Robinson+Cole

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

May 31, 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**
**135 Honey Hill Road, East Haddam, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 130-foot level of an existing 150-foot tower at 135 Honey Hill Road in East Haddam, Connecticut (the "Property"). The tower is owned by American Tower Corporation ("ATC"). The Council approved Cellco's use of this tower in 2005. Cellco now intends to replace six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700 MHz antennas and three (3) model SBNHH-1D65B, 2100 MHz antennas and install six (6) new remote radio heads ("RRHs"), behind its new 700 MHz and 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install two (2) HYBRIFLEX™ antenna cables inside the shaft of the monopole. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cables.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Emmett J. Lyman, First Selectman of the Town of East Haddam; James F. Ventres, East Haddam Land Use Administrator/Zoning Enforcement Officer; Donald and Susan Porter, 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 structure. Cellco's replacement antennas and RRHs will be attached to its existing platform at the 130-foot level of the tower.

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

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

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

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

6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).[1] Please note, the structural report mistakenly showed the six (6) replacement antennas as existing. They final configuration is correct and contemplated in the analysis.

A copy of property owner information and a parcel map are included in Attachment 4.

[1] The table at the top of page two of the Structural Analysis Report showing Existing and Reserved Equipment identifies the proposed replacement antennas (six (6) SBNHH-1065B) as "existing" equipment, rather than "proposed equipment". The Structural Analysis Report correctly identifies the proposed RRHs to be added, and the existing antennas (three (3) BXA-7063-6CF and three (3) BXA-171063-BBF) to be removed. In its final analysis, the Structural Analysis Report concludes that the existing tower is capable of supporting Cellco's modifications as described in this filing.

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:
Emmett J. Lyman, Town of East Haddam First Selectman
James F. Ventres, Canaan Land Use Administrator/Zoning Enforcement Officer
Donald and Susan Porter
ATC
Tim Parks

# ATTACHMENT 1

# Product Specifications

COMMSCOPE®

## SBNHH-1D65B

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

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

## Electrical Specifications

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

## Electrical Specifications, BASTA*

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

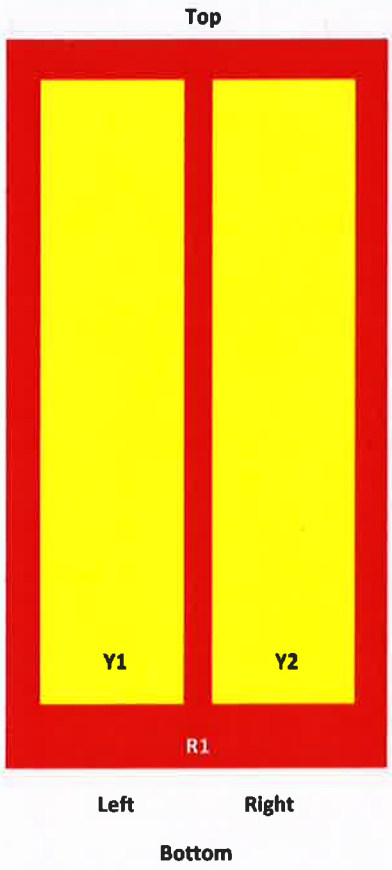
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

## Array Layout

# Product Specifications

SBNHH-1D65B

SBNHH 65




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

View from the front of the antenna

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

## General Specifications

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

## Mechanical Specifications

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

# Product Specifications

SBNHH-1D65B

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

## Dimensions

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

## Remote Electrical Tilt (RET) Information

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

## Packed Dimensions

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

## Regulatory Compliance/Certifications

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

# Product Specifications

SBNHH-1D65B

## Included Products

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

## * Footnotes

| | |
|---|---|
| Performance Note | Severe environmental conditions may degrade optimum performance |

# ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

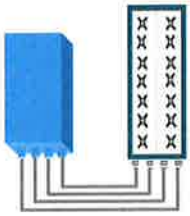
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

## FEATURES

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

## BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

## TECHNICAL SPECIFICATIONS

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

# ALCATEL-LUCENT B66A RRH4X45

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

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

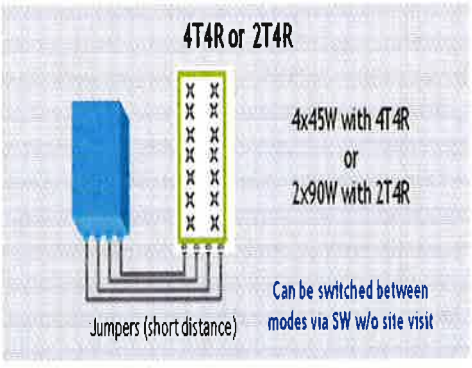
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

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

## FEATURES

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




## BENEFITS

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

| Features & Performance | |
|---|---|
| **Number of TX/RX paths** | 4 duplexed (either 4T4R or 2T4R selectable by SW) |
| **Frequency band** | AWS 1-3, B4/B66a<br>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**<br>**Receiver Sensivity (FRC A1-3)** | 2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity<br>-104.5 dBm maximum |
| **Sizes (HxWxD) in mm (in.)**<br><br>**Volume in Liters**<br><br>**Weight in kg (lb) (w/o mounting HW)** | 655x299x182 (25.8x11.8x7.2) (with solar shield)<br>640x290x160 (25.2x11.4x6.3) (without solar shield)<br>35.5 (with solar shield)<br>29.7 (without solar shield)<br>25.8kg (56.8lb) (with solar shield) |
| **DC voltage range**<br><br>**DC power consumption** | Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption<br>750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG |
| **Environmental conditions**<br><br>**Wind load (@150km/h or 93mph)** | -40°C (-40°F) /+55°C (+131°F)<br>UL50E Type 4 Enclosure<br>250N (56lb) Frontal/150N (34lb) Lateral |
| **Antenna ports** | 4 ports 4.3-10 female (50 ohms)<br>VSWR < 1.5 |
| **CPRI ports** | 2 CPRI ports (HW ready for Rate 7, 9.8 Gbps)<br>SFP: SMDF (HW supports also SMSF and MMDF) |
| **AISG interfaces** | 1 AISG 2.0 output (RS485)<br>Integrated Smart Bias Tees (x2) |
| **Misc. Interfaces** | 4 external alarms (1 connector)<br>1 DC connector (2 pins) |
| **Installation conditions** | Pole and wall mounting |
| **Regulatory compliance** | 3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE |

# Product Data Sheet HB158-1-08U8-S8J18

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

### Product Description

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

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

Figure 1: HYBRIFLEX Series

### Features/Benefits

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

### Technical Specifications

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

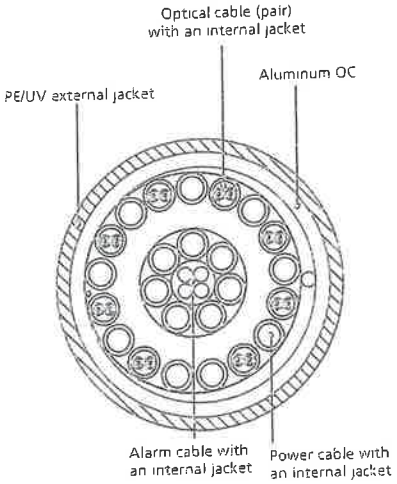



Figure 2: Construction Detail

* This data is provisional and subject to change

# ATTACHMENT 2

| | General | Power | Density | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Site Name: East Haddam** | | | | | | | | |
| **Tower Height:** 150ft | | | | | | | | |
| **CARRIER** | **# OF CHAN.** | **WATTS ERP** | **HEIGHT** | **CALC. POWER DENS** | **FREQ.** | **MAX. PERMISS. EXP.** | **FRACTION MPE** | **Total** |
| *Nextel | 24 | 100 | 150 | 851 | 0.0416 | 0.5673 | 0.73% | |
| *Sprint | 11 | 505 | 140 | 1950 | 0.1113 | 1.0000 | 1.11% | |
| *AT&T | 2 | 565 | 120 | 880 | 0.0313 | 0.5867 | 0.53% | |
| *AT&T | 2 | 875 | 120 | 1900 | 0.0484 | 1.0000 | 0.48% | |
| *AT&T | 1 | 283 | 120 | 880 | 0.0078 | 0.5867 | 0.13% | |
| *AT&T | 4 | 525 | 120 | 1900 | 0.0581 | 1.0000 | 0.58% | |
| *AT&T | 1 | 1771 | 120 | 734 | 0.0490 | 0.4893 | 1.00% | |
| **Verizon PCS** | **0** | **0** | **130** | **0.0000** | **1970** | **1.0000** | **0.00%** | |
| **Verizon Cellular** | **9** | **292** | **130** | **0.0559** | **869** | **0.5793** | **9.65%** | |
| **Verizon AWS** | **1** | **6907** | **130** | **0.1470** | **2145** | **1.0000** | **14.70%** | |
| **Verizon 700** | **1** | **1646** | **130** | **0.0350** | **746** | **0.4973** | **7.04%** | |
| | | | | | | | | **35.97%** |
| * Source: Siting Council | | | | | | | | |

# ATTACHMENT 3

AMERICAN TOWER®
CORPORATION

# Structural Analysis Report

| | | |
|---|---|---|
| **Structure** | : | **150 ft Monopole** |
| **ATC Site Name** | : | **East Haddam, CT** |
| **ATC Site Number** | : | **302527** |
| **Engineering Number** | : | **OAA697424_C3_02** |
| **Proposed Carrier** | : | **Verizon** |
| **Carrier Site Name** | : | **East Haddam, CT** |
| **Carrier Site Number** | : | **119662** |
| **Site Location** | : | **135 Honey Hill Road**<br>**East Haddam, CT 06423-1714**<br>**41.436900,-72.366400** |
| **County** | : | **Middlesex** |
| **Date** | : | **May 19, 2017** |
| **Max Usage** | : | **31%** |
| **Result** | : | **Pass** |

Prepared By:
Charles Dalton Wally, E.I.
Structural Engineer I

Charles D. Wally

Reviewed By:

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

May 19 2017 5:11 PM cosign

**COA: PEC.0001553**

AMERICAN TOWER®
CORPORATION

## Table of Contents

AMERICAN TOWER®
CORPORATION

## Introduction

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

## Supporting Documents

| | |
|---|---|
| **Tower Drawings** | Summit Manufacturing/PJF Job #29201-0876, Rev 1, dated September 24, 2001 |
| **Foundation Drawing** | Summit Manufacturing, PJF Job #29201-0876, dated October 30, 2001 |
| **Geotechnical Report** | Dr. Clarence Welti, P.E., P.C. Letter dated June 28, 2001 |

## 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:** | 101 mph (3-Second Gust, $V_{asd}$) / 130 mph (3-Second Gust, $V_{ult}$) |
| **Basic Wind Speed w/ Ice:** | 50 mph (3-Second Gust) w/ 3/4" radial ice concurrent |
| **Code:** | ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code |
| **Structure Class:** | II |
| **Exposure Category:** | B |
| **Topographic Category:** | 2 |
| **Crest Height:** | 105 ft |
| **Spectral Response:** | Ss = 0.17, $S_1$ = 0.06 |
| **Site Class:** | D - Stiff Soil |

## Conclusion

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

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

## Existing and Reserved Equipment

| Elevation[1] (ft) | | Qty | Antenna | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|---|
| Mount | RAD | | | | | |
| 150.0 | 150.0 | 12 | Decibel DB844H90E-XY | Low Profile Platform | (12) 1 1/4" Coax | Sprint Nextel |
| 140.0 | 140.0 | 12 | Decibel DB980F65E-M | T-Arms | (24) 1 5/8" Coax | |
| 130.0 | 130.0 | 6 | RFS FD9R6004/2C-3L | Low Profile Platform | (12) 1 5/8" Coax | Verizon |
| | | 6 | RFS APL868013-42T0 | | | |
| | | 6 | Commscope SBNHH-1D65B (72.9") | | | |
| 120.0 | 122.0 | 1 | Raycap DC6-48-60-18-8F ("Squid") | Low Profile Platform | (12) 1 1/4" Coax<br>(2) 0.78" 8 AWG 6<br>(1) 0.39" Fiber Trunk | AT&T Mobility |
| | | 3 | Ericsson RRUS-11 1900MHz | | | |
| | | 6 | Powerwave 7770.00 | | | |
| | | 1 | Commscope SBNH-1D4545A | | | |
| | | 1 | Andrew DBXNH-6565B-R2M (72.7") | | | |
| | | 1 | 96" x 12" Panel | | | |
| | 120.0 | 6 | Powerwave LGP21401 | | | |
| 76.0 | 76.0 | 1 | GPS | Side Arm | (1) 1/2" Coax | Sprint Nextel |

## Equipment to be Removed

| Elevation[1] (ft) | | Qty | Antenna | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|---|
| Mount | RAD | | | | | |
| 130.0 | 130.0 | 3 | Antel BXA-70063-6CF-EDIN-X | - | (2) 1 5/8" Coax | Verizon |
| | | 3 | Antel BXA-171063-8BF-EDIN-X | | | |

## Proposed Equipment

| Elevation[1] (ft) | | Qty | Antenna | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|---|
| Mount | RAD | | | | | |
| 130.0 | 130.0 | 3 | Alcatel-Lucent B13 RRH4X30-4R w/ Solar Shield (57.2 lbs) | Low Profile Platform | (2) 1 5/8" Hybriflex | Verizon |
| | | 3 | Alcatel-Lucent B66A RRH4x45-4R w/o Solar Shield | | | |
| | | 2 | Commscope RC3DC-3315-PF-48 | | | |

**[1]Mount 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 | 31% | Pass |
| Shaft | 28% | Pass |
| Base Plate | 23% | Pass |

## Foundations

| Reaction Component | Analysis Reactions | % of Usage |
|---|---|---|
| Moment (Kips-Ft) | 3,472.4 | 25% |
| Axial (Kips) | 77.0 | 15% |
| Shear (Kips) | 37.1 | 9% |

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) (°) |
|---|---|---|---|---|
| 130.0 | Alcatel-Lucent B13 RRH4X30-4R w/ Solar Shield (57.2 lbs) | Verizon | 0.339 | 0.259 |
| | Alcatel-Lucent B66A RRH4x45-4R w/o Solar Shield | | | |
| | Commscope RC3DC-3315-PF-48 | | | |

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

AMERICAN TOWER®
CORPORATION

## 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:

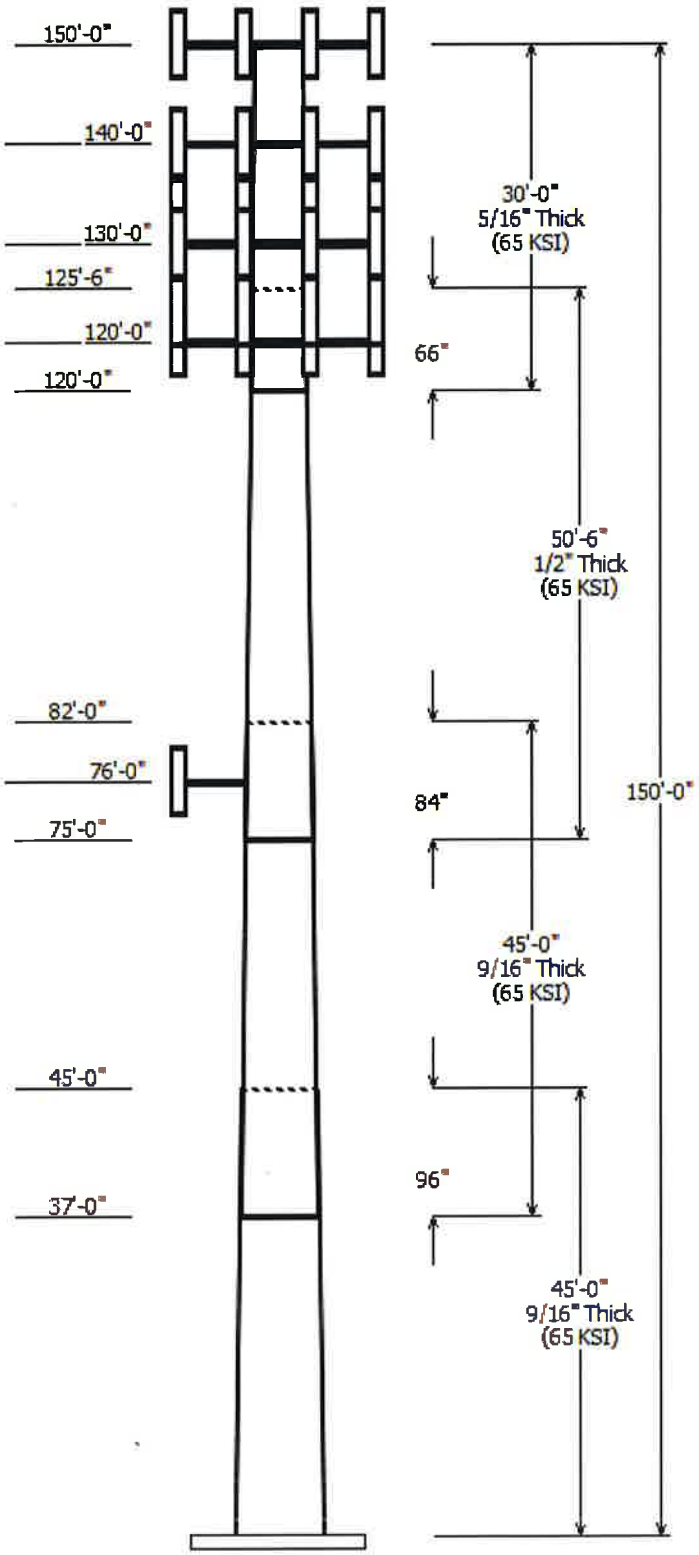
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- 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.




## Job Information

| | | | |
|---|---|---|---|
| Pole : | 302527 | Code: | ANSI/TIA-222-G |
| Description : | 150' Summit Monopole | | |
| Client : | VERIZON WIRELESS | Struct Class : | II |
| Location : | East Haddam, CT | | |
| Shape : | 18 Sides | Exposure : | B |
| Height : | 150.00 (ft) | Topo : | 2 |
| Base Elev (ft): | 0.00 | | |
| Taper: | 0.253625 (in/ft) | | |

## Sections Properties

| Shaft Section | Length (ft) | Diameter (in) Accross Flats Top | Bottom | Thick (in) | Joint Type | Overlap Length (in) | Taper (in/ft) | Steel Grade (ksi) |
|---|---|---|---|---|---|---|---|---|
| 1 | 45.000 | 60.78 | 72.20 | 0.563 | | 0.000 | 0.253600 | 65 |
| 2 | 45.000 | 52.52 | 63.94 | 0.563 | Slip Joint | 96.000 | 0.253600 | 65 |
| 3 | 50.500 | 42.49 | 55.30 | 0.500 | Slip Joint | 84.000 | 0.253600 | 65 |
| 4 | 30.000 | 36.90 | 44.51 | 0.313 | Slip Joint | 66.000 | 0.253600 | 65 |

## Discrete Appurtenance

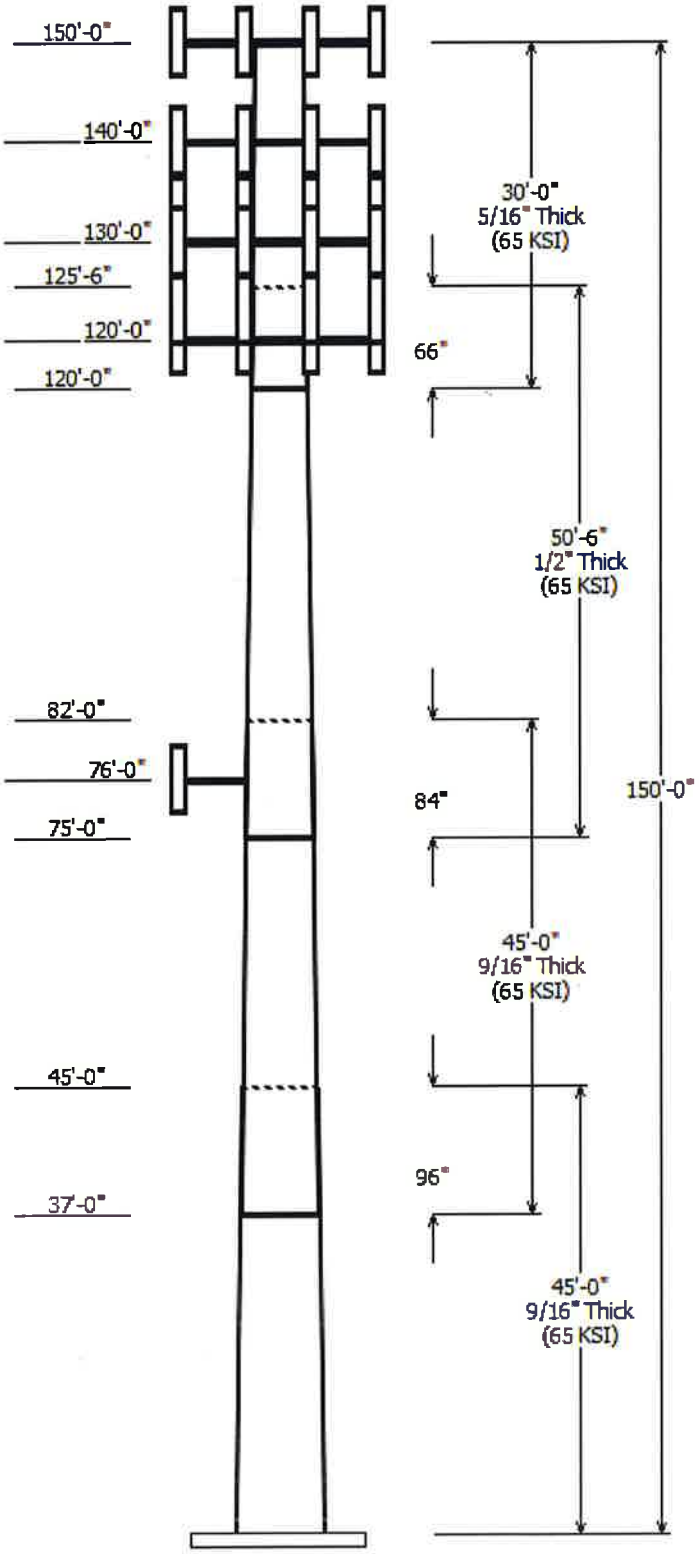
| Attach Elev (ft) | Force Elev (ft) | Qty | Description |
|---|---|---|---|
| 150.000 | 150.000 | 1 | Flat Low Profile Platform |
| 150.000 | 150.000 | 12 | Decibel DB844H90E-XY |
| 140.000 | 140.000 | 3 | Round T-Arms |
| 140.000 | 140.000 | 12 | Decibel DB980F65E-M |
| 130.000 | 130.000 | 2 | Commscope RC3DC-3315-PF- |
| 130.000 | 130.000 | 3 | Alcatel-Lucent B66A RRH4x45- |
| 130.000 | 130.000 | 3 | Alcatel-Lucent B13 RRH4X30- |
| 130.000 | 132.000 | 6 | RFS APL868013-42T0 |
| 130.000 | 132.000 | 6 | RFS FD9R6004/2C-3L |
| 130.000 | 130.000 | 6 | Commscope SBNHH-1D65B |
| 130.000 | 130.000 | 1 | Flat Low Profile Platform |
| 120.000 | 122.000 | 6 | Powerwave Allgon 7770.00 |
| 120.000 | 122.000 | 1 | 96" x 12" Panel |
| 120.000 | 122.000 | 1 | Andrew DBXNH-6565B-R2M |
| 120.000 | 122.000 | 1 | Commscope SBNH-1D4545A |
| 120.000 | 122.000 | 3 | Ericsson RRUS-11 1900 MHz |
| 120.000 | 122.000 | 1 | Raycap DC6-48-60-18-8F |
| 120.000 | 120.000 | 6 | Powerwave Allgon LGP21401 |
| 120.000 | 120.000 | 1 | Round Low Profile Platform |
| 76.000 | 76.000 | 1 | Flat Side Arm |
| 76.000 | 76.000 | 1 | GPS |

