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

December 22, 2016

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
**West Street, Rocky Hill, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 90-foot level of the existing 100-foot tower off West Street in Rocky Hill, Connecticut (the "Property"). The tower is owned by American Tower Corporation ("ATC"). The Council approved Cellco's use of this tower in 2008. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 1900 MHz antennas and three (3) model SBNHH-1D65B, 2100 MHz antennas, all at the same 90-foot level on the tower and to replace three (3) remote radio heads ("RRHs") and install six (6) new RRHs and one (1) HYBRIFLEX™ fiber optic antenna cable. Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cable.[1]

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 Claudia Baio, Mayor of the Town of Rocky Hill. A copy of this letter is also being sent to Connecticut Light and Power Company, the owner of the Property and ATC, the tower owner.

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

[1] With the exception of a change in model of the 2100 MHz RRH, this facility modification notice is identical to the modification approved by the Council in EM-VER-119-160921. Cellco's approval of EM-VER-119-160921 was surrendered by Cellco on November 3, 2016.

1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the 90-foot level on the 100-foot tower.

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

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

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for each of Cellco's operating frequencies are included behind Attachment 2. The Far Field calculations demonstrate that Cellco's modified facility will operate well within the RF emissions limits established by the FCC.

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). Please note that the Structural Analysis Report shows the modified antenna configuration as existing.

A copy of the Town Assessor's Parcel Map and property owner information is included in Attachment 4.

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Claudia Baio, Rocky Hill Mayor
Connecticut Light and Power Company
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 |

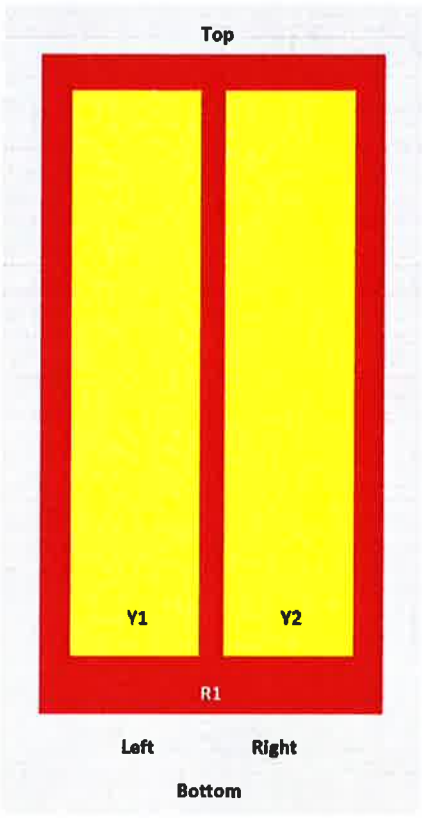
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

## Array Layout

# Product Specifications

SBNHH-1D65B

**SBNHH 65**




| Array | Freq (MHz) | Conns | RET (MRET) | AISG RET UID |
|---|---|---|---|---|
| R1 | 698-896 | 1-2 | 1 | ARxxxxxxxxxxxxxxxx 1 |
| Y1 | 1695-2360 | 3-4 | 2 | ARxxxxxxxxxxxxxxxx 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 |
| Color | Light gray |

# Product Specifications

SBNHH-1D65B

| | |
|---|---|
| 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 |

## Included Products

# Product Specifications

SBNHH-1D65B

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.

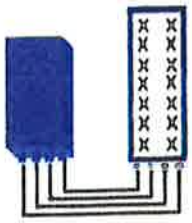
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

| 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>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 interface | 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 B25 RRH4X30

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

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

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

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

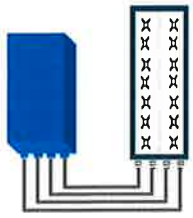
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

## FEATURES

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

## BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

| Features & performance | |
|---|---|
| Number of TX/RX paths | 4 duplexed (either 4T4R or 2T4R by SW) |
| Frequency band | 3GPP bands 2 & 25 (PCS-G)<br>DL: 1930 - 1995 MHz<br>UL: 1850 - 1915 MHz |
| Instantaneous bandwidth - #carriers | 65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth) |
| LTE carrier bandwidth | 3, 5, 10, 15 or 20 MHz |
| RF output power | 2x60W or 4x30W (by SW) |
| Noise figure (3GPP band 2)<br>RX Diversity scheme | 2.0 dB typ. (<2.5 dB max)<br>2 or 4 way Rx diversity |
| Sizes (HxWxD)(w/ solar shield) in mm (in.)<br>Volume (w/ solar shield) in L<br>Weight (w/ solar shield) in kg (lb) | 538 x 304 x 182 (21.2" x 12.0" x 7.2")<br>30<br>24 (53) |
| DC voltage range<br>DC power consumption | -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption<br>580W typical @100% RF load |
| 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 (> 14dB) |
| CPRI ports | 2 CPRI ports (HW ready for Rate7 / 9.8 Gbps) |
| AISG interfaces | 1 AISG2.0 output (RS485), +24V/2A DC power<br>Integrated Smart Bias Tees (x2) |
| Misc. Interfaces | 1 external alarms connector (4 alarms)<br>4 RF Tx & 4 RF Rx monitor ports<br>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.

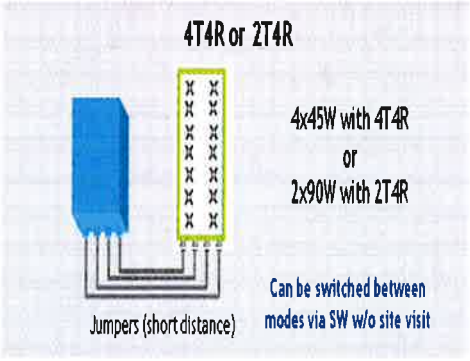
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

## TECHNICAL SPECIFICATIONS

| Features & Performance | |
|---|---|
| Number of TX/RX paths | 4 duplexed (either 4T4R or 2T4R selectable by SW) |
| Frequency band | AWS 1-3, B4/B66a<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-93-658<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) |

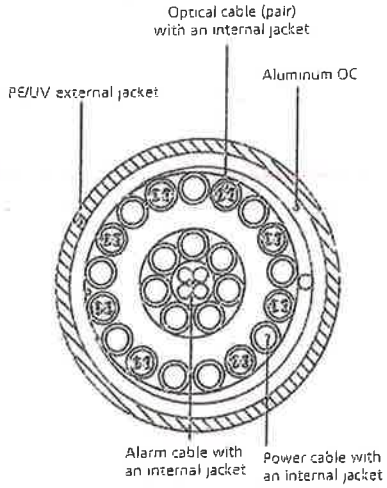



Figure 2: Construction Detail

* This data is provisional and subject to change

# ATTACHMENT 2

Far Field Approximation
with downtilt variation

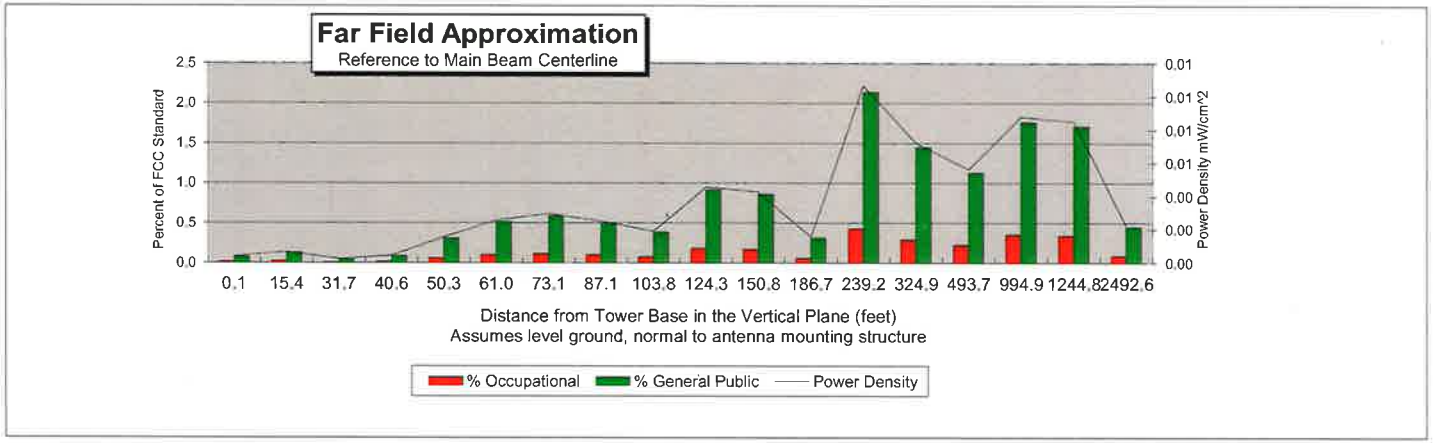
## Estimated Radiated Emission

## Single Emitter Far Field Model

## Dipole / Wire/ Yagi Antenna Types

| | |
|---|---|
| Location: | ROCKY HILL 4, CT |
| Site #: | |
| Date: | 08/11/16 |
| Name: | Mark Brauer |
| File Name: | Rocky Hill 4, CT - FF Power |

| | |
|---|---|
| Operating Freq. (MHz) | **746.0** |
| Antenna Height (ft): | **90.0** |
| Antenna Gain (dBi): | **14.7** |
| Antenna Size (in.): | **72.0** |
| Downtilt (degrees): | **0.0** |
| Feedline Loss (dB): | **0.0** |
| Power @ J4 (w): | **2140.0** |
| Number of Channels | **1** |




**Distance in feet below:**

| Calc Angle | 90.0 | 80.0 | 70.0 | 65.0 | 60.0 | 55.0 | 50.0 | 45.0 | 40.0 | 35.0 | 30.0 | 25.0 | 20.0 | 15.0 | 10.0 | 5.0 | 4.0 | 2.0 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Solve for r, dx to antenna | 87.0 | 88.4 | 92.6 | 96.0 | 100.5 | 106.2 | 113.6 | 123.1 | 135.4 | 151.7 | 174.1 | 206.0 | 254.5 | 336.3 | 501.3 | 998.7 | 1247.8 | 2494.1 | |
| Distance from Antenna Structure Base in Horizontal plane | 0.1 | 15.4 | 31.7 | 40.6 | 50.3 | 61.0 | 73.1 | 87.1 | 103.8 | 124.3 | 150.8 | 186.7 | 239.2 | 324.9 | 493.7 | 994.9 | 1244.8 | 2492.6 | |
| Angle from Main Beam (reference to horizontal plane) | 90 | 80 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 4 | 2 | |
| dB down from centerline (referenced to centerline) | 36.76 | 34.35 | 38.52 | 35.34 | 29.54 | 26.8 | 25.59 | 25.63 | 25.99 | 21.21 | 20.29 | 23.24 | 13.03 | 12.3 | 9.92 | 2 | 0.2 | 0 | |
| Reflection Coefficient (1 to 4, 2.56 typical) | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | |
| Power Density (mW/cm^2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | |
| Percent of Occupational Standard | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.4 | 0.3 | 0.2 | 0.4 | 0.3 | 0.1 | |
| Percent of General Population Standard | 0.1 | 0.1 | 0.0 | 0.1 | 0.3 | 0.5 | 0.6 | 0.5 | 0.4 | 0.9 | 0.9 | 0.3 | 2.1 | 1.5 | 1.1 | 1.8 | 1.7 | 0.4 | |

Antenna Type SBNHH-1D65B
Max% 2.14%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Po
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

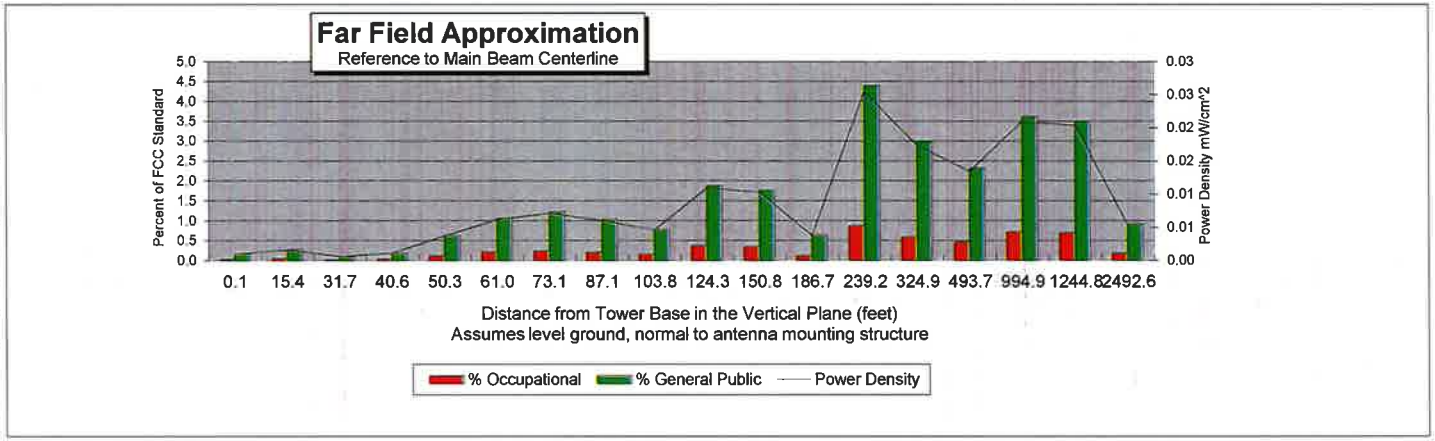
## Estimated Radiated Emission

## Single Emitter Far Field Model

## Dipole / Wire/ Yagi Antenna Types

| | |
|---|---|
| Location: | ROCKY HILL 4 , CT |
| Site #: | |
| Date: | 08/11/16 |
| Name: | Mark Brauer |
| File Name: | Rocky Hill 4, CT - FF Power |

| | |
|---|---|
| Operating Freq. (MHz) | **869.0** |
| Antenna Height (ft): | **90.0** |
| Antenna Gain (dBi): | **16.0** |
| Antenna Size (in.): | **72.0** |
| Downtilt (degrees): | **0.0** |
| Feedline Loss (dB): | **0.0** |
| Power @ J4 (w): | **3795.0** |
| Number of Channels | **9** |




**Distance in feet below:**

| Calc Angle | 90.0 | 80.0 | 70.0 | 65.0 | 60.0 | 55.0 | 50.0 | 45.0 | 40.0 | 35.0 | 30.0 | 25.0 | 20.0 | 15.0 | 10.0 | 5.0 | 4.0 | 2.0 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Solve for r, dx to antenna | 87.0 | 88.4 | 92.6 | 96.0 | 100.5 | 106.2 | 113.6 | 123.1 | 135.4 | 151.7 | 174.1 | 206.0 | 254.5 | 336.3 | 501.3 | 998.7 | 1247.8 | 2494.1 | |
| Distance from Antenna Structure Base in Horizontal plane | 0.1 | 15.4 | 31.7 | 40.6 | 50.3 | 61.0 | 73.1 | 87.1 | 103.8 | 124.3 | 150.8 | 186.7 | 239.2 | 324.9 | 493.7 | 994.9 | 1244.8 | 2492.6 | |
| Angle from Main Beam (reference to horizontal plane) | 90 | 80 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 4 | 2 | |
| dB down from centerline (referenced to centerline) | 36.76 | 34.35 | 38.52 | 35.34 | 29.54 | 26.8 | 25.59 | 25.63 | 25.99 | 21.21 | 20.29 | 23.24 | 13.03 | 12.3 | 9.92 | 2 | 0.2 | 0 | |
| Reflection Coefficient (1 to 4, 2.56 typical) | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | |
| Power Density (mW/cm^2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.03 | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 | |
| Percent of Occupational Standard | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.1 | 0.9 | 0.6 | 0.5 | 0.7 | 0.7 | 0.2 | |
| Percent of General Population Standard | 0.2 | 0.3 | 0.1 | 0.2 | 0.6 | 1.1 | 1.2 | 1.0 | 0.8 | 1.9 | 1.8 | 0.6 | 4.4 | 3.0 | 2.3 | 3.6 | 3.5 | 0.9 | |

Antenna Type LNX-6514DS-A1M
Max% 4.40%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pov
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

