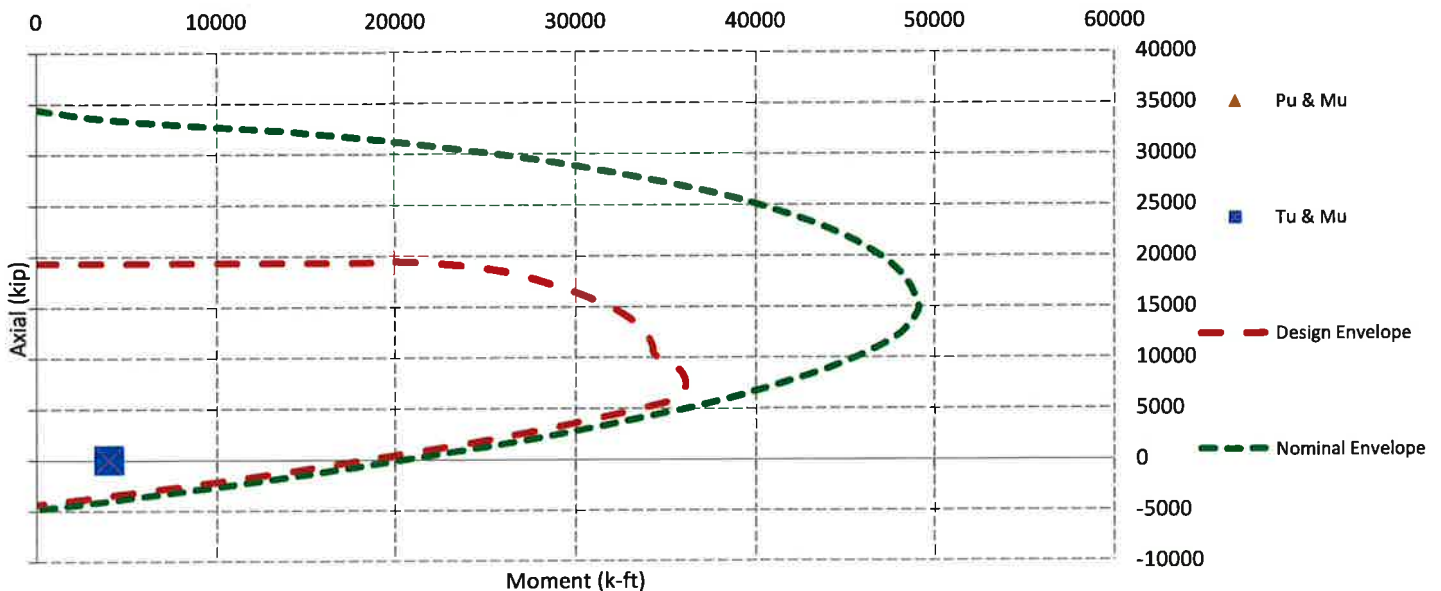
Sliding Factor of Safety

Total Factored Sliding Resistance:	158.6 k
Sliding Design / Sliding Resistance:	0.20 Result: OK