## Linear Appurtenance

| Elev (ft) From | To | Description | Exposed To Wind |
|---|---|---|---|
| 10.000 | 76.000 | 1/2" Coax | No |
| 10.000 | 120.0 | 0.39" Fiber Trunk | No |
| 10.000 | 120.0 | 0.78" 8 AWG 6 | No |
| 10.000 | 120.0 | 1 1/4" Coax | No |
| 10.000 | 130.0 | 1 5/8" Coax | No |
| 10.000 | 130.0 | 1 5/8" Hybriflex | No |
| 10.000 | 140.0 | 1 5/8" Coax | No |
| 10.000 | 150.0 | 1 1/4" Coax | No |

## Load Cases

| | |
|---|---|
| 1.2D + 1.6W | 101 mph with No Ice |
| 0.9D + 1.6W | 101 mph with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 50 mph with 0.75 in Radial Ice |
| (1.2 + 0.2Sds) * DL + E | Seismic Equivalent Lateral Forces Method |



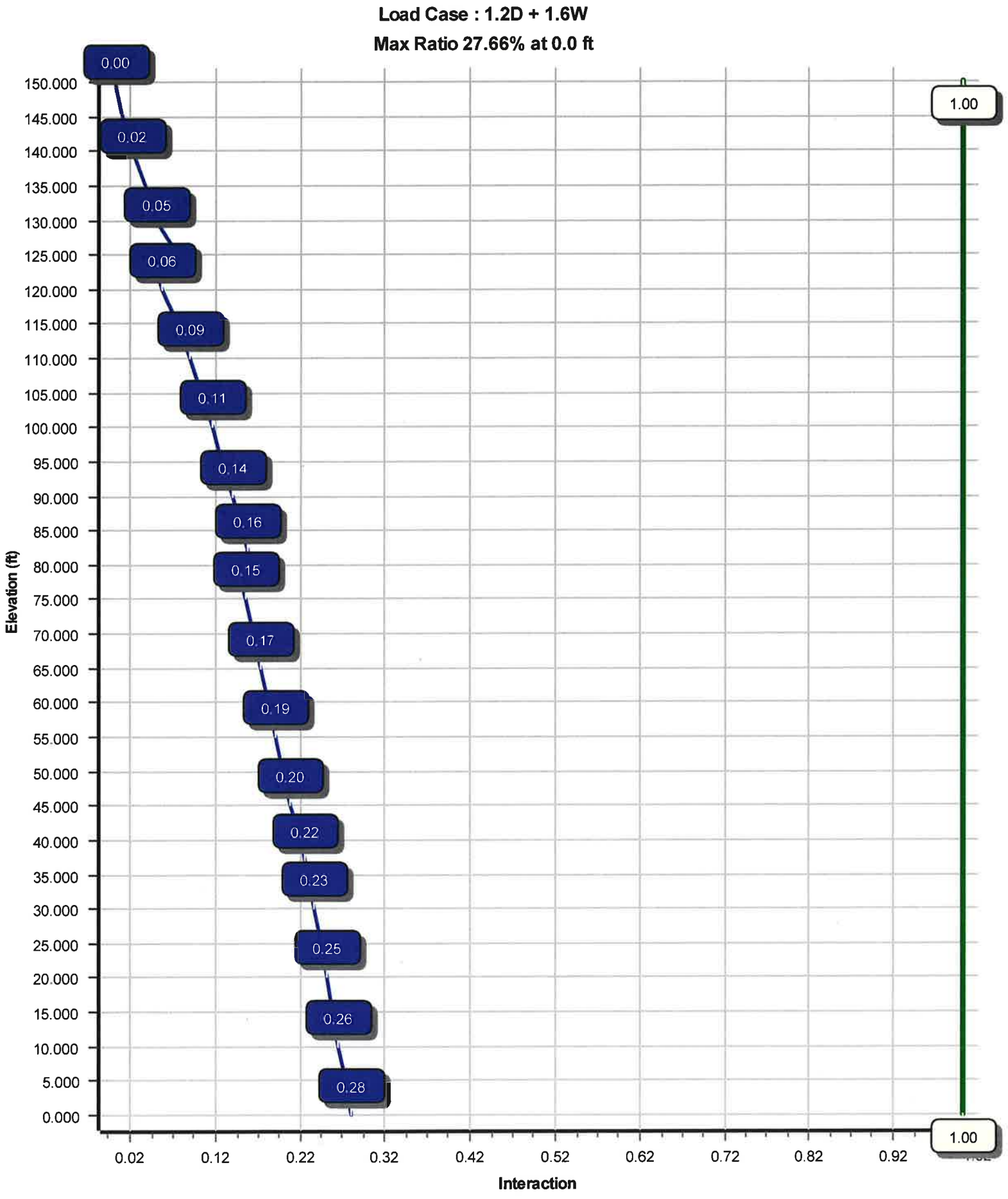

| | |
|---|---|
| (1.2 + 0.2Sds) * DL + E | Seismic Equivalent Modal Analysis Method |
| (0.9 - 0.2Sds) * DL + E | Seismic (Reduced DL) Equivalent Lateral |
| (0.9 - 0.2Sds) * DL + E | Seismic (Reduced DL) Equivalent Modal |
| 1.0D + 1.0W | Serviceability 60 mph |

## Reactions

| Load Case | Moment (kip-ft) | Shear (kip) | Axial (kip) |
|---|---|---|---|
| 1.2D + 1.6W | 3472.44 | 37.09 | 76.96 |
| 0.9D + 1.6W | 3459.48 | 37.08 | 57.72 |
| 1.2D + 1.0Di + 1.0Wi | 914.34 | 10.11 | 104.84 |
| (1.2 + 0.2Sds) * DL + E ELFM | 423.30 | 4.12 | 76.64 |
| (1.2 + 0.2Sds) * DL + E EMAM | 330.25 | 3.16 | 76.64 |
| (0.9 - 0.2Sds) * DL + E ELFM | 421.49 | 4.12 | 53.55 |
| (0.9 - 0.2Sds) * DL + E EMAM | 328.76 | 3.15 | 53.55 |
| 1.0D + 1.0W | 763.98 | 8.18 | 64.15 |

## 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 27.66% at 0.0 ft
0.00
0.02
0.05
0.06
0.09
0.11
0.14
0.16
0.15
0.17
0.19
0.20
0.22
0.23
0.25
0.26
0.28
1.00
1.00
150.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number:OAA697424_C3_02 5/19/2017 3:56:08 PM

Customer: VERIZON WIRELESS

## Analysis Parameters

| | | | |
|---|---|---|---|
| Location: | MIDDLESEX County, CT | Height (ft): | 150 |
| Code: | ANSI/TIA-222-G | Base Diameter (in): | 72.20 |
| Shape: | 18 Sides | Top Diameter (in): | 36.91 |
| Pole Type: | Taper | Taper (in/ft) : | 0.254 |
| Pole Manfacturer: | Summit Manufacturing | Rotation (deg) : | 0.00 |

## Ice & Wind Parameters

| | | | |
|---|---|---|---|
| Structure Class: | II | Design Wind Speed Without Ice: | 101 mph |
| Exposure Category: | B | Design Wind Speed With Ice: | 50 mph |
| Topographic Category: | 2 | Operational Wind Speed: | 60 mph |
| Crest Height: | 104.7 ft | Design Ice Thickness: | 0.75 in |

## Seismic Parameters

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | Equivalent Modal Analysis & Equivalent Lateral Force Methods | | | | |
| Site Class: | D - Stiff Soil | | | | |
| Period Based on Rayleigh Method (sec): | 1.30 | | | | |
| $T_L$ (sec): | 6 | p: | 1.3 | $C_s$: | 0.049 |
| $S_s$: | 0.170 | $S_1$: | 0.060 | $C_s$ Max: | 0.049 |
| $F_a$: | 1.600 | $F_v$: | 2.400 | $C_s$ Min: | 0.030 |
| $S_{ds}$: | 0.181 | $S_{d1}$: | 0.096 | | |

## Load Cases

| | |
|---|---|
| 1.2D + 1.6W | 101 mph with No Ice |
| 0.9D + 1.6W | 101 mph with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 50 mph with 0.75 in Radial Ice |
| (1.2 + 0.2Sds) * DL + E 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: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number:OAA697424_C3_02 5/19/2017 3:56:08 PM

Customer: VERIZON WIRELESS

## Shaft Section Properties

| Sect Info | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Slip Joint Len (in) | Weight (lb) | Bottom Dia (in) | Bottom Elev (ft) | Bottom Area (in²) | Bottom Ix (in⁴) | Bottom W/t Ratio | Bottom D/t Ratio | Top Dia (in) | Top Elev (ft) | Top Area (in²) | Top Ix (in⁴) | Top W/t Ratio | Top D/t Ratio | Taper (in/ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-18 | 45.000 | 0.5625 | 65 | | 0.00 | 18,024 | 72.20 | 0.00 | 127.89 | 82924.1 | 21.22 | 128.35 | 60.78 | 45.00 | 107.52 | 49269.2 | 17.64 | 108.06 | 0.253625 |
| 2-18 | 45.000 | 0.5625 | 65 | Slip | 96.00 | 15,766 | 63.94 | 37.00 | 113.15 | 57422.5 | 18.63 | 113.67 | 52.52 | 82.00 | 92.77 | 31651.7 | 15.06 | 93.38 | 0.253625 |
| 3-18 | 50.500 | 0.5000 | 65 | Slip | 84.00 | 13,198 | 55.30 | 75.00 | 86.97 | 33000.6 | 18.09 | 110.61 | 42.49 | 125.50 | 66.64 | 14849.0 | 13.58 | 84.99 | 0.253625 |
| 4-18 | 30.000 | 0.3125 | 65 | Slip | 66.00 | 4,090 | 44.51 | 120.00 | 43.84 | 10822.4 | 23.71 | 142.45 | 36.90 | 150.00 | 36.29 | 6140.5 | 19.41 | 118.10 | 0.253625 |
| | | | | Shaft Weight | | 51,078 | | | | | | | | | | | | | |

## Discrete Appurtenance Properties

| Attach Elev (ft) | Description | Qty | No Ice Weight (lb) | No Ice EPAa (sf) | No Ice Orientation Factor | Ice Weight (lb) | Ice EPAa (sf) | Ice Orientation Factor | Distance From Face (ft) | Vert Ecc (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 150.00 | Decibel DB844H90E-XY | 12 | 14.00 | 3.610 | 0.74 | 130.85 | 4.551 | 0.74 | 0.000 | 0.000 |
| 150.00 | Flat Low Profile Platform | 1 | 1500.00 | 26.100 | 1.00 | 2,178.02 | 46.080 | 1.00 | 0.000 | 0.000 |
| 140.00 | Decibel DB980F65E-M | 12 | 9.50 | 3.750 | 0.68 | 106.51 | 4.848 | 0.68 | 0.000 | 0.000 |
| 140.00 | Round T-Arms | 3 | 250.00 | 9.700 | 0.67 | 468.39 | 18.314 | 0.67 | 0.000 | 0.000 |
| 130.00 | Alcatel-Lucent B13 RRH4X30- | 3 | 57.20 | 2.160 | 0.67 | 143.50 | 2.832 | 0.67 | 0.000 | 0.000 |
| 130.00 | Alcatel-Lucent B66A | 3 | 56.80 | 2.390 | 0.67 | 145.29 | 3.266 | 0.67 | 0.000 | 0.000 |
| 130.00 | Commscope RC3DC-3315-PF- | 2 | 32.00 | 3.780 | 0.67 | 146.38 | 5.160 | 0.67 | 0.000 | 0.000 |
| 130.00 | Commscope SBNHH-1D65B | 6 | 40.60 | 8.200 | 0.69 | 254.78 | 9.571 | 0.69 | 0.000 | 0.000 |
| 130.00 | Flat Low Profile Platform | 1 | 1500.00 | 26.100 | 1.00 | 2,176.08 | 46.023 | 1.00 | 0.000 | 0.000 |
| 130.00 | RFS APL868013-42T0 | 6 | 6.30 | 3.610 | 0.88 | 119.22 | 4.548 | 0.88 | 0.000 | 2.000 |
| 130.00 | RFS FD9R6004/2C-3L | 6 | 2.60 | 0.370 | 0.50 | 16.68 | 0.596 | 0.50 | 0.000 | 2.000 |
| 120.00 | 96" x 12" Panel | 1 | 45.00 | 11.470 | 0.67 | 306.99 | 13.190 | 0.67 | 0.000 | 2.000 |
| 120.00 | Andrew DBXNH-6565B-R2M | 1 | 46.30 | 8.170 | 1.00 | 259.50 | 9.533 | 1.00 | 0.000 | 2.000 |
| 120.00 | Commscope SBNH-1D4545A | 1 | 39.70 | 7.940 | 0.75 | 218.08 | 10.263 | 0.75 | 0.000 | 2.000 |
| 120.00 | Ericsson RRUS-11 1900 MHz | 3 | 44.00 | 2.520 | 0.67 | 128.43 | 3.193 | 0.67 | 0.000 | 2.000 |
| 120.00 | Powerwave Allgon 7770.00 | 6 | 35.00 | 5.510 | 0.65 | 176.77 | 6.605 | 0.65 | 0.000 | 2.000 |
| 120.00 | Powerwave Allgon LGP21401 | 6 | 14.10 | 1.100 | 0.50 | 49.64 | 1.584 | 0.50 | 0.000 | 0.000 |
| 120.00 | Raycap DC6-48-60-18-8F | 1 | 31.80 | 1.280 | 1.00 | 129.34 | 2.882 | 1.00 | 0.000 | 2.000 |
| 120.00 | Round Low Profile Platform | 1 | 1500.00 | 21.700 | 1.00 | 2,175.19 | 41.708 | 1.00 | 0.000 | 0.000 |
| 76.00 | Flat Side Arm | 1 | 150.00 | 6.300 | 1.00 | 225.80 | 8.847 | 1.00 | 0.000 | 0.000 |
| 76.00 | GPS | 1 | 10.00 | 1.000 | 1.00 | 32.12 | 0.581 | 1.00 | 0.000 | 0.000 |
| | Totals | 77 | 6984.40 | | | 17,201.48 | | | Number of Loadings : | 21 |

## Linear Appurtenance Properties

| Elev From (ft) | Elev To (ft) | Qty | Description | Coax Diameter (in) | Coax Weight (lb/ft) | Flat | Projected Width (in) | Exposed To Wind | Carrier |
|---|---|---|---|---|---|---|---|---|---|
| 10.00 | 150.00 | 12 | 1 1/4" Coax | 1.55 | 0.63 | N | 0.00 | N | Sprint Nextel |
| 10.00 | 140.00 | 24 | 1 5/8" Coax | 1.98 | 0.82 | N | 0.00 | N | Sprint Nextel |
| 10.00 | 130.00 | 12 | 1 5/8" Coax | 1.98 | 0.82 | N | 0.00 | N | Verizon |
| 10.00 | 130.00 | 2 | 1 5/8" Hybriflex Cable | 1.98 | 1.30 | N | 0.00 | N | Verizon |
| 10.00 | 120.00 | 1 | 0.39" Fiber Trunk | 0.39 | 0.06 | N | 0.00 | N | AT&T Mobility |
| 10.00 | 120.00 | 2 | 0.78" 8 AWG 6 | 0.78 | 0.59 | N | 0.00 | N | AT&T Mobility |
| 10.00 | 120.00 | 12 | 1 1/4" Coax | 1.55 | 0.63 | N | 0.00 | N | AT&T Mobility |
| 10.00 | 76.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0.00 | N | AT&T Mobility |

## 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | 0.5625 | 72.200 | 127.894 | 82,924.1 | 21.22 | 128.35 | 76.4 | 2262. | 0.0 | 0.0 |
| 5.00 | | 0.5625 | 70.931 | 125.630 | 78,597.9 | 20.82 | 126.10 | 76.9 | 2182. | 0.0 | 2,156.7 |
| 10.00 | | 0.5625 | 69.663 | 123.366 | 74,424.7 | 20.43 | 123.85 | 77.4 | 2104. | 0.0 | 2,118.2 |
| 15.00 | | 0.5625 | 68.395 | 121.103 | 70,402.0 | 20.03 | 121.59 | 77.8 | 2027. | 0.0 | 2,079.7 |
| 20.00 | | 0.5625 | 67.127 | 118.839 | 66,526.9 | 19.63 | 119.34 | 78.3 | 1952. | 0.0 | 2,041.2 |
| 25.00 | | 0.5625 | 65.859 | 116.575 | 62,796.6 | 19.23 | 117.08 | 78.8 | 1878. | 0.0 | 2,002.6 |
| 30.00 | | 0.5625 | 64.591 | 114.311 | 59,208.5 | 18.84 | 114.83 | 79.2 | 1805. | 0.0 | 1,964.1 |
| 35.00 | | 0.5625 | 63.323 | 112.047 | 55,759.7 | 18.44 | 112.57 | 79.7 | 1734. | 0.0 | 1,925.6 |
| 37.00 | Bot - Section 2 | 0.5625 | 62.815 | 111.141 | 54,418.6 | 18.28 | 111.67 | 79.9 | 1706. | 0.0 | 759.5 |
| 40.00 | | 0.5625 | 62.055 | 109.783 | 52,447.5 | 18.04 | 110.32 | 80.2 | 1664. | 0.0 | 2,275.8 |
| 45.00 | Top - Section 1 | 0.5625 | 61.911 | 109.527 | 52,082.2 | 18.00 | 110.06 | 80.2 | 1656. | 0.0 | 3,731.3 |
| 50.00 | | 0.5625 | 60.643 | 107.263 | 48,918.8 | 17.60 | 107.81 | 80.7 | 1588. | 0.0 | 1,844.2 |
| 55.00 | | 0.5625 | 59.375 | 104.999 | 45,886.1 | 17.20 | 105.56 | 81.2 | 1522. | 0.0 | 1,805.7 |
| 60.00 | | 0.5625 | 58.107 | 102.735 | 42,981.5 | 16.80 | 103.30 | 81.6 | 1456. | 0.0 | 1,767.2 |
| 65.00 | | 0.5625 | 56.839 | 100.471 | 40,202.0 | 16.41 | 101.05 | 82.1 | 1393. | 0.0 | 1,728.7 |
| 70.00 | | 0.5625 | 55.571 | 98.207 | 37,545.1 | 16.01 | 98.79 | 82.6 | 1330. | 0.0 | 1,690.1 |
| 75.00 | Bot - Section 3 | 0.5625 | 54.303 | 95.943 | 35,007.9 | 15.61 | 96.54 | 82.6 | 1269. | 0.0 | 1,651.6 |
| 76.00 | | 0.5625 | 54.049 | 95.490 | 34,514.6 | 15.53 | 96.09 | 82.6 | 1257. | 0.0 | 621.0 |
| 80.00 | | 0.5625 | 53.035 | 93.679 | 32,587.6 | 15.21 | 94.28 | 82.6 | 1210. | 0.0 | 2,454.7 |
| 82.00 | Top - Section 2 | 0.5000 | 53.527 | 84.151 | 29,896.1 | 17.47 | 107.05 | 80.9 | 1100. | 0.0 | 1,209.9 |
| 85.00 | | 0.5000 | 52.767 | 82.944 | 28,627.6 | 17.20 | 105.53 | 81.2 | 1068. | 0.0 | 852.9 |
| 90.00 | | 0.5000 | 51.498 | 80.932 | 26,594.0 | 16.75 | 103.00 | 81.7 | 1017. | 0.0 | 1,394.1 |
| 95.00 | | 0.5000 | 50.230 | 78.919 | 24,659.1 | 16.30 | 100.46 | 82.2 | 966.9 | 0.0 | 1,359.8 |
| 100.0 | | 0.5000 | 48.962 | 76.907 | 22,820.3 | 15.86 | 97.92 | 82.6 | 918.0 | 0.0 | 1,325.6 |
| 105.0 | | 0.5000 | 47.694 | 74.894 | 21,075.4 | 15.41 | 95.39 | 82.6 | 870.3 | 0.0 | 1,291.4 |
| 110.0 | | 0.5000 | 46.426 | 72.882 | 19,421.7 | 14.96 | 92.85 | 82.6 | 824.0 | 0.0 | 1,257.1 |
| 115.0 | | 0.5000 | 45.158 | 70.869 | 17,856.9 | 14.51 | 90.32 | 82.6 | 778.9 | 0.0 | 1,222.9 |
| 120.0 | Bot - Section 4 | 0.5000 | 43.890 | 68.857 | 16,378.4 | 14.07 | 87.78 | 82.6 | 735.0 | 0.0 | 1,188.6 |
| 125.0 | | 0.5000 | 42.622 | 66.844 | 14,984.0 | 13.62 | 85.24 | 82.6 | 692.4 | 0.0 | 1,889.6 |
| 125.5 | Top - Section 3 | 0.3125 | 43.120 | 42.458 | 9,829.8 | 22.92 | 137.98 | 74.4 | 449.0 | 0.0 | 185.9 |
| 130.0 | | 0.3125 | 41.978 | 41.326 | 9,064.3 | 22.28 | 134.33 | 75.2 | 425.3 | 0.0 | 641.5 |
| 135.0 | | 0.3125 | 40.710 | 40.068 | 8,261.6 | 21.56 | 130.27 | 76.0 | 399.7 | 0.0 | 692.4 |
| 140.0 | | 0.3125 | 39.442 | 38.810 | 7,507.8 | 20.84 | 126.21 | 76.9 | 374.9 | 0.0 | 671.0 |
| 145.0 | | 0.3125 | 38.174 | 37.553 | 6,801.3 | 20.13 | 122.16 | 77.7 | 350.9 | 0.0 | 649.6 |
| 150.0 | | 0.3125 | 36.906 | 36.295 | 6,140.5 | 19.41 | 118.10 | 78.6 | 327.7 | 0.0 | 628.2 |
| | | | | | | | | | | | 51,078.4 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number:OAA697424_C3_02 5/19/2017 3:56:08 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W 101 mph with No Ice 17 Iterations