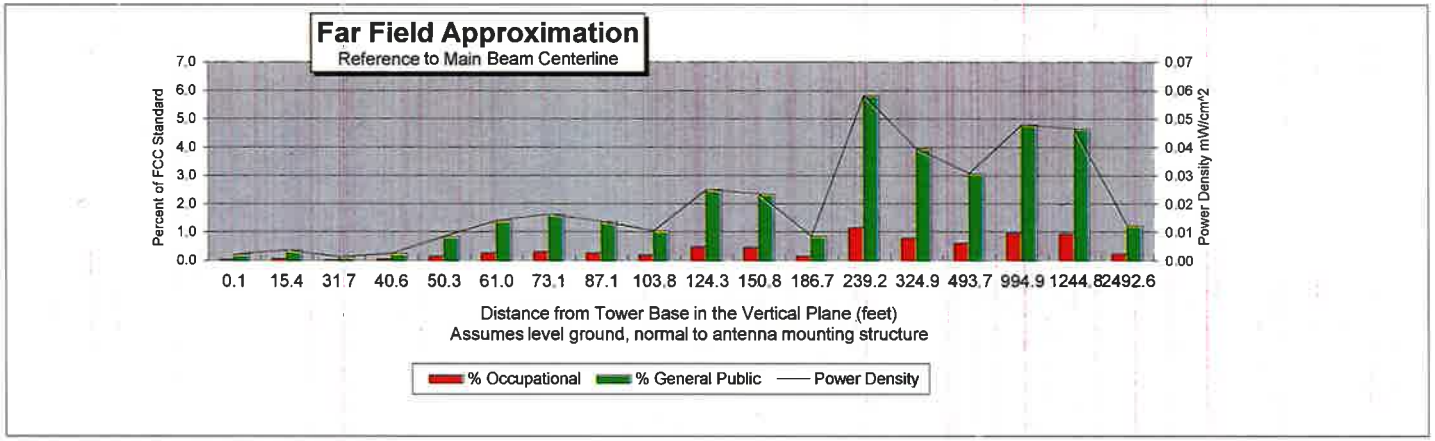
## Estimated Radiated Emission

## Single Emitter Far Field Model

## Dipole / Wire/ Yagi Antenna Types

| | |
|---|---|
| Location: | Rocky Hill 4, CT |
| Site #: | |
| Date: | 08/11/16 |
| Name: | Mark Brauer |
| File Name: | Rocky Hill 4, CT - FF Power |

| | |
|---|---|
| Operating Freq. (MHz) | 1970.0 |
| Antenna Height (ft): | 90.0 |
| Antenna Gain (dBi): | 18.4 |
| Antenna Size (in.): | 72.0 |
| Downtilt (degrees): | 0.0 |
| Feedline Loss (dB): | 0.0 |
| Power @ J4 (w): | 5000.0 |
| Number of Channels | 1 |




**Distance in feet below:**

| Calc Angle | 90.0 | 80.0 | 70.0 | 65.0 | 60.0 | 55.0 | 50.0 | 45.0 | 40.0 | 35.0 | 30.0 | 25.0 | 20.0 | 15.0 | 10.0 | 5.0 | 4.0 | 2.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Solve for r, dx to antenna | 87.0 | 88.4 | 92.6 | 96.0 | 100.5 | 106.2 | 113.6 | 123.1 | 135.4 | 151.7 | 174.1 | 206.0 | 254.5 | 336.3 | 501.3 | 998.7 | 1247.8 | 2494.1 |
| Distance from Antenna Structure Base in Horizontal plane | 0.1 | 15.4 | 31.7 | 40.6 | 50.3 | 61.0 | 73.1 | 87.1 | 103.8 | 124.3 | 150.8 | 186.7 | 239.2 | 324.9 | 493.7 | 994.9 | 1244.8 | 2492.6 |
| Angle from Main Beam (reference to horizontal plane) | 90 | 80 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 4 | 2 |
| dB down from centerline (referenced to centerline) | 36.76 | 34.35 | 38.52 | 35.34 | 29.54 | 26.8 | 25.59 | 25.63 | 25.99 | 21.21 | 20.29 | 23.24 | 13.03 | 12.3 | 9.92 | 2 | 0.2 | 0 |
| Reflection Coefficient (1 to 4, 2.56 typical) | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 |
| Power Density (mW/cm^2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.06 | 0.04 | 0.03 | 0.05 | 0.05 | 0.01 |
| Percent of Occupational Standard | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.5 | 0.5 | 0.2 | 1.2 | 0.8 | 0.6 | 1.0 | 0.9 | 0.2 |
| Percent of General Population Standard | 0.2 | 0.4 | 0.1 | 0.2 | 0.8 | 1.4 | 1.6 | 1.4 | 1.0 | 2.5 | 2.3 | 0.8 | 5.8 | 4.0 | 3.1 | 4.8 | 4.7 | 1.2 |

Antenna Type SBNHH-1D65B
Max% 5.83%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pov
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

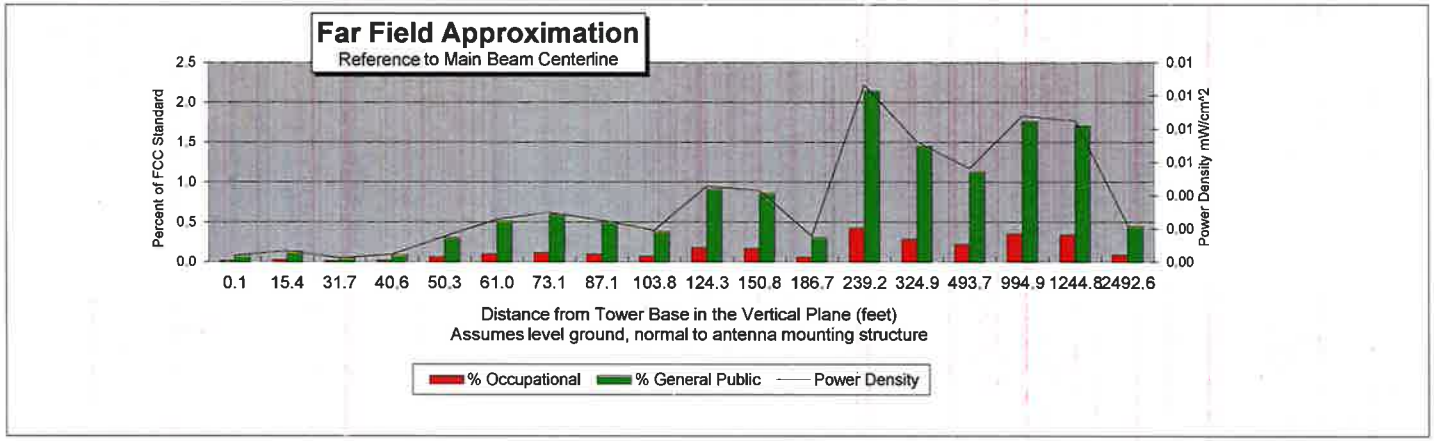
## Estimated Radiated Emission

## Single Emitter Far Field Model

## Dipole / Wire/ Yagi Antenna Types

| | |
|---|---|
| Location: | ROCKY HILL 4, CT |
| Site #: | |
| Date: | 08/11/16 |
| Name: | Mark Brauer |
| File Name: | Rocky Hill 4, CT - FF Power |

| | |
|---|---|
| Operating Freq. (MHz) | **746.0** |
| Antenna Height (ft): | **90.0** |
| Antenna Gain (dBi): | **14.7** |
| Antenna Size (in.): | **72.0** |
| Downtilt (degrees): | **0.0** |
| Feedline Loss (dB): | **0.0** |
| Power @ J4 (w): | **2140.0** |
| Number of Channels | **1** |




**Distance in feet below:**

| Calc Angle | 90.0 | 80.0 | 70.0 | 65.0 | 60.0 | 55.0 | 50.0 | 45.0 | 40.0 | 35.0 | 30.0 | 25.0 | 20.0 | 15.0 | 10.0 | 5.0 | 4.0 | 2.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Solve for r, dx to antenna | 87.0 | 88.4 | 92.6 | 96.0 | 100.5 | 106.2 | 113.6 | 123.1 | 135.4 | 151.7 | 174.1 | 206.0 | 254.5 | 336.3 | 501.3 | 998.7 | 1247.8 | 2494.1 |
| Distance from Antenna Structure Base in Horizontal plane | 0.1 | 15.4 | 31.7 | 40.6 | 50.3 | 61.0 | 73.1 | 87.1 | 103.8 | 124.3 | 150.8 | 186.7 | 239.2 | 324.9 | 493.7 | 994.9 | 1244.8 | 2492.6 |
| Angle from Main Beam (reference to horizontal plane) | 90 | 80 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 4 | 2 |
| dB down from centerline (referenced to centerline) | 36.76 | 34.35 | 38.52 | 35.34 | 29.54 | 26.8 | 25.59 | 25.63 | 25.99 | 21.21 | 20.29 | 23.24 | 13.03 | 12.3 | 9.92 | 2 | 0.2 | 0 |
| Reflection Coefficient (1 to 4, 2.56 typical) | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 |
| Power Density (mW/cm^2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0 01 | 0.01 | 0.01 | 0.01 | 0.00 |
| Percent of Occupational Standard | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.4 | 0.3 | 0.2 | 0.4 | 0.3 | 0.1 |
| Percent of General Population Standard | 0.1 | 0.1 | 0.0 | 0.1 | 0.3 | 0.5 | 0.6 | 0.5 | 0.4 | 0.9 | 0.9 | 0.3 | 2.1 | 1.5 | 1.1 | 1.8 | 1.7 | 0.4 |

Antenna Type SBNHH-1D65B
Max% 2.14%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pov
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

# ATTACHMENT 3

AMERICAN TOWER®
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# Structural Analysis Report

| | | |
|---|---|---|
| **Structure** | : | **100 ft Monopole** |
| **ATC Site Name** | : | **Rkhl - Rocky Hill, CT** |
| **ATC Site Number** | : | **302479** |
| **Engineering Number** | : | **OAA689558_C3_01** |
| **Proposed Carrier** | : | **Verizon** |
| **Carrier Site Name** | : | **Rocky Hill 4 CT** |
| **Carrier Site Number** | : | **178101** |
| **Site Location** | : | **699 West Street**<br>**Rocky Hill, CT 06067-1924**<br>**41.651764,-72.668472** |
| **County** | : | **Hartford** |
| **Date** | : | **November 16, 2016** |
| **Max Usage** | : | **96%** |
| **Result** | : | **Pass** |

Reviewed by:
Scott Wirgau, PE
Structural Team Leader


Prepared By:
Theodore A. Deters, E.I.
Structural Engineer I

Reviewed By:

Nov 17 2016 4:27 PM

cosign

**COA: PEC.0001553**

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## Table of Contents

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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 100 ft monopole to reflect the change in loading by Verizon.

## Supporting Documents

| | |
|---|---|
| **Tower Drawings** | ITT Meyer Type D, AT&T Technologies #AT-8935, dated April 13, 1984<br>Mapping by Hightower Solutions, Project #1981, dated August 9, 2007 |
| **Foundation Drawing** | SNET Site: Rocky Hill, Conn, dated November 12, 1991 |
| **Geotechnical Report** | S&ME Job #1261-08-049Q, dated April 24, 2008 |
| **Modifications** | ATC Engineering #40737338, dated May 5, 2008 |

## Analysis

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

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

## Conclusion

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

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

## Existing and Reserved Equipment

| Elevation[1] (ft) | | Qty | Antenna | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|---|
| Mount | RAD | | | | | |
| 100.0 | 105.0 | 12 | Powerwave 7020.00 Dual Band RET | Platform w/ Handrails | (12) 1 1/4" Coax<br>(4) 0.78" 8 AWG 6<br>(2) 0.39" Fiber Trunk<br>(1) 3" Conduit | AT&T Mobility |
| | 104.0 | 2 | Raycap DC6-48-60-18-8F | | | |
| | | 6 | Powerwave 7770.00 | | | |
| | | 3 | CCI HPA-65R-BUU-H6 | | | |
| | 102.0 | 6 | Powerwave LGP21901 | | | |
| | | 6 | Powerwave LGP21401 | | | |
| | 100.0 | 3 | Ericsson RRUS 11 (Band 12) | | | |
| | | 3 | Ericsson RRUS 32 B2 | | | |
| 90.0 | 90.0 | 6 | RFS FD9R6004/2C-3L | Low Profile Platform | (12) 1 5/8" Coax<br>(2) 1 5/8" Hybriflex | Verizon |
| | | 3 | Alcatel-Lucent B25 RRH4x30 | | | |
| | | 3 | Alcatel-Lucent B13 RRH4x30-4R 700U | | | |
| | | 2 | RFS DB-T1-6Z-8AB-0Z | | | |
| | | 3 | Antel BXA-70063-6CF-EDIN-X | | | |
| | | 3 | Andrew LNX-6514DS-VTM | | | |
| | | 6 | Andrew SBNHH-1D65B | | | |
| 82.0 | 82.0 | 3 | RFS APXV18-206517S-C | Flush | (6) 1 5/8" Coax | Metro PCS |

## Equipment to be Removed

| Elevation[1] (ft) | | Qty | Antenna | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|---|
| Mount | RAD | | | | | |
| 90.0 | 90.0 | 3 | Alcatel-Lucent RRH2X60-AWS Band 4 | - | - | Verizon |

## Proposed Equipment

| Elevation[1] (ft) | | Qty | Antenna | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|---|
| Mount | RAD | | | | | |
| 90.0 | 90.0 | 3 | Alcatel-Lucent RRH4X45-B66 w/ Solar Shield | Low Profile Platform | - | Verizon |

**[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).**

## Structure Usages

| Structural Component | Controlling Usage | Pass/Fail |
|---|---|---|
| Anchor Bolts | 44% | Pass |
| Shaft | 83% | Pass |
| Base Plate | 78% | Pass |
| Reinforcement | 96% | Pass |

## Foundations

| Reaction Component | Analysis Reactions | % of Usage |
|---|---|---|
| Moment (Kips-Ft) | 1,254.4 | 51% |
| Axial (Kips) | 50.0 | 11% |
| Shear (Kips) | 17.2 | 19% |

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) (°) |
|---|---|---|---|---|
| 90.0 | Alcatel-Lucent RRH4X45-B66 w/ Solar Shield | Verizon | 0.831 | 1.002 |

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

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## 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:

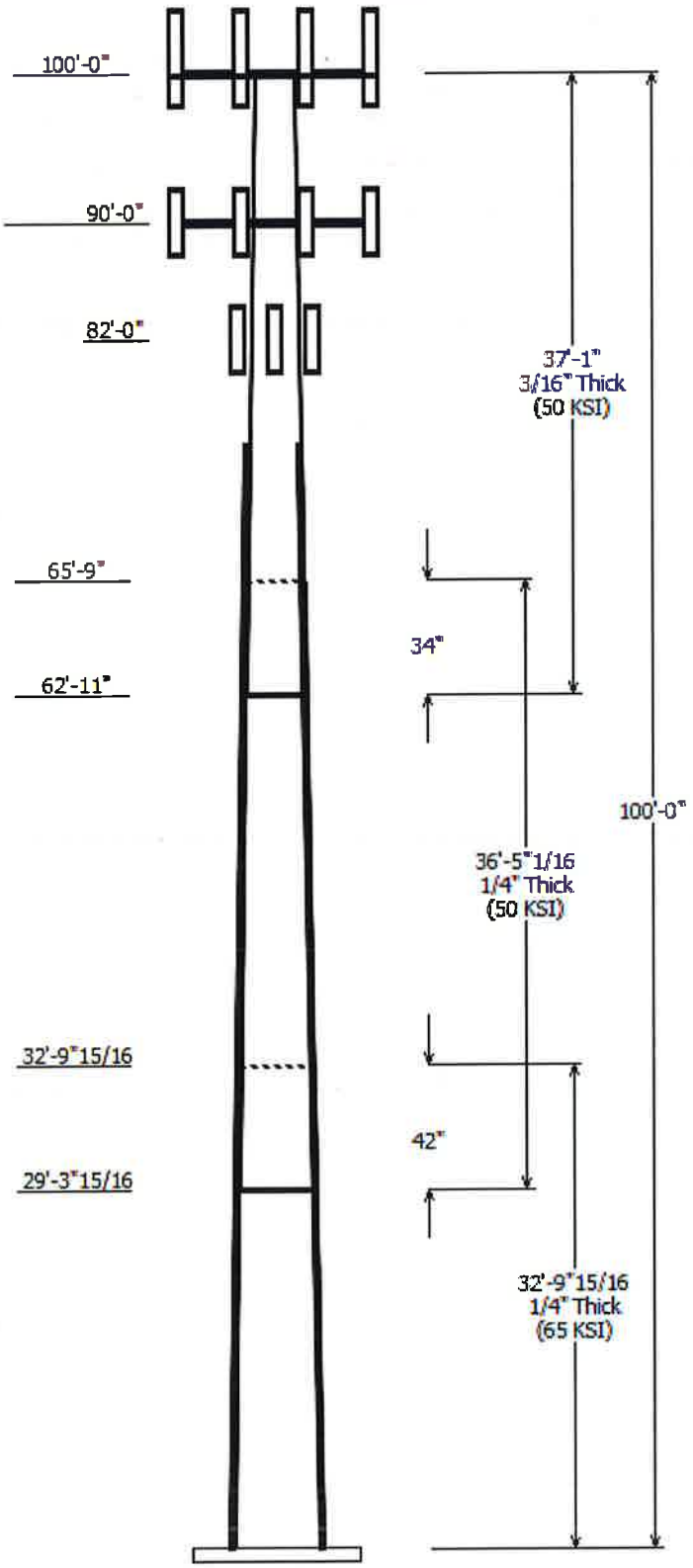
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- 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 : | 302479 | Code: | ANSI/TIA-222-G |
| Description : | 100 ft Monopole | | |
| Client : | AT&T Mobility | Struct Class : | II |
| Location : | Rkhl - Rocky Hill, CT | | |
| Shape : | 12 Sides | Exposure : | B |
| Height : | 100.00 (ft) | Topo : | 1 |
| Base Elev (ft): | 0.00 | | |
| Taper: | 0.163760 (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 | 32.830 | 24.62 | 30.00 | 0.250 | | 0.000 | 0.163800 | 65 |
| 2 | 36.420 | 19.73 | 25.69 | 0.250 | Slip Joint | 42.000 | 0.163800 | 50 |
| 3 | 37.083 | 14.50 | 20.57 | 0.188 | Slip Joint | 34.000 | 0.163800 | 50 |