One Way Shear, Flexural Capacity, and Punching Shear

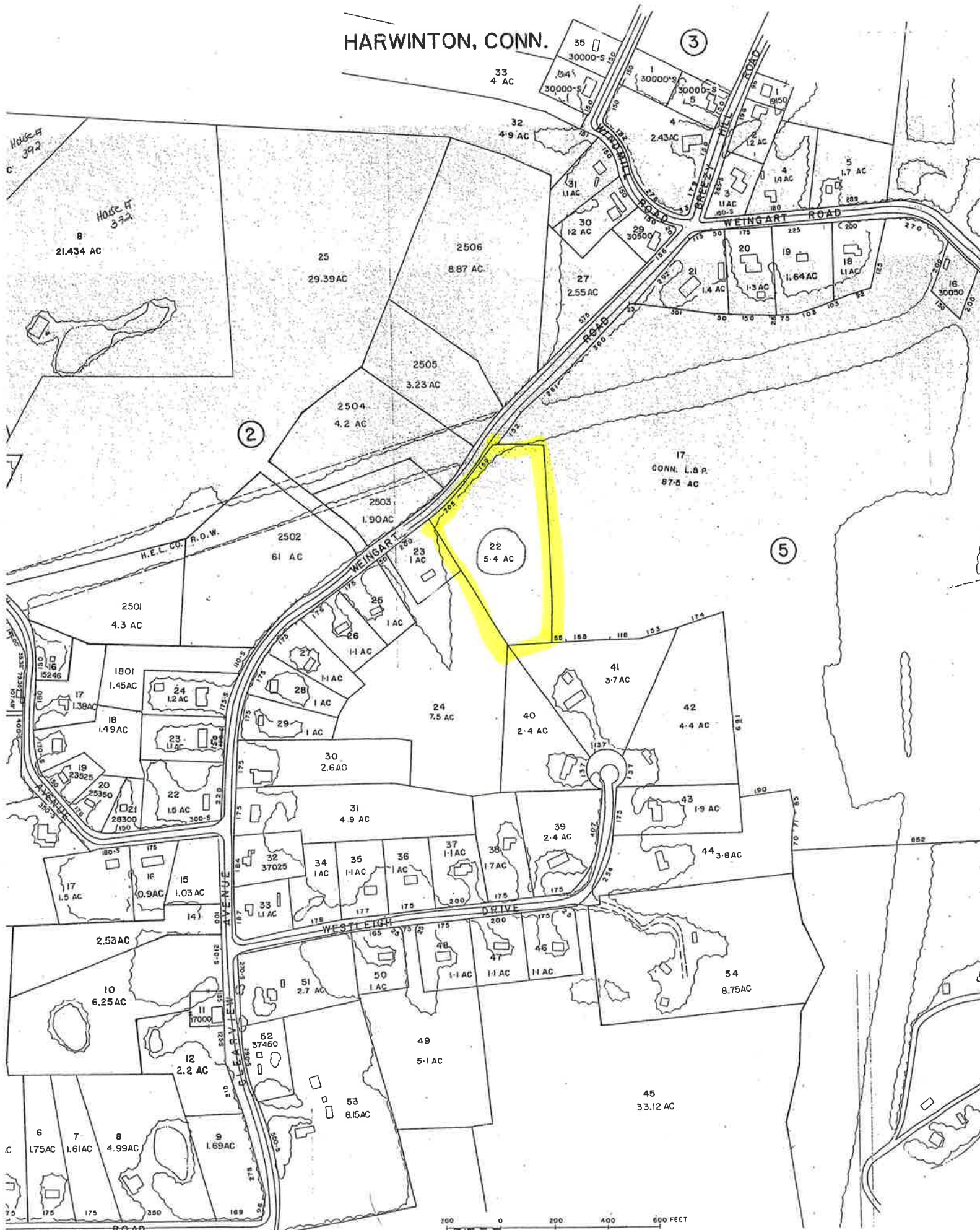
Factored One Way Shear (V_u):	176.3 k
One Way Shear Capacity (ϕV_c):	403.5 k - ACI11.3.1.1
$V_u / \phi V_c$:	0.44 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment (M_u):	1040.5 k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	5975.0 k-ft - ACI10.3
$M_u / \phi M_n$:	0.17 Result: OK
Load Direction Controlling Flexural Capacity:	Diagonal to Pad Edge
Upper Steel Pad Factored Moment (M_u):	367.9 k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	1756.8 k-ft
$M_u / \phi M_n$:	0.21 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0066 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0016 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0 k
Nominal Punching Shear Capacity ($\phi_c V_n$):	2542.6 k - ACI11.12.2.1
$V_u / \phi V_c$:	0.00 Result: OK
Factored Moment in Pier (M_u):	4032.5 k-ft
Pier Moment Capacity (ϕM_n):	20333.4 k-ft
$M_u / \phi M_n$:	0.20 Result: OK
Factored Shear in Pier (V_u):	31.3 k
Pier Shear Capacity (ϕV_n):	961.7 k
$V_u / \phi V_c$:	0.03 Result: OK
Pier Shear Reinforcement Ratio:	0.0002 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0 k
Pier Tension Capacity (ϕT_n):	4380.5 k
$T_u / \phi T_n$:	0.00 Result: OK
Factored Compression in Pier (P_u):	62.7 k
Pier Compression Capacity (ϕP_n):	15372.9 k - ACI10.3.6.2
$P_u / \phi P_n$:	0.00 Result: OK
Pier Compression Reinforcement Ratio:	0.007 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$:	0.20 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



ATTACHMENT 4

HARWINTON, CONN.