Gust Response Factor :1.10 Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

## Applied Segment Forces Summary

| Seg Elev (ft) | Description | Shaft Forces Wind FX (lb) | Shaft Forces Dead Load (lb) | Discrete Forces Wind FX (lb) | Discrete Forces Torsion MY (lb-ft) | Discrete Forces Moment MZ (lb-ft) | Discrete Forces Dead Load (lb) | Linear Forces Wind FX (lb) | Linear Forces Dead Load (lb) | Sum of Forces Wind FX (lb) | Sum of Forces Dead Load (lb) | Sum of Forces Torsion MY (lb-ft) | Sum of Forces Moment MZ (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | 569.2 | 0.0 | | | | | 0.0 | 0.0 | 569.2 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1,110.7 | 2,588.1 | | | | | 0.0 | 0.0 | 1,110.7 | 2,588.1 | 0.0 | 0.0 |
| 10.00 | | 1,057.3 | 2,541.8 | | | | | 0.0 | 0.0 | 1,057.3 | 2,541.8 | 0.0 | 0.0 |
| 15.00 | | 1,007.5 | 2,495.6 | | | | | 0.0 | 291.8 | 1,007.5 | 2,787.4 | 0.0 | 0.0 |
| 20.00 | | 961.0 | 2,449.4 | | | | | 0.0 | 291.8 | 961.0 | 2,741.2 | 0.0 | 0.0 |
| 25.00 | | 917.5 | 2,403.2 | | | | | 0.0 | 291.8 | 917.5 | 2,694.9 | 0.0 | 0.0 |
| 30.00 | | 887.0 | 2,357.0 | | | | | 0.0 | 291.8 | 887.0 | 2,648.7 | 0.0 | 0.0 |
| 35.00 | | 613.9 | 2,310.7 | | | | | 0.0 | 291.8 | 613.9 | 2,602.5 | 0.0 | 0.0 |
| 37.00 | Bot - Section 2 | 441.9 | 911.3 | | | | | 0.0 | 116.7 | 441.9 | 1,028.1 | 0.0 | 0.0 |
| 40.00 | | 708.6 | 2,730.9 | | | | | 0.0 | 175.1 | 708.6 | 2,906.0 | 0.0 | 0.0 |
| 45.00 | Top - Section 1 | 878.9 | 4,477.6 | | | | | 0.0 | 291.8 | 878.9 | 4,769.3 | 0.0 | 0.0 |
| 50.00 | | 868.5 | 2,213.1 | | | | | 0.0 | 291.8 | 868.5 | 2,504.8 | 0.0 | 0.0 |
| 55.00 | | 856.1 | 2,166.8 | | | | | 0.0 | 291.8 | 856.1 | 2,458.6 | 0.0 | 0.0 |
| 60.00 | | 842.4 | 2,120.6 | | | | | 0.0 | 291.8 | 842.4 | 2,412.4 | 0.0 | 0.0 |
| 65.00 | | 827.7 | 2,074.4 | | | | | 0.0 | 291.8 | 827.7 | 2,366.2 | 0.0 | 0.0 |
| 70.00 | | 812.1 | 2,028.2 | | | | | 0.0 | 291.8 | 812.1 | 2,319.9 | 0.0 | 0.0 |
| 75.00 | Bot - Section 3 | 483.0 | 1,981.9 | | | | | 0.0 | 291.8 | 483.0 | 2,273.7 | 0.0 | 0.0 |
| 76.00 | Appertunance(s) | 401.2 | 745.1 | 389.3 | 0.0 | 0.0 | 192.0 | 0.0 | 58.4 | 790.6 | 995.5 | 0.0 | 0.0 |
| 80.00 | | 478.5 | 2,945.7 | | | | | 0.0 | 232.7 | 478.5 | 3,178.3 | 0.0 | 0.0 |
| 82.00 | Top - Section 2 | 392.9 | 1,451.9 | | | | | 0.0 | 116.3 | 392.9 | 1,568.2 | 0.0 | 0.0 |
| 85.00 | | 619.0 | 1,023.5 | | | | | 0.0 | 174.5 | 619.0 | 1,198.0 | 0.0 | 0.0 |
| 90.00 | | 760.1 | 1,672.9 | | | | | 0.0 | 290.9 | 760.1 | 1,963.8 | 0.0 | 0.0 |
| 95.00 | | 742.7 | 1,631.8 | | | | | 0.0 | 290.9 | 742.7 | 1,922.7 | 0.0 | 0.0 |
| 100.00 | | 725.3 | 1,590.7 | | | | | 0.0 | 290.9 | 725.3 | 1,881.6 | 0.0 | 0.0 |
| 105.00 | | 707.7 | 1,549.6 | | | | | 0.0 | 290.9 | 707.7 | 1,840.5 | 0.0 | 0.0 |
| 110.00 | | 690.1 | 1,508.5 | | | | | 0.0 | 290.9 | 690.1 | 1,799.4 | 0.0 | 0.0 |
| 115.00 | | 672.4 | 1,467.5 | | | | | 0.0 | 290.9 | 672.4 | 1,758.3 | 0.0 | 0.0 |
| 120.00 | Bot - Section 4 | 659.4 | 1,426.4 | 3,476.1 | 0.0 | 4,311.7 | 2,507.3 | 0.0 | 290.9 | 4,135.5 | 4,224.5 | 0.0 | 0.0 |
| 125.00 | | 359.9 | 2,267.5 | | | | | 0.0 | 238.1 | 359.9 | 2,505.6 | 0.0 | 0.0 |
| 125.50 | Top - Section 3 | 318.7 | 223.1 | | | | | 0.0 | 23.8 | 318.7 | 246.9 | 0.0 | 0.0 |
| 130.00 | Appertunance(s) | 596.3 | 769.8 | 4,398.0 | 0.0 | 1,758.6 | 2,643.6 | 0.0 | 214.3 | 4,994.3 | 3,627.6 | 0.0 | 0.0 |
| 135.00 | | 610.8 | 830.9 | | | | | 0.0 | 163.4 | 610.8 | 994.3 | 0.0 | 0.0 |
| 140.00 | Appertunance(s) | 593.0 | 805.2 | 2,134.1 | 0.0 | 0.0 | 1,036.8 | 0.0 | 163.4 | 2,727.1 | 2,005.4 | 0.0 | 0.0 |
| 145.00 | | 575.2 | 779.5 | | | | | 0.0 | 45.4 | 575.2 | 824.9 | 0.0 | 0.0 |
| 150.00 | Appertunance(s) | 283.1 | 753.9 | 3,193.3 | 0.0 | 0.0 | 2,001.6 | 0.0 | 45.4 | 3,476.4 | 2,800.8 | 0.0 | 0.0 |
| | | | | | | | | Totals: | | 37,620.5 | 76,979.8 | 0.00 | 0.00 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number:OAA697424_C3_02 5/19/2017 3:56:09 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W 101 mph with No Ice 17 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 | -76.96 | -37.09 | 0.00 | -3,472.44 | 0.00 | 3,472.44 | 8,798.63 | 4,399.32 | 25,899.6 | 12,969.0 | 0.00 | 0.00 | 0.277 |
| 5.00 | -74.34 | -36.05 | 0.00 | -3,286.99 | 0.00 | 3,286.99 | 8,695.74 | 4,347.87 | 25,140.1 | 12,588.7 | 0.03 | -0.06 | 0.270 |
| 10.00 | -71.76 | -35.07 | 0.00 | -3,106.72 | 0.00 | 3,106.72 | 8,590.95 | 4,295.47 | 24,386.0 | 12,211.1 | 0.12 | -0.12 | 0.263 |
| 15.00 | -68.94 | -34.12 | 0.00 | -2,931.39 | 0.00 | 2,931.39 | 8,484.25 | 4,242.12 | 23,637.6 | 11,836.3 | 0.28 | -0.17 | 0.256 |
| 20.00 | -66.17 | -33.22 | 0.00 | -2,760.80 | 0.00 | 2,760.80 | 8,375.64 | 4,187.82 | 22,895.2 | 11,464.6 | 0.49 | -0.23 | 0.249 |
| 25.00 | -63.45 | -32.35 | 0.00 | -2,594.72 | 0.00 | 2,594.72 | 8,265.13 | 4,132.56 | 22,159.1 | 11,096.0 | 0.76 | -0.29 | 0.242 |
| 30.00 | -60.77 | -31.51 | 0.00 | -2,432.97 | 0.00 | 2,432.97 | 8,152.71 | 4,076.36 | 21,429.5 | 10,730.7 | 1.10 | -0.35 | 0.234 |
| 35.00 | -58.15 | -30.92 | 0.00 | -2,275.43 | 0.00 | 2,275.43 | 8,038.39 | 4,019.19 | 20,706.9 | 10,368.8 | 1.49 | -0.40 | 0.227 |
| 37.00 | -57.11 | -30.50 | 0.00 | -2,213.60 | 0.00 | 2,213.60 | 7,992.13 | 3,996.06 | 20,419.9 | 10,225.1 | 1.66 | -0.42 | 0.224 |
| 40.00 | -54.19 | -29.81 | 0.00 | -2,122.11 | 0.00 | 2,122.11 | 7,922.16 | 3,961.08 | 19,991.5 | 10,010.6 | 1.94 | -0.46 | 0.219 |
| 45.00 | -49.40 | -28.94 | 0.00 | -1,973.08 | 0.00 | 1,973.08 | 7,908.92 | 3,954.46 | 19,911.2 | 9,970.44 | 2.45 | -0.51 | 0.204 |
| 50.00 | -46.88 | -28.09 | 0.00 | -1,828.40 | 0.00 | 1,828.40 | 7,790.58 | 3,895.29 | 19,204.2 | 9,616.39 | 3.02 | -0.57 | 0.196 |
| 55.00 | -44.40 | -27.24 | 0.00 | -1,687.97 | 0.00 | 1,687.97 | 7,670.32 | 3,835.16 | 18,505.0 | 9,266.26 | 3.65 | -0.62 | 0.188 |
| 60.00 | -41.98 | -26.41 | 0.00 | -1,551.74 | 0.00 | 1,551.74 | 7,548.17 | 3,774.08 | 17,813.9 | 8,920.21 | 4.32 | -0.67 | 0.180 |
| 65.00 | -39.60 | -25.59 | 0.00 | -1,419.69 | 0.00 | 1,419.69 | 7,424.10 | 3,712.05 | 17,131.2 | 8,578.37 | 5.05 | -0.72 | 0.171 |
| 70.00 | -37.27 | -24.78 | 0.00 | -1,291.74 | 0.00 | 1,291.74 | 7,296.29 | 3,648.15 | 16,453.2 | 8,238.84 | 5.83 | -0.77 | 0.162 |
| 75.00 | -34.99 | -24.28 | 0.00 | -1,167.86 | 0.00 | 1,167.86 | 7,128.09 | 3,564.04 | 15,699.6 | 7,861.47 | 6.66 | -0.81 | 0.154 |
| 76.00 | -34.00 | -23.49 | 0.00 | -1,143.58 | 0.00 | 1,143.58 | 7,094.45 | 3,547.22 | 15,551.0 | 7,787.06 | 6.83 | -0.82 | 0.152 |
| 80.00 | -30.82 | -22.98 | 0.00 | -1,049.62 | 0.00 | 1,049.62 | 6,959.89 | 3,479.94 | 14,963.6 | 7,492.96 | 7.54 | -0.86 | 0.145 |
| 82.00 | -29.25 | -22.57 | 0.00 | -1,003.67 | 0.00 | 1,003.67 | 6,123.84 | 3,061.92 | 13,322.5 | 6,671.16 | 7.90 | -0.88 | 0.155 |
| 85.00 | -28.04 | -21.95 | 0.00 | -935.95 | 0.00 | 935.95 | 6,059.53 | 3,029.76 | 12,991.6 | 6,505.50 | 8.46 | -0.90 | 0.149 |
| 90.00 | -26.08 | -21.18 | 0.00 | -826.19 | 0.00 | 826.19 | 5,950.82 | 2,975.41 | 12,446.1 | 6,232.31 | 9.44 | -0.95 | 0.137 |
| 95.00 | -24.15 | -20.42 | 0.00 | -720.29 | 0.00 | 720.29 | 5,840.20 | 2,920.10 | 11,908.1 | 5,962.90 | 10.45 | -0.99 | 0.125 |
| 100.00 | -22.27 | -19.68 | 0.00 | -618.18 | 0.00 | 618.18 | 5,713.78 | 2,856.89 | 11,350.2 | 5,683.57 | 11.51 | -1.03 | 0.113 |
| 105.00 | -20.43 | -18.95 | 0.00 | -519.79 | 0.00 | 519.79 | 5,564.26 | 2,782.13 | 10,761.0 | 5,388.54 | 12.60 | -1.06 | 0.100 |
| 110.00 | -18.64 | -18.23 | 0.00 | -425.05 | 0.00 | 425.05 | 5,414.75 | 2,707.38 | 10,187.5 | 5,101.37 | 13.74 | -1.09 | 0.087 |
| 115.00 | -16.89 | -17.54 | 0.00 | -333.88 | 0.00 | 333.88 | 5,265.24 | 2,632.62 | 9,629.81 | 4,822.06 | 14.90 | -1.12 | 0.072 |
| 120.00 | -12.74 | -13.32 | 0.00 | -241.89 | 0.00 | 241.89 | 5,115.72 | 2,557.86 | 9,087.73 | 4,550.62 | 16.09 | -1.15 | 0.056 |
| 125.00 | -10.24 | -12.91 | 0.00 | -175.28 | 0.00 | 175.28 | 4,966.21 | 2,483.10 | 8,561.35 | 4,287.04 | 17.30 | -1.16 | 0.043 |
| 125.50 | -10.00 | -12.59 | 0.00 | -168.82 | 0.00 | 168.82 | 2,844.63 | 1,422.32 | 5,006.36 | 2,506.90 | 17.42 | -1.17 | 0.071 |
| 130.00 | -6.47 | -7.52 | 0.00 | -110.40 | 0.00 | 110.40 | 2,796.96 | 1,398.48 | 4,790.27 | 2,398.70 | 18.53 | -1.18 | 0.048 |
| 135.00 | -5.49 | -6.89 | 0.00 | -72.78 | 0.00 | 72.78 | 2,742.18 | 1,371.09 | 4,552.45 | 2,279.61 | 19.77 | -1.19 | 0.034 |
| 140.00 | -3.54 | -4.13 | 0.00 | -38.31 | 0.00 | 38.31 | 2,685.50 | 1,342.75 | 4,317.32 | 2,161.87 | 21.02 | -1.20 | 0.019 |
| 145.00 | -2.73 | -3.53 | 0.00 | -17.67 | 0.00 | 17.67 | 2,626.91 | 1,313.45 | 4,085.18 | 2,045.63 | 22.28 | -1.21 | 0.010 |
| 150.00 | 0.00 | -3.48 | 0.00 | 0.00 | 0.00 | 0.00 | 2,566.41 | 1,283.21 | 3,856.33 | 1,931.03 | 23.55 | -1.21 | 0.000 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number: OAA697424_C3_02 5/19/2017 3:56:09 PM

Customer: VERIZON WIRELESS

**Load Case:** 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 17 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

## Applied Segment Forces Summary

| | | Shaft Forces | | Discrete Forces | | | | Linear Forces | | Sum of Forces | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seg Elev (ft) | Description | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00 | | 569.2 | 0.0 | | | | | 0.0 | 0.0 | 569.2 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1,110.7 | 1,941.1 | | | | | 0.0 | 0.0 | 1,110.7 | 1,941.1 | 0.0 | 0.0 |
| 10.00 | | 1,057.3 | 1,906.4 | | | | | 0.0 | 0.0 | 1,057.3 | 1,906.4 | 0.0 | 0.0 |
| 15.00 | | 1,007.5 | 1,871.7 | | | | | 0.0 | 218.8 | 1,007.5 | 2,090.5 | 0.0 | 0.0 |
| 20.00 | | 961.0 | 1,837.0 | | | | | 0.0 | 218.8 | 961.0 | 2,055.9 | 0.0 | 0.0 |
| 25.00 | | 917.5 | 1,802.4 | | | | | 0.0 | 218.8 | 917.5 | 2,021.2 | 0.0 | 0.0 |
| 30.00 | | 887.0 | 1,767.7 | | | | | 0.0 | 218.8 | 887.0 | 1,986.5 | 0.0 | 0.0 |
| 35.00 | | 613.9 | 1,733.0 | | | | | 0.0 | 218.8 | 613.9 | 1,951.9 | 0.0 | 0.0 |
| 37.00 | Bot - Section 2 | 441.9 | 683.5 | | | | | 0.0 | 87.5 | 441.9 | 771.0 | 0.0 | 0.0 |
| 40.00 | | 708.6 | 2,048.2 | | | | | 0.0 | 131.3 | 708.6 | 2,179.5 | 0.0 | 0.0 |
| 45.00 | Top - Section 1 | 878.9 | 3,358.2 | | | | | 0.0 | 218.8 | 878.9 | 3,577.0 | 0.0 | 0.0 |
| 50.00 | | 868.5 | 1,659.8 | | | | | 0.0 | 218.8 | 868.5 | 1,878.6 | 0.0 | 0.0 |
| 55.00 | | 856.1 | 1,625.1 | | | | | 0.0 | 218.8 | 856.1 | 1,844.0 | 0.0 | 0.0 |
| 60.00 | | 842.4 | 1,590.5 | | | | | 0.0 | 218.8 | 842.4 | 1,809.3 | 0.0 | 0.0 |
| 65.00 | | 827.7 | 1,555.8 | | | | | 0.0 | 218.8 | 827.7 | 1,774.6 | 0.0 | 0.0 |
| 70.00 | | 812.1 | 1,521.1 | | | | | 0.0 | 218.8 | 812.1 | 1,739.9 | 0.0 | 0.0 |
| 75.00 | Bot - Section 3 | 483.0 | 1,486.5 | | | | | 0.0 | 218.8 | 483.0 | 1,705.3 | 0.0 | 0.0 |
| 76.00 | Appertunance(s) | 401.2 | 558.9 | 389.3 | 0.0 | 0.0 | 144.0 | 0.0 | 43.8 | 790.6 | 746.6 | 0.0 | 0.0 |
| 80.00 | | 478.5 | 2,209.2 | | | | | 0.0 | 174.5 | 478.5 | 2,383.8 | 0.0 | 0.0 |
| 82.00 | Top - Section 2 | 392.9 | 1,088.9 | | | | | 0.0 | 87.3 | 392.9 | 1,176.2 | 0.0 | 0.0 |
| 85.00 | | 619.0 | 767.6 | | | | | 0.0 | 130.9 | 619.0 | 898.5 | 0.0 | 0.0 |
| 90.00 | | 760.1 | 1,254.7 | | | | | 0.0 | 218.1 | 760.1 | 1,472.8 | 0.0 | 0.0 |
| 95.00 | | 742.7 | 1,223.9 | | | | | 0.0 | 218.1 | 742.7 | 1,442.0 | 0.0 | 0.0 |
| 100.00 | | 725.3 | 1,193.0 | | | | | 0.0 | 218.1 | 725.3 | 1,411.2 | 0.0 | 0.0 |
| 105.00 | | 707.7 | 1,162.2 | | | | | 0.0 | 218.1 | 707.7 | 1,380.4 | 0.0 | 0.0 |
| 110.00 | | 690.1 | 1,131.4 | | | | | 0.0 | 218.1 | 690.1 | 1,349.6 | 0.0 | 0.0 |
| 115.00 | | 672.4 | 1,100.6 | | | | | 0.0 | 218.1 | 672.4 | 1,318.7 | 0.0 | 0.0 |
| 120.00 | Bot - Section 4 | 659.4 | 1,069.8 | 3,476.1 | 0.0 | 4,311.7 | 1,880.5 | 0.0 | 218.1 | 4,135.5 | 3,168.4 | 0.0 | 0.0 |
| 125.00 | | 359.9 | 1,700.7 | | | | | 0.0 | 178.5 | 359.9 | 1,879.2 | 0.0 | 0.0 |
| 125.50 | Top - Section 3 | 318.7 | 167.3 | | | | | 0.0 | 17.9 | 318.7 | 185.2 | 0.0 | 0.0 |
| 130.00 | Appertunance(s) | 596.3 | 577.3 | 4,398.0 | 0.0 | 1,758.6 | 1,982.7 | 0.0 | 160.7 | 4,994.3 | 2,720.7 | 0.0 | 0.0 |
| 135.00 | | 610.8 | 623.2 | | | | | 0.0 | 122.6 | 610.8 | 745.7 | 0.0 | 0.0 |
| 140.00 | Appertunance(s) | 593.0 | 603.9 | 2,134.1 | 0.0 | 0.0 | 777.6 | 0.0 | 122.6 | 2,727.1 | 1,504.1 | 0.0 | 0.0 |
| 145.00 | | 575.2 | 584.7 | | | | | 0.0 | 34.0 | 575.2 | 618.7 | 0.0 | 0.0 |
| 150.00 | Appertunance(s) | 283.1 | 565.4 | 3,193.3 | 0.0 | 0.0 | 1,501.2 | 0.0 | 34.0 | 3,476.4 | 2,100.6 | 0.0 | 0.0 |
| | | | | | | | | Totals: | | 37,620.5 | 57,734.8 | 0.00 | 0.00 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number: OAA697424_C3_02 5/19/2017 3:56:10 PM

Customer: VERIZON WIRELESS

**Load Case:** 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 17 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60