## Discrete Appurtenance

| Attach Elev (ft) | Force Elev (ft) | Qty | Description |
|---|---|---|---|
| 100.000 | 104.000 | 6 | Powerwave Allgon 7770.00 |
| 100.000 | 104.000 | 3 | CCI HPA-65R-BUU-H6 |
| 100.000 | 105.000 | 12 | Powerwave 7020.00 Dual Band |
| 100.000 | 100.000 | 3 | Ericsson RRUS 32 B2 |
| 100.000 | 100.000 | 3 | Ericsson RRUS 11 (Band 12) |
| 100.000 | 104.000 | 2 | Raycap DC6-48-60-18-8F |
| 100.000 | 100.000 | 1 | Flat Platform with Handrails |
| 100.000 | 102.000 | 6 | Powerwave LGP21401 |
| 100.000 | 102.000 | 6 | Powerwave LGP21901 |
| 90.000 | 90.000 | 6 | Andrew SBNHH-1D65B |
| 90.000 | 90.000 | 3 | Alcatel-Lucent B13 RRH4x30- |
| 90.000 | 90.000 | 3 | Alcatel-Lucent B25 RRH4x30 |
| 90.000 | 90.000 | 2 | RFS DB-T1-6Z-8AB-0Z |
| 90.000 | 90.000 | 3 | Alcatel-Lucent RRH4X45-B66 |
| 90.000 | 90.000 | 3 | Andrew LNX-6514DS-VTM |
| 90.000 | 90.000 | 3 | Antel BXA-70063-6CF-EDIN-X |
| 90.000 | 90.000 | 6 | RFS FD9R6004/2C-3L |
| 90.000 | 90.000 | 1 | Round Low Profile Platform |
| 82.000 | 82.000 | 3 | RFS APXV18-206517S-C |

## Linear Appurtenance

| Elev (ft) From | To | Description | Exposed To Wind |
|---|---|---|---|
| 5.000 | 82.000 | 1 5/8" Coax | Yes |
| 5.000 | 90.000 | 1 5/8" Coax | Yes |
| 5.000 | 90.000 | 1 5/8" Hybriflex | No |
| 5.000 | 100.0 | 0.39" Fiber Trunk | No |
| 5.000 | 100.0 | 0.78" 8 AWG 6 | No |
| 5.000 | 100.0 | 1 1/4" Coax | No |
| 5.000 | 100.0 | 3" Conduit | No |
| 0.000 | 78.406 | Reinf. | Yes |

## Load Cases

| | |
|---|---|
| 1.2D + 1.6W | 97 mph with No Ice |
| 0.9D + 1.6W | 97 mph with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 50 mph with 1.00 in Radial Ice |
| (1.2 + 0.2Sds) * DL + E | Seismic Equivalent Lateral Forces Method |
| (1.2 + 0.2Sds) * DL + E | Seismic Equivalent Modal Analysis Method |
| (0.9 - 0.2Sds) * DL + E | Seismic (Reduced DL) Equivalent Lateral |
| (0.9 - 0.2Sds) * DL + E | Seismic (Reduced DL) Equivalent Modal |

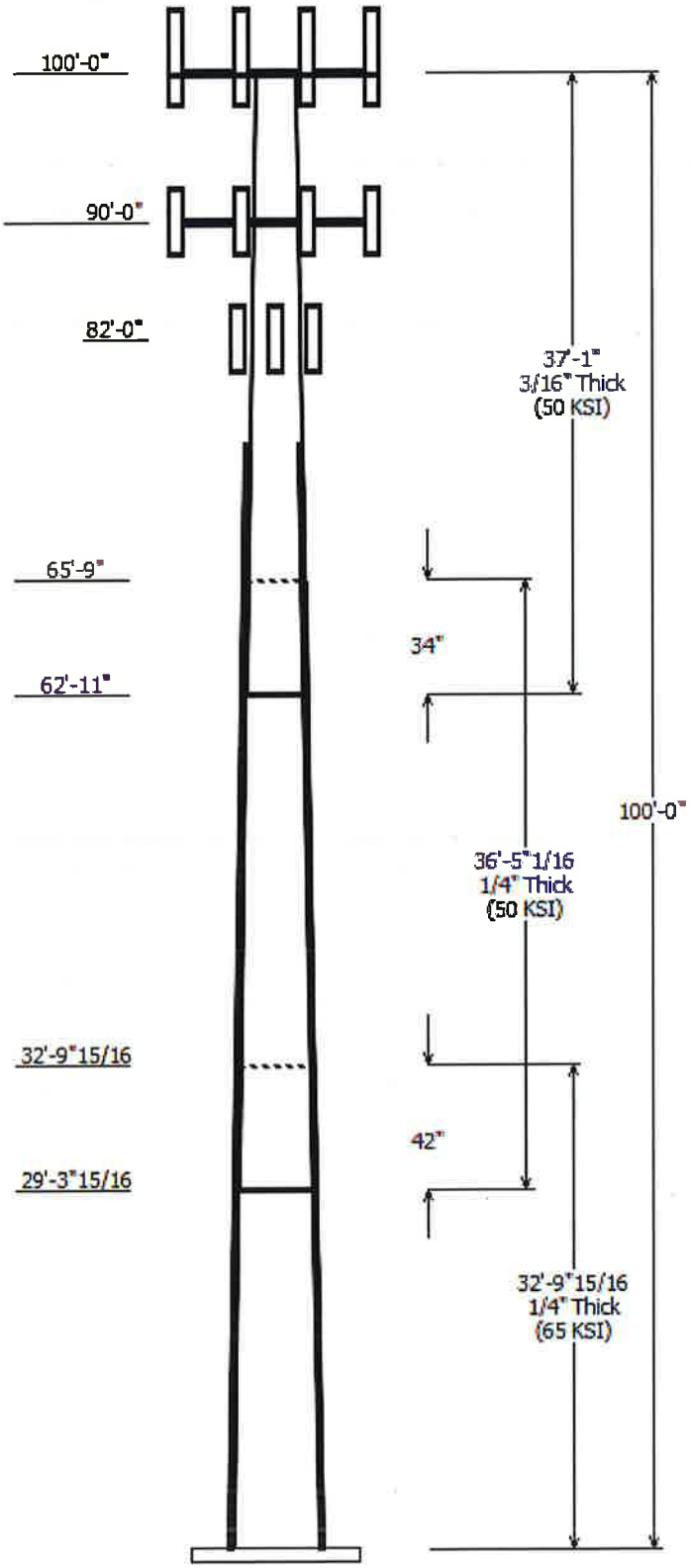
| | |
|---|---|
| 1.0D + 1.0W | Serviceability 60 mph |

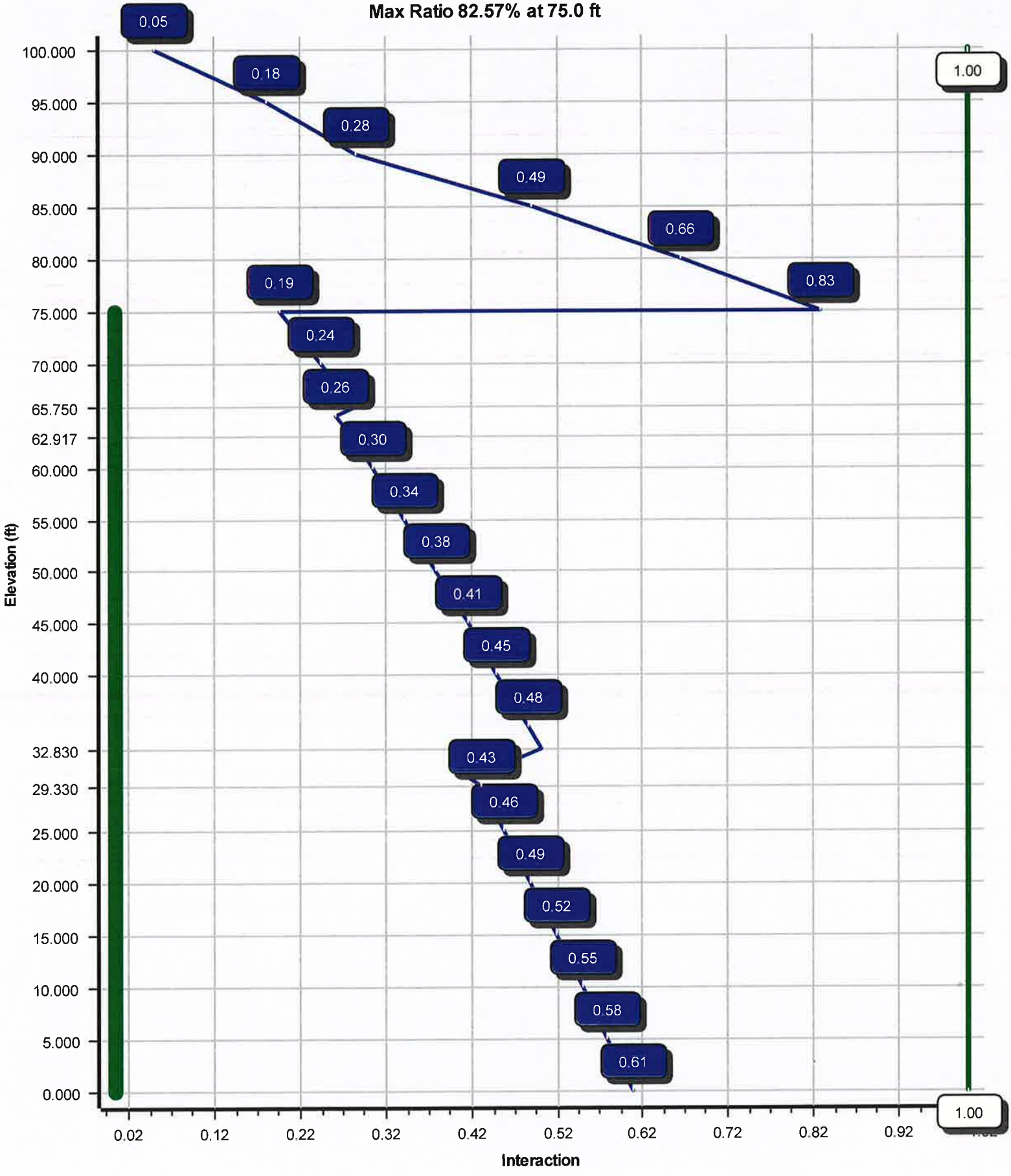
## Reactions

| Load Case | Moment (kip-ft) | Shear (kip) | Axial (kip) |
|---|---|---|---|
| 1.2D + 1.6W | 1254.39 | 17.18 | 25.79 |
| 0.9D + 1.6W | 1241.90 | 17.17 | 19.33 |
| 1.2D + 1.0Di + 1.0Wi | 321.98 | 4.20 | 50.01 |
| (1.2 + 0.2Sds) * DL + E ELFM | 85.45 | 1.04 | 25.76 |
| (1.2 + 0.2Sds) * DL + E EMAM | 153.55 | 1.76 | 25.76 |
| (0.9 - 0.2Sds) * DL + E ELFM | 84.43 | 1.04 | 17.91 |
| (0.9 - 0.2Sds) * DL + E EMAM | 151.59 | 1.76 | 17.91 |
| 1.0D + 1.0W | 298.19 | 4.11 | 21.53 |

## 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 82.57% at 75.0 ft
0.05
0.18
0.28
0.49
0.66
0.83
0.19
0.24
0.26
0.30
0.34
0.38
0.41
0.45
0.48
0.43
0.46
0.49
0.52
0.55
0.58
0.61
1.00
1.00
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.750
62.917
60.000
55.000
50.000
45.000
40.000
32.830
29.330
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: 302479 Code: ANSI/TIA-222-G 
Site Name: Rkhl - Rocky Hill, CT Engineering Number:OAA689558_C3_01 11/16/2016 6:57:14 PM
Customer: AT&T Mobility

## Analysis Parameters

| | | | |
|---|---|---|---|
| Location: | Hartford County, CT | | |
| Code: | ANSI/TIA-222-G | Height (ft): | 100 |
| Shape: | 12 Sides | Base Diameter (in): | 30.00 |
| Pole Type: | Taper | Top Diameter (in): | 14.50 |
| Pole Manfacturer: | ITT Meyer | Taper (in/ft) : | 0.164 |

## Ice & Wind Parameters

| | | | |
|---|---|---|---|
| Structure Class: | II | Design Wind Speed Without Ice: | 97 mph |
| Exposure Category: | B | Design Wind Speed With Ice: | 50 mph |
| Topographic Category: | 1 | Operational Wind Speed: | 60 mph |
| Crest Height: | 0.0 ft | Design Ice Thickness: | 1.00 in |

## Seismic Parameters

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | Equivalent Modal Analysis & Equivalent Lateral Force Methods | | | | |
| Site Class: | D - Stiff Soil | | | | |
| Period Based on Rayleigh Method (sec): | 1.81 | | | | |
| $T_L$ (sec): | 6 | p: | 1.3 | $C_s$: | 0.037 |
| $S_s$: | 0.181 | $S_1$: | 0.063 | $C_s$ Max: | 0.037 |
| $F_a$: | 1.600 | $F_v$: | 2.400 | $C_s$ Min: | 0.030 |
| $S_{ds}$: | 0.193 | $S_{d1}$: | 0.101 | | |

## Load Cases

| | |
|---|---|
| 1.2D + 1.6W | 97 mph with No Ice |
| 0.9D + 1.6W | 97 mph with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 50 mph with 1.00 in Radial Ice |
| (1.2 + 0.2Sds) * DL + E ELFM | Seismic Equivalent Lateral Forces Method |
| (1.2 + 0.2Sds) * DL + E EMAM | Seismic Equivalent Modal Analysis Method |
| (0.9 - 0.2Sds) * DL + E ELFM | Seismic (Reduced DL) Equivalent Lateral Forces Method |
| (0.9 - 0.2Sds) * DL + E EMAM | Seismic (Reduced DL) Equivalent Modal Analysis Method |
| 1.0D + 1.0W | Serviceability 60 mph |

Site Number: 302479 Code: ANSI/TIA-222-G 

Site Name: Rkhl - Rocky Hill, CT Engineering Number:OAA689558_C3_01 11/16/2016 6:57:14 PM

Customer: AT&T Mobility

## 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-12 | 32.830 | 0.2500 | 65 | | 0.00 | 2,434 | 30.00 | 0.00 | 23.95 | 2705.5 | 30.01 | 120.00 | 24.62 | 32.83 | 19.62 | 1487.8 | 24.25 | 98.50 | 0.163760 |
| 2-12 | 36.420 | 0.2500 | 50 | Slip | 42.00 | 2,241 | 25.69 | 29.33 | 20.48 | 1693.1 | 25.40 | 102.79 | 19.73 | 65.75 | 15.68 | 759.9 | 19.01 | 78.93 | 0.163760 |
| 3-12 | 37.083 | 0.1880 | 50 | Slip | 34.00 | 1,325 | 20.57 | 62.92 | 12.34 | 654.5 | 27.18 | 109.43 | 14.50 | 100.00 | 8.66 | 226.5 | 18.52 | 77.13 | 0.163760 |
| | | | | Shaft Weight | | 6,000 | | | | | | | | | | | | | |