300 0 200 400 600 FEET



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Owner and Parcel Information

Owner Name	SBC TOWER HOLDINGS LLC C/O AMERICAN TOWER	Today's Date	September 28, 2017
Mailing Address	PO BOX 723597 ATLANTA, GA 31139	Parcel ID	593 (Account #: 3057)
Location Address	159 WEINGART RD	Census Tract	298300000000
Map / Block / Lot	B8 / 05 / 0022	Acreage	5.35
Use Class / Description	3-1 IND LAND	Utilities	
Assessing Neighborhood	0001A		

Current Appraised Value Information

Building Value	XF Value	OB Value	Land Value	Special Land Value	Total Appraised Value	Net Appraised Value	Current Assessment
\$ 24,600	\$ 0	\$ 19,500	\$ 129,170		\$ 173,270	\$ 173,270	\$ 121,290

Assessment History

Year	Building	OB/Misc	Land	Total Assessment
Current	\$ 17,220	\$ 13,650	\$ 90,420	\$ 121,290
2016	\$ 17,220	\$ 13,650	\$ 90,420	\$ 121,290
2015	\$ 17,220	\$ 13,650	\$ 90,420	\$ 121,290

Land Information

Use	Class	Zoning	Area	Value
IND LAND	I	TR1.5	1.5 AC	\$ 105,300
EX ACRES	R		3.85 AC	\$ 23,870

Commercial Building Information

Style	Year Built	Eff Year Built	Gross Area	Stories	Grade	Exterior Wall	Interior Wall	Wall Height	# Units
Warehouse	1995	1995	312	1	Average +20	Concr/Cinder	Drywall/Sheet	9	1
Roof Cover	Roof Structure	Floor Type	Heat Type	Heat Fuel	AC Type	Sprinkler	Construction	Plumbing	Comm Walls
Concrete Tile	Flat	Average	Solar Assisted	None	NONE	%	MASONRY	NONE	0%

Building Sub Areas

Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	312	312	
Totals		312	312	312

Building Sketch [Enlarge](#)

Building Photo
NA

Out Buildings / Extra Features

Description	Sub Description	Area	Year Built	Value
PAVING		3,900 S.F.	1995	\$ 19,500

Sale Information

Sale Date	Sale Price	Deed Book/Page	Sale Qualification	Reason	Vacant or Improved	Owner
08/19/2013		0240/1013	Unqualified		Improved	SBC TOWER HOLDINGS LLC C/O AMERICAN TOWER

06/26/2013	\$ 394,000	0240/0205	Qualified		Vacant	AMERICAN TOWER ASSET SUB II LLC
06/05/2002		0171/0811	Qualified			CLEMENTE JAMIE L + LAURA DOROTHY M

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
1718CA	08/14/2017		CO ISSUED			0		
1737B	04/06/2017		REINFORCEMENT BARS	\$ 11,000		100		
1720B	02/17/2017		3 ANTENNAS	\$ 15,000		100		
9520	04/01/2015		ADDING 3 REMOTE RADI	\$ 4,750		0		
9447	11/13/2014		MODIFICATIONS	\$ 13,000		0		
9035	09/20/2013		GENERATOR	\$ 10,000		0		
8867	04/30/2013	EL	Electric	\$ 12,500		0		
8815	03/21/2013			\$ 20,000		0		CABINETS & CONCRETE SLAB
8709	11/21/2012		ANTENNAS	\$ 10,000		0		
7995	01/25/2011		CELLUAR SITE	\$ 12,000		0		
7986	12/22/2010	EL	Electric	\$ 15,000		0		

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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.

Postmaster, per (name of receiving employee)

[Handwritten Signature]

neopost™
10/04/2017
US POSTAGE \$002.38
ZIP 06103
041L12203380

USPS® Tracking Number
Firm-specific Identifier

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

Parcel Airift

Special Handling

Fee

Postage

1.

Michael R. Criss, First Selectman
Town of Harwinton
100 Bentley Drive
Harwinton, CT 06791

2.

Polly Redmond, Land Use Coordinator
Town of Harwinton
100 Bentley Drive
Harwinton, CT 06791

3.

SBC Tower Holdings
c/o American Tower Corporation
P.O. Box 723597
Atlanta, GA 31139

4.

5.

6.