Wind Importance 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 | -57.72 | -37.08 | 0.00 | -3,459.48 | 0.00 | 3,459.48 | 8,798.63 | 4,399.32 | 25,899.6 | 12,969.0 | 0.00 | 0.00 | 0.273 |
| 5.00 | -55.74 | -36.03 | 0.00 | -3,274.08 | 0.00 | 3,274.08 | 8,695.74 | 4,347.87 | 25,140.1 | 12,588.7 | 0.03 | -0.06 | 0.267 |
| 10.00 | -53.80 | -35.02 | 0.00 | -3,093.95 | 0.00 | 3,093.95 | 8,590.95 | 4,295.47 | 24,386.0 | 12,211.1 | 0.12 | -0.12 | 0.260 |
| 15.00 | -51.68 | -34.06 | 0.00 | -2,918.86 | 0.00 | 2,918.86 | 8,484.25 | 4,242.12 | 23,637.6 | 11,836.3 | 0.28 | -0.17 | 0.253 |
| 20.00 | -49.59 | -33.14 | 0.00 | -2,748.57 | 0.00 | 2,748.57 | 8,375.64 | 4,187.82 | 22,895.2 | 11,464.6 | 0.49 | -0.23 | 0.246 |
| 25.00 | -47.54 | -32.26 | 0.00 | -2,582.87 | 0.00 | 2,582.87 | 8,265.13 | 4,132.56 | 22,159.1 | 11,096.0 | 0.76 | -0.29 | 0.239 |
| 30.00 | -45.53 | -31.41 | 0.00 | -2,421.57 | 0.00 | 2,421.57 | 8,152.71 | 4,076.36 | 21,429.5 | 10,730.7 | 1.09 | -0.34 | 0.231 |
| 35.00 | -43.56 | -30.81 | 0.00 | -2,264.54 | 0.00 | 2,264.54 | 8,038.39 | 4,019.19 | 20,706.9 | 10,368.8 | 1.48 | -0.40 | 0.224 |
| 37.00 | -42.78 | -30.38 | 0.00 | -2,202.92 | 0.00 | 2,202.92 | 7,992.13 | 3,996.06 | 20,419.9 | 10,225.1 | 1.66 | -0.42 | 0.221 |
| 40.00 | -40.58 | -29.69 | 0.00 | -2,111.77 | 0.00 | 2,111.77 | 7,922.16 | 3,961.08 | 19,991.5 | 10,010.6 | 1.93 | -0.46 | 0.216 |
| 45.00 | -36.98 | -28.82 | 0.00 | -1,963.32 | 0.00 | 1,963.32 | 7,908.92 | 3,954.46 | 19,911.2 | 9,970.44 | 2.44 | -0.51 | 0.202 |
| 50.00 | -35.09 | -27.96 | 0.00 | -1,819.24 | 0.00 | 1,819.24 | 7,790.58 | 3,895.29 | 19,204.2 | 9,616.39 | 3.01 | -0.57 | 0.194 |
| 55.00 | -33.23 | -27.12 | 0.00 | -1,679.42 | 0.00 | 1,679.42 | 7,670.32 | 3,835.16 | 18,505.0 | 9,266.26 | 3.63 | -0.62 | 0.186 |
| 60.00 | -31.41 | -26.28 | 0.00 | -1,543.84 | 0.00 | 1,543.84 | 7,548.17 | 3,774.08 | 17,813.9 | 8,920.21 | 4.30 | -0.67 | 0.177 |
| 65.00 | -29.62 | -25.46 | 0.00 | -1,412.43 | 0.00 | 1,412.43 | 7,424.10 | 3,712.05 | 17,131.2 | 8,578.37 | 5.03 | -0.72 | 0.169 |
| 70.00 | -27.87 | -24.65 | 0.00 | -1,285.15 | 0.00 | 1,285.15 | 7,296.29 | 3,648.15 | 16,453.2 | 8,238.84 | 5.81 | -0.76 | 0.160 |
| 75.00 | -26.16 | -24.15 | 0.00 | -1,161.92 | 0.00 | 1,161.92 | 7,128.09 | 3,564.04 | 15,699.6 | 7,861.47 | 6.63 | -0.81 | 0.152 |
| 76.00 | -25.42 | -23.36 | 0.00 | -1,137.77 | 0.00 | 1,137.77 | 7,094.45 | 3,547.22 | 15,551.0 | 7,787.06 | 6.80 | -0.82 | 0.150 |
| 80.00 | -23.03 | -22.86 | 0.00 | -1,044.33 | 0.00 | 1,044.33 | 6,959.89 | 3,479.94 | 14,963.6 | 7,492.96 | 7.51 | -0.86 | 0.143 |
| 82.00 | -21.85 | -22.46 | 0.00 | -998.61 | 0.00 | 998.61 | 6,123.84 | 3,061.92 | 13,322.5 | 6,671.16 | 7.87 | -0.87 | 0.153 |
| 85.00 | -20.95 | -21.84 | 0.00 | -931.24 | 0.00 | 931.24 | 6,059.53 | 3,029.76 | 12,991.6 | 6,505.50 | 8.43 | -0.90 | 0.147 |
| 90.00 | -19.47 | -21.07 | 0.00 | -822.06 | 0.00 | 822.06 | 5,950.82 | 2,975.41 | 12,446.1 | 6,232.31 | 9.39 | -0.94 | 0.135 |
| 95.00 | -18.03 | -20.31 | 0.00 | -716.73 | 0.00 | 716.73 | 5,840.20 | 2,920.10 | 11,908.1 | 5,962.90 | 10.40 | -0.98 | 0.123 |
| 100.00 | -16.62 | -19.57 | 0.00 | -615.17 | 0.00 | 615.17 | 5,713.78 | 2,856.89 | 11,350.2 | 5,683.57 | 11.46 | -1.02 | 0.111 |
| 105.00 | -15.24 | -18.85 | 0.00 | -517.30 | 0.00 | 517.30 | 5,564.26 | 2,782.13 | 10,761.0 | 5,388.54 | 12.55 | -1.06 | 0.099 |
| 110.00 | -13.89 | -18.14 | 0.00 | -423.06 | 0.00 | 423.06 | 5,414.75 | 2,707.38 | 10,187.5 | 5,101.37 | 13.67 | -1.09 | 0.086 |
| 115.00 | -12.58 | -17.45 | 0.00 | -332.35 | 0.00 | 332.35 | 5,265.24 | 2,632.62 | 9,629.81 | 4,822.06 | 14.83 | -1.12 | 0.071 |
| 120.00 | -9.49 | -13.26 | 0.00 | -240.79 | 0.00 | 240.79 | 5,115.72 | 2,557.86 | 9,087.73 | 4,550.62 | 16.01 | -1.14 | 0.055 |
| 125.00 | -7.62 | -12.86 | 0.00 | -174.52 | 0.00 | 174.52 | 4,966.21 | 2,483.10 | 8,561.35 | 4,287.04 | 17.22 | -1.16 | 0.042 |
| 125.50 | -7.44 | -12.54 | 0.00 | -168.09 | 0.00 | 168.09 | 2,844.63 | 1,422.32 | 5,006.36 | 2,506.90 | 17.34 | -1.16 | 0.070 |
| 130.00 | -4.82 | -7.49 | 0.00 | -109.91 | 0.00 | 109.91 | 2,796.96 | 1,398.48 | 4,790.27 | 2,398.70 | 18.44 | -1.17 | 0.048 |
| 135.00 | -4.08 | -6.86 | 0.00 | -72.46 | 0.00 | 72.46 | 2,742.18 | 1,371.09 | 4,552.45 | 2,279.61 | 19.68 | -1.19 | 0.033 |
| 140.00 | -2.63 | -4.11 | 0.00 | -38.14 | 0.00 | 38.14 | 2,685.50 | 1,342.75 | 4,317.32 | 2,161.87 | 20.92 | -1.20 | 0.019 |
| 145.00 | -2.03 | -3.52 | 0.00 | -17.60 | 0.00 | 17.60 | 2,626.91 | 1,313.45 | 4,085.18 | 2,045.63 | 22.18 | -1.20 | 0.009 |
| 150.00 | 0.00 | -3.48 | 0.00 | 0.00 | 0.00 | 0.00 | 2,566.41 | 1,283.21 | 3,856.33 | 1,931.03 | 23.44 | -1.20 | 0.000 |

**Load Case:** 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 16 Iterations

Gust Response Factor : 1.10 | Ice Dead Load Factor : 1.00 | Wind Importance Factor : 1.00
Dead Load Factor : 1.20 | Ice Importance Factor : 1.00
Wind Load Factor : 1.00

## Applied Segment Forces Summary

| | | Shaft Forces | | Discrete Forces | | | | Linear Forces | | Sum of Forces | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seg Elev (ft) | Description | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00 | | 167.4 | 0.0 | | | | | 0.0 | 0.0 | 167.4 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 327.4 | 3,245.0 | | | | | 0.0 | 0.0 | 327.4 | 3,245.0 | 0.0 | 0.0 |
| 10.00 | | 312.8 | 3,255.7 | | | | | 0.0 | 0.0 | 312.8 | 3,255.7 | 0.0 | 0.0 |
| 15.00 | | 298.7 | 3,226.3 | | | | | 0.0 | 291.8 | 298.7 | 3,518.1 | 0.0 | 0.0 |
| 20.00 | | 285.4 | 3,184.3 | | | | | 0.0 | 291.8 | 285.4 | 3,476.1 | 0.0 | 0.0 |
| 25.00 | | 272.9 | 3,136.0 | | | | | 0.0 | 291.8 | 272.9 | 3,427.7 | 0.0 | 0.0 |
| 30.00 | | 264.2 | 3,084.0 | | | | | 0.0 | 291.8 | 264.2 | 3,375.7 | 0.0 | 0.0 |
| 35.00 | | 183.1 | 3,029.6 | | | | | 0.0 | 291.8 | 183.1 | 3,321.4 | 0.0 | 0.0 |
| 37.00 | Bot - Section 2 | 131.9 | 1,197.9 | | | | | 0.0 | 116.7 | 131.9 | 1;314.6 | 0.0 | 0.0 |
| 40.00 | | 211.5 | 3,164.3 | | | | | 0.0 | 175.1 | 211.5 | 3,339.4 | 0.0 | 0.0 |
| 45.00 | Top - Section 1 | 262.7 | 5,188.3 | | | | | 0.0 | 291.8 | 262.7 | 5,480.0 | 0.0 | 0.0 |
| 50.00 | | 259.9 | 2,912.1 | | | | | 0.0 | 291.8 | 259.9 | 3,203.8 | 0.0 | 0.0 |
| 55.00 | | 256.5 | 2,853.5 | | | | | 0.0 | 291.8 | 256.5 | 3,145.3 | 0.0 | 0.0 |
| 60.00 | | 252.7 | 2,794.5 | | | | | 0.0 | 291.8 | 252.7 | 3,086.3 | 0.0 | 0.0 |
| 65.00 | | 248.6 | 2,735.2 | | | | | 0.0 | 291.8 | 248.6 | 3,026.9 | 0.0 | 0.0 |
| 70.00 | | 244.3 | 2,675.6 | | | | | 0.0 | 291.8 | 244.3 | 2,967.3 | 0.0 | 0.0 |
| 75.00 | Bot - Section 3 | 145.4 | 2,615.8 | | | | | 0.0 | 291.8 | 145.4 | 2,907.5 | 0.0 | 0.0 |
| 76.00 | Appertunance(s) | 120.8 | 873.7 | 77.0 | 0.0 | 0.0 | 209.9 | 0.0 | 58.4 | 197.9 | 1,142.0 | 0.0 | 0.0 |
| 80.00 | | 144.2 | 3,450.8 | | | | | 0.0 | 232.7 | 144.2 | 3,683.5 | 0.0 | 0.0 |
| 82.00 | Top - Section 2 | 118.5 | 1,702.3 | | | | | 0.0 | 116.3 | 118.5 | 1,818.6 | 0.0 | 0.0 |
| 85.00 | | 186.9 | 1,394.1 | | | | | 0.0 | 174.5 | 186.9 | 1,568.6 | 0.0 | 0.0 |
| 90.00 | | 229.8 | 2,276.6 | | | | | 0.0 | 290.9 | 229.8 | 2,567.5 | 0.0 | 0.0 |
| 95.00 | | 224.9 | 2,221.6 | | | | | 0.0 | 290.9 | 224.9 | 2,512.4 | 0.0 | 0.0 |
| 100.00 | | 220.0 | 2,166.5 | | | | | 0.0 | 290.9 | 220.0 | 2,457.4 | 0.0 | 0.0 |
| 105.00 | | 215.1 | 2,111.4 | | | | | 0.0 | 290.9 | 215.1 | 2,402.2 | 0.0 | 0.0 |
| 110.00 | | 210.2 | 2,056.2 | | | | | 0.0 | 290.9 | 210.2 | 2,347.1 | 0.0 | 0.0 |
| 115.00 | | 205.2 | 2,001.1 | | | | | 0.0 | 290.9 | 205.2 | 2,291.9 | 0.0 | 0.0 |
| 120.00 | Bot - Section 4 | 201.5 | 1,945.9 | 784.7 | 0.0 | 813.2 | 5,001.7 | 0.0 | 290.9 | 986.3 | 7,238.4 | 0.0 | 0.0 |
| 125.00 | | 110.1 | 2,780.1 | | | | | 0.0 | 238.1 | 110.1 | 3,018.2 | 0.0 | 0.0 |
| 125.50 | Top - Section 3 | 97.7 | 274.2 | | | | | 0.0 | 23.8 | 97.7 | 298.0 | 0.0 | 0.0 |
| 130.00 | Appertunance(s) | 183.0 | 1,218.4 | 948.4 | 0.0 | 344.6 | 5,983.9 | 0.0 | 214.3 | 1,131.4 | 7,416.5 | 0.0 | 0.0 |
| 135.00 | | 187.9 | 1,315.3 | | | | | 0.0 | 163.4 | 187.9 | 1,478.7 | 0.0 | 0.0 |
| 140.00 | Appertunance(s) | 182.9 | 1,275.5 | 495.2 | 0.0 | 0.0 | 2,664.0 | 0.0 | 163.4 | 678.1 | 4,102.9 | 0.0 | 0.0 |
| 145.00 | | 177.9 | 1,235.7 | | | | | 0.0 | 45.4 | 177.9 | 1,281.0 | 0.0 | 0.0 |
| 150.00 | Appertunance(s) | 87.7 | 1,195.9 | 727.4 | 0.0 | 0.0 | 3,881.8 | 0.0 | 45.4 | 815.2 | 5,123.0 | 0.0 | 0.0 |
| | | | | | | | | Totals: | | 10,262.6 | 104,839. | 0.00 | 0.00 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number: OAA697424_C3_02 5/19/2017 3:56:11 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 16 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 | -104.84 | -10.11 | 0.00 | -914.34 | 0.00 | 914.34 | 8,798.63 | 4,399.32 | 25,899.6 | 12,969.0 | 0.00 | 0.00 | 0.082 |
| 5.00 | -101.59 | -9.81 | 0.00 | -863.80 | 0.00 | 863.80 | 8,695.74 | 4,347.87 | 25,140.1 | 12,588.7 | 0.01 | -0.02 | 0.080 |
| 10.00 | -98.33 | -9.52 | 0.00 | -814.76 | 0.00 | 814.76 | 8,590.95 | 4,295.47 | 24,386.0 | 12,211.1 | 0.03 | -0.03 | 0.078 |
| 15.00 | -94.81 | -9.24 | 0.00 | -767.16 | 0.00 | 767.16 | 8,484.25 | 4,242.12 | 23,637.6 | 11,836.3 | 0.07 | -0.05 | 0.076 |
| 20.00 | -91.33 | -8.98 | 0.00 | -720.94 | 0.00 | 720.94 | 8,375.64 | 4,187.82 | 22,895.2 | 11,464.6 | 0.13 | -0.06 | 0.074 |
| 25.00 | -87.90 | -8.73 | 0.00 | -676.05 | 0.00 | 676.05 | 8,265.13 | 4,132.56 | 22,159.1 | 11,096.0 | 0.20 | -0.08 | 0.072 |
| 30.00 | -84.53 | -8.48 | 0.00 | -632.42 | 0.00 | 632.42 | 8,152.71 | 4,076.36 | 21,429.5 | 10,730.7 | 0.29 | -0.09 | 0.069 |
| 35.00 | -81.20 | -8.30 | 0.00 | -590.04 | 0.00 | 590.04 | 8,038.39 | 4,019.19 | 20,706.9 | 10,368.8 | 0.39 | -0.11 | 0.067 |
| 37.00 | -79.89 | -8.18 | 0.00 | -573.43 | 0.00 | 573.43 | 7,992.13 | 3,996.06 | 20,419.9 | 10,225.1 | 0.44 | -0.11 | 0.066 |
| 40.00 | -76.55 | -7.98 | 0.00 | -548.89 | 0.00 | 548.89 | 7,922.16 | 3,961.08 | 19,991.5 | 10,010.6 | 0.51 | -0.12 | 0.064 |
| 45.00 | -71.07 | -7.72 | 0.00 | -509.01 | 0.00 | 509.01 | 7,908.92 | 3,954.46 | 19,911.2 | 9,970.44 | 0.64 | -0.13 | 0.060 |
| 50.00 | -67.86 | -7.47 | 0.00 | -470.42 | 0.00 | 470.42 | 7,790.58 | 3,895.29 | 19,204.2 | 9,616.39 | 0.79 | -0.15 | 0.058 |
| 55.00 | -64.72 | -7.22 | 0.00 | -433.08 | 0.00 | 433.08 | 7,670.32 | 3,835.16 | 18,505.0 | 9,266.26 | 0.95 | -0.16 | 0.055 |
| 60.00 | -61.63 | -6.97 | 0.00 | -396.99 | 0.00 | 396.99 | 7,548.17 | 3,774.08 | 17,813.9 | 8,920.21 | 1.13 | -0.17 | 0.053 |
| 65.00 | -58.60 | -6.72 | 0.00 | -362.14 | 0.00 | 362.14 | 7,424.10 | 3,712.05 | 17,131.2 | 8,578.37 | 1.32 | -0.19 | 0.050 |
| 70.00 | -55.63 | -6.48 | 0.00 | -328.53 | 0.00 | 328.53 | 7,296.29 | 3,648.15 | 16,453.2 | 8,238.84 | 1.52 | -0.20 | 0.048 |
| 75.00 | -52.73 | -6.33 | 0.00 | -296.12 | 0.00 | 296.12 | 7,128.09 | 3,564.04 | 15,699.6 | 7,861.47 | 1.74 | -0.21 | 0.045 |
| 76.00 | -51.58 | -6.14 | 0.00 | -289.79 | 0.00 | 289.79 | 7,094.45 | 3,547.22 | 15,551.0 | 7,787.06 | 1.78 | -0.21 | 0.044 |
| 80.00 | -47.90 | -5.98 | 0.00 | -265.25 | 0.00 | 265.25 | 6,959.89 | 3,479.94 | 14,963.6 | 7,492.96 | 1.96 | -0.22 | 0.042 |
| 82.00 | -46.08 | -5.86 | 0.00 | -253.28 | 0.00 | 253.28 | 6,123.84 | 3,061.92 | 13,322.5 | 6,671.16 | 2.06 | -0.23 | 0.045 |
| 85.00 | -44.51 | -5.68 | 0.00 | -235.70 | 0.00 | 235.70 | 6,059.53 | 3,029.76 | 12,991.6 | 6,505.50 | 2.20 | -0.23 | 0.044 |
| 90.00 | -41.94 | -5.44 | 0.00 | -207.32 | 0.00 | 207.32 | 5,950.82 | 2,975.41 | 12,446.1 | 6,232.31 | 2.45 | -0.24 | 0.040 |
| 95.00 | -39.43 | -5.21 | 0.00 | -180.11 | 0.00 | 180.11 | 5,840.20 | 2,920.10 | 11,908.1 | 5,962.90 | 2.71 | -0.25 | 0.037 |
| 100.00 | -36.98 | -4.99 | 0.00 | -154.05 | 0.00 | 154.05 | 5,713.78 | 2,856.89 | 11,350.2 | 5,683.57 | 2.99 | -0.26 | 0.034 |
| 105.00 | -34.57 | -4.77 | 0.00 | -129.11 | 0.00 | 129.11 | 5,564.26 | 2,782.13 | 10,761.0 | 5,388.54 | 3.27 | -0.27 | 0.030 |
| 110.00 | -32.23 | -4.55 | 0.00 | -105.27 | 0.00 | 105.27 | 5,414.75 | 2,707.38 | 10,187.5 | 5,101.37 | 3.56 | -0.28 | 0.027 |
| 115.00 | -29.94 | -4.34 | 0.00 | -82.52 | 0.00 | 82.52 | 5,265.24 | 2,632.62 | 9,629.81 | 4,822.06 | 3.86 | -0.29 | 0.023 |
| 120.00 | -22.70 | -3.32 | 0.00 | -60.03 | 0.00 | 60.03 | 5,115.72 | 2,557.86 | 9,087.73 | 4,550.62 | 4.16 | -0.29 | 0.018 |
| 125.00 | -19.68 | -3.19 | 0.00 | -43.45 | 0.00 | 43.45 | 4,966.21 | 2,483.10 | 8,561.35 | 4,287.04 | 4.47 | -0.30 | 0.014 |
| 125.50 | -19.39 | -3.09 | 0.00 | -41.86 | 0.00 | 41.86 | 2,844.63 | 1,422.32 | 5,006.36 | 2,506.90 | 4.51 | -0.30 | 0.024 |
| 130.00 | -11.98 | -1.92 | 0.00 | -27.60 | 0.00 | 27.60 | 2,796.96 | 1,398.48 | 4,790.27 | 2,398.70 | 4.79 | -0.30 | 0.016 |
| 135.00 | -10.50 | -1.73 | 0.00 | -17.99 | 0.00 | 17.99 | 2,742.18 | 1,371.09 | 4,552.45 | 2,279.61 | 5.11 | -0.31 | 0.012 |
| 140.00 | -6.40 | -1.03 | 0.00 | -9.35 | 0.00 | 9.35 | 2,685.50 | 1,342.75 | 4,317.32 | 2,161.87 | 5.43 | -0.31 | 0.007 |
| 145.00 | -5.12 | -0.84 | 0.00 | -4.21 | 0.00 | 4.21 | 2,626.91 | 1,313.45 | 4,085.18 | 2,045.63 | 5.75 | -0.31 | 0.004 |
| 150.00 | 0.00 | -0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 2,566.41 | 1,283.21 | 3,856.33 | 1,931.03 | 6.07 | -0.31 | 0.000 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number: OAA697424_C3_02 5/19/2017 3:56:11 PM