## 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 100.00 | CCI HPA-65R-BUU-H6 | 3 | 51.00 | 9.660 | 0.83 | 382.35 | 11.433 | 0.83 | 0.000 | 4.000 |
| 100.00 | Ericsson RRUS 11 (Band 12) | 3 | 50.00 | 2.570 | 0.50 | 161.10 | 3.423 | 0.50 | 0.000 | 0.000 |
| 100.00 | Ericsson RRUS 32 B2 | 3 | 53.00 | 2.740 | 0.50 | 173.11 | 3.696 | 0.50 | 0.000 | 0.000 |
| 100.00 | Flat Platform with Handrails | 1 | 2000.00 | 42.400 | 1.00 | 3,818.72 | 69.239 | 1.00 | 0.000 | 0.000 |
| 100.00 | Powerwave 7020.00 Dual | 12 | 2.20 | 0.400 | 0.50 | 25.56 | 0.721 | 0.50 | 0.000 | 5.000 |
| 100.00 | Powerwave Allgon 7770.00 | 6 | 35.00 | 5.510 | 0.77 | 218.55 | 6.880 | 0.77 | 0.000 | 4.000 |
| 100.00 | Powerwave LGP21401 | 6 | 14.10 | 1.100 | 0.50 | 15.36 | 1.198 | 0.50 | 0.000 | 2.000 |
| 100.00 | Powerwave LGP21901 | 6 | 5.50 | 0.230 | 0.50 | 5.99 | 0.250 | 0.50 | 0.000 | 2.000 |
| 100.00 | Raycap DC6-48-60-18-8F | 2 | 20.00 | 1.110 | 1.00 | 129.93 | 2.715 | 1.00 | 0.000 | 4.000 |
| 90.00 | Alcatel-Lucent B13 RRH4x30- | 3 | 57.20 | 2.170 | 0.50 | 167.52 | 2.989 | 0.50 | 0.000 | 0.000 |
| 90.00 | Alcatel-Lucent B25 RRH4x30 | 3 | 53.00 | 2.120 | 0.50 | 151.89 | 2.931 | 0.50 | 0.000 | 0.000 |
| 90.00 | Alcatel-Lucent RRH4X45-B66 | 3 | 64.00 | 2.660 | 0.67 | 178.65 | 3.587 | 0.67 | 0.000 | 0.000 |
| 90.00 | Andrew LNX-6514DS-VTM | 3 | 33.10 | 8.080 | 0.83 | 300.80 | 9.742 | 0.83 | 0.000 | 0.000 |
| 90.00 | Andrew SBNHH-1D65B | 6 | 50.70 | 8.170 | 0.83 | 320.80 | 9.850 | 0.83 | 0.000 | 0.000 |
| 90.00 | Antel BXA-70063-6CF-EDIN-X | 3 | 17.00 | 7.570 | 0.77 | 240.69 | 9.181 | 0.77 | 0.000 | 0.000 |
| 90.00 | RFS DB-T1-6Z-8AB-0Z | 2 | 44.00 | 4.800 | 0.67 | 226.75 | 5.924 | 0.67 | 0.000 | 0.000 |
| 90.00 | RFS FD9R6004/2C-3L | 6 | 2.60 | 0.370 | 0.50 | 22.09 | 0.672 | 0.50 | 0.000 | 0.000 |
| 90.00 | Round Low Profile Platform | 1 | 1500.00 | 21.700 | 1.00 | 2,320.20 | 46.005 | 1.00 | 0.000 | 0.000 |
| 82.00 | RFS APXV18-206517S-C | 3 | 26.40 | 5.170 | 0.80 | 185.19 | 6.748 | 0.80 | 0.000 | 0.000 |
| | Totals | 75 | 5515.90 | | | 16,479.61 | | | Number of Loadings : | 19 |

## 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 |
|---|---|---|---|---|---|---|---|---|---|
| 5.00 | 100.00 | 2 | 0.39" Fiber Trunk | 0.39 | 0.06 | N | 0.00 | N | AT&T Mobility |
| 5.00 | 100.00 | 4 | 0.78" 8 AWG 6 | 0.78 | 0.59 | N | 0.00 | N | AT&T Mobility |
| 5.00 | 100.00 | 12 | 1 1/4" Coax | 1.55 | 0.63 | N | 0.00 | N | AT&T Mobility |
| 5.00 | 100.00 | 1 | 3" Conduit | 3.50 | 7.58 | N | 0.00 | N | AT&T Mobility |
| 5.00 | 90.00 | 12 | 1 5/8" Coax | 1.98 | 0.82 | N | 3.96 | Y | Verizon |
| 5.00 | 90.00 | 2 | 1 5/8" Hybriflex | 1.98 | 1.30 | N | 0.00 | N | Verizon |
| 5.00 | 82.00 | 6 | 1 5/8" Coax | 1.98 | 4.92 | N | 3.96 | Y | Metro PCS |
| 0.00 | 78.41 | 4 | Reinf. | 2.50 | 0.00 | N | 0.08 | Y | |

## Additional Steel

| Elev From (ft) | Elev To (ft) | Qty | Description | Fy (ksi) | Offset (in) | Intermediate Connections Description | Spacing (in) | Len (in) | Connectors | Continuation? |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 75.00 | 4 | SOL #20 All Thread | 80 | 2.20 | 6" Angle Bracket | 30.0 | 3.31 | 5/8" A36 U-Bolt | No |

## Segment Properties (Max Len : 5. ft)

| Seg Top Elev (ft) | Description | Thick (in) | Flat Dia (in) | Area ($in^2$) | Ix ($in^4$) | W/t Ratio | D/t Ratio | F'y (ksi) | S ($in^3$) | Z ($in^3$) | Weight (lb) | Additional Reinforcing Area ($in^2$) | Additional Reinforcing Ix ($in^4$) | Additional Reinforcing Weight (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | 0.2500 | 30.000 | 23.949 | 2,705.5 | 30.01 | 120.00 | 72.0 | 174.2 | 0.0 | 0.0 | 19.64 | 3,350 | 0.0 |
| 5.00 | | 0.2500 | 29.181 | 23.290 | 2,488.2 | 29.13 | 116.72 | 72.9 | 164.7 | 0.0 | 401.9 | 19.64 | 3,203 | 334.0 |
| 10.00 | | 0.2500 | 28.362 | 22.630 | 2,282.8 | 28.26 | 113.45 | 73.9 | 155.5 | 0.0 | 390.6 | 19.64 | 3,060 | 334.0 |
| 15.00 | | 0.2500 | 27.544 | 21.971 | 2,089.1 | 27.38 | 110.17 | 74.9 | 146.5 | 0.0 | 379.4 | 19.64 | 2,920 | 334.0 |
| 20.00 | | 0.2500 | 26.725 | 21.312 | 1,906.7 | 26.50 | 106.90 | 75.8 | 137.8 | 0.0 | 368.2 | 19.64 | 2,783 | 334.0 |
| 25.00 | | 0.2500 | 25.906 | 20.653 | 1,735.2 | 25.62 | 103.62 | 76.8 | 129.4 | 0.0 | 357.0 | 19.64 | 2,649 | 334.0 |
| 29.33 | Bot - Section 2 | 0.2500 | 25.197 | 20.082 | 1,595.3 | 24.86 | 100.79 | 77.6 | 122.3 | 0.0 | 300.1 | 19.64 | 2,536 | 289.2 |
| 30.00 | | 0.2500 | 25.087 | 19.994 | 1,574.3 | 24.74 | 100.35 | 77.7 | 121.2 | 0.0 | 92.3 | 19.64 | 2,598 | 44.8 |
| 32.83 | Top - Section 1 | 0.2500 | 25.124 | 20.023 | 1,581.3 | 24.78 | 100.50 | 62.3 | 121.6 | 0.0 | 385.3 | 19.64 | 2,525 | 189.0 |
| 35.00 | | 0.2500 | 24.768 | 19.737 | 1,514.5 | 24.40 | 99.07 | 62.6 | 118.1 | 0.0 | 146.8 | 19.64 | 2,469 | 145.0 |
| 40.00 | | 0.2500 | 23.950 | 19.078 | 1,367.7 | 23.53 | 95.80 | 63.0 | 110.3 | 0.0 | 330.2 | 19.64 | 2,344 | 334.0 |
| 45.00 | | 0.2500 | 23.131 | 18.419 | 1,230.8 | 22.65 | 92.52 | 63.0 | 102.8 | 0.0 | 319.0 | 19.64 | 2,221 | 334.0 |
| 50.00 | | 0.2500 | 22.312 | 17.760 | 1,103.4 | 21.77 | 89.25 | 63.0 | 95.5 | 0.0 | 307.8 | 19.64 | 2,102 | 334.0 |
| 55.00 | | 0.2500 | 21.493 | 17.101 | 985.0 | 20.89 | 85.97 | 63.0 | 88.5 | 0.0 | 296.6 | 19.64 | 1,986 | 334.0 |
| 60.00 | | 0.2500 | 20.674 | 16.442 | 875.4 | 20.02 | 82.70 | 63.0 | 81.8 | 0.0 | 285.3 | 19.64 | 1,874 | 334.0 |
| 62.92 | Bot - Section 3 | 0.2500 | 20.197 | 16.057 | 815.5 | 19.50 | 80.79 | 63.0 | 78.0 | 0.0 | 161.3 | 19.64 | 1,810 | 194.8 |
| 65.00 | | 0.2500 | 19.856 | 15.783 | 774.3 | 19.14 | 79.42 | 63.0 | 75.3 | 0.0 | 199.6 | 19.64 | 1,814 | 139.2 |
| 65.75 | Top - Section 2 | 0.1880 | 20.109 | 12.059 | 610.8 | 26.52 | 106.96 | 61.0 | 58.7 | 0.0 | 71.0 | 19.64 | 1,798 | 50.1 |
| 70.00 | | 0.1880 | 19.413 | 11.638 | 549.0 | 25.52 | 103.26 | 61.8 | 54.6 | 0.0 | 171.4 | 19.64 | 1,707 | 283.9 |
| 75.00 | Reinf. Top | 0.1880 | 18.594 | 11.142 | 481.8 | 24.36 | 98.90 | 62.6 | 50.1 | 0.0 | 193.8 | 19.64 | 1,603 | 334.0 |
| 80.00 | | 0.1880 | 17.775 | 10.647 | 420.3 | 23.19 | 94.55 | 63.0 | 45.7 | 0.0 | 185.4 | | | |
| 82.00 | | 0.1880 | 17.448 | 10.448 | 397.3 | 22.72 | 92.81 | 63.0 | 44.0 | 0.0 | 71.8 | | | |
| 85.00 | | 0.1880 | 16.956 | 10.151 | 364.3 | 22.02 | 90.19 | 63.0 | 41.5 | 0.0 | 105.1 | | | |
| 90.00 | | 0.1880 | 16.138 | 9.655 | 313.5 | 20.86 | 85.84 | 63.0 | 37.5 | 0.0 | 168.5 | | | |
| 95.00 | | 0.1880 | 15.319 | 9.160 | 267.7 | 19.69 | 81.48 | 63.0 | 33.8 | 0.0 | 160.1 | | | |
| 100.0 | | 0.1880 | 14.500 | 8.664 | 226.5 | 18.52 | 77.13 | 63.0 | 30.2 | 0.0 | 151.6 | | | |
| | | | | | | | | | | | 6,000.0 | | | 5,010.0 |

Site Number: 302479
Site Name: Rkhl - Rocky Hill, CT
Customer: AT&T Mobility

Code: ANSI/TIA-222-G
Engineering Number:OAA689558_C3_01



11/16/2016 6:57:14 PM

**Load Case:** 1.2D + 1.6W — 97 mph with No Ice — 21 Iterations

Gust Response Factor :1.10
Dead Load Factor :1.20
Wind Load Factor :1.60

Wind Importance Factor :1.00

## 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 | | 179.9 | 0.0 | | | | | 0.0 | 0.0 | 179.9 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 389.9 | 482.2 | | | | | 0.0 | 400.8 | 389.9 | 883.0 | 0.0 | 0.0 |
| 10.00 | | 413.9 | 468.8 | | | | | 112.8 | 758.3 | 526.7 | 1,227.0 | 0.0 | 0.0 |
| 15.00 | | 401.9 | 455.3 | | | | | 112.8 | 758.3 | 514.7 | 1,213.6 | 0.0 | 0.0 |
| 20.00 | | 390.0 | 441.9 | | | | | 112.8 | 758.3 | 502.8 | 1,200.1 | 0.0 | 0.0 |
| 25.00 | | 353.5 | 428.4 | | | | | 112.8 | 758.3 | 466.2 | 1,186.7 | 0.0 | 0.0 |
| 29.33 | Bot - Section 2 | 186.5 | 360.1 | | | | | 97.7 | 656.6 | 284.2 | 1,016.8 | 0.0 | 0.0 |
| 30.00 | | 131.3 | 110.8 | | | | | 15.1 | 101.6 | 146.4 | 212.4 | 0.0 | 0.0 |
| 32.83 | Top - Section 1 | 188.1 | 462.4 | | | | | 64.7 | 429.2 | 252.8 | 891.6 | 0.0 | 0.0 |
| 35.00 | | 271.5 | 176.2 | | | | | 50.7 | 329.1 | 322.2 | 505.3 | 0.0 | 0.0 |
| 40.00 | | 379.5 | 396.2 | | | | | 120.3 | 758.3 | 499.8 | 1,154.5 | 0.0 | 0.0 |
| 45.00 | | 379.1 | 382.8 | | | | | 124.7 | 758.3 | 503.8 | 1,141.1 | 0.0 | 0.0 |
| 50.00 | | 376.9 | 369.3 | | | | | 128.7 | 758.3 | 505.6 | 1,127.6 | 0.0 | 0.0 |
| 55.00 | | 373.1 | 355.9 | | | | | 132.4 | 758.3 | 505.5 | 1,114.1 | 0.0 | 0.0 |
| 60.00 | | 292.3 | 342.4 | | | | | 135.9 | 758.3 | 428.2 | 1,100.7 | 0.0 | 0.0 |
| 62.92 | Bot - Section 3 | 183.9 | 193.5 | | | | | 80.8 | 442.3 | 264.7 | 635.8 | 0.0 | 0.0 |
| 65.00 | | 104.7 | 239.5 | | | | | 58.4 | 316.0 | 163.1 | 555.5 | 0.0 | 0.0 |
| 65.75 | Top - Section 2 | 182.5 | 85.2 | | | | | 21.1 | 113.7 | 203.6 | 198.9 | 0.0 | 0.0 |
| 70.00 | | 333.5 | 205.6 | | | | | 121.1 | 644.5 | 454.6 | 850.2 | 0.0 | 0.0 |
| 75.00 | Reinf. Top | 352.7 | 232.5 | | | | | 145.2 | 758.3 | 498.0 | 990.8 | 0.0 | 0.0 |
| 80.00 | | 242.5 | 222.4 | | | | | 147.5 | 357.5 | 390.0 | 579.9 | 0.0 | 0.0 |
| 82.00 | Appertunance(s) | 169.3 | 86.1 | 466.6 | 0.0 | 0.0 | 95.0 | 59.4 | 143.0 | 695.3 | 324.2 | 0.0 | 0.0 |
| 85.00 | | 265.0 | 126.2 | | | | | 44.9 | 108.2 | 310.0 | 234.4 | 0.0 | 0.0 |
| 90.00 | Appertunance(s) | 296.1 | 202.2 | 3,853.9 | 0.0 | 0.0 | 3,096.8 | 75.9 | 180.4 | 4,225.9 | 3,479.4 | 0.0 | 0.0 |
| 95.00 | | 259.1 | 192.1 | | | | | 0.0 | 105.7 | 259.1 | 297.8 | 0.0 | 0.0 |
| 100.00 | Appertunance(s) | 127.1 | 181.9 | 3,679.2 | 0.0 | 6,848.8 | 3,427.2 | 0.0 | 105.7 | 3,806.2 | 3,714.9 | 0.0 | 0.0 |
| | | | | | | | | Totals: | | 17,298.9 | 25,836.1 | 0.00 | 0.00 |

Site Number: 302479 Code: ANSI/TIA-222-G 

Site Name: Rkhl - Rocky Hill, CT Engineering Number:OAA689558_C3_01 11/16/2016 6:57:15 PM