Customer: VERIZON WIRELESS

**Load Case:** 1.0D + 1.0W Serviceability 60 mph 16 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

## Applied Segment Forces Summary

| | | Shaft Forces | | Discrete Forces | | | | Linear Forces | | Sum of Forces | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seg Elev (ft) | Description | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00 | | 125.5 | 0.0 | | | | | 0.0 | 0.0 | 125.5 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 245.0 | 2,156.7 | | | | | 0.0 | 0.0 | 245.0 | 2,156.7 | 0.0 | 0.0 |
| 10.00 | | 233.2 | 2,118.2 | | | | | 0.0 | 0.0 | 233.2 | 2,118.2 | 0.0 | 0.0 |
| 15.00 | | 222.2 | 2,079.7 | | | | | 0.0 | 243.1 | 222.2 | 2,322.8 | 0.0 | 0.0 |
| 20.00 | | 212.0 | 2,041.2 | | | | | 0.0 | 243.1 | 212.0 | 2,284.3 | 0.0 | 0.0 |
| 25.00 | | 202.4 | 2,002.6 | | | | | 0.0 | 243.1 | 202.4 | 2,245.8 | 0.0 | 0.0 |
| 30.00 | | 195.6 | 1,964.1 | | | | | 0.0 | 243.1 | 195.6 | 2,207.3 | 0.0 | 0.0 |
| 35.00 | | 135.4 | 1,925.6 | | | | | 0.0 | 243.1 | 135.4 | 2,168.7 | 0.0 | 0.0 |
| 37.00 | Bot - Section 2 | 97.5 | 759.5 | | | | | 0.0 | 97.3 | 97.5 | 856.7 | 0.0 | 0.0 |
| 40.00 | | 156.3 | 2,275.8 | | | | | 0.0 | 145.9 | 156.3 | 2,421.6 | 0.0 | 0.0 |
| 45.00 | Top - Section 1 | 193.9 | 3,731.3 | | | | | 0.0 | 243.1 | 193.9 | 3,974.4 | 0.0 | 0.0 |
| 50.00 | | 191.6 | 1,844.2 | | | | | 0.0 | 243.1 | 191.6 | 2,087.4 | 0.0 | 0.0 |
| 55.00 | | 188.8 | 1,805.7 | | | | | 0.0 | 243.1 | 188.8 | 2,048.8 | 0.0 | 0.0 |
| 60.00 | | 185.8 | 1,767.2 | | | | | 0.0 | 243.1 | 185.8 | 2,010.3 | 0.0 | 0.0 |
| 65.00 | | 182.6 | 1,728.7 | | | | | 0.0 | 243.1 | 182.6 | 1,971.8 | 0.0 | 0.0 |
| 70.00 | | 179.1 | 1,690.1 | | | | | 0.0 | 243.1 | 179.1 | 1,933.3 | 0.0 | 0.0 |
| 75.00 | Bot - Section 3 | 106.5 | 1,651.6 | | | | | 0.0 | 243.1 | 106.5 | 1,894.8 | 0.0 | 0.0 |
| 76.00 | Appertunance(s) | 88.5 | 621.0 | 85.9 | 0.0 | 0.0 | 160.0 | 0.0 | 48.6 | 174.4 | 829.6 | 0.0 | 0.0 |
| 80.00 | | 105.5 | 2,454.7 | | | | | 0.0 | 193.9 | 105.5 | 2,648.6 | 0.0 | 0.0 |
| 82.00 | Top - Section 2 | 86.7 | 1,209.9 | | | | | 0.0 | 97.0 | 86.7 | 1,306.8 | 0.0 | 0.0 |
| 85.00 | | 136.5 | 852.9 | | | | | 0.0 | 145.4 | 136.5 | 998.3 | 0.0 | 0.0 |
| 90.00 | | 167.6 | 1,394.1 | | | | | 0.0 | 242.4 | 167.6 | 1,636.5 | 0.0 | 0.0 |
| 95.00 | | 163.8 | 1,359.8 | | | | | 0.0 | 242.4 | 163.8 | 1,602.2 | 0.0 | 0.0 |
| 100.00 | | 160.0 | 1,325.6 | | | | | 0.0 | 242.4 | 160.0 | 1,568.0 | 0.0 | 0.0 |
| 105.00 | | 156.1 | 1,291.4 | | | | | 0.0 | 242.4 | 156.1 | 1,533.7 | 0.0 | 0.0 |
| 110.00 | | 152.2 | 1,257.1 | | | | | 0.0 | 242.4 | 152.2 | 1,499.5 | 0.0 | 0.0 |
| 115.00 | | 148.3 | 1,222.9 | | | | | 0.0 | 242.4 | 148.3 | 1,465.3 | 0.0 | 0.0 |
| 120.00 | Bot - Section 4 | 145.4 | 1,188.6 | 766.7 | 0.0 | 951.0 | 2,089.4 | 0.0 | 242.4 | 912.2 | 3,520.4 | 0.0 | 0.0 |
| 125.00 | | 79.4 | 1,889.6 | | | | | 0.0 | 198.4 | 79.4 | 2,088.0 | 0.0 | 0.0 |
| 125.50 | Top - Section 3 | 70.3 | 185.9 | | | | | 0.0 | 19.8 | 70.3 | 205.7 | 0.0 | 0.0 |
| 130.00 | Appertunance(s) | 131.5 | 641.5 | 970.1 | 0.0 | 387.9 | 2,203.0 | 0.0 | 178.5 | 1,101.6 | 3,023.0 | 0.0 | 0.0 |
| 135.00 | | 134.7 | 692.4 | | | | | 0.0 | 136.2 | 134.7 | 828.6 | 0.0 | 0.0 |
| 140.00 | Appertunance(s) | 130.8 | 671.0 | 470.7 | 0.0 | 0.0 | 864.0 | 0.0 | 136.2 | 601.5 | 1,671.2 | 0.0 | 0.0 |
| 145.00 | | 126.9 | 649.6 | | | | | 0.0 | 37.8 | 126.9 | 687.4 | 0.0 | 0.0 |
| 150.00 | Appertunance(s) | 62.4 | 628.2 | 704.3 | 0.0 | 0.0 | 1,668.0 | 0.0 | 37.8 | 766.8 | 2,334.0 | 0.0 | 0.0 |
| | | | | | | | | Totals: | | 8,297.83 | 64,149.8 | 0.00 | 0.00 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number: OAA697424_C3_02 5/19/2017 3:56:12 PM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W Serviceability 60 mph 16 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 | -64.15 | -8.18 | 0.00 | -763.98 | 0.00 | 763.98 | 8,798.63 | 4,399.32 | 25,899.6 | 12,969.0 | 0.00 | 0.00 | 0.066 |
| 5.00 | -61.99 | -7.95 | 0.00 | -723.09 | 0.00 | 723.09 | 8,695.74 | 4,347.87 | 25,140.1 | 12,588.7 | 0.01 | -0.01 | 0.065 |
| 10.00 | -59.87 | -7.73 | 0.00 | -683.35 | 0.00 | 683.35 | 8,590.95 | 4,295.47 | 24,386.0 | 12,211.1 | 0.03 | -0.03 | 0.063 |
| 15.00 | -57.55 | -7.52 | 0.00 | -644.72 | 0.00 | 644.72 | 8,484.25 | 4,242.12 | 23,637.6 | 11,836.3 | 0.06 | -0.04 | 0.061 |
| 20.00 | -55.26 | -7.31 | 0.00 | -607.14 | 0.00 | 607.14 | 8,375.64 | 4,187.82 | 22,895.2 | 11,464.6 | 0.11 | -0.05 | 0.060 |
| 25.00 | -53.01 | -7.12 | 0.00 | -570.57 | 0.00 | 570.57 | 8,265.13 | 4,132.56 | 22,159.1 | 11,096.0 | 0.17 | -0.06 | 0.058 |
| 30.00 | -50.80 | -6.93 | 0.00 | -534.96 | 0.00 | 534.96 | 8,152.71 | 4,076.36 | 21,429.5 | 10,730.7 | 0.24 | -0.08 | 0.056 |
| 35.00 | -48.64 | -6.80 | 0.00 | -500.29 | 0.00 | 500.29 | 8,038.39 | 4,019.19 | 20,706.9 | 10,368.8 | 0.33 | -0.09 | 0.054 |
| 37.00 | -47.78 | -6.71 | 0.00 | -486.68 | 0.00 | 486.68 | 7,992.13 | 3,996.06 | 20,419.9 | 10,225.1 | 0.37 | -0.09 | 0.054 |
| 40.00 | -45.36 | -6.56 | 0.00 | -466.55 | 0.00 | 466.55 | 7,922.16 | 3,961.08 | 19,991.5 | 10,010.6 | 0.43 | -0.10 | 0.052 |
| 45.00 | -41.38 | -6.36 | 0.00 | -433.77 | 0.00 | 433.77 | 7,908.92 | 3,954.46 | 19,911.2 | 9,970.44 | 0.54 | -0.11 | 0.049 |
| 50.00 | -39.29 | -6.18 | 0.00 | -401.95 | 0.00 | 401.95 | 7,790.58 | 3,895.29 | 19,204.2 | 9,616.39 | 0.66 | -0.13 | 0.047 |
| 55.00 | -37.24 | -5.99 | 0.00 | -371.06 | 0.00 | 371.06 | 7,670.32 | 3,835.16 | 18,505.0 | 9,266.26 | 0.80 | -0.14 | 0.045 |
| 60.00 | -35.23 | -5.81 | 0.00 | -341.11 | 0.00 | 341.11 | 7,548.17 | 3,774.08 | 17,813.9 | 8,920.21 | 0.95 | -0.15 | 0.043 |
| 65.00 | -33.26 | -5.62 | 0.00 | -312.08 | 0.00 | 312.08 | 7,424.10 | 3,712.05 | 17,131.2 | 8,578.37 | 1.11 | -0.16 | 0.041 |
| 70.00 | -31.33 | -5.45 | 0.00 | -283.96 | 0.00 | 283.96 | 7,296.29 | 3,648.15 | 16,453.2 | 8,238.84 | 1.28 | -0.17 | 0.039 |
| 75.00 | -29.43 | -5.34 | 0.00 | -256.73 | 0.00 | 256.73 | 7,128.09 | 3,564.04 | 15,699.6 | 7,861.47 | 1.47 | -0.18 | 0.037 |
| 76.00 | -28.60 | -5.16 | 0.00 | -251.40 | 0.00 | 251.40 | 7,094.45 | 3,547.22 | 15,551.0 | 7,787.06 | 1.50 | -0.18 | 0.036 |
| 80.00 | -25.95 | -5.05 | 0.00 | -230.75 | 0.00 | 230.75 | 6,959.89 | 3,479.94 | 14,963.6 | 7,492.96 | 1.66 | -0.19 | 0.035 |
| 82.00 | -24.65 | -4.96 | 0.00 | -220.65 | 0.00 | 220.65 | 6,123.84 | 3,061.92 | 13,322.5 | 6,671.16 | 1.74 | -0.19 | 0.037 |
| 85.00 | -23.65 | -4.83 | 0.00 | -205.76 | 0.00 | 205.76 | 6,059.53 | 3,029.76 | 12,991.6 | 6,505.50 | 1.86 | -0.20 | 0.036 |
| 90.00 | -22.01 | -4.66 | 0.00 | -181.64 | 0.00 | 181.64 | 5,950.82 | 2,975.41 | 12,446.1 | 6,232.31 | 2.07 | -0.21 | 0.033 |
| 95.00 | -20.41 | -4.49 | 0.00 | -158.36 | 0.00 | 158.36 | 5,840.20 | 2,920.10 | 11,908.1 | 5,962.90 | 2.30 | -0.22 | 0.030 |
| 100.00 | -18.84 | -4.33 | 0.00 | -135.92 | 0.00 | 135.92 | 5,713.78 | 2,856.89 | 11,350.2 | 5,683.57 | 2.53 | -0.23 | 0.027 |
| 105.00 | -17.31 | -4.17 | 0.00 | -114.29 | 0.00 | 114.29 | 5,564.26 | 2,782.13 | 10,761.0 | 5,388.54 | 2.77 | -0.23 | 0.024 |
| 110.00 | -15.81 | -4.01 | 0.00 | -93.47 | 0.00 | 93.47 | 5,414.75 | 2,707.38 | 10,187.5 | 5,101.37 | 3.02 | -0.24 | 0.021 |
| 115.00 | -14.34 | -3.86 | 0.00 | -73.43 | 0.00 | 73.43 | 5,265.24 | 2,632.62 | 9,629.81 | 4,822.06 | 3.28 | -0.25 | 0.018 |
| 120.00 | -10.83 | -2.93 | 0.00 | -53.20 | 0.00 | 53.20 | 5,115.72 | 2,557.86 | 9,087.73 | 4,550.62 | 3.54 | -0.25 | 0.014 |
| 125.00 | -8.74 | -2.84 | 0.00 | -38.55 | 0.00 | 38.55 | 4,966.21 | 2,483.10 | 8,561.35 | 4,287.04 | 3.80 | -0.26 | 0.011 |
| 125.50 | -8.53 | -2.77 | 0.00 | -37.13 | 0.00 | 37.13 | 2,844.63 | 1,422.32 | 5,006.36 | 2,506.90 | 3.83 | -0.26 | 0.018 |
| 130.00 | -5.51 | -1.65 | 0.00 | -24.28 | 0.00 | 24.28 | 2,796.96 | 1,398.48 | 4,790.27 | 2,398.70 | 4.07 | -0.26 | 0.012 |
| 135.00 | -4.69 | -1.52 | 0.00 | -16.01 | 0.00 | 16.01 | 2,742.18 | 1,371.09 | 4,552.45 | 2,279.61 | 4.35 | -0.26 | 0.009 |
| 140.00 | -3.02 | -0.91 | 0.00 | -8.43 | 0.00 | 8.43 | 2,685.50 | 1,342.75 | 4,317.32 | 2,161.87 | 4.62 | -0.26 | 0.005 |
| 145.00 | -2.33 | -0.78 | 0.00 | -3.89 | 0.00 | 3.89 | 2,626.91 | 1,313.45 | 4,085.18 | 2,045.63 | 4.90 | -0.27 | 0.003 |
| 150.00 | 0.00 | -0.77 | 0.00 | 0.00 | 0.00 | 0.00 | 2,566.41 | 1,283.21 | 3,856.33 | 1,931.03 | 5.18 | -0.27 | 0.000 |

## Equivalent Lateral Forces Method Analysis

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

| | |
|---|---|
| Spectral Response Acceleration for Short Period ($S_s$): | 0.17 |
| 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 Coeffiecient $F_v$: | 2.40 |
| Response Modification Coefficient (R): | 1.50 |
| Design Spectral Response Acceleration at Short Period ($S_{ds}$): | 0.18 |
| Design Spectral Response Acceleration at 1.0 Second Period ($S_{d1}$): | 0.10 |
| Seismic Response Coefficient ($C_s$): | 0.05 |
| Upper Limit $C_s$ | 0.05 |
| Lower Limit $C_s$ | 0.03 |
| Period based on Rayleigh Method (sec): | 1.30 |
| Redundancy Factor (p): | 1.30 |
| Seismic Force Distribution Exponent (k): | 1.40 |
| Total Unfactored Dead Load: | 64.15 k |
| Seismic Base Shear (E): | 4.12 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) |
|---|---|---|---|---|---|---|
| 34 | 147.50 | 666 | 716 | 0.026 | 108 | 823 |
| 33 | 142.50 | 687 | 704 | 0.026 | 106 | 850 |
| 32 | 137.50 | 807 | 786 | 0.029 | 118 | 998 |
| 31 | 132.50 | 829 | 766 | 0.028 | 116 | 1,024 |
| 30 | 127.75 | 820 | 721 | 0.026 | 109 | 1,014 |
| 29 | 125.25 | 206 | 176 | 0.006 | 27 | 254 |
| 28 | 122.50 | 2,088 | 1,731 | 0.063 | 261 | 2,581 |
| 27 | 117.50 | 1,431 | 1,119 | 0.041 | 169 | 1,769 |
| 26 | 112.50 | 1,465 | 1,078 | 0.039 | 162 | 1,811 |
| 25 | 107.50 | 1,500 | 1,035 | 0.038 | 156 | 1,854 |
| 24 | 102.50 | 1,534 | 991 | 0.036 | 149 | 1,896 |
| 23 | 97.50 | 1,568 | 945 | 0.035 | 142 | 1,938 |
| 22 | 92.50 | 1,602 | 897 | 0.033 | 135 | 1,981 |
| 21 | 87.50 | 1,636 | 848 | 0.031 | 128 | 2,023 |
| 20 | 83.50 | 998 | 484 | 0.018 | 73 | 1,234 |
| 19 | 81.00 | 1,307 | 608 | 0.022 | 92 | 1,616 |
| 18 | 78.00 | 2,649 | 1,168 | 0.043 | 176 | 3,274 |
| 17 | 75.50 | 670 | 282 | 0.010 | 43 | 828 |
| 16 | 72.50 | 1,895 | 754 | 0.028 | 114 | 2,342 |
| 15 | 67.50 | 1,933 | 697 | 0.025 | 105 | 2,390 |
| 14 | 62.50 | 1,972 | 638 | 0.023 | 96 | 2,438 |
| 13 | 57.50 | 2,010 | 579 | 0.021 | 87 | 2,485 |
| 12 | 52.50 | 2,049 | 520 | 0.019 | 78 | 2,533 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 11 | 47.50 | 2,087 | 460 | 0.017 | 69 | 2,581 |
| 10 | 42.50 | 3,974 | 750 | 0.027 | 113 | 4,913 |
| 9 | 38.50 | 2,422 | 398 | 0.015 | 60 | 2,994 |
| 8 | 36.00 | 857 | 128 | 0.005 | 19 | 1,059 |
| 7 | 32.50 | 2,169 | 281 | 0.010 | 42 | 2,681 |
| 6 | 27.50 | 2,207 | 227 | 0.008 | 34 | 2,729 |
| 5 | 22.50 | 2,246 | 174 | 0.006 | 26 | 2,776 |
| 4 | 17.50 | 2,284 | 125 | 0.005 | 19 | 2,824 |
| 3 | 12.50 | 2,323 | 79 | 0.003 | 12 | 2,872 |
| 2 | 7.50 | 2,118 | 35 | 0.001 | 5 | 2,619 |
| 1 | 2.50 | 2,157 | 8 | 0.000 | 1 | 2,666 |
| Decibel DB844H90E-XY | 150.00 | 168 | 185 | 0.007 | 28 | 208 |
| Flat Low Profile Pla | 150.00 | 1,500 | 1,650 | 0.060 | 249 | 1,854 |
| Decibel DB980F65E-M | 140.00 | 114 | 114 | 0.004 | 17 | 141 |
| Round T-Arms | 140.00 | 750 | 749 | 0.027 | 113 | 927 |
| RFS FD9R6004/2C-3L | 130.00 | 16 | 14 | 0.001 | 2 | 19 |
| Alcatel-Lucent B13 R | 130.00 | 172 | 155 | 0.006 | 23 | 212 |
| Alcatel-Lucent B66A | 130.00 | 170 | 153 | 0.006 | 23 | 211 |
| RFS APL868013-42T0 | 130.00 | 38 | 34 | 0.001 | 5 | 47 |
| Commscope RC3DC-3315 | 130.00 | 64 | 58 | 0.002 | 9 | 79 |
| Commscope SBNHH-1D65 | 130.00 | 244 | 219 | 0.008 | 33 | 301 |
| Flat Low Profile Pla | 130.00 | 1,500 | 1,351 | 0.049 | 204 | 1,854 |
| Powerwave Allgon LGP | 120.00 | 85 | 68 | 0.002 | 10 | 105 |
| Raycap DC6-48-60-18- | 120.00 | 32 | 26 | 0.001 | 4 | 39 |
| Ericsson RRUS-11 190 | 120.00 | 132 | 106 | 0.004 | 16 | 163 |
| Powerwave Allgon 777 | 120.00 | 210 | 169 | 0.006 | 25 | 260 |
| Commscope SBNH-1D454 | 120.00 | 40 | 32 | 0.001 | 5 | 49 |
| Andrew DBXNH-6565B-R | 120.00 | 46 | 37 | 0.001 | 6 | 57 |
| 96" x 12" Panel | 120.00 | 45 | 36 | 0.001 | 5 | 56 |
| Round Low Profile Pl | 120.00 | 1,500 | 1,208 | 0.044 | 182 | 1,854 |
| GPS | 76.00 | 10 | 4 | 0.000 | 1 | 12 |
| Flat Side Arm | 76.00 | 150 | 64 | 0.002 | 10 | 185 |
| | | 64,150 | 27,341 | 1.000 | 4,120 | 79,306 |

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) |
|---|---|---|---|---|---|---|
| 34 | 147.50 | 666 | 716 | 0.026 | 108 | 575 |
| 33 | 142.50 | 687 | 704 | 0.026 | 106 | 594 |
| 32 | 137.50 | 807 | 786 | 0.029 | 118 | 697 |
| 31 | 132.50 | 829 | 766 | 0.028 | 116 | 716 |
| 30 | 127.75 | 820 | 721 | 0.026 | 109 | 708 |
| 29 | 125.25 | 206 | 176 | 0.006 | 27 | 178 |
| 28 | 122.50 | 2,088 | 1,731 | 0.063 | 261 | 1,803 |
| 27 | 117.50 | 1,431 | 1,119 | 0.041 | 169 | 1,236 |
| 26 | 112.50 | 1,465 | 1,078 | 0.039 | 162 | 1,266 |
| 25 | 107.50 | 1,500 | 1,035 | 0.038 | 156 | 1,295 |
| 24 | 102.50 | 1,534 | 991 | 0.036 | 149 | 1,325 |
| 23 | 97.50 | 1,568 | 945 | 0.035 | 142 | 1,354 |
| 22 | 92.50 | 1,602 | 897 | 0.033 | 135 | 1,384 |
| 21 | 87.50 | 1,636 | 848 | 0.031 | 128 | 1,413 |
| 20 | 83.50 | 998 | 484 | 0.018 | 73 | 862 |
| 19 | 81.00 | 1,307 | 608 | 0.022 | 92 | 1,129 |
| 18 | 78.00 | 2,649 | 1,168 | 0.043 | 176 | 2,288 |
| 17 | 75.50 | 670 | 282 | 0.010 | 43 | 578 |
| 16 | 72.50 | 1,895 | 754 | 0.028 | 114 | 1,637 |
| 15 | 67.50 | 1,933 | 697 | 0.025 | 105 | 1,670 |
| 14 | 62.50 | 1,972 | 638 | 0.023 | 96 | 1,703 |
| 13 | 57.50 | 2,010 | 579 | 0.021 | 87 | 1,736 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 12 | 52.50 | 2,049 | 520 | 0.019 | 78 | 1,770 |
| 11 | 47.50 | 2,087 | 460 | 0.017 | 69 | 1,803 |
| 10 | 42.50 | 3,974 | 750 | 0.027 | 113 | 3,433 |
| 9 | 38.50 | 2,422 | 398 | 0.015 | 60 | 2,092 |
| 8 | 36.00 | 857 | 128 | 0.005 | 19 | 740 |
| 7 | 32.50 | 2,169 | 281 | 0.010 | 42 | 1,873 |
| 6 | 27.50 | 2,207 | 227 | 0.008 | 34 | 1,906 |
| 5 | 22.50 | 2,246 | 174 | 0.006 | 26 | 1,940 |
| 4 | 17.50 | 2,284 | 125 | 0.005 | 19 | 1,973 |
| 3 | 12.50 | 2,323 | 79 | 0.003 | 12 | 2,006 |
| 2 | 7.50 | 2,118 | 35 | 0.001 | 5 | 1,830 |
| 1 | 2.50 | 2,157 | 8 | 0.000 | 1 | 1,863 |
| Decibel DB844H90E-XY | 150.00 | 168 | 185 | 0.007 | 28 | 145 |
| Flat Low Profile Pla | 150.00 | 1,500 | 1,650 | 0.060 | 249 | 1,296 |
| Decibel DB980F65E-M | 140.00 | 114 | 114 | 0.004 | 17 | 98 |
| Round T-Arms | 140.00 | 750 | 749 | 0.027 | 113 | 648 |
| RFS FD9R6004/2C-3L | 130.00 | 16 | 14 | 0.001 | 2 | 13 |
| Alcatel-Lucent B13 R | 130.00 | 172 | 155 | 0.006 | 23 | 148 |
| Alcatel-Lucent B66A | 130.00 | 170 | 153 | 0.006 | 23 | 147 |
| RFS APL868013-42T0 | 130.00 | 38 | 34 | 0.001 | 5 | 33 |
| Commscope RC3DC-3315 | 130.00 | 64 | 58 | 0.002 | 9 | 55 |
| Commscope SBNHH-1D65 | 130.00 | 244 | 219 | 0.008 | 33 | 210 |
| Flat Low Profile Pla | 130.00 | 1,500 | 1,351 | 0.049 | 204 | 1,296 |
| Powerwave Allgon LGP | 120.00 | 85 | 68 | 0.002 | 10 | 73 |
| Raycap DC6-48-60-18- | 120.00 | 32 | 26 | 0.001 | 4 | 27 |
| Ericsson RRUS-11 190 | 120.00 | 132 | 106 | 0.004 | 16 | 114 |
| Powerwave Allgon 777 | 120.00 | 210 | 169 | 0.006 | 25 | 181 |
| Commscope SBNH-1D454 | 120.00 | 40 | 32 | 0.001 | 5 | 34 |
| Andrew DBXNH-6565B-R | 120.00 | 46 | 37 | 0.001 | 6 | 40 |
| 96" x 12" Panel | 120.00 | 45 | 36 | 0.001 | 5 | 39 |
| Round Low Profile Pl | 120.00 | 1,500 | 1,208 | 0.044 | 182 | 1,296 |
| GPS | 76.00 | 10 | 4 | 0.000 | 1 | 9 |
| Flat Side Arm | 76.00 | 150 | 64 | 0.002 | 10 | 130 |
| | | 64,150 | 27,341 | 1.000 | 4,120 | 55,408 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number: OAA697424_C3_02 5/19/2017 3:56:12 PM