Customer: AT&T Mobility

**Load Case:** 1.2D + 1.6W — 97 mph with No Ice — 21 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 | -25.79 | -17.18 | 0.00 | -1,254.39 | 0.00 | 1,254.39 | 1,551.53 | 775.77 | 1,904.52 | 940.57 | 0.00 | 0.00 | 0.605 |
| 5.00 | -24.83 | -16.92 | 0.00 | -1,168.47 | 0.00 | 1,168.47 | 1,528.89 | 764.45 | 1,824.65 | 901.13 | 0.15 | -0.28 | 0.576 |
| 10.00 | -23.52 | -16.49 | 0.00 | -1,083.89 | 0.00 | 1,083.89 | 1,505.12 | 752.56 | 1,745.00 | 861.79 | 0.60 | -0.57 | 0.546 |
| 15.00 | -22.24 | -16.07 | 0.00 | -1,001.42 | 0.00 | 1,001.42 | 1,480.21 | 740.10 | 1,665.70 | 822.62 | 1.35 | -0.84 | 0.516 |
| 20.00 | -20.97 | -15.65 | 0.00 | -921.06 | 0.00 | 921.06 | 1,454.16 | 727.08 | 1,586.85 | 783.69 | 2.38 | -1.12 | 0.486 |
| 25.00 | -19.73 | -15.24 | 0.00 | -842.82 | 0.00 | 842.82 | 1,426.98 | 713.49 | 1,508.58 | 745.03 | 3.69 | -1.38 | 0.455 |
| 29.33 | -18.69 | -14.97 | 0.00 | -776.83 | 0.00 | 776.83 | 1,402.52 | 701.26 | 1,441.35 | 711.83 | 5.05 | -1.61 | 0.429 |
| 30.00 | -18.46 | -14.85 | 0.00 | -766.80 | 0.00 | 766.80 | 1,398.66 | 699.33 | 1,430.99 | 706.71 | 5.28 | -1.65 | 0.416 |
| 32.83 | -17.54 | -14.61 | 0.00 | -724.78 | 0.00 | 724.78 | 1,122.95 | 561.48 | 1,150.62 | 568.25 | 6.30 | -1.79 | 0.500 |
| 35.00 | -17.00 | -14.32 | 0.00 | -693.08 | 0.00 | 693.08 | 1,111.89 | 555.94 | 1,122.84 | 554.53 | 7.14 | -1.90 | 0.483 |
| 40.00 | -15.81 | -13.85 | 0.00 | -621.47 | 0.00 | 621.47 | 1,081.73 | 540.87 | 1,055.54 | 521.29 | 9.26 | -2.13 | 0.447 |
| 45.00 | -14.64 | -13.35 | 0.00 | -552.24 | 0.00 | 552.24 | 1,044.36 | 522.18 | 983.50 | 485.71 | 11.62 | -2.36 | 0.413 |
| 50.00 | -13.49 | -12.85 | 0.00 | -485.48 | 0.00 | 485.48 | 1,006.99 | 503.49 | 914.00 | 451.39 | 14.21 | -2.57 | 0.377 |
| 55.00 | -12.36 | -12.33 | 0.00 | -421.24 | 0.00 | 421.24 | 969.61 | 484.81 | 847.05 | 418.33 | 17.01 | -2.77 | 0.340 |
| 60.00 | -11.25 | -11.88 | 0.00 | -359.57 | 0.00 | 359.57 | 932.24 | 466.12 | 782.65 | 386.52 | 20.02 | -2.96 | 0.302 |
| 62.92 | -10.61 | -11.60 | 0.00 | -324.92 | 0.00 | 324.92 | 910.44 | 455.22 | 746.26 | 368.55 | 21.86 | -3.06 | 0.280 |
| 65.00 | -10.06 | -11.41 | 0.00 | -300.76 | 0.00 | 300.76 | 894.87 | 447.43 | 720.79 | 355.97 | 23.22 | -3.14 | 0.258 |
| 65.75 | -9.86 | -11.21 | 0.00 | -292.21 | 0.00 | 292.21 | 662.47 | 331.23 | 543.96 | 268.64 | 23.71 | -3.16 | 0.283 |
| 70.00 | -9.01 | -10.73 | 0.00 | -244.56 | 0.00 | 244.56 | 646.97 | 323.48 | 512.50 | 253.10 | 26.58 | -3.29 | 0.241 |
| 75.00 | -8.03 | -10.19 | 0.00 | -190.90 | 0.00 | 190.90 | 628.03 | 314.01 | 476.10 | 235.13 | 30.10 | -3.42 | 0.193 |
| 75.00 | -8.03 | -10.19 | 0.00 | -190.90 | 0.00 | 190.90 | 628.03 | 314.01 | 476.10 | 235.13 | 30.10 | -3.42 | 0.826 |
| 80.00 | -7.45 | -9.79 | 0.00 | -139.94 | 0.00 | 139.94 | 603.66 | 301.83 | 437.06 | 215.85 | 33.75 | -3.54 | 0.662 |
| 82.00 | -7.13 | -9.10 | 0.00 | -120.36 | 0.00 | 120.36 | 592.42 | 296.21 | 420.85 | 207.84 | 35.27 | -3.71 | 0.592 |
| 85.00 | -6.88 | -8.81 | 0.00 | -93.07 | 0.00 | 93.07 | 575.56 | 287.78 | 397.11 | 196.12 | 37.68 | -3.94 | 0.487 |
| 90.00 | -3.70 | -4.36 | 0.00 | -49.04 | 0.00 | 49.04 | 547.45 | 273.73 | 359.07 | 177.33 | 41.97 | -4.22 | 0.284 |
| 95.00 | -3.41 | -4.08 | 0.00 | -27.26 | 0.00 | 27.26 | 519.35 | 259.67 | 322.95 | 159.49 | 46.48 | -4.39 | 0.178 |
| 100.00 | 0.00 | -3.81 | 0.00 | -6.85 | 0.00 | 6.85 | 491.24 | 245.62 | 288.74 | 142.60 | 51.14 | -4.48 | 0.048 |

Site Number: 302479 | Code: ANSI/TIA-222-G | 

Site Name: Rkhl - Rocky Hill, CT | Engineering Number:OAA689558_C3_01 | 11/16/2016 6:57:15 PM

Customer: AT&T Mobility

**Load Case:** 0.9D + 1.6W | 97 mph with No Ice (Reduced DL) | 21 Iterations

Gust Response Factor :1.10 | Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

## Applied Segment Forces Summary

| | | 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 | | 179.9 | 0.0 | | | | | 0.0 | 0.0 | 179.9 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 389.9 | 361.7 | | | | | 0.0 | 300.6 | 389.9 | 662.3 | 0.0 | 0.0 |
| 10.00 | | 413.9 | 351.6 | | | | | 112.8 | 568.7 | 526.7 | 920.3 | 0.0 | 0.0 |
| 15.00 | | 401.9 | 341.5 | | | | | 112.8 | 568.7 | 514.7 | 910.2 | 0.0 | 0.0 |
| 20.00 | | 390.0 | 331.4 | | | | | 112.8 | 568.7 | 502.8 | 900.1 | 0.0 | 0.0 |
| 25.00 | | 353.5 | 321.3 | | | | | 112.8 | 568.7 | 466.2 | 890.0 | 0.0 | 0.0 |
| 29.33 | Bot - Section 2 | 186.5 | 270.1 | | | | | 97.7 | 492.5 | 284.2 | 762.6 | 0.0 | 0.0 |
| 30.00 | | 131.3 | 83.1 | | | | | 15.1 | 76.2 | 146.4 | 159.3 | 0.0 | 0.0 |
| 32.83 | Top - Section 1 | 188.1 | 346.8 | | | | | 64.7 | 321.9 | 252.8 | 668.7 | 0.0 | 0.0 |
| 35.00 | | 271.5 | 132.1 | | | | | 50.7 | 246.8 | 322.2 | 379.0 | 0.0 | 0.0 |
| 40.00 | | 379.5 | 297.2 | | | | | 120.3 | 568.7 | 499.8 | 865.9 | 0.0 | 0.0 |
| 45.00 | | 379.1 | 287.1 | | | | | 124.7 | 568.7 | 503.8 | 855.8 | 0.0 | 0.0 |
| 50.00 | | 376.9 | 277.0 | | | | | 128.7 | 568.7 | 505.6 | 845.7 | 0.0 | 0.0 |
| 55.00 | | 373.1 | 266.9 | | | | | 132.4 | 568.7 | 505.5 | 835.6 | 0.0 | 0.0 |
| 60.00 | | 292.3 | 256.8 | | | | | 135.9 | 568.7 | 428.2 | 825.5 | 0.0 | 0.0 |
| 62.92 | Bot - Section 3 | 183.9 | 145.1 | | | | | 80.8 | 331.7 | 264.7 | 476.9 | 0.0 | 0.0 |
| 65.00 | | 104.7 | 179.7 | | | | | 58.4 | 237.0 | 163.1 | 416.6 | 0.0 | 0.0 |
| 65.75 | Top - Section 2 | 182.5 | 63.9 | | | | | 21.1 | 85.3 | 203.6 | 149.2 | 0.0 | 0.0 |
| 70.00 | | 333.5 | 154.2 | | | | | 121.1 | 483.4 | 454.6 | 637.6 | 0.0 | 0.0 |
| 75.00 | Reinf. Top | 352.7 | 174.4 | | | | | 145.2 | 568.7 | 498.0 | 743.1 | 0.0 | 0.0 |
| 80.00 | | 242.5 | 166.8 | | | | | 147.5 | 268.1 | 390.0 | 434.9 | 0.0 | 0.0 |
| 82.00 | Appertunance(s) | 169.3 | 64.6 | 466.6 | 0.0 | 0.0 | 71.3 | 59.4 | 107.2 | 695.3 | 243.1 | 0.0 | 0.0 |
| 85.00 | | 265.0 | 94.6 | | | | | 44.9 | 81.2 | 310.0 | 175.8 | 0.0 | 0.0 |
| 90.00 | Appertunance(s) | 296.1 | 151.6 | 3,853.9 | 0.0 | 0.0 | 2,322.6 | 75.9 | 135.3 | 4,225.9 | 2,609.5 | 0.0 | 0.0 |
| 95.00 | | 259.1 | 144.1 | | | | | 0.0 | 79.3 | 259.1 | 223.3 | 0.0 | 0.0 |
| 100.00 | Appertunance(s) | 127.1 | 136.5 | 3,679.2 | 0.0 | 6,848.8 | 2,570.4 | 0.0 | 79.3 | 3,806.2 | 2,786.2 | 0.0 | 0.0 |
| | | | | | | | | Totals: | | 17,298.9 | 19,377.1 | 0.00 | 0.00 |

Site Number: 302479 Code: ANSI/TIA-222-G 

Site Name: Rkhl - Rocky Hill, CT Engineering Number:OAA689558_C3_01 11/16/2016 6:57:16 PM

Customer: AT&T Mobility

**Load Case:** 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 21 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 | -19.33 | -17.17 | 0.00 | -1,241.90 | 0.00 | 1,241.90 | 1,551.53 | 775.77 | 1,904.52 | 940.57 | 0.00 | 0.00 | 0.597 |
| 5.00 | -18.59 | -16.87 | 0.00 | -1,156.06 | 0.00 | 1,156.06 | 1,528.89 | 764.45 | 1,824.65 | 901.13 | 0.15 | -0.28 | 0.568 |
| 10.00 | -17.59 | -16.42 | 0.00 | -1,071.73 | 0.00 | 1,071.73 | 1,505.12 | 752.56 | 1,745.00 | 861.79 | 0.60 | -0.56 | 0.538 |
| 15.00 | -16.62 | -15.97 | 0.00 | -989.63 | 0.00 | 989.63 | 1,480.21 | 740.10 | 1,665.70 | 822.62 | 1.33 | -0.83 | 0.508 |
| 20.00 | -15.65 | -15.53 | 0.00 | -909.77 | 0.00 | 909.77 | 1,454.16 | 727.08 | 1,586.85 | 783.69 | 2.35 | -1.10 | 0.478 |
| 25.00 | -14.71 | -15.10 | 0.00 | -832.14 | 0.00 | 832.14 | 1,426.98 | 713.49 | 1,508.58 | 745.03 | 3.65 | -1.37 | 0.448 |
| 29.33 | -13.92 | -14.83 | 0.00 | -766.74 | 0.00 | 766.74 | 1,402.52 | 701.26 | 1,441.35 | 711.83 | 5.00 | -1.59 | 0.421 |
| 30.00 | -13.74 | -14.70 | 0.00 | -756.80 | 0.00 | 756.80 | 1,398.66 | 699.33 | 1,430.99 | 706.71 | 5.23 | -1.63 | 0.409 |
| 32.83 | -13.05 | -14.46 | 0.00 | -715.19 | 0.00 | 715.19 | 1,122.95 | 561.48 | 1,150.62 | 568.25 | 6.23 | -1.77 | 0.491 |
| 35.00 | -12.64 | -14.16 | 0.00 | -683.82 | 0.00 | 683.82 | 1,111.89 | 555.94 | 1,122.84 | 554.53 | 7.06 | -1.88 | 0.475 |
| 40.00 | -11.74 | -13.68 | 0.00 | -613.01 | 0.00 | 613.01 | 1,081.73 | 540.87 | 1,055.54 | 521.29 | 9.16 | -2.11 | 0.439 |
| 45.00 | -10.85 | -13.18 | 0.00 | -544.61 | 0.00 | 544.61 | 1,044.36 | 522.18 | 983.50 | 485.71 | 11.49 | -2.33 | 0.405 |
| 50.00 | -9.98 | -12.68 | 0.00 | -478.69 | 0.00 | 478.69 | 1,006.99 | 503.49 | 914.00 | 451.39 | 14.04 | -2.54 | 0.370 |
| 55.00 | -9.13 | -12.17 | 0.00 | -415.30 | 0.00 | 415.30 | 969.61 | 484.81 | 847.05 | 418.33 | 16.81 | -2.74 | 0.334 |
| 60.00 | -8.30 | -11.72 | 0.00 | -354.48 | 0.00 | 354.48 | 932.24 | 466.12 | 782.65 | 386.52 | 19.78 | -2.92 | 0.297 |
| 62.92 | -7.82 | -11.44 | 0.00 | -320.31 | 0.00 | 320.31 | 910.44 | 455.22 | 746.26 | 368.55 | 21.60 | -3.03 | 0.274 |
| 65.00 | -7.40 | -11.26 | 0.00 | -296.47 | 0.00 | 296.47 | 894.87 | 447.43 | 720.79 | 355.97 | 22.94 | -3.10 | 0.253 |
| 65.75 | -7.25 | -11.06 | 0.00 | -288.03 | 0.00 | 288.03 | 662.47 | 331.23 | 543.96 | 268.64 | 23.43 | -3.12 | 0.277 |
| 70.00 | -6.61 | -10.58 | 0.00 | -241.03 | 0.00 | 241.03 | 646.97 | 323.48 | 512.50 | 253.10 | 26.26 | -3.24 | 0.237 |
| 75.00 | -5.88 | -10.06 | 0.00 | -188.10 | 0.00 | 188.10 | 628.03 | 314.01 | 476.10 | 235.13 | 29.73 | -3.38 | 0.189 |
| 75.00 | -5.88 | -10.06 | 0.00 | -188.10 | 0.00 | 188.10 | 628.03 | 314.01 | 476.10 | 235.13 | 29.73 | -3.38 | 0.810 |
| 80.00 | -5.45 | -9.66 | 0.00 | -137.82 | 0.00 | 137.82 | 603.66 | 301.83 | 437.06 | 215.85 | 33.34 | -3.49 | 0.649 |
| 82.00 | -5.21 | -8.96 | 0.00 | -118.50 | 0.00 | 118.50 | 592.42 | 296.21 | 420.85 | 207.84 | 34.84 | -3.66 | 0.580 |
| 85.00 | -5.02 | -8.67 | 0.00 | -91.61 | 0.00 | 91.61 | 575.56 | 287.78 | 397.11 | 196.12 | 37.21 | -3.89 | 0.477 |
| 90.00 | -2.70 | -4.28 | 0.00 | -48.28 | 0.00 | 48.28 | 547.45 | 273.73 | 359.07 | 177.33 | 41.45 | -4.16 | 0.277 |
| 95.00 | -2.49 | -4.01 | 0.00 | -26.89 | 0.00 | 26.89 | 519.35 | 259.67 | 322.95 | 159.49 | 45.90 | -4.33 | 0.174 |
| 100.00 | 0.00 | -3.81 | 0.00 | -6.85 | 0.00 | 6.85 | 491.24 | 245.62 | 288.74 | 142.60 | 50.49 | -4.42 | 0.048 |

Site Number: 302479 Code: ANSI/TIA-222-G 

Site Name: Rkhl - Rocky Hill, CT Engineering Number:OAA689558_C3_01 11/16/2016 6:57:16 PM

Customer: AT&T Mobility

**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 20 Iterations

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

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

## Applied Segment Forces Summary

| Seg Elev (ft) | Description | Shaft Forces 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 | | 39.5 | 0.0 | | | | | 0.0 | 0.0 | 39.5 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 78.4 | 789.4 | | | | | 0.0 | 485.9 | 78.4 | 1,275.3 | 0.0 | 0.0 |
| 10.00 | | 77.0 | 804.4 | | | | | 42.9 | 1,158.7 | 120.0 | 1,963.2 | 0.0 | 0.0 |
| 15.00 | | 75.4 | 800.0 | | | | | 44.2 | 1,180.7 | 119.6 | 1,980.6 | 0.0 | 0.0 |
| 20.00 | | 73.7 | 789.1 | | | | | 45.1 | 1,195.9 | 118.8 | 1,985.0 | 0.0 | 0.0 |
| 25.00 | | 67.2 | 774.8 | | | | | 45.8 | 1,207.7 | 112.9 | 1,982.5 | 0.0 | 0.0 |
| 29.33 | Bot - Section 2 | 35.6 | 658.4 | | | | | 40.1 | 1,053.7 | 75.6 | 1,712.1 | 0.0 | 0.0 |
| 30.00 | | 25.1 | 158.0 | | | | | 6.2 | 163.7 | 31.3 | 321.7 | 0.0 | 0.0 |
| 32.83 | Top - Section 1 | 36.0 | 659.9 | | | | | 26.8 | 692.7 | 62.8 | 1,352.6 | 0.0 | 0.0 |
| 35.00 | | 52.3 | 326.8 | | | | | 21.1 | 532.9 | 73.3 | 859.7 | 0.0 | 0.0 |
| 40.00 | | 73.4 | 736.4 | | | | | 50.3 | 1,232.9 | 123.7 | 1,969.3 | 0.0 | 0.0 |
| 45.00 | | 73.8 | 716.7 | | | | | 52.6 | 1,239.3 | 126.4 | 1,956.0 | 0.0 | 0.0 |
| 50.00 | | 73.9 | 696.2 | | | | | 54.6 | 1,245.1 | 128.5 | 1,941.4 | 0.0 | 0.0 |
| 55.00 | | 73.7 | 675.2 | | | | | 56.5 | 1,250.4 | 130.2 | 1,925.7 | 0.0 | 0.0 |
| 60.00 | | 58.1 | 653.7 | | | | | 58.4 | 1,255.3 | 116.4 | 1,909.0 | 0.0 | 0.0 |
| 62.92 | Bot - Section 3 | 36.7 | 372.6 | | | | | 34.8 | 734.3 | 71.5 | 1,106.9 | 0.0 | 0.0 |
| 65.00 | | 20.9 | 368.2 | | | | | 25.2 | 525.5 | 46.1 | 893.7 | 0.0 | 0.0 |
| 65.75 | Top - Section 2 | 36.7 | 131.4 | | | | | 9.2 | 189.3 | 45.8 | 320.7 | 0.0 | 0.0 |
| 70.00 | | 67.3 | 460.1 | | | | | 52.5 | 1,074.7 | 119.9 | 1,534.9 | 0.0 | 0.0 |
| 75.00 | Reinf. Top | 71.8 | 522.7 | | | | | 63.3 | 1,268.0 | 135.0 | 1,790.6 | 0.0 | 0.0 |
| 80.00 | | 49.7 | 503.1 | | | | | 60.4 | 831.3 | 110.1 | 1,334.5 | 0.0 | 0.0 |
| 82.00 | Appertunance(s) | 35.0 | 197.1 | 101.1 | 0.0 | 0.0 | 571.4 | 20.7 | 299.5 | 156.9 | 1,068.0 | 0.0 | 0.0 |
| 85.00 | | 55.2 | 289.0 | | | | | 15.7 | 259.3 | 70.9 | 548.3 | 0.0 | 0.0 |
| 90.00 | Appertunance(s) | 67.7 | 463.3 | 913.6 | 0.0 | 0.0 | 8,265.8 | 26.6 | 433.4 | 1,008.0 | 9,162.5 | 0.0 | 0.0 |
| 95.00 | | 66.1 | 443.0 | | | | | 0.0 | 105.7 | 66.1 | 548.7 | 0.0 | 0.0 |
| 100.00 | Appertunance(s) | 32.6 | 422.5 | 883.2 | 0.0 | 1,469.1 | 8,038.2 | 0.0 | 105.7 | 915.9 | 8,566.5 | 0.0 | 0.0 |
| | | | | | | | | Totals: | | 4,203.62 | 50,009.4 | 0.00 | 0.00 |

Site Number: 302479 Code: ANSI/TIA-222-G 

Site Name: Rkhl - Rocky Hill, CT Engineering Number:OAA689558_C3_01 11/16/2016 6:57:17 PM

Customer: AT&T Mobility

**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 20 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 | -50.01 | -4.20 | 0.00 | -321.98 | 0.00 | 321.98 | 1,551.53 | 775.77 | 1,904.52 | 940.57 | 0.00 | 0.00 | 0.171 |
| 5.00 | -48.73 | -4.18 | 0.00 | -301.00 | 0.00 | 301.00 | 1,528.89 | 764.45 | 1,824.65 | 901.13 | 0.04 | -0.07 | 0.163 |
| 10.00 | -46.76 | -4.11 | 0.00 | -280.11 | 0.00 | 280.11 | 1,505.12 | 752.56 | 1,745.00 | 861.79 | 0.16 | -0.15 | 0.156 |
| 15.00 | -44.77 | -4.04 | 0.00 | -259.53 | 0.00 | 259.53 | 1,480.21 | 740.10 | 1,665.70 | 822.62 | 0.35 | -0.22 | 0.148 |
| 20.00 | -42.78 | -3.97 | 0.00 | -239.31 | 0.00 | 239.31 | 1,454.16 | 727.08 | 1,586.85 | 783.69 | 0.61 | -0.29 | 0.139 |
| 25.00 | -40.80 | -3.89 | 0.00 | -219.47 | 0.00 | 219.47 | 1,426.98 | 713.49 | 1,508.58 | 745.03 | 0.95 | -0.36 | 0.131 |
| 29.33 | -39.08 | -3.83 | 0.00 | -202.62 | 0.00 | 202.62 | 1,402.52 | 701.26 | 1,441.35 | 711.83 | 1.31 | -0.42 | 0.124 |
| 30.00 | -38.76 | -3.81 | 0.00 | -200.06 | 0.00 | 200.06 | 1,398.66 | 699.33 | 1,430.99 | 706.71 | 1.36 | -0.43 | 0.121 |
| 32.83 | -37.41 | -3.76 | 0.00 | -189.28 | 0.00 | 189.28 | 1,122.95 | 561.48 | 1,150.62 | 568.25 | 1.63 | -0.46 | 0.145 |
| 35.00 | -36.54 | -3.71 | 0.00 | -181.13 | 0.00 | 181.13 | 1,111.89 | 555.94 | 1,122.84 | 554.53 | 1.85 | -0.49 | 0.141 |
| 40.00 | -34.57 | -3.60 | 0.00 | -162.60 | 0.00 | 162.60 | 1,081.73 | 540.87 | 1,055.54 | 521.29 | 2.40 | -0.55 | 0.131 |
| 45.00 | -32.61 | -3.49 | 0.00 | -144.60 | 0.00 | 144.60 | 1,044.36 | 522.18 | 983.50 | 485.71 | 3.01 | -0.61 | 0.121 |
| 50.00 | -30.67 | -3.37 | 0.00 | -127.17 | 0.00 | 127.17 | 1,006.99 | 503.49 | 914.00 | 451.39 | 3.68 | -0.67 | 0.111 |
| 55.00 | -28.74 | -3.24 | 0.00 | -110.34 | 0.00 | 110.34 | 969.61 | 484.81 | 847.05 | 418.33 | 4.41 | -0.72 | 0.101 |
| 60.00 | -26.84 | -3.11 | 0.00 | -94.16 | 0.00 | 94.16 | 932.24 | 466.12 | 782.65 | 386.52 | 5.19 | -0.77 | 0.091 |
| 62.92 | -25.73 | -3.04 | 0.00 | -85.08 | 0.00 | 85.08 | 910.44 | 455.22 | 746.26 | 368.55 | 5.67 | -0.80 | 0.084 |
| 65.00 | -24.83 | -2.98 | 0.00 | -78.75 | 0.00 | 78.75 | 894.87 | 447.43 | 720.79 | 355.97 | 6.03 | -0.82 | 0.079 |
| 65.75 | -24.51 | -2.94 | 0.00 | -76.51 | 0.00 | 76.51 | 662.47 | 331.23 | 543.96 | 268.64 | 6.15 | -0.82 | 0.086 |
| 70.00 | -22.98 | -2.81 | 0.00 | -64.01 | 0.00 | 64.01 | 646.97 | 323.48 | 512.50 | 253.10 | 6.90 | -0.86 | 0.075 |
| 75.00 | -21.19 | -2.66 | 0.00 | -49.94 | 0.00 | 49.94 | 628.03 | 314.01 | 476.10 | 235.13 | 7.82 | -0.89 | 0.061 |
| 75.00 | -21.19 | -2.66 | 0.00 | -49.94 | 0.00 | 49.94 | 628.03 | 314.01 | 476.10 | 235.13 | 7.82 | -0.89 | 0.246 |
| 80.00 | -19.85 | -2.55 | 0.00 | -36.62 | 0.00 | 36.62 | 603.66 | 301.83 | 437.06 | 215.85 | 8.77 | -0.92 | 0.203 |
| 82.00 | -18.79 | -2.39 | 0.00 | -31.53 | 0.00 | 31.53 | 592.42 | 296.21 | 420.85 | 207.84 | 9.17 | -0.97 | 0.183 |
| 85.00 | -18.24 | -2.33 | 0.00 | -24.37 | 0.00 | 24.37 | 575.56 | 287.78 | 397.11 | 196.12 | 9.79 | -1.03 | 0.156 |
| 90.00 | -9.09 | -1.16 | 0.00 | -12.72 | 0.00 | 12.72 | 547.45 | 273.73 | 359.07 | 177.33 | 10.91 | -1.10 | 0.088 |
| 95.00 | -8.55 | -1.09 | 0.00 | -6.91 | 0.00 | 6.91 | 519.35 | 259.67 | 322.95 | 159.49 | 12.09 | -1.14 | 0.060 |
| 100.00 | 0.00 | -0.92 | 0.00 | -1.47 | 0.00 | 1.47 | 491.24 | 245.62 | 288.74 | 142.60 | 13.30 | -1.17 | 0.010 |

Site Number: 302479 Code: ANSI/TIA-222-G 

Site Name: Rkhl - Rocky Hill, CT Engineering Number:OAA689558_C3_01 11/16/2016 6:57:18 PM

Customer: AT&T Mobility

**Load Case:** 1.0D + 1.0W Serviceability 60 mph 20 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 | | 43.0 | 0.0 | | | | | 0.0 | 0.0 | 43.0 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 93.2 | 401.9 | | | | | 0.0 | 334.0 | 93.2 | 735.9 | 0.0 | 0.0 |
| 10.00 | | 99.0 | 390.6 | | | | | 27.0 | 631.9 | 125.9 | 1,022.5 | 0.0 | 0.0 |
| 15.00 | | 96.1 | 379.4 | | | | | 27.0 | 631.9 | 123.1 | 1,011.3 | 0.0 | 0.0 |
| 20.00 | | 93.3 | 368.2 | | | | | 27.0 | 631.9 | 120.2 | 1,000.1 | 0.0 | 0.0 |
| 25.00 | | 84.5 | 357.0 | | | | | 27.0 | 631.9 | 111.5 | 988.9 | 0.0 | 0.0 |
| 29.33 | Bot - Section 2 | 44.6 | 300.1 | | | | | 23.4 | 547.2 | 68.0 | 847.3 | 0.0 | 0.0 |
| 30.00 | | 31.4 | 92.3 | | | | | 3.6 | 84.7 | 35.0 | 177.0 | 0.0 | 0.0 |
| 32.83 | Top - Section 1 | 45.0 | 385.3 | | | | | 15.5 | 357.6 | 60.5 | 743.0 | 0.0 | 0.0 |
| 35.00 | | 64.9 | 146.8 | | | | | 12.1 | 274.3 | 77.1 | 421.1 | 0.0 | 0.0 |
| 40.00 | | 90.7 | 330.2 | | | | | 28.8 | 631.9 | 119.5 | 962.1 | 0.0 | 0.0 |
| 45.00 | | 90.7 | 319.0 | | | | | 29.8 | 631.9 | 120.5 | 950.9 | 0.0 | 0.0 |
| 50.00 | | 90.1 | 307.8 | | | | | 30.8 | 631.9 | 120.9 | 939.7 | 0.0 | 0.0 |
| 55.00 | | 89.2 | 296.6 | | | | | 31.7 | 631.9 | 120.9 | 928.4 | 0.0 | 0.0 |
| 60.00 | | 69.9 | 285.3 | | | | | 32.5 | 631.9 | 102.4 | 917.2 | 0.0 | 0.0 |
| 62.92 | Bot - Section 3 | 44.0 | 161.3 | | | | | 19.3 | 368.6 | 63.3 | 529.9 | 0.0 | 0.0 |
| 65.00 | | 25.0 | 199.6 | | | | | 14.0 | 263.3 | 39.0 | 462.9 | 0.0 | 0.0 |
| 65.75 | Top - Section 2 | 43.6 | 71.0 | | | | | 5.1 | 94.8 | 48.7 | 165.8 | 0.0 | 0.0 |
| 70.00 | | 79.7 | 171.4 | | | | | 29.0 | 537.1 | 108.7 | 708.5 | 0.0 | 0.0 |
| 75.00 | Reinf. Top | 84.3 | 193.8 | | | | | 34.7 | 631.9 | 119.1 | 825.7 | 0.0 | 0.0 |
| 80.00 | | 58.0 | 185.4 | | | | | 35.3 | 297.9 | 93.3 | 483.3 | 0.0 | 0.0 |
| 82.00 | Appertunance(s) | 40.5 | 71.8 | 111.6 | 0.0 | 0.0 | 79.2 | 14.2 | 119.2 | 166.3 | 270.1 | 0.0 | 0.0 |
| 85.00 | | 63.4 | 105.1 | | | | | 10.7 | 90.2 | 74.1 | 195.3 | 0.0 | 0.0 |
| 90.00 | Appertunance(s) | 70.8 | 168.5 | 921.6 | 0.0 | 0.0 | 2,580.7 | 18.1 | 150.3 | 1,010.5 | 2,899.5 | 0.0 | 0.0 |
| 95.00 | | 62.0 | 160.1 | | | | | 0.0 | 88.1 | 62.0 | 248.2 | 0.0 | 0.0 |
| 100.00 | Appertunance(s) | 30.4 | 151.6 | 879.8 | 0.0 | 1,637.8 | 2,856.0 | 0.0 | 88.1 | 910.2 | 3,095.7 | 0.0 | 0.0 |
| | | | | | | | | Totals: | | 4,136.76 | 21,530.1 | 0.00 | 0.00 |

Site Number: 302479 Code: ANSI/TIA-222-G 

Site Name: Rkhl - Rocky Hill, CT Engineering Number:OAA689558_C3_01 11/16/2016 6:57:19 PM

Customer: AT&T Mobility

**Load Case:** 1.0D + 1.0W Serviceability 60 mph 20 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 | -21.53 | -4.11 | 0.00 | -298.19 | 0.00 | 298.19 | 1,551.53 | 775.77 | 1,904.52 | 940.57 | 0.00 | 0.00 | 0.149 |
| 5.00 | -20.79 | -4.04 | 0.00 | -277.66 | 0.00 | 277.66 | 1,528.89 | 764.45 | 1,824.65 | 901.13 | 0.04 | -0.07 | 0.142 |
| 10.00 | -19.76 | -3.93 | 0.00 | -257.47 | 0.00 | 257.47 | 1,505.12 | 752.56 | 1,745.00 | 861.79 | 0.14 | -0.13 | 0.135 |
| 15.00 | -18.74 | -3.83 | 0.00 | -237.81 | 0.00 | 237.81 | 1,480.21 | 740.10 | 1,665.70 | 822.62 | 0.32 | -0.20 | 0.127 |
| 20.00 | -17.74 | -3.72 | 0.00 | -218.67 | 0.00 | 218.67 | 1,454.16 | 727.08 | 1,586.85 | 783.69 | 0.57 | -0.27 | 0.120 |
| 25.00 | -16.75 | -3.62 | 0.00 | -200.06 | 0.00 | 200.06 | 1,426.98 | 713.49 | 1,508.58 | 745.03 | 0.88 | -0.33 | 0.112 |
| 29.33 | -15.90 | -3.56 | 0.00 | -184.37 | 0.00 | 184.37 | 1,402.52 | 701.26 | 1,441.35 | 711.83 | 1.20 | -0.38 | 0.106 |
| 30.00 | -15.72 | -3.53 | 0.00 | -181.98 | 0.00 | 181.98 | 1,398.66 | 699.33 | 1,430.99 | 706.71 | 1.26 | -0.39 | 0.103 |
| 32.83 | -14.98 | -3.47 | 0.00 | -172.00 | 0.00 | 172.00 | 1,122.95 | 561.48 | 1,150.62 | 568.25 | 1.50 | -0.43 | 0.123 |
| 35.00 | -14.56 | -3.40 | 0.00 | -164.46 | 0.00 | 164.46 | 1,111.89 | 555.94 | 1,122.84 | 554.53 | 1.70 | -0.45 | 0.119 |
| 40.00 | -13.59 | -3.29 | 0.00 | -147.46 | 0.00 | 147.46 | 1,081.73 | 540.87 | 1,055.54 | 521.29 | 2.20 | -0.51 | 0.110 |
| 45.00 | -12.64 | -3.17 | 0.00 | -131.03 | 0.00 | 131.03 | 1,044.36 | 522.18 | 983.50 | 485.71 | 2.76 | -0.56 | 0.102 |
| 50.00 | -11.70 | -3.05 | 0.00 | -115.19 | 0.00 | 115.19 | 1,006.99 | 503.49 | 914.00 | 451.39 | 3.37 | -0.61 | 0.093 |
| 55.00 | -10.77 | -2.93 | 0.00 | -99.95 | 0.00 | 99.95 | 969.61 | 484.81 | 847.05 | 418.33 | 4.04 | -0.66 | 0.084 |
| 60.00 | -9.85 | -2.82 | 0.00 | -85.32 | 0.00 | 85.32 | 932.24 | 466.12 | 782.65 | 386.52 | 4.76 | -0.70 | 0.075 |
| 62.92 | -9.32 | -2.75 | 0.00 | -77.10 | 0.00 | 77.10 | 910.44 | 455.22 | 746.26 | 368.55 | 5.19 | -0.73 | 0.070 |
| 65.00 | -8.86 | -2.71 | 0.00 | -71.37 | 0.00 | 71.37 | 894.87 | 447.43 | 720.79 | 355.97 | 5.51 | -0.74 | 0.064 |
| 65.75 | -8.69 | -2.66 | 0.00 | -69.33 | 0.00 | 69.33 | 662.47 | 331.23 | 543.96 | 268.64 | 5.63 | -0.75 | 0.070 |
| 70.00 | -7.98 | -2.55 | 0.00 | -58.03 | 0.00 | 58.03 | 646.97 | 323.48 | 512.50 | 253.10 | 6.31 | -0.78 | 0.060 |
| 75.00 | -7.16 | -2.42 | 0.00 | -45.29 | 0.00 | 45.29 | 628.03 | 314.01 | 476.10 | 235.13 | 7.15 | -0.81 | 0.049 |
| 75.00 | -7.16 | -2.42 | 0.00 | -45.29 | 0.00 | 45.29 | 628.03 | 314.01 | 476.10 | 235.13 | 7.15 | -0.81 | 0.204 |
| 80.00 | -6.67 | -2.32 | 0.00 | -33.20 | 0.00 | 33.20 | 603.66 | 301.83 | 437.06 | 215.85 | 8.02 | -0.84 | 0.165 |
| 82.00 | -6.41 | -2.16 | 0.00 | -28.55 | 0.00 | 28.55 | 592.42 | 296.21 | 420.85 | 207.84 | 8.38 | -0.88 | 0.148 |
| 85.00 | -6.21 | -2.09 | 0.00 | -22.07 | 0.00 | 22.07 | 575.56 | 287.78 | 397.11 | 196.12 | 8.95 | -0.94 | 0.123 |
| 90.00 | -3.33 | -1.03 | 0.00 | -11.63 | 0.00 | 11.63 | 547.45 | 273.73 | 359.07 | 177.33 | 9.97 | -1.00 | 0.072 |
| 95.00 | -3.08 | -0.97 | 0.00 | -6.47 | 0.00 | 6.47 | 519.35 | 259.67 | 322.95 | 159.49 | 11.04 | -1.04 | 0.047 |
| 100.00 | 0.00 | -0.91 | 0.00 | -1.64 | 0.00 | 1.64 | 491.24 | 245.62 | 288.74 | 142.60 | 12.15 | -1.06 | 0.011 |