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 | -76.64 | -4.12 | 0.00 | -423.30 | 0.00 | 423.30 | 8,798.63 | 4,399.32 | 25,899.6 | 12,969.0 | 0.00 | 0.00 | 0.041 |
| 5.00 | -74.02 | -4.13 | 0.00 | -402.68 | 0.00 | 402.68 | 8,695.74 | 4,347.87 | 25,140.1 | 12,588.7 | 0.00 | -0.01 | 0.041 |
| 10.00 | -71.15 | -4.12 | 0.00 | -382.04 | 0.00 | 382.04 | 8,590.95 | 4,295.47 | 24,386.0 | 12,211.1 | 0.02 | -0.01 | 0.040 |
| 15.00 | -68.32 | -4.11 | 0.00 | -361.42 | 0.00 | 361.42 | 8,484.25 | 4,242.12 | 23,637.6 | 11,836.3 | 0.03 | -0.02 | 0.039 |
| 20.00 | -65.55 | -4.09 | 0.00 | -340.86 | 0.00 | 340.86 | 8,375.64 | 4,187.82 | 22,895.2 | 11,464.6 | 0.06 | -0.03 | 0.038 |
| 25.00 | -62.82 | -4.07 | 0.00 | -320.40 | 0.00 | 320.40 | 8,265.13 | 4,132.56 | 22,159.1 | 11,096.0 | 0.09 | -0.04 | 0.036 |
| 30.00 | -60.14 | -4.03 | 0.00 | -300.07 | 0.00 | 300.07 | 8,152.71 | 4,076.36 | 21,429.5 | 10,730.7 | 0.13 | -0.04 | 0.035 |
| 35.00 | -59.08 | -4.01 | 0.00 | -279.93 | 0.00 | 279.93 | 8,038.39 | 4,019.19 | 20,706.9 | 10,368.8 | 0.18 | -0.05 | 0.034 |
| 37.00 | -56.08 | -3.95 | 0.00 | -271.90 | 0.00 | 271.90 | 7,992.13 | 3,996.06 | 20,419.9 | 10,225.1 | 0.20 | -0.05 | 0.034 |
| 40.00 | -51.17 | -3.84 | 0.00 | -260.04 | 0.00 | 260.04 | 7,922.16 | 3,961.08 | 19,991.5 | 10,010.6 | 0.24 | -0.06 | 0.032 |
| 45.00 | -48.59 | -3.77 | 0.00 | -240.83 | 0.00 | 240.83 | 7,908.92 | 3,954.46 | 19,911.2 | 9,970.44 | 0.30 | -0.06 | 0.030 |
| 50.00 | -46.05 | -3.70 | 0.00 | -221.96 | 0.00 | 221.96 | 7,790.58 | 3,895.29 | 19,204.2 | 9,616.39 | 0.37 | -0.07 | 0.029 |
| 55.00 | -43.57 | -3.61 | 0.00 | -203.47 | 0.00 | 203.47 | 7,670.32 | 3,835.16 | 18,505.0 | 9,266.26 | 0.45 | -0.08 | 0.028 |
| 60.00 | -41.13 | -3.52 | 0.00 | -185.40 | 0.00 | 185.40 | 7,548.17 | 3,774.08 | 17,813.9 | 8,920.21 | 0.53 | -0.08 | 0.026 |
| 65.00 | -38.74 | -3.41 | 0.00 | -167.81 | 0.00 | 167.81 | 7,424.10 | 3,712.05 | 17,131.2 | 8,578.37 | 0.62 | -0.09 | 0.025 |
| 70.00 | -36.40 | -3.30 | 0.00 | -150.75 | 0.00 | 150.75 | 7,296.29 | 3,648.15 | 16,453.2 | 8,238.84 | 0.72 | -0.09 | 0.023 |
| 75.00 | -35.57 | -3.26 | 0.00 | -134.25 | 0.00 | 134.25 | 7,128.09 | 3,564.04 | 15,699.6 | 7,861.47 | 0.82 | -0.10 | 0.022 |
| 76.00 | -32.10 | -3.07 | 0.00 | -130.99 | 0.00 | 130.99 | 7,094.45 | 3,547.22 | 15,551.0 | 7,787.06 | 0.84 | -0.10 | 0.021 |
| 80.00 | -30.48 | -2.97 | 0.00 | -118.73 | 0.00 | 118.73 | 6,959.89 | 3,479.94 | 14,963.6 | 7,492.96 | 0.92 | -0.10 | 0.020 |
| 82.00 | -29.25 | -2.90 | 0.00 | -112.78 | 0.00 | 112.78 | 6,123.84 | 3,061.92 | 13,322.5 | 6,671.16 | 0.97 | -0.11 | 0.022 |
| 85.00 | -27.23 | -2.77 | 0.00 | -104.08 | 0.00 | 104.08 | 6,059.53 | 3,029.76 | 12,991.6 | 6,505.50 | 1.04 | -0.11 | 0.020 |
| 90.00 | -25.25 | -2.63 | 0.00 | -90.23 | 0.00 | 90.23 | 5,950.82 | 2,975.41 | 12,446.1 | 6,232.31 | 1.15 | -0.11 | 0.019 |
| 95.00 | -23.31 | -2.49 | 0.00 | -77.07 | 0.00 | 77.07 | 5,840.20 | 2,920.10 | 11,908.1 | 5,962.90 | 1.27 | -0.12 | 0.017 |
| 100.00 | -21.41 | -2.34 | 0.00 | -64.63 | 0.00 | 64.63 | 5,713.78 | 2,856.89 | 11,350.2 | 5,683.57 | 1.40 | -0.12 | 0.015 |
| 105.00 | -19.56 | -2.18 | 0.00 | -52.94 | 0.00 | 52.94 | 5,564.26 | 2,782.13 | 10,761.0 | 5,388.54 | 1.53 | -0.13 | 0.013 |
| 110.00 | -17.75 | -2.01 | 0.00 | -42.06 | 0.00 | 42.06 | 5,414.75 | 2,707.38 | 10,187.5 | 5,101.37 | 1.66 | -0.13 | 0.012 |
| 115.00 | -15.98 | -1.84 | 0.00 | -32.00 | 0.00 | 32.00 | 5,265.24 | 2,632.62 | 9,629.81 | 4,822.06 | 1.80 | -0.13 | 0.010 |
| 120.00 | -10.81 | -1.31 | 0.00 | -22.80 | 0.00 | 22.80 | 5,115.72 | 2,557.86 | 9,087.73 | 4,550.62 | 1.94 | -0.13 | 0.007 |
| 125.00 | -10.56 | -1.29 | 0.00 | -16.23 | 0.00 | 16.23 | 4,966.21 | 2,483.10 | 8,561.35 | 4,287.04 | 2.08 | -0.14 | 0.006 |
| 125.50 | -9.55 | -1.18 | 0.00 | -15.58 | 0.00 | 15.58 | 2,844.63 | 1,422.32 | 5,006.36 | 2,506.90 | 2.10 | -0.14 | 0.010 |
| 130.00 | -5.80 | -0.75 | 0.00 | -10.29 | 0.00 | 10.29 | 2,796.96 | 1,398.48 | 4,790.27 | 2,398.70 | 2.23 | -0.14 | 0.006 |
| 135.00 | -4.80 | -0.63 | 0.00 | -6.52 | 0.00 | 6.52 | 2,742.18 | 1,371.09 | 4,552.45 | 2,279.61 | 2.37 | -0.14 | 0.005 |
| 140.00 | -2.88 | -0.39 | 0.00 | -3.36 | 0.00 | 3.36 | 2,685.50 | 1,342.75 | 4,317.32 | 2,161.87 | 2.52 | -0.14 | 0.003 |
| 145.00 | -2.06 | -0.28 | 0.00 | -1.41 | 0.00 | 1.41 | 2,626.91 | 1,313.45 | 4,085.18 | 2,045.63 | 2.66 | -0.14 | 0.001 |
| 150.00 | 0.00 | -0.28 | 0.00 | 0.00 | 0.00 | 0.00 | 2,566.41 | 1,283.21 | 3,856.33 | 1,931.03 | 2.81 | -0.14 | 0.000 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number: OAA697424_C3_02 5/19/2017 3:56:12 PM

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 | -53.55 | -4.12 | 0.00 | -421.49 | 0.00 | 421.49 | 8,798.63 | 4,399.32 | 25,899.6 | 12,969.0 | 0.00 | 0.00 | 0.039 |
| 5.00 | -51.72 | -4.12 | 0.00 | -400.88 | 0.00 | 400.88 | 8,695.74 | 4,347.87 | 25,140.1 | 12,588.7 | 0.00 | -0.01 | 0.038 |
| 10.00 | -49.71 | -4.12 | 0.00 | -380.27 | 0.00 | 380.27 | 8,590.95 | 4,295.47 | 24,386.0 | 12,211.1 | 0.02 | -0.01 | 0.037 |
| 15.00 | -47.73 | -4.10 | 0.00 | -359.68 | 0.00 | 359.68 | 8,484.25 | 4,242.12 | 23,637.6 | 11,836.3 | 0.03 | -0.02 | 0.036 |
| 20.00 | -45.79 | -4.08 | 0.00 | -339.16 | 0.00 | 339.16 | 8,375.64 | 4,187.82 | 22,895.2 | 11,464.6 | 0.06 | -0.03 | 0.035 |
| 25.00 | -43.89 | -4.05 | 0.00 | -318.75 | 0.00 | 318.75 | 8,265.13 | 4,132.56 | 22,159.1 | 11,096.0 | 0.09 | -0.04 | 0.034 |
| 30.00 | -42.01 | -4.01 | 0.00 | -298.49 | 0.00 | 298.49 | 8,152.71 | 4,076.36 | 21,429.5 | 10,730.7 | 0.13 | -0.04 | 0.033 |
| 35.00 | -41.27 | -4.00 | 0.00 | -278.42 | 0.00 | 278.42 | 8,038.39 | 4,019.19 | 20,706.9 | 10,368.8 | 0.18 | -0.05 | 0.032 |
| 37.00 | -39.18 | -3.94 | 0.00 | -270.43 | 0.00 | 270.43 | 7,992.13 | 3,996.06 | 20,419.9 | 10,225.1 | 0.20 | -0.05 | 0.031 |
| 40.00 | -35.75 | -3.82 | 0.00 | -258.61 | 0.00 | 258.61 | 7,922.16 | 3,961.08 | 19,991.5 | 10,010.6 | 0.24 | -0.06 | 0.030 |
| 45.00 | -33.95 | -3.76 | 0.00 | -239.49 | 0.00 | 239.49 | 7,908.92 | 3,954.46 | 19,911.2 | 9,970.44 | 0.30 | -0.06 | 0.028 |
| 50.00 | -32.18 | -3.68 | 0.00 | -220.70 | 0.00 | 220.70 | 7,790.58 | 3,895.29 | 19,204.2 | 9,616.39 | 0.37 | -0.07 | 0.027 |
| 55.00 | -30.44 | -3.59 | 0.00 | -202.30 | 0.00 | 202.30 | 7,670.32 | 3,835.16 | 18,505.0 | 9,266.26 | 0.45 | -0.08 | 0.026 |
| 60.00 | -28.74 | -3.50 | 0.00 | -184.33 | 0.00 | 184.33 | 7,548.17 | 3,774.08 | 17,813.9 | 8,920.21 | 0.53 | -0.08 | 0.024 |
| 65.00 | -27.07 | -3.39 | 0.00 | -166.83 | 0.00 | 166.83 | 7,424.10 | 3,712.05 | 17,131.2 | 8,578.37 | 0.62 | -0.09 | 0.023 |
| 70.00 | -25.43 | -3.28 | 0.00 | -149.86 | 0.00 | 149.86 | 7,296.29 | 3,648.15 | 16,453.2 | 8,238.84 | 0.71 | -0.09 | 0.022 |
| 75.00 | -24.85 | -3.24 | 0.00 | -133.46 | 0.00 | 133.46 | 7,128.09 | 3,564.04 | 15,699.6 | 7,861.47 | 0.81 | -0.10 | 0.020 |
| 76.00 | -22.42 | -3.05 | 0.00 | -130.22 | 0.00 | 130.22 | 7,094.45 | 3,547.22 | 15,551.0 | 7,787.06 | 0.83 | -0.10 | 0.020 |
| 80.00 | -21.30 | -2.96 | 0.00 | -118.02 | 0.00 | 118.02 | 6,959.89 | 3,479.94 | 14,963.6 | 7,492.96 | 0.92 | -0.10 | 0.019 |
| 82.00 | -20.43 | -2.88 | 0.00 | -112.11 | 0.00 | 112.11 | 6,123.84 | 3,061.92 | 13,322.5 | 6,671.16 | 0.96 | -0.11 | 0.020 |
| 85.00 | -19.02 | -2.75 | 0.00 | -103.46 | 0.00 | 103.46 | 6,059.53 | 3,029.76 | 12,991.6 | 6,505.50 | 1.03 | -0.11 | 0.019 |
| 90.00 | -17.64 | -2.62 | 0.00 | -89.69 | 0.00 | 89.69 | 5,950.82 | 2,975.41 | 12,446.1 | 6,232.31 | 1.15 | -0.11 | 0.017 |
| 95.00 | -16.28 | -2.47 | 0.00 | -76.61 | 0.00 | 76.61 | 5,840.20 | 2,920.10 | 11,908.1 | 5,962.90 | 1.27 | -0.12 | 0.016 |
| 100.00 | -14.96 | -2.32 | 0.00 | -64.24 | 0.00 | 64.24 | 5,713.78 | 2,856.89 | 11,350.2 | 5,683.57 | 1.39 | -0.12 | 0.014 |
| 105.00 | -13.66 | -2.16 | 0.00 | -52.63 | 0.00 | 52.63 | 5,564.26 | 2,782.13 | 10,761.0 | 5,388.54 | 1.52 | -0.13 | 0.012 |
| 110.00 | -12.40 | -2.00 | 0.00 | -41.81 | 0.00 | 41.81 | 5,414.75 | 2,707.38 | 10,187.5 | 5,101.37 | 1.66 | -0.13 | 0.010 |
| 115.00 | -11.16 | -1.83 | 0.00 | -31.81 | 0.00 | 31.81 | 5,265.24 | 2,632.62 | 9,629.81 | 4,822.06 | 1.79 | -0.13 | 0.009 |
| 120.00 | -7.55 | -1.31 | 0.00 | -22.66 | 0.00 | 22.66 | 5,115.72 | 2,557.86 | 9,087.73 | 4,550.62 | 1.93 | -0.13 | 0.006 |
| 125.00 | -7.38 | -1.28 | 0.00 | -16.13 | 0.00 | 16.13 | 4,966.21 | 2,483.10 | 8,561.35 | 4,287.04 | 2.07 | -0.14 | 0.005 |
| 125.50 | -6.67 | -1.17 | 0.00 | -15.49 | 0.00 | 15.49 | 2,844.63 | 1,422.32 | 5,006.36 | 2,506.90 | 2.09 | -0.14 | 0.009 |
| 130.00 | -4.05 | -0.75 | 0.00 | -10.23 | 0.00 | 10.23 | 2,796.96 | 1,398.48 | 4,790.27 | 2,398.70 | 2.21 | -0.14 | 0.006 |
| 135.00 | -3.35 | -0.63 | 0.00 | -6.49 | 0.00 | 6.49 | 2,742.18 | 1,371.09 | 4,552.45 | 2,279.61 | 2.36 | -0.14 | 0.004 |
| 140.00 | -2.02 | -0.39 | 0.00 | -3.35 | 0.00 | 3.35 | 2,685.50 | 1,342.75 | 4,317.32 | 2,161.87 | 2.50 | -0.14 | 0.002 |
| 145.00 | -1.44 | -0.28 | 0.00 | -1.40 | 0.00 | 1.40 | 2,626.91 | 1,313.45 | 4,085.18 | 2,045.63 | 2.65 | -0.14 | 0.001 |
| 150.00 | 0.00 | -0.28 | 0.00 | 0.00 | 0.00 | 0.00 | 2,566.41 | 1,283.21 | 3,856.33 | 1,931.03 | 2.79 | -0.14 | 0.000 |

## 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 ($S_s$): | 0.17 |
| 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 ($S_{ds}$): | 0.18 |
| Desing Spectral Response Acceleration at 1.0 Second Period ($S_{d1}$): | 0.10 |
| Period Based on Rayleigh Method (sec): | 1.30 |
| Redundancy Factor (p): | 1.30 |

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

| Segment | Height Above Base (ft) | Weight (lb) | a | b | c | Saz | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|---|---|
| 34 | 147.50 | 666 | 1.828 | 1.667 | 1.025 | 0.327 | 189 | 823 |
| 33 | 142.50 | 687 | 1.706 | 1.144 | 0.823 | 0.260 | 155 | 850 |
| 32 | 137.50 | 807 | 1.588 | 0.742 | 0.654 | 0.202 | 141 | 998 |
| 31 | 132.50 | 829 | 1.475 | 0.441 | 0.513 | 0.151 | 108 | 1,024 |
| 30 | 127.75 | 820 | 1.371 | 0.231 | 0.402 | 0.111 | 79 | 1,014 |
| 29 | 125.25 | 206 | 1.318 | 0.146 | 0.352 | 0.092 | 16 | 254 |
| 28 | 122.50 | 2,088 | 1.261 | 0.069 | 0.302 | 0.074 | 134 | 2,581 |
| 27 | 117.50 | 1,431 | 1.160 | -0.030 | 0.226 | 0.047 | 59 | 1,769 |
| 26 | 112.50 | 1,465 | 1.063 | -0.088 | 0.165 | 0.028 | 36 | 1,811 |
| 25 | 107.50 | 1,500 | 0.971 | -0.116 | 0.117 | 0.016 | 20 | 1,854 |
| 24 | 102.50 | 1,534 | 0.883 | -0.121 | 0.081 | 0.009 | 13 | 1,896 |
| 23 | 97.50 | 1,568 | 0.799 | -0.112 | 0.053 | 0.008 | 11 | 1,938 |
| 22 | 92.50 | 1,602 | 0.719 | -0.092 | 0.034 | 0.011 | 16 | 1,981 |
| 21 | 87.50 | 1,636 | 0.643 | -0.068 | 0.020 | 0.016 | 23 | 2,023 |
| 20 | 83.50 | 998 | 0.586 | -0.048 | 0.013 | 0.021 | 19 | 1,234 |
| 19 | 81.00 | 1,307 | 0.551 | -0.035 | 0.010 | 0.025 | 28 | 1,616 |
| 18 | 78.00 | 2,649 | 0.511 | -0.020 | 0.008 | 0.028 | 65 | 3,274 |
| 17 | 75.50 | 670 | 0.479 | -0.008 | 0.006 | 0.031 | 18 | 828 |
| 16 | 72.50 | 1,895 | 0.442 | 0.005 | 0.006 | 0.034 | 56 | 2,342 |
| 15 | 67.50 | 1,933 | 0.383 | 0.023 | 0.007 | 0.038 | 64 | 2,390 |
| 14 | 62.50 | 1,972 | 0.328 | 0.039 | 0.010 | 0.040 | 69 | 2,438 |
| 13 | 57.50 | 2,010 | 0.278 | 0.050 | 0.014 | 0.041 | 72 | 2,485 |
| 12 | 52.50 | 2,049 | 0.232 | 0.058 | 0.019 | 0.041 | 72 | 2,533 |
| 11 | 47.50 | 2,087 | 0.190 | 0.064 | 0.025 | 0.040 | 72 | 2,581 |
| 10 | 42.50 | 3,974 | 0.152 | 0.068 | 0.030 | 0.038 | 131 | 4,913 |
| 9 | 38.50 | 2,422 | 0.125 | 0.070 | 0.034 | 0.037 | 77 | 2,994 |
| 8 | 36.00 | 857 | 0.109 | 0.071 | 0.036 | 0.036 | 27 | 1,059 |
| 7 | 32.50 | 2,169 | 0.089 | 0.071 | 0.039 | 0.034 | 65 | 2,681 |
| 6 | 27.50 | 2,207 | 0.064 | 0.072 | 0.041 | 0.033 | 63 | 2,729 |
| 5 | 22.50 | 2,246 | 0.043 | 0.070 | 0.042 | 0.031 | 60 | 2,776 |
| 4 | 17.50 | 2,284 | 0.026 | 0.067 | 0.040 | 0.028 | 56 | 2,824 |
| 3 | 12.50 | 2,323 | 0.013 | 0.059 | 0.034 | 0.025 | 50 | 2,872 |
| 2 | 7.50 | 2,118 | 0.005 | 0.044 | 0.025 | 0.018 | 34 | 2,619 |
| 1 | 2.50 | 2,157 | 0.001 | 0.018 | 0.010 | 0.008 | 15 | 2,666 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Decibel DB844H90E-XY | 150.00 | 168 | 1.890 | 1.980 | 1.140 | 0.364 | 53 | 208 |
| Flat Low Profile Pla | 150.00 | 1,500 | 1.890 | 1.980 | 1.140 | 0.364 | 473 | 1,854 |
| Decibel DB980F65E-M | 140.00 | 114 | 1.646 | 0.929 | 0.735 | 0.230 | 23 | 141 |
| Round T-Arms | 140.00 | 750 | 1.646 | 0.929 | 0.735 | 0.230 | 149 | 927 |
| RFS FD9R6004/2C-3L | 130.00 | 16 | 1.420 | 0.322 | 0.452 | 0.129 | 2 | 19 |
| Alcatel-Lucent B13 R | 130.00 | 172 | 1.420 | 0.322 | 0.452 | 0.129 | 19 | 212 |
| Alcatel-Lucent B66A | 130.00 | 170 | 1.420 | 0.322 | 0.452 | 0.129 | 19 | 211 |
| RFS APL868013-42T0 | 130.00 | 38 | 1.420 | 0.322 | 0.452 | 0.129 | 4 | 47 |
| Commscope RC3DC- | 130.00 | 64 | 1.420 | 0.322 | 0.452 | 0.129 | 7 | 79 |
| Commscope SBNHH- | 130.00 | 244 | 1.420 | 0.322 | 0.452 | 0.129 | 27 | 301 |
| Flat Low Profile Pla | 130.00 | 1,500 | 1.420 | 0.322 | 0.452 | 0.129 | 167 | 1,854 |
| Powerwave Allgon LGP | 120.00 | 85 | 1.210 | 0.014 | 0.262 | 0.060 | 4 | 105 |
| Raycap DC6-48-60-18- | 120.00 | 32 | 1.210 | 0.014 | 0.262 | 0.060 | 2 | 39 |
| Ericsson RRUS-11 190 | 120.00 | 132 | 1.210 | 0.014 | 0.262 | 0.060 | 7 | 163 |
| Powerwave Allgon 777 | 120.00 | 210 | 1.210 | 0.014 | 0.262 | 0.060 | 11 | 260 |
| Commscope SBNH- | 120.00 | 40 | 1.210 | 0.014 | 0.262 | 0.060 | 2 | 49 |
| Andrew DBXNH-6565B-R | 120.00 | 46 | 1.210 | 0.014 | 0.262 | 0.060 | 2 | 57 |
| 96" x 12" Panel | 120.00 | 45 | 1.210 | 0.014 | 0.262 | 0.060 | 2 | 56 |
| Round Low Profile Pl | 120.00 | 1,500 | 1.210 | 0.014 | 0.262 | 0.060 | 78 | 1,854 |
| GPS | 76.00 | 10 | 0.485 | -0.011 | 0.007 | 0.031 | 0 | 12 |
| Flat Side Arm | 76.00 | 150 | 0.485 | -0.011 | 0.007 | 0.031 | 4 | 185 |
| | | 64,150 | 49.041 | 12.711 | 14.241 | 4.610 | 3,167 | 79,306 |