## Equivalent Lateral Forces Method Analysis

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

| | |
|---|---|
| Spectral Response Acceleration for Short Period ($S_s$): | 0.18 |
| Spectral Response Acceleration at 1.0 Second Period ($S_1$): | 0.06 |
| Long-Period Transition Period ($T_L$): | 6 |
| Importance Factor ($I_E$): | 1.00 |
| Site Coefficient $F_a$: | 1.60 |
| Site Coeffiecient $F_v$: | 2.40 |
| Response Modification Coefficient (R): | 1.50 |
| Design Spectral Response Acceleration at Short Period ($S_{ds}$): | 0.19 |
| Design Spectral Response Acceleration at 1.0 Second Period ($S_{d1}$): | 0.10 |
| Seismic Response Coefficient ($C_s$): | 0.04 |
| Upper Limit $C_s$ | 0.04 |
| Lower Limit $C_s$ | 0.03 |
| Period based on Rayleigh Method (sec): | 1.81 |
| Redundancy Factor (p): | 1.30 |
| Seismic Force Distribution Exponent (k): | 1.65 |
| Total Unfactored Dead Load: | 21.53 k |
| Seismic Base Shear (E): | 1.04 k |

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

### Seismic Equivalent Lateral Forces Method

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| 25 | 97.50 | 240 | 468 | 0.024 | 25 | 297 |
| 24 | 92.50 | 248 | 444 | 0.023 | 24 | 307 |
| 23 | 87.50 | 319 | 520 | 0.026 | 28 | 395 |
| 22 | 83.50 | 195 | 295 | 0.015 | 16 | 242 |
| 21 | 81.00 | 191 | 274 | 0.014 | 15 | 236 |
| 20 | 77.50 | 483 | 645 | 0.033 | 34 | 599 |
| 19 | 72.50 | 826 | 986 | 0.050 | 52 | 1,023 |
| 18 | 67.87 | 708 | 759 | 0.039 | 40 | 878 |
| 17 | 65.37 | 166 | 167 | 0.009 | 9 | 205 |
| 16 | 63.96 | 463 | 449 | 0.023 | 24 | 573 |
| 15 | 61.46 | 530 | 482 | 0.025 | 26 | 656 |
| 14 | 57.50 | 917 | 747 | 0.038 | 40 | 1,136 |
| 13 | 52.50 | 928 | 650 | 0.033 | 34 | 1,150 |
| 12 | 47.50 | 940 | 558 | 0.028 | 30 | 1,164 |
| 11 | 42.50 | 951 | 470 | 0.024 | 25 | 1,178 |
| 10 | 37.50 | 962 | 386 | 0.020 | 20 | 1,192 |
| 9 | 33.91 | 421 | 143 | 0.007 | 8 | 522 |
| 8 | 31.41 | 743 | 223 | 0.011 | 12 | 920 |
| 7 | 29.66 | 177 | 48 | 0.002 | 3 | 219 |
| 6 | 27.16 | 847 | 200 | 0.010 | 11 | 1,049 |
| 5 | 22.50 | 989 | 171 | 0.009 | 9 | 1,225 |
| 4 | 17.50 | 1,000 | 114 | 0.006 | 6 | 1,239 |
| 3 | 12.50 | 1,011 | 66 | 0.003 | 3 | 1,253 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | 7.50 | 1,023 | 29 | 0.001 | 2 | 1,267 |
| 1 | 2.50 | 736 | 3 | 0.000 | 0 | 911 |
| Powerwave LGP21901 | 100.00 | 33 | 67 | 0.003 | 4 | 41 |
| Powerwave 7020.00 Du | 100.00 | 26 | 54 | 0.003 | 3 | 33 |
| Powerwave LGP21401 | 100.00 | 85 | 172 | 0.009 | 9 | 105 |
| Raycap DC6-48-60-18- | 100.00 | 40 | 81 | 0.004 | 4 | 50 |
| Ericsson RRUS 11 (Ba | 100.00 | 150 | 305 | 0.016 | 16 | 186 |
| Ericsson RRUS 32 B2 | 100.00 | 159 | 323 | 0.016 | 17 | 197 |
| Powerwave Allgon 777 | 100.00 | 210 | 427 | 0.022 | 23 | 260 |
| CCI HPA-65R-BUU-H6 | 100.00 | 153 | 311 | 0.016 | 16 | 190 |
| Flat Platform with H | 100.00 | 2,000 | 4,067 | 0.207 | 216 | 2,477 |
| RFS FD9R6004/2C-3L | 90.00 | 16 | 27 | 0.001 | 1 | 19 |
| Alcatel-Lucent B25 R | 90.00 | 159 | 272 | 0.014 | 14 | 197 |
| Alcatel-Lucent B13 R | 90.00 | 172 | 293 | 0.015 | 16 | 213 |
| Alcatel-Lucent RRH4X | 90.00 | 192 | 328 | 0.017 | 17 | 238 |
| RFS DB-T1-6Z-8AB-0Z | 90.00 | 88 | 150 | 0.008 | 8 | 109 |
| Antel BXA-70063-6CF- | 90.00 | 51 | 87 | 0.004 | 5 | 63 |
| Andrew LNX-6514DS-VT | 90.00 | 99 | 170 | 0.009 | 9 | 123 |
| Andrew SBNHH-1D65B | 90.00 | 304 | 520 | 0.026 | 28 | 377 |
| Round Low Profile Pl | 90.00 | 1,500 | 2,563 | 0.131 | 136 | 1,858 |
| RFS APXV18-206517S-C | 82.00 | 79 | 116 | 0.006 | 6 | 98 |
| | | 21,530 | 19,628 | 1.000 | 1,040 | 26,668 |

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) |
|---|---|---|---|---|---|---|
| 25 | 97.50 | 240 | 468 | 0.024 | 25 | 206 |
| 24 | 92.50 | 248 | 444 | 0.023 | 24 | 214 |
| 23 | 87.50 | 319 | 520 | 0.026 | 28 | 275 |
| 22 | 83.50 | 195 | 295 | 0.015 | 16 | 168 |
| 21 | 81.00 | 191 | 274 | 0.014 | 15 | 164 |
| 20 | 77.50 | 483 | 645 | 0.033 | 34 | 416 |
| 19 | 72.50 | 826 | 986 | 0.050 | 52 | 711 |
| 18 | 67.87 | 708 | 759 | 0.039 | 40 | 610 |
| 17 | 65.37 | 166 | 167 | 0.009 | 9 | 143 |
| 16 | 63.96 | 463 | 449 | 0.023 | 24 | 399 |
| 15 | 61.46 | 530 | 482 | 0.025 | 26 | 456 |
| 14 | 57.50 | 917 | 747 | 0.038 | 40 | 790 |
| 13 | 52.50 | 928 | 650 | 0.033 | 34 | 800 |
| 12 | 47.50 | 940 | 558 | 0.028 | 30 | 809 |
| 11 | 42.50 | 951 | 470 | 0.024 | 25 | 819 |
| 10 | 37.50 | 962 | 386 | 0.020 | 20 | 829 |
| 9 | 33.91 | 421 | 143 | 0.007 | 8 | 363 |
| 8 | 31.41 | 743 | 223 | 0.011 | 12 | 640 |
| 7 | 29.66 | 177 | 48 | 0.002 | 3 | 152 |
| 6 | 27.16 | 847 | 200 | 0.010 | 11 | 730 |
| 5 | 22.50 | 989 | 171 | 0.009 | 9 | 852 |
| 4 | 17.50 | 1,000 | 114 | 0.006 | 6 | 861 |
| 3 | 12.50 | 1,011 | 66 | 0.003 | 3 | 871 |
| 2 | 7.50 | 1,023 | 29 | 0.001 | 2 | 881 |
| 1 | 2.50 | 736 | 3 | 0.000 | 0 | 634 |
| Powerwave LGP21901 | 100.00 | 33 | 67 | 0.003 | 4 | 28 |
| Powerwave 7020.00 Du | 100.00 | 26 | 54 | 0.003 | 3 | 23 |
| Powerwave LGP21401 | 100.00 | 85 | 172 | 0.009 | 9 | 73 |
| Raycap DC6-48-60-18- | 100.00 | 40 | 81 | 0.004 | 4 | 34 |
| Ericsson RRUS 11 (Ba | 100.00 | 150 | 305 | 0.016 | 16 | 129 |
| Ericsson RRUS 32 B2 | 100.00 | 159 | 323 | 0.016 | 17 | 137 |
| Powerwave Allgon 777 | 100.00 | 210 | 427 | 0.022 | 23 | 181 |
| CCI HPA-65R-BUU-H6 | 100.00 | 153 | 311 | 0.016 | 16 | 132 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Flat Platform with H | 100.00 | 2,000 | 4,067 | 0.207 | 216 | 1,723 |
| RFS FD9R6004/2C-3L | 90.00 | 16 | 27 | 0.001 | 1 | 13 |
| Alcatel-Lucent B25 R | 90.00 | 159 | 272 | 0.014 | 14 | 137 |
| Alcatel-Lucent B13 R | 90.00 | 172 | 293 | 0.015 | 16 | 148 |
| Alcatel-Lucent RRH4X | 90.00 | 192 | 328 | 0.017 | 17 | 165 |
| RFS DB-T1-6Z-8AB-0Z | 90.00 | 88 | 150 | 0.008 | 8 | 76 |
| Antel BXA-70063-6CF- | 90.00 | 51 | 87 | 0.004 | 5 | 44 |
| Andrew LNX-6514DS-VT | 90.00 | 99 | 170 | 0.009 | 9 | 86 |
| Andrew SBNHH-1D65B | 90.00 | 304 | 520 | 0.026 | 28 | 262 |
| Round Low Profile Pl | 90.00 | 1,500 | 2,563 | 0.131 | 136 | 1,292 |
| RFS APXV18-206517S-C | 82.00 | 79 | 116 | 0.006 | 6 | 68 |
| | | 21,530 | 19,628 | 1.000 | 1,040 | 18,546 |

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 | -25.76 | -1.04 | 0.00 | -85.45 | 0.00 | 85.45 | 1,551.53 | 775.77 | 1,904.52 | 940.57 | 0.00 | 0.00 | 0.050 |
| 5.00 | -24.49 | -1.05 | 0.00 | -80.23 | 0.00 | 80.23 | 1,528.89 | 764.45 | 1,824.65 | 901.13 | 0.01 | -0.02 | 0.048 |
| 10.00 | -23.24 | -1.05 | 0.00 | -74.97 | 0.00 | 74.97 | 1,505.12 | 752.56 | 1,745.00 | 861.79 | 0.04 | -0.04 | 0.045 |
| 15.00 | -22.00 | -1.05 | 0.00 | -69.70 | 0.00 | 69.70 | 1,480.21 | 740.10 | 1,665.70 | 822.62 | 0.09 | -0.06 | 0.043 |
| 20.00 | -20.77 | -1.05 | 0.00 | -64.43 | 0.00 | 64.43 | 1,454.16 | 727.08 | 1,586.85 | 783.69 | 0.16 | -0.08 | 0.041 |
| 25.00 | -19.72 | -1.04 | 0.00 | -59.18 | 0.00 | 59.18 | 1,426.98 | 713.49 | 1,508.58 | 745.03 | 0.25 | -0.10 | 0.039 |
| 29.33 | -19.50 | -1.04 | 0.00 | -54.65 | 0.00 | 54.65 | 1,402.52 | 701.26 | 1,441.35 | 711.83 | 0.35 | -0.11 | 0.037 |
| 30.00 | -18.58 | -1.03 | 0.00 | -53.95 | 0.00 | 53.95 | 1,398.66 | 699.33 | 1,430.99 | 706.71 | 0.36 | -0.11 | 0.036 |
| 32.83 | -18.06 | -1.03 | 0.00 | -51.03 | 0.00 | 51.03 | 1,122.95 | 561.48 | 1,150.62 | 568.25 | 0.44 | -0.12 | 0.043 |
| 35.00 | -16.87 | -1.01 | 0.00 | -48.80 | 0.00 | 48.80 | 1,111.89 | 555.94 | 1,122.84 | 554.53 | 0.49 | -0.13 | 0.041 |
| 40.00 | -15.69 | -0.98 | 0.00 | -43.76 | 0.00 | 43.76 | 1,081.73 | 540.87 | 1,055.54 | 521.29 | 0.64 | -0.15 | 0.038 |
| 45.00 | -14.53 | -0.96 | 0.00 | -38.84 | 0.00 | 38.84 | 1,044.36 | 522.18 | 983.50 | 485.71 | 0.81 | -0.16 | 0.035 |
| 50.00 | -13.38 | -0.92 | 0.00 | -34.06 | 0.00 | 34.06 | 1,006.99 | 503.49 | 914.00 | 451.39 | 0.99 | -0.18 | 0.032 |
| 55.00 | -12.24 | -0.88 | 0.00 | -29.45 | 0.00 | 29.45 | 969.61 | 484.81 | 847.05 | 418.33 | 1.18 | -0.19 | 0.029 |
| 60.00 | -11.58 | -0.86 | 0.00 | -25.05 | 0.00 | 25.05 | 932.24 | 466.12 | 782.65 | 386.52 | 1.39 | -0.21 | 0.026 |
| 62.92 | -11.01 | -0.83 | 0.00 | -22.55 | 0.00 | 22.55 | 910.44 | 455.22 | 746.26 | 368.55 | 1.52 | -0.21 | 0.024 |
| 65.00 | -10.81 | -0.82 | 0.00 | -20.82 | 0.00 | 20.82 | 894.87 | 447.43 | 720.79 | 355.97 | 1.62 | -0.22 | 0.023 |
| 65.75 | -9.93 | -0.78 | 0.00 | -20.21 | 0.00 | 20.21 | 662.47 | 331.23 | 543.96 | 268.64 | 1.65 | -0.22 | 0.025 |
| 70.00 | -8.91 | -0.72 | 0.00 | -16.90 | 0.00 | 16.90 | 646.97 | 323.48 | 512.50 | 253.10 | 1.85 | -0.23 | 0.021 |
| 75.00 | -8.31 | -0.69 | 0.00 | -13.28 | 0.00 | 13.28 | 628.03 | 314.01 | 476.10 | 235.13 | 2.10 | -0.24 | 0.018 |
| 75.00 | -8.31 | -0.69 | 0.00 | -13.28 | 0.00 | 13.28 | 628.03 | 314.01 | 476.10 | 235.13 | 2.10 | -0.24 | 0.070 |
| 80.00 | -8.07 | -0.67 | 0.00 | -9.84 | 0.00 | 9.84 | 603.66 | 301.83 | 437.06 | 215.85 | 2.35 | -0.25 | 0.059 |
| 82.00 | -7.73 | -0.65 | 0.00 | -8.49 | 0.00 | 8.49 | 592.42 | 296.21 | 420.85 | 207.84 | 2.46 | -0.26 | 0.054 |
| 85.00 | -7.34 | -0.63 | 0.00 | -6.53 | 0.00 | 6.53 | 575.56 | 287.78 | 397.11 | 196.12 | 2.63 | -0.28 | 0.046 |
| 90.00 | -3.83 | -0.35 | 0.00 | -3.40 | 0.00 | 3.40 | 547.45 | 273.73 | 359.07 | 177.33 | 2.92 | -0.29 | 0.026 |
| 95.00 | -3.54 | -0.33 | 0.00 | -1.63 | 0.00 | 1.63 | 519.35 | 259.67 | 322.95 | 159.49 | 3.24 | -0.31 | 0.017 |
| 100.00 | 0.00 | -0.31 | 0.00 | 0.00 | 0.00 | 0.00 | 491.24 | 245.62 | 288.74 | 142.60 | 3.56 | -0.31 | 0.000 |