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) |
|---|---|---|---|---|---|---|---|---|
| 34 | 147.50 | 666 | 1.828 | 1.667 | 1.025 | 0.327 | 189 | 575 |
| 33 | 142.50 | 687 | 1.706 | 1.144 | 0.823 | 0.260 | 155 | 594 |
| 32 | 137.50 | 807 | 1.588 | 0.742 | 0.654 | 0.202 | 141 | 697 |
| 31 | 132.50 | 829 | 1.475 | 0.441 | 0.513 | 0.151 | 108 | 716 |
| 30 | 127.75 | 820 | 1.371 | 0.231 | 0.402 | 0.111 | 79 | 708 |
| 29 | 125.25 | 206 | 1.318 | 0.146 | 0.352 | 0.092 | 16 | 178 |
| 28 | 122.50 | 2,088 | 1.261 | 0.069 | 0.302 | 0.074 | 134 | 1,803 |
| 27 | 117.50 | 1,431 | 1.160 | -0.030 | 0.226 | 0.047 | 59 | 1,236 |
| 26 | 112.50 | 1,465 | 1.063 | -0.088 | 0.165 | 0.028 | 36 | 1,266 |
| 25 | 107.50 | 1,500 | 0.971 | -0.116 | 0.117 | 0.016 | 20 | 1,295 |
| 24 | 102.50 | 1,534 | 0.883 | -0.121 | 0.081 | 0.009 | 13 | 1,325 |
| 23 | 97.50 | 1,568 | 0.799 | -0.112 | 0.053 | 0.008 | 11 | 1,354 |
| 22 | 92.50 | 1,602 | 0.719 | -0.092 | 0.034 | 0.011 | 16 | 1,384 |
| 21 | 87.50 | 1,636 | 0.643 | -0.068 | 0.020 | 0.016 | 23 | 1,413 |
| 20 | 83.50 | 998 | 0.586 | -0.048 | 0.013 | 0.021 | 19 | 862 |
| 19 | 81.00 | 1,307 | 0.551 | -0.035 | 0.010 | 0.025 | 28 | 1,129 |
| 18 | 78.00 | 2,649 | 0.511 | -0.020 | 0.008 | 0.028 | 65 | 2,288 |
| 17 | 75.50 | 670 | 0.479 | -0.008 | 0.006 | 0.031 | 18 | 578 |
| 16 | 72.50 | 1,895 | 0.442 | 0.005 | 0.006 | 0.034 | 56 | 1,637 |
| 15 | 67.50 | 1,933 | 0.383 | 0.023 | 0.007 | 0.038 | 64 | 1,670 |
| 14 | 62.50 | 1,972 | 0.328 | 0.039 | 0.010 | 0.040 | 69 | 1,703 |
| 13 | 57.50 | 2,010 | 0.278 | 0.050 | 0.014 | 0.041 | 72 | 1,736 |
| 12 | 52.50 | 2,049 | 0.232 | 0.058 | 0.019 | 0.041 | 72 | 1,770 |
| 11 | 47.50 | 2,087 | 0.190 | 0.064 | 0.025 | 0.040 | 72 | 1,803 |
| 10 | 42.50 | 3,974 | 0.152 | 0.068 | 0.030 | 0.038 | 131 | 3,433 |
| 9 | 38.50 | 2,422 | 0.125 | 0.070 | 0.034 | 0.037 | 77 | 2,092 |
| 8 | 36.00 | 857 | 0.109 | 0.071 | 0.036 | 0.036 | 27 | 740 |
| 7 | 32.50 | 2,169 | 0.089 | 0.071 | 0.039 | 0.034 | 65 | 1,873 |
| 6 | 27.50 | 2,207 | 0.064 | 0.072 | 0.041 | 0.033 | 63 | 1,906 |
| 5 | 22.50 | 2,246 | 0.043 | 0.070 | 0.042 | 0.031 | 60 | 1,940 |
| 4 | 17.50 | 2,284 | 0.026 | 0.067 | 0.040 | 0.028 | 56 | 1,973 |
| 3 | 12.50 | 2,323 | 0.013 | 0.059 | 0.034 | 0.025 | 50 | 2,006 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | 7.50 | 2,118 | 0.005 | 0.044 | 0.025 | 0.018 | 34 | 1,830 |
| 1 | 2.50 | 2,157 | 0.001 | 0.018 | 0.010 | 0.008 | 15 | 1,863 |
| Decibel DB844H90E-XY | 150.00 | 168 | 1.890 | 1.980 | 1.140 | 0.364 | 53 | 145 |
| Flat Low Profile Pla | 150.00 | 1,500 | 1.890 | 1.980 | 1.140 | 0.364 | 473 | 1,296 |
| Decibel DB980F65E-M | 140.00 | 114 | 1.646 | 0.929 | 0.735 | 0.230 | 23 | 98 |
| Round T-Arms | 140.00 | 750 | 1.646 | 0.929 | 0.735 | 0.230 | 149 | 648 |
| RFS FD9R6004/2C-3L | 130.00 | 16 | 1.420 | 0.322 | 0.452 | 0.129 | 2 | 13 |
| Alcatel-Lucent B13 R | 130.00 | 172 | 1.420 | 0.322 | 0.452 | 0.129 | 19 | 148 |
| Alcatel-Lucent B66A | 130.00 | 170 | 1.420 | 0.322 | 0.452 | 0.129 | 19 | 147 |
| RFS APL868013-42T0 | 130.00 | 38 | 1.420 | 0.322 | 0.452 | 0.129 | 4 | 33 |
| Commscope RC3DC- | 130.00 | 64 | 1.420 | 0.322 | 0.452 | 0.129 | 7 | 55 |
| Commscope SBNHH- | 130.00 | 244 | 1.420 | 0.322 | 0.452 | 0.129 | 27 | 210 |
| Flat Low Profile Pla | 130.00 | 1,500 | 1.420 | 0.322 | 0.452 | 0.129 | 167 | 1,296 |
| Powerwave Allgon LGP | 120.00 | 85 | 1.210 | 0.014 | 0.262 | 0.060 | 4 | 73 |
| Raycap DC6-48-60-18- | 120.00 | 32 | 1.210 | 0.014 | 0.262 | 0.060 | 2 | 27 |
| Ericsson RRUS-11 190 | 120.00 | 132 | 1.210 | 0.014 | 0.262 | 0.060 | 7 | 114 |
| Powerwave Allgon 777 | 120.00 | 210 | 1.210 | 0.014 | 0.262 | 0.060 | 11 | 181 |
| Commscope SBNH- | 120.00 | 40 | 1.210 | 0.014 | 0.262 | 0.060 | 2 | 34 |
| Andrew DBXNH-6565B-R | 120.00 | 46 | 1.210 | 0.014 | 0.262 | 0.060 | 2 | 40 |
| 96" x 12" Panel | 120.00 | 45 | 1.210 | 0.014 | 0.262 | 0.060 | 2 | 39 |
| Round Low Profile Pl | 120.00 | 1,500 | 1.210 | 0.014 | 0.262 | 0.060 | 78 | 1,296 |
| GPS | 76.00 | 10 | 0.485 | -0.011 | 0.007 | 0.031 | 0 | 9 |
| Flat Side Arm | 76.00 | 150 | 0.485 | -0.011 | 0.007 | 0.031 | 4 | 130 |
| | | 64,150 | 49.041 | 12.711 | 14.241 | 4.610 | 3,167 | 55,408 |

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 | -76.64 | -3.16 | 0.00 | -330.25 | 0.00 | 330.25 | 8,798.63 | 4,399.32 | 25,899.6 | 12,969.0 | 0.00 | 0.00 | 0.034 |
| 5.00 | -74.02 | -3.13 | 0.00 | -314.47 | 0.00 | 314.47 | 8,695.74 | 4,347.87 | 25,140.1 | 12,588.7 | 0.00 | -0.01 | 0.033 |
| 10.00 | -71.15 | -3.09 | 0.00 | -298.83 | 0.00 | 298.83 | 8,590.95 | 4,295.47 | 24,386.0 | 12,211.1 | 0.01 | -0.01 | 0.033 |
| 15.00 | -68.32 | -3.04 | 0.00 | -283.40 | 0.00 | 283.40 | 8,484.25 | 4,242.12 | 23,637.6 | 11,836.3 | 0.03 | -0.02 | 0.032 |
| 20.00 | -65.55 | -2.98 | 0.00 | -268.22 | 0.00 | 268.22 | 8,375.64 | 4,187.82 | 22,895.2 | 11,464.6 | 0.05 | -0.02 | 0.031 |
| 25.00 | -62.82 | -2.92 | 0.00 | -253.32 | 0.00 | 253.32 | 8,265.13 | 4,132.56 | 22,159.1 | 11,096.0 | 0.07 | -0.03 | 0.030 |
| 30.00 | -60.14 | -2.86 | 0.00 | -238.70 | 0.00 | 238.70 | 8,152.71 | 4,076.36 | 21,429.5 | 10,730.7 | 0.11 | -0.03 | 0.030 |
| 35.00 | -59.08 | -2.84 | 0.00 | -224.39 | 0.00 | 224.39 | 8,038.39 | 4,019.19 | 20,706.9 | 10,368.8 | 0.14 | -0.04 | 0.029 |
| 37.00 | -56.08 | -2.76 | 0.00 | -218.71 | 0.00 | 218.71 | 7,992.13 | 3,996.06 | 20,419.9 | 10,225.1 | 0.16 | -0.04 | 0.028 |
| 40.00 | -51.17 | -2.63 | 0.00 | -210.42 | 0.00 | 210.42 | 7,922.16 | 3,961.08 | 19,991.5 | 10,010.6 | 0.19 | -0.04 | 0.027 |
| 45.00 | -48.59 | -2.56 | 0.00 | -197.25 | 0.00 | 197.25 | 7,908.92 | 3,954.46 | 19,911.2 | 9,970.44 | 0.24 | -0.05 | 0.026 |
| 50.00 | -46.06 | -2.49 | 0.00 | -184.43 | 0.00 | 184.43 | 7,790.58 | 3,895.29 | 19,204.2 | 9,616.39 | 0.29 | -0.06 | 0.025 |
| 55.00 | -43.57 | -2.42 | 0.00 | -171.96 | 0.00 | 171.96 | 7,670.32 | 3,835.16 | 18,505.0 | 9,266.26 | 0.35 | -0.06 | 0.024 |
| 60.00 | -41.13 | -2.36 | 0.00 | -159.85 | 0.00 | 159.85 | 7,548.17 | 3,774.08 | 17,813.9 | 8,920.21 | 0.42 | -0.07 | 0.023 |
| 65.00 | -38.74 | -2.29 | 0.00 | -148.07 | 0.00 | 148.07 | 7,424.10 | 3,712.05 | 17,131.2 | 8,578.37 | 0.49 | -0.07 | 0.022 |
| 70.00 | -36.40 | -2.24 | 0.00 | -136.61 | 0.00 | 136.61 | 7,296.29 | 3,648.15 | 16,453.2 | 8,238.84 | 0.57 | -0.08 | 0.022 |
| 75.00 | -35.57 | -2.22 | 0.00 | -125.43 | 0.00 | 125.43 | 7,128.09 | 3,564.04 | 15,699.6 | 7,861.47 | 0.65 | -0.08 | 0.021 |
| 76.00 | -32.10 | -2.15 | 0.00 | -123.21 | 0.00 | 123.21 | 7,094.45 | 3,547.22 | 15,551.0 | 7,787.06 | 0.67 | -0.08 | 0.020 |
| 80.00 | -30.49 | -2.12 | 0.00 | -114.62 | 0.00 | 114.62 | 6,959.89 | 3,479.94 | 14,963.6 | 7,492.96 | 0.74 | -0.09 | 0.020 |
| 82.00 | -29.25 | -2.10 | 0.00 | -110.38 | 0.00 | 110.38 | 6,123.84 | 3,061.92 | 13,322.5 | 6,671.16 | 0.78 | -0.09 | 0.021 |
| 85.00 | -27.23 | -2.07 | 0.00 | -104.09 | 0.00 | 104.09 | 6,059.53 | 3,029.76 | 12,991.6 | 6,505.50 | 0.83 | -0.09 | 0.020 |
| 90.00 | -25.25 | -2.06 | 0.00 | -93.72 | 0.00 | 93.72 | 5,950.82 | 2,975.41 | 12,446.1 | 6,232.31 | 0.93 | -0.10 | 0.019 |
| 95.00 | -23.31 | -2.04 | 0.00 | -83.43 | 0.00 | 83.43 | 5,840.20 | 2,920.10 | 11,908.1 | 5,962.90 | 1.03 | -0.10 | 0.018 |
| 100.00 | -21.41 | -2.03 | 0.00 | -73.21 | 0.00 | 73.21 | 5,713.78 | 2,856.89 | 11,350.2 | 5,683.57 | 1.14 | -0.10 | 0.017 |
| 105.00 | -19.56 | -2.01 | 0.00 | -63.06 | 0.00 | 63.06 | 5,564.26 | 2,782.13 | 10,761.0 | 5,388.54 | 1.25 | -0.11 | 0.015 |
| 110.00 | -17.75 | -1.97 | 0.00 | -53.02 | 0.00 | 53.02 | 5,414.75 | 2,707.38 | 10,187.5 | 5,101.37 | 1.37 | -0.11 | 0.014 |
| 115.00 | -15.98 | -1.91 | 0.00 | -43.17 | 0.00 | 43.17 | 5,265.24 | 2,632.62 | 9,629.81 | 4,822.06 | 1.49 | -0.12 | 0.012 |
| 120.00 | -10.81 | -1.66 | 0.00 | -33.63 | 0.00 | 33.63 | 5,115.72 | 2,557.86 | 9,087.73 | 4,550.62 | 1.61 | -0.12 | 0.010 |
| 125.00 | -10.56 | -1.64 | 0.00 | -25.35 | 0.00 | 25.35 | 4,966.21 | 2,483.10 | 8,561.35 | 4,287.04 | 1.74 | -0.12 | 0.008 |
| 125.50 | -9.55 | -1.56 | 0.00 | -24.53 | 0.00 | 24.53 | 2,844.63 | 1,422.32 | 5,006.36 | 2,506.90 | 1.75 | -0.12 | 0.013 |
| 130.00 | -5.80 | -1.20 | 0.00 | -17.51 | 0.00 | 17.51 | 2,796.96 | 1,398.48 | 4,790.27 | 2,398.70 | 1.87 | -0.12 | 0.009 |
| 135.00 | -4.80 | -1.05 | 0.00 | -11.53 | 0.00 | 11.53 | 2,742.18 | 1,371.09 | 4,552.45 | 2,279.61 | 2.00 | -0.13 | 0.007 |
| 140.00 | -2.88 | -0.72 | 0.00 | -6.26 | 0.00 | 6.26 | 2,685.50 | 1,342.75 | 4,317.32 | 2,161.87 | 2.13 | -0.13 | 0.004 |
| 145.00 | -2.06 | -0.53 | 0.00 | -2.66 | 0.00 | 2.66 | 2,626.91 | 1,313.45 | 4,085.18 | 2,045.63 | 2.27 | -0.13 | 0.002 |
| 150.00 | 0.00 | -0.53 | 0.00 | 0.00 | 0.00 | 0.00 | 2,566.41 | 1,283.21 | 3,856.33 | 1,931.03 | 2.40 | -0.13 | 0.000 |

Site Number: 302527 Code: ANSI/TIA-222-G 

Site Name: East Haddam, CT Engineering Number: OAA697424_C3_02 5/19/2017 3:56:13 PM

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 | -53.55 | -3.15 | 0.00 | -328.76 | 0.00 | 328.76 | 8,798.63 | 4,399.32 | 25,899.6 | 12,969.0 | 0.00 | 0.00 | 0.031 |
| 5.00 | -51.72 | -3.13 | 0.00 | -312.99 | 0.00 | 312.99 | 8,695.74 | 4,347.87 | 25,140.1 | 12,588.7 | 0.00 | -0.01 | 0.031 |
| 10.00 | -49.71 | -3.08 | 0.00 | -297.36 | 0.00 | 297.36 | 8,590.95 | 4,295.47 | 24,386.0 | 12,211.1 | 0.01 | -0.01 | 0.030 |
| 15.00 | -47.74 | -3.03 | 0.00 | -281.96 | 0.00 | 281.96 | 8,484.25 | 4,242.12 | 23,637.6 | 11,836.3 | 0.03 | -0.02 | 0.029 |
| 20.00 | -45.80 | -2.97 | 0.00 | -266.82 | 0.00 | 266.82 | 8,375.64 | 4,187.82 | 22,895.2 | 11,464.6 | 0.05 | -0.02 | 0.029 |
| 25.00 | -43.89 | -2.91 | 0.00 | -251.96 | 0.00 | 251.96 | 8,265.13 | 4,132.56 | 22,159.1 | 11,096.0 | 0.07 | -0.03 | 0.028 |
| 30.00 | -42.02 | -2.85 | 0.00 | -237.39 | 0.00 | 237.39 | 8,152.71 | 4,076.36 | 21,429.5 | 10,730.7 | 0.10 | -0.03 | 0.027 |
| 35.00 | -41.28 | -2.83 | 0.00 | -223.14 | 0.00 | 223.14 | 8,038.39 | 4,019.19 | 20,706.9 | 10,368.8 | 0.14 | -0.04 | 0.027 |
| 37.00 | -39.18 | -2.75 | 0.00 | -217.48 | 0.00 | 217.48 | 7,992.13 | 3,996.06 | 20,419.9 | 10,225.1 | 0.16 | -0.04 | 0.026 |
| 40.00 | -35.75 | -2.62 | 0.00 | -209.23 | 0.00 | 209.23 | 7,922.16 | 3,961.08 | 19,991.5 | 10,010.6 | 0.19 | -0.04 | 0.025 |
| 45.00 | -33.95 | -2.55 | 0.00 | -196.13 | 0.00 | 196.13 | 7,908.92 | 3,954.46 | 19,911.2 | 9,970.44 | 0.24 | -0.05 | 0.024 |
| 50.00 | -32.18 | -2.48 | 0.00 | -183.38 | 0.00 | 183.38 | 7,790.58 | 3,895.29 | 19,204.2 | 9,616.39 | 0.29 | -0.06 | 0.023 |
| 55.00 | -30.44 | -2.41 | 0.00 | -170.98 | 0.00 | 170.98 | 7,670.32 | 3,835.16 | 18,505.0 | 9,266.26 | 0.35 | -0.06 | 0.022 |
| 60.00 | -28.74 | -2.34 | 0.00 | -158.94 | 0.00 | 158.94 | 7,548.17 | 3,774.08 | 17,813.9 | 8,920.21 | 0.42 | -0.07 | 0.022 |
| 65.00 | -27.07 | -2.28 | 0.00 | -147.24 | 0.00 | 147.24 | 7,424.10 | 3,712.05 | 17,131.2 | 8,578.37 | 0.49 | -0.07 | 0.021 |
| 70.00 | -25.43 | -2.22 | 0.00 | -135.85 | 0.00 | 135.85 | 7,296.29 | 3,648.15 | 16,453.2 | 8,238.84 | 0.57 | -0.08 | 0.020 |
| 75.00 | -24.85 | -2.20 | 0.00 | -124.74 | 0.00 | 124.74 | 7,128.09 | 3,564.04 | 15,699.6 | 7,861.47 | 0.65 | -0.08 | 0.019 |
| 76.00 | -22.43 | -2.13 | 0.00 | -122.54 | 0.00 | 122.54 | 7,094.45 | 3,547.22 | 15,551.0 | 7,787.06 | 0.66 | -0.08 | 0.019 |
| 80.00 | -21.30 | -2.10 | 0.00 | -114.01 | 0.00 | 114.01 | 6,959.89 | 3,479.94 | 14,963.6 | 7,492.96 | 0.73 | -0.09 | 0.018 |
| 82.00 | -20.44 | -2.08 | 0.00 | -109.80 | 0.00 | 109.80 | 6,123.84 | 3,061.92 | 13,322.5 | 6,671.16 | 0.77 | -0.09 | 0.020 |
| 85.00 | -19.02 | -2.06 | 0.00 | -103.55 | 0.00 | 103.55 | 6,059.53 | 3,029.76 | 12,991.6 | 6,505.50 | 0.83 | -0.09 | 0.019 |
| 90.00 | -17.64 | -2.04 | 0.00 | -93.25 | 0.00 | 93.25 | 5,950.82 | 2,975.41 | 12,446.1 | 6,232.31 | 0.92 | -0.10 | 0.018 |
| 95.00 | -16.28 | -2.03 | 0.00 | -83.02 | 0.00 | 83.02 | 5,840.20 | 2,920.10 | 11,908.1 | 5,962.90 | 1.03 | -0.10 | 0.017 |
| 100.00 | -14.96 | -2.02 | 0.00 | -72.86 | 0.00 | 72.86 | 5,713.78 | 2,856.89 | 11,350.2 | 5,683.57 | 1.13 | -0.10 | 0.015 |
| 105.00 | -13.66 | -2.00 | 0.00 | -62.77 | 0.00 | 62.77 | 5,564.26 | 2,782.13 | 10,761.0 | 5,388.54 | 1.25 | -0.11 | 0.014 |
| 110.00 | -12.40 | -1.96 | 0.00 | -52.79 | 0.00 | 52.79 | 5,414.75 | 2,707.38 | 10,187.5 | 5,101.37 | 1.36 | -0.11 | 0.013 |
| 115.00 | -11.16 | -1.90 | 0.00 | -43.00 | 0.00 | 43.00 | 5,265.24 | 2,632.62 | 9,629.81 | 4,822.06 | 1.48 | -0.12 | 0.011 |
| 120.00 | -7.55 | -1.65 | 0.00 | -33.51 | 0.00 | 33.51 | 5,115.72 | 2,557.86 | 9,087.73 | 4,550.62 | 1.60 | -0.12 | 0.009 |
| 125.00 | -7.38 | -1.63 | 0.00 | -25.26 | 0.00 | 25.26 | 4,966.21 | 2,483.10 | 8,561.35 | 4,287.04 | 1.73 | -0.12 | 0.007 |
| 125.50 | -6.67 | -1.55 | 0.00 | -24.45 | 0.00 | 24.45 | 2,844.63 | 1,422.32 | 5,006.36 | 2,506.90 | 1.74 | -0.12 | 0.012 |
| 130.00 | -4.05 | -1.19 | 0.00 | -17.46 | 0.00 | 17.46 | 2,796.96 | 1,398.48 | 4,790.27 | 2,398.70 | 1.86 | -0.12 | 0.009 |
| 135.00 | -3.35 | -1.05 | 0.00 | -11.50 | 0.00 | 11.50 | 2,742.18 | 1,371.09 | 4,552.45 | 2,279.61 | 1.99 | -0.13 | 0.006 |
| 140.00 | -2.01 | -0.72 | 0.00 | -6.25 | 0.00 | 6.25 | 2,685.50 | 1,342.75 | 4,317.32 | 2,161.87 | 2.12 | -0.13 | 0.004 |
| 145.00 | -1.44 | -0.53 | 0.00 | -2.65 | 0.00 | 2.65 | 2,626.91 | 1,313.45 | 4,085.18 | 2,045.63 | 2.26 | -0.13 | 0.002 |
| 150.00 | 0.00 | -0.53 | 0.00 | 0.00 | 0.00 | 0.00 | 2,566.41 | 1,283.21 | 3,856.33 | 1,931.03 | 2.39 | -0.13 | 0.000 |

## Analysis Summary

| | Reactions | | | | | | Max Usage | |
|---|---|---|---|---|---|---|---|---|
| Load Case | 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 | 37.09 | 0.00 | 76.96 | 0.00 | 0.00 | 3472.44 | 0.00 | 0.28 |
| 0.9D + 1.6W | 37.08 | 0.00 | 57.72 | 0.00 | 0.00 | 3459.48 | 0.00 | 0.27 |
| 1.2D + 1.0Di + 1.0Wi | 10.11 | 0.00 | 104.84 | 0.00 | 0.00 | 914.34 | 0.00 | 0.08 |
| (1.2 + 0.2Sds) * DL + E ELFM | 4.12 | 0.00 | 76.64 | 0.00 | 0.00 | 423.30 | 0.00 | 0.04 |
| (1.2 + 0.2Sds) * DL + E EMAM | 3.16 | 0.00 | 76.64 | 0.00 | 0.00 | 330.25 | 0.00 | 0.03 |
| (0.9 - 0.2Sds) * DL + E ELFM | 4.12 | 0.00 | 53.55 | 0.00 | 0.00 | 421.49 | 0.00 | 0.04 |
| (0.9 - 0.2Sds) * DL + E EMAM | 3.15 | 0.00 | 53.55 | 0.00 | 0.00 | 328.76 | 0.00 | 0.03 |
| 1.0D + 1.0W | 8.18 | 0.00 | 64.15 | 0.00 | 0.00 | 763.98 | 0.00 | 0.07 |

| | | | |
|---|---|---|---|
| Site Number: | **302527** | *Last Updated:* | *10/6/2016* |
| Site Name: | **East Haddam, CT** | | |
| Job Number: | **OAA697424** | | |
| Engineer: | **Charles.Wally** | | |
| Date: | **5/19/2017** | | |

## Base Plate and Bolt Analysis

| | | |
|---|---|---|
| Moment: | 3472.4 | k-ft |
| Shear/Leg: | 37.1 | k |
| Compression/Leg: | 77.0 | k |

| | | |
|---|---|---|
| TIA-222 Code Revision (F/G): | G | |
| Anchor Bolt Arrangement: | Corners | |
| Monopole Shaft Diameter (Across Flats): | 72.2 | in |
| Lower Monopole Thickness: | 0.563 | in |
| # of Sides of Pole: | 18 | |
| Monopole Shaft Yield Strength: | 65 | ksi |
| Baseplate Diameter / Length: | 81.00 | |
| Base Plate Thickness: | 3.50 | in |
| Base Plate Yield Strength: | 55 | ksi |
| Baseplate Detail Type: | D | |
| Include Plate Thickness Beyond Bolt Circle: | Y | |
| Stress Increase: | 1.00 | |
| Fillet Weld Size: | 0.313 | in |
| Weld Type (CJP or F/F): | CJP | |
| Weld Strength: | 80 | ksi |

Anchor Bolts

| | | |
|---|---|---|
| Anchor Bolt Yield Strength: | 75 | ksi |
| Anchor Bolt Ultimate Strength: | 100 | ksi |
| Anchor Bolt Diameter: | 2.25 | in |
| Anchor Bolt Circle: | 80.00 | in |
| # of Anchor Bolts: | 28 | |
| Minimum Anchor Bolt Separation: | 6.00 | in |
| Additional Anchor Bolts Installed: | N | |

| | Baseplate Flexural Capacity | | | | | Baseplate Shear Capacity | | | |
|---|---|---|---|---|---|---|---|---|---|
| Failure Mode: | Effective Width (in) | Moment (k-in) | S/Z ($in^3$) | Capacity (k-in) | Usage | Shear (k) | Area ($in^4$) | Capacity (k) | Usage |
| AA | 39.02 | 929.3 | 119.5 | 5914.7 | 0.16 | 377.4 | 136.6 | 4055.8 | 0.09 |
| AB | 55.98 | 1710.1 | 171.4 | 8486.3 | 0.20 | 516.8 | 195.9 | 5819.2 | 0.09 |
| BA | 41.46 | 1139.4 | 127.0 | 6284.3 | 0.18 | 377.4 | 145.1 | 4309.3 | 0.09 |
| BB | 61.19 | 1911.5 | 187.4 | 9275.8 | 0.21 | 516.8 | 214.2 | 6360.5 | 0.08 |

### Anchor Bolt Capacity

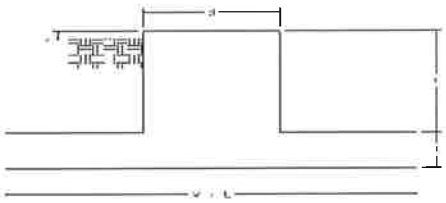
| | | |
|---|---|---|
| Area of Bolt: | 3.25 | $in^2$ |
| Inertia of Bolt: | 0.84 | $in^4$ |
| Total Bolt Inertia: | 72771.6 | $in^4$ |
| Maximum Bolt Tension: | 71.6 | k |
| Maximum Bolt Compression: | 77.1 | k |
| Bolt Shear: | 1.3 | k |
| Tensile Bolt Capacity: | 259.8 | k |
| Compressive Bolt Capacity: | 259.8 | k |
| Shear Bolt Capacity: | 140.3 | k |
| Interaction Equation: | 0.31 | Result: |
| | | OK |

### Base Weld Capacity

| | | |
|---|---|---|
| Force / Weld: | 8.1 | k/in |
| Weld Capacity: | 35.1 | k/in |
| Interaction Equation: | 0.23 | Result: |
| | | OK |

| | |
|---|---|
| Site Name: | East Haddam, CT |
| Site Number: | 302527 |
| Engineering Number: | OAA697424 |
| Engineer: | Charles.Wally |
| Date: | 05/19/17 |
| Tower Type: | MP |

*Program Last Updated:* *5/13/2014*



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

| | | | | | |
|---|---|---|---|---|---|
| Design / Analysis / Mapping: | Analysis | | | | |
| Compression/Leg: | 77.0 | k | Concrete Strength ($f'_c$): | 3000 | psi |
| Uplift/Leg: | 0.0 | k | Pad Tension Steel Depth: | 50.00 | in |
| Total Shear: | 37.1 | k | $\phi_{Shear}$: | 0.75 | |
| Moment: | 3472.4 | k-ft | $\phi_{Flexure\ /\ Tension}$: | 0.90 | |
| Tower + Appurtenance Weight: | 77.0 | k | $\phi_{Compression:}$ | 0.65 | |
| Depth to Base of Foundation (l + t - h): | 4.00 | ft | $\beta$: | 0.85 | |
| Diameter of Pier (d): | 8.00 | ft | Bottom Pad Rebar Size #: | 10 | |
| Height of Pier above Ground (h): | 0.50 | | # of Bottom Pad Rebar: | 47 | |
| Width of Pad (W): | 35.00 | ft | Pad Bottom Steel Area: | 59.69 | $in^2$ |
| Length of Pad (L): | 35.00 | ft | Pad Steel $F_y$: | 60000 | psi |
| Thickness of Pad (t): | 4.50 | ft | Top Pad Rebar Size #: | 10 | |
| Tower Leg Center to Center: | 0.00 | ft | # of Top Pad Rebar: | 47 | |
| Number of Tower Legs: | 1.0 | (1 if MP or GT) | Pad Top Steel Area: | 59.69 | $in^2$ |
| Tower Center from Mat Center: | 0.00 | ft | | | |
| Depth Below Ground Surface to Water Table: | 4.00 | ft | | | |
| Unit Weight of Concrete: | 150.0 | pcf | | | |
| Unit Weight of Soil Above Water Table: | 125.0 | pcf | | | |
| Unit Weight of Water: | 62.4 | pcf | | | |
| Unit Weight of Soil Below Water Table: | 62.6 | pcf | | | |
| Friction Angle of Uplift: | 15.0 | Degrees | | | |
| Ultimate Coefficient of Shear Friction: | 0.60 | | | | |
| Ultimate Compressive Bearing Pressure: | 12000.0 | psf | | | |
| Ultimate Passive Pressure on Pad Face: | 0.0 | psf | | | |
| $\phi_{Soil\ and\ Concrete\ Weight}$: | 0.9 | | | | |
| $\phi_{Soil}$: | 0.75 | | | | |

## Overturning Moment Usage

| | | |
|---|---|---|
| Design OTM: | 3639.3 | k-ft |
| OTM Resistance: | 14391.2 | k-ft |
| Design OTM / OTM Resistance: | 0.25 | Result: OK |

## Soil Bearing Pressure Usage

| | | |
|---|---|---|
| Net Bearing Pressure: | 970 | psf |
| Factored Nominal Bearing Pressure: | 9000 | psf |
| Net Bearing Pressure/Factored Nominal Bearing Pressure: | 0.11 | Result: OK |
| Load Direction Controling Design Bearing Pressure: | Diagonal to Pad Edge | |

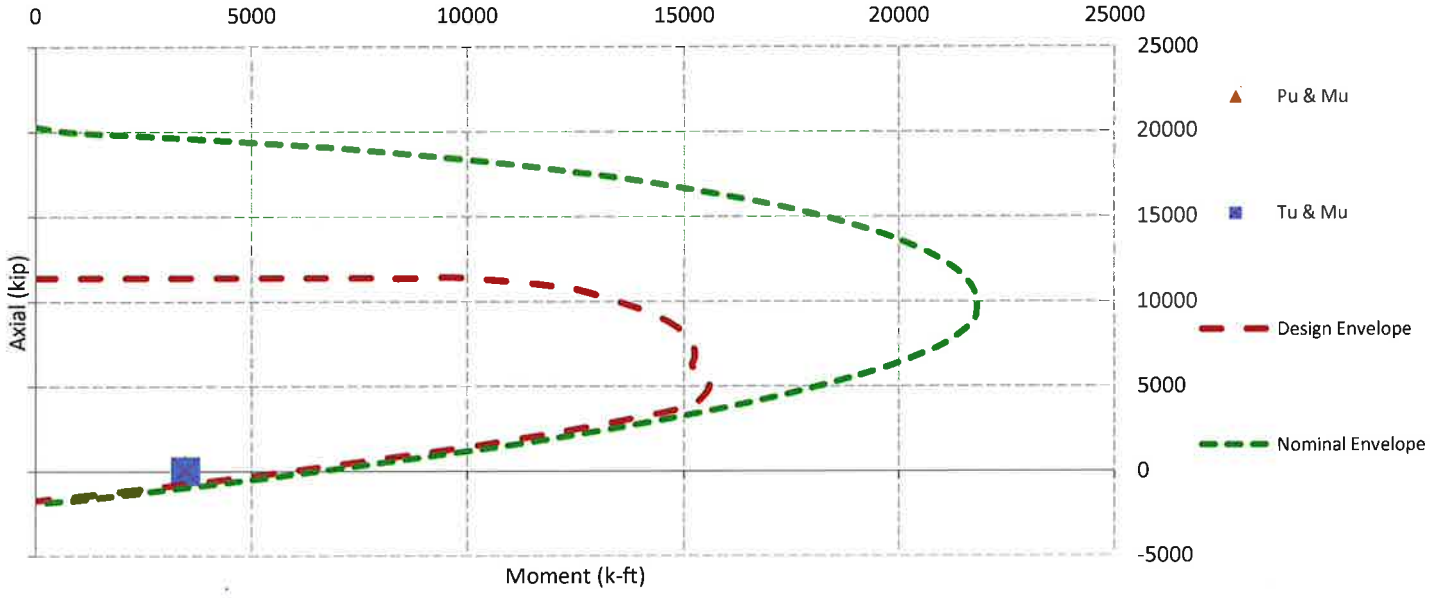
## Sliding Factor of Safety

| | | |
|---|---|---|
| Total Factored Sliding Resistance: | 402.7 | k |
| Sliding Design / Sliding Resistance: | 0.09 | Result: OK |

## One Way Shear, Flexual Capacity, and Punching Shear

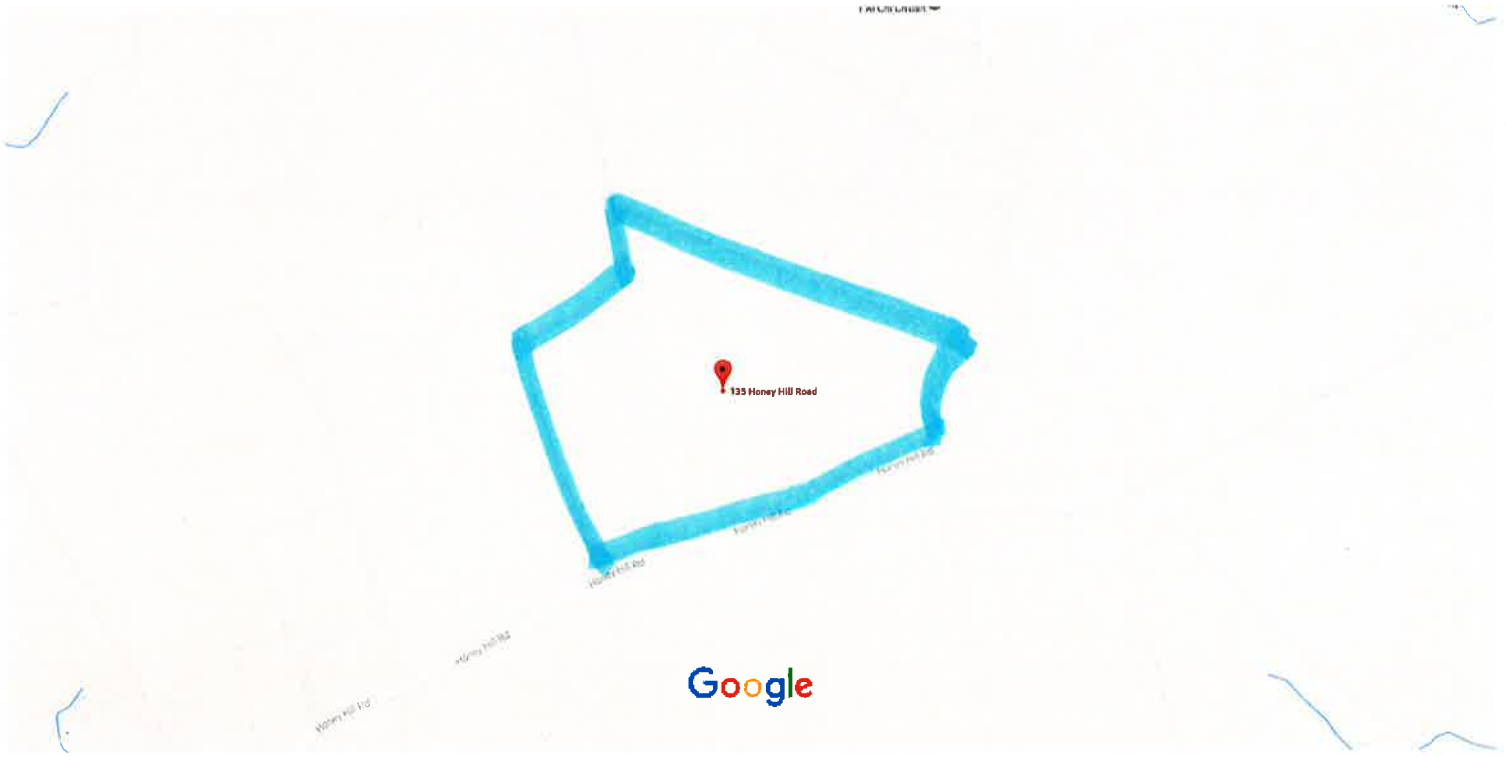
| | | |
|---|---|---|
| Factored One Way Shear ($V_u$): | 205.4 | k |
| One Way Shear Capacity ($\phi V_c$): | 1725.3 | k - ACI11.3.1.1 |
| $V_u / \phi V_c$: | 0.12 | Result: OK |
| Load Direction Controling Shear Capacity: | Parallel to Pad Edge | |
| Lower Steel Pad Factored Moment ($M_u$): | 2019.9 | k-ft |
| Lower Steel Pad Moment Capacity ($\phi M_n$): | 13048.5 | k-ft - ACI10.3 |
| $M_u / \phi M_n$: | 0.15 | Result: OK |
| Load Direction Controling Flexural Capacity: | Parallel to Pad Edge | |
| Upper Steel Pad Factored Moment ($M_u$): | 880.1 | k-ft |
| Upper Steel Pad Moment Capacity ($\phi M_n$): | 13048.5 | k-ft |
| $M_u / \phi M_n$: | 0.07 | Result: OK |
| Lower Pad Flexural Reinforcement Ratio: | 0.0028 | OK - Minimum Reinforcement Ratio Met - ACI10.5.1 |
| Upper Pad Flexural Reinforcement Ratio: | 0.0028 | OK - Minimum Reinforcement Ratio Met - ACI10.5.1 |
| Lower Pad Reinforcement Spacing: | 9 | in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4 |
| Upper Pad Reinforcement Spacing: | 9 | in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4 |
| Factored Punching Shear ($V_u$): | 19.1 | k |
| Nominal Punching Shear Capacity ($\phi_c V_n$): | 3768.4 | k - ACI11.12.2.1 |
| $V_u / \phi V_c$: | 0.01 | Result: OK |

Nominal and Design Moment Capacity and Factored Design Loads



# ATTACHMENT 4

Google Maps 135 Honey Hill Rd




Map data ©2017 Google 200 ft

## 135 Honey Hill Rd

East Haddam, CT 06423

# 135 HONEY HILL RD

| | | | |
|---|---|---|---|
| **Location** | 135 HONEY HILL RD | **Mblu** | M13/ / L004/ / |
| **Acct#** | 00036900 | **Owner** | PORTER DONALD L & SUSAN L |
| **Assessment** | $192,570 | **Appraisal** | $380,080 |
| **PID** | 404 | **Building Count** | 1 |

## Current Value

| Appraisal | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2016 | $146,400 | $233,680 | $380,080 |
| **Assessment** | | | |
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2016 | $102,480 | $90,090 | $192,570 |

## Owner of Record

**Owner** PORTER DONALD L & SUSAN L
**Co-Owner**
**Address** 135 HONEY HILL RD
EAST HADDAM, CT 06423

**Sale Price** $0
**Certificate**
**Book & Page** 801/ 111
**Sale Date** 02/26/2008
**Instrument** 29

## Ownership History

| Ownership History | | | | | |
|---|---|---|---|---|---|
| **Owner** | **Sale Price** | **Certificate** | **Book & Page** | **Instrument** | **Sale Date** |
| PORTER DONALD L & SUSAN L | $0 | | 801/ 111 | 29 | 02/26/2008 |
| SOBIECH ZIGFRED R & PORTER DONALD L & SL | $0 | | 202/ 76 | | 09/11/1985 |

## Building Information

### Building 1 : Section 1

| | |
|---|---|
| **Year Built:** | 1987 |
| **Living Area:** | 1,767 |
| **Replacement Cost:** | $156,632 |
| **Building Percent Good:** | 84 |
| **Replacement Cost Less Depreciation:** | $131,600 |

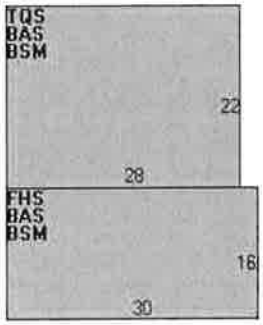
| Building Attributes | |
|---|---|
| **Field** | **Description** |
| Style | Cape |
| Model | Residential |
| Grade: | C+ |
| Stories | 1.50 |
| Occupancy | 1 |
| Exterior Wall 1 | Clapboard |
| Exterior Wall 2 | |
| Roof Structure | Gable |
| Roof Cover | Asphalt |
| Interior Wall 1 | Drywall |
| Interior Wall 2 | |
| Interior Flr 1 | Hardwood |
| Interior Flr 2 | Carpet |
| Heat Fuel | Oil |
| Heat Type | Hot Water |
| AC Type | None |
| Bedrooms | 3 Bedrooms |
| Full Baths | 2 |
| Half Baths | 0 |
| Extra Fixtures | 0 |
| Total Rooms | 6 |
| Bath Style | Average |
| Kitchen Style | Average |
| Fireplace(s) | 1 |
| Extra Openings | 0 |
| Gas Fireplace(s) | 0 |
| Stacks | 1 |
| Bsmt Garage(s) | 0 |
| Foundation | Poured Conc |
| Fin Bsmnt | 0 |
| Int Vs Ext | Same |

## Building Photo

Building Photo

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

## Building Layout




| Building Sub-Areas (sq ft) | | | Legend |
|---|---|---|---|
| **Code** | **Description** | **Gross Area** | **Living Area** |
| BAS | First Floor | 1,096 | 1,096 |
| TQS | Three Quarter Story | 616 | 431 |
| FHS | Finished Half Story | 480 | 240 |
| BSM | Basement | 1,096 | 0 |
| | | 3,288 | 1,767 |

## Extra Features

| Extra Features | Legend |
|---|---|
| No Data for Extra Features | |

## Land

## Land Use

| | |
|---|---|
| **Use Code** | 101 |
| **Description** | Res Dwelling |
| **Zone** | R2 |
| **Neighborhood** | |
| **Alt Land Appr** | No |
| **Category** | |

## Land Line Valuation

| | |
|---|---|
| **Size (Acres)** | 34 |
| **Frontage** | |
| **Depth** | |
| **Assessed Value** | $90,090 |
| **Appraised Value** | $233,680 |

## Outbuildings

| Outbuildings | | | | | | Legend |
|---|---|---|---|---|---|---|
| **Code** | **Description** | **Sub Code** | **Sub Description** | **Size** | **Value** | **Bldg #** |
| SHD1 | Shed | | | 192 S.F. | $1,200 | 1 |
| BRN1 | 1 Story Barn | | | 1512 S.F. | $13,600 | 1 |

## Valuation History

| Appraisal | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2016 | $146,400 | $233,680 | $380,080 |
| 2015 | $146,400 | $233,680 | $380,080 |
| 2014 | $146,400 | $233,680 | $380,080 |

| Assessment | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2016 | $102,480 | $90,090 | $192,570 |
| 2015 | $102,480 | $90,090 | $192,570 |
| 2014 | $102,480 | $90,090 | $192,570 |