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 | -17.91 | -1.04 | 0.00 | -84.43 | 0.00 | 84.43 | 1,551.53 | 775.77 | 1,904.52 | 940.57 | 0.00 | 0.00 | 0.046 |
| 5.00 | -17.03 | -1.05 | 0.00 | -79.21 | 0.00 | 79.21 | 1,528.89 | 764.45 | 1,824.65 | 901.13 | 0.01 | -0.02 | 0.044 |
| 10.00 | -16.16 | -1.05 | 0.00 | -73.98 | 0.00 | 73.98 | 1,505.12 | 752.56 | 1,745.00 | 861.79 | 0.04 | -0.04 | 0.042 |
| 15.00 | -15.30 | -1.05 | 0.00 | -68.74 | 0.00 | 68.74 | 1,480.21 | 740.10 | 1,665.70 | 822.62 | 0.09 | -0.06 | 0.040 |
| 20.00 | -14.45 | -1.04 | 0.00 | -63.51 | 0.00 | 63.51 | 1,454.16 | 727.08 | 1,586.85 | 783.69 | 0.16 | -0.08 | 0.038 |
| 25.00 | -13.71 | -1.03 | 0.00 | -58.30 | 0.00 | 58.30 | 1,426.98 | 713.49 | 1,508.58 | 745.03 | 0.25 | -0.09 | 0.036 |
| 29.33 | -13.56 | -1.03 | 0.00 | -53.83 | 0.00 | 53.83 | 1,402.52 | 701.26 | 1,441.35 | 711.83 | 0.34 | -0.11 | 0.034 |
| 30.00 | -12.92 | -1.02 | 0.00 | -53.14 | 0.00 | 53.14 | 1,398.66 | 699.33 | 1,430.99 | 706.71 | 0.36 | -0.11 | 0.033 |
| 32.83 | -12.56 | -1.01 | 0.00 | -50.25 | 0.00 | 50.25 | 1,122.95 | 561.48 | 1,150.62 | 568.25 | 0.43 | -0.12 | 0.040 |
| 35.00 | -11.73 | -0.99 | 0.00 | -48.05 | 0.00 | 48.05 | 1,111.89 | 555.94 | 1,122.84 | 554.53 | 0.49 | -0.13 | 0.038 |
| 40.00 | -10.91 | -0.97 | 0.00 | -43.07 | 0.00 | 43.07 | 1,081.73 | 540.87 | 1,055.54 | 521.29 | 0.63 | -0.15 | 0.035 |
| 45.00 | -10.10 | -0.94 | 0.00 | -38.22 | 0.00 | 38.22 | 1,044.36 | 522.18 | 983.50 | 485.71 | 0.80 | -0.16 | 0.033 |
| 50.00 | -9.30 | -0.91 | 0.00 | -33.51 | 0.00 | 33.51 | 1,006.99 | 503.49 | 914.00 | 451.39 | 0.97 | -0.18 | 0.030 |
| 55.00 | -8.51 | -0.87 | 0.00 | -28.97 | 0.00 | 28.97 | 969.61 | 484.81 | 847.05 | 418.33 | 1.17 | -0.19 | 0.027 |
| 60.00 | -8.06 | -0.84 | 0.00 | -24.63 | 0.00 | 24.63 | 932.24 | 466.12 | 782.65 | 386.52 | 1.37 | -0.20 | 0.024 |
| 62.92 | -7.66 | -0.82 | 0.00 | -22.18 | 0.00 | 22.18 | 910.44 | 455.22 | 746.26 | 368.55 | 1.50 | -0.21 | 0.022 |
| 65.00 | -7.51 | -0.81 | 0.00 | -20.47 | 0.00 | 20.47 | 894.87 | 447.43 | 720.79 | 355.97 | 1.59 | -0.22 | 0.021 |
| 65.75 | -6.90 | -0.77 | 0.00 | -19.87 | 0.00 | 19.87 | 662.47 | 331.23 | 543.96 | 268.64 | 1.63 | -0.22 | 0.023 |
| 70.00 | -6.19 | -0.71 | 0.00 | -16.61 | 0.00 | 16.61 | 646.97 | 323.48 | 512.50 | 253.10 | 1.82 | -0.23 | 0.020 |
| 75.00 | -5.78 | -0.68 | 0.00 | -13.05 | 0.00 | 13.05 | 628.03 | 314.01 | 476.10 | 235.13 | 2.07 | -0.24 | 0.016 |
| 75.00 | -5.78 | -0.68 | 0.00 | -13.05 | 0.00 | 13.05 | 628.03 | 314.01 | 476.10 | 235.13 | 2.07 | -0.24 | 0.065 |
| 80.00 | -5.61 | -0.66 | 0.00 | -9.66 | 0.00 | 9.66 | 603.66 | 301.83 | 437.06 | 215.85 | 2.32 | -0.24 | 0.054 |
| 82.00 | -5.38 | -0.64 | 0.00 | -8.33 | 0.00 | 8.33 | 592.42 | 296.21 | 420.85 | 207.84 | 2.42 | -0.26 | 0.049 |
| 85.00 | -5.10 | -0.61 | 0.00 | -6.41 | 0.00 | 6.41 | 575.56 | 287.78 | 397.11 | 196.12 | 2.59 | -0.27 | 0.042 |
| 90.00 | -2.66 | -0.35 | 0.00 | -3.34 | 0.00 | 3.34 | 547.45 | 273.73 | 359.07 | 177.33 | 2.88 | -0.29 | 0.024 |
| 95.00 | -2.46 | -0.32 | 0.00 | -1.60 | 0.00 | 1.60 | 519.35 | 259.67 | 322.95 | 159.49 | 3.19 | -0.30 | 0.015 |
| 100.00 | 0.00 | -0.31 | 0.00 | 0.00 | 0.00 | 0.00 | 491.24 | 245.62 | 288.74 | 142.60 | 3.51 | -0.31 | 0.000 |

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 | -25.76 | -1.76 | 0.00 | -153.55 | 0.00 | 153.55 | 1,551.53 | 775.77 | 1,904.52 | 940.57 | 0.00 | 0.00 | 0.082 |
| 5.00 | -24.49 | -1.75 | 0.00 | -144.72 | 0.00 | 144.72 | 1,528.89 | 764.45 | 1,824.65 | 901.13 | 0.02 | -0.04 | 0.079 |
| 10.00 | -23.23 | -1.73 | 0.00 | -135.97 | 0.00 | 135.97 | 1,505.12 | 752.56 | 1,745.00 | 861.79 | 0.07 | -0.07 | 0.076 |
| 15.00 | -21.99 | -1.71 | 0.00 | -127.32 | 0.00 | 127.32 | 1,480.21 | 740.10 | 1,665.70 | 822.62 | 0.17 | -0.11 | 0.072 |
| 20.00 | -20.77 | -1.68 | 0.00 | -118.79 | 0.00 | 118.79 | 1,454.16 | 727.08 | 1,586.85 | 783.69 | 0.30 | -0.14 | 0.069 |
| 25.00 | -19.72 | -1.65 | 0.00 | -110.40 | 0.00 | 110.40 | 1,426.98 | 713.49 | 1,508.58 | 745.03 | 0.46 | -0.17 | 0.066 |
| 29.33 | -19.50 | -1.65 | 0.00 | -103.25 | 0.00 | 103.25 | 1,402.52 | 701.26 | 1,441.35 | 711.83 | 0.63 | -0.20 | 0.063 |
| 30.00 | -18.58 | -1.62 | 0.00 | -102.14 | 0.00 | 102.14 | 1,398.66 | 699.33 | 1,430.99 | 706.71 | 0.66 | -0.21 | 0.061 |
| 32.83 | -18.06 | -1.61 | 0.00 | -97.56 | 0.00 | 97.56 | 1,122.95 | 561.48 | 1,150.62 | 568.25 | 0.79 | -0.23 | 0.074 |
| 35.00 | -16.86 | -1.57 | 0.00 | -94.07 | 0.00 | 94.07 | 1,111.89 | 555.94 | 1,122.84 | 554.53 | 0.90 | -0.24 | 0.072 |
| 40.00 | -15.69 | -1.54 | 0.00 | -86.21 | 0.00 | 86.21 | 1,081.73 | 540.87 | 1,055.54 | 521.29 | 1.17 | -0.28 | 0.068 |
| 45.00 | -14.52 | -1.52 | 0.00 | -78.51 | 0.00 | 78.51 | 1,044.36 | 522.18 | 983.50 | 485.71 | 1.48 | -0.31 | 0.064 |
| 50.00 | -13.37 | -1.51 | 0.00 | -70.91 | 0.00 | 70.91 | 1,006.99 | 503.49 | 914.00 | 451.39 | 1.82 | -0.34 | 0.060 |
| 55.00 | -12.23 | -1.51 | 0.00 | -63.36 | 0.00 | 63.36 | 969.61 | 484.81 | 847.05 | 418.33 | 2.19 | -0.37 | 0.056 |
| 60.00 | -11.58 | -1.52 | 0.00 | -55.79 | 0.00 | 55.79 | 932.24 | 466.12 | 782.65 | 386.52 | 2.59 | -0.40 | 0.052 |
| 62.92 | -11.00 | -1.53 | 0.00 | -51.35 | 0.00 | 51.35 | 910.44 | 455.22 | 746.26 | 368.55 | 2.84 | -0.41 | 0.049 |
| 65.00 | -10.80 | -1.53 | 0.00 | -48.16 | 0.00 | 48.16 | 894.87 | 447.43 | 720.79 | 355.97 | 3.02 | -0.42 | 0.046 |
| 65.75 | -9.92 | -1.54 | 0.00 | -47.02 | 0.00 | 47.02 | 662.47 | 331.23 | 543.96 | 268.64 | 3.09 | -0.43 | 0.050 |
| 70.00 | -8.90 | -1.55 | 0.00 | -40.46 | 0.00 | 40.46 | 646.97 | 323.48 | 512.50 | 253.10 | 3.48 | -0.45 | 0.044 |
| 75.00 | -8.30 | -1.54 | 0.00 | -32.72 | 0.00 | 32.72 | 628.03 | 314.01 | 476.10 | 235.13 | 3.96 | -0.47 | 0.037 |
| 75.00 | -8.30 | -1.54 | 0.00 | -32.72 | 0.00 | 32.72 | 628.03 | 314.01 | 476.10 | 235.13 | 3.96 | -0.47 | 0.152 |
| 80.00 | -8.06 | -1.53 | 0.00 | -25.02 | 0.00 | 25.02 | 603.66 | 301.83 | 437.06 | 215.85 | 4.46 | -0.49 | 0.129 |
| 82.00 | -7.72 | -1.52 | 0.00 | -21.96 | 0.00 | 21.96 | 592.42 | 296.21 | 420.85 | 207.84 | 4.68 | -0.52 | 0.119 |
| 85.00 | -7.32 | -1.49 | 0.00 | -17.40 | 0.00 | 17.40 | 575.56 | 287.78 | 397.11 | 196.12 | 5.02 | -0.57 | 0.101 |
| 90.00 | -3.82 | -1.03 | 0.00 | -9.98 | 0.00 | 9.98 | 547.45 | 273.73 | 359.07 | 177.33 | 5.64 | -0.62 | 0.063 |
| 95.00 | -3.53 | -0.96 | 0.00 | -4.82 | 0.00 | 4.82 | 519.35 | 259.67 | 322.95 | 159.49 | 6.31 | -0.65 | 0.037 |
| 100.00 | 0.00 | -0.92 | 0.00 | 0.00 | 0.00 | 0.00 | 491.24 | 245.62 | 288.74 | 142.60 | 7.00 | -0.67 | 0.000 |

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 | -17.91 | -1.76 | 0.00 | -151.59 | 0.00 | 151.59 | 1,551.53 | 775.77 | 1,904.52 | 940.57 | 0.00 | 0.00 | 0.078 |
| 5.00 | -17.03 | -1.74 | 0.00 | -142.78 | 0.00 | 142.78 | 1,528.89 | 764.45 | 1,824.65 | 901.13 | 0.02 | -0.03 | 0.075 |
| 10.00 | -16.16 | -1.72 | 0.00 | -134.06 | 0.00 | 134.06 | 1,505.12 | 752.56 | 1,745.00 | 861.79 | 0.07 | -0.07 | 0.072 |
| 15.00 | -15.29 | -1.69 | 0.00 | -125.47 | 0.00 | 125.47 | 1,480.21 | 740.10 | 1,665.70 | 822.62 | 0.16 | -0.10 | 0.069 |
| 20.00 | -14.44 | -1.66 | 0.00 | -117.02 | 0.00 | 117.02 | 1,454.16 | 727.08 | 1,586.85 | 783.69 | 0.29 | -0.14 | 0.066 |
| 25.00 | -13.71 | -1.63 | 0.00 | -108.72 | 0.00 | 108.72 | 1,426.98 | 713.49 | 1,508.58 | 745.03 | 0.45 | -0.17 | 0.063 |
| 29.33 | -13.56 | -1.63 | 0.00 | -101.65 | 0.00 | 101.65 | 1,402.52 | 701.26 | 1,441.35 | 711.83 | 0.62 | -0.20 | 0.060 |
| 30.00 | -12.92 | -1.60 | 0.00 | -100.56 | 0.00 | 100.56 | 1,398.66 | 699.33 | 1,430.99 | 706.71 | 0.65 | -0.21 | 0.058 |
| 32.83 | -12.56 | -1.58 | 0.00 | -96.04 | 0.00 | 96.04 | 1,122.95 | 561.48 | 1,150.62 | 568.25 | 0.78 | -0.23 | 0.071 |
| 35.00 | -11.73 | -1.55 | 0.00 | -92.60 | 0.00 | 92.60 | 1,111.89 | 555.94 | 1,122.84 | 554.53 | 0.89 | -0.24 | 0.069 |
| 40.00 | -10.91 | -1.52 | 0.00 | -84.86 | 0.00 | 84.86 | 1,081.73 | 540.87 | 1,055.54 | 521.29 | 1.16 | -0.27 | 0.065 |
| 45.00 | -10.10 | -1.49 | 0.00 | -77.28 | 0.00 | 77.28 | 1,044.36 | 522.18 | 983.50 | 485.71 | 1.46 | -0.30 | 0.061 |
| 50.00 | -9.30 | -1.48 | 0.00 | -69.82 | 0.00 | 69.82 | 1,006.99 | 503.49 | 914.00 | 451.39 | 1.79 | -0.33 | 0.058 |
| 55.00 | -8.50 | -1.49 | 0.00 | -62.40 | 0.00 | 62.40 | 969.61 | 484.81 | 847.05 | 418.33 | 2.16 | -0.36 | 0.054 |
| 60.00 | -8.05 | -1.50 | 0.00 | -54.96 | 0.00 | 54.96 | 932.24 | 466.12 | 782.65 | 386.52 | 2.55 | -0.39 | 0.049 |
| 62.92 | -7.65 | -1.50 | 0.00 | -50.59 | 0.00 | 50.59 | 910.44 | 455.22 | 746.26 | 368.55 | 2.79 | -0.41 | 0.046 |
| 65.00 | -7.51 | -1.51 | 0.00 | -47.46 | 0.00 | 47.46 | 894.87 | 447.43 | 720.79 | 355.97 | 2.97 | -0.42 | 0.044 |
| 65.75 | -6.90 | -1.52 | 0.00 | -46.33 | 0.00 | 46.33 | 662.47 | 331.23 | 543.96 | 268.64 | 3.04 | -0.42 | 0.048 |
| 70.00 | -6.18 | -1.53 | 0.00 | -39.87 | 0.00 | 39.87 | 646.97 | 323.48 | 512.50 | 253.10 | 3.43 | -0.44 | 0.042 |
| 75.00 | -5.77 | -1.52 | 0.00 | -32.24 | 0.00 | 32.24 | 628.03 | 314.01 | 476.10 | 235.13 | 3.90 | -0.46 | 0.035 |
| 75.00 | -5.77 | -1.52 | 0.00 | -32.24 | 0.00 | 32.24 | 628.03 | 314.01 | 476.10 | 235.13 | 3.90 | -0.46 | 0.146 |
| 80.00 | -5.60 | -1.51 | 0.00 | -24.66 | 0.00 | 24.66 | 603.66 | 301.83 | 437.06 | 215.85 | 4.40 | -0.48 | 0.124 |
| 82.00 | -5.36 | -1.50 | 0.00 | -21.64 | 0.00 | 21.64 | 592.42 | 296.21 | 420.85 | 207.84 | 4.61 | -0.52 | 0.113 |
| 85.00 | -5.09 | -1.46 | 0.00 | -17.15 | 0.00 | 17.15 | 575.56 | 287.78 | 397.11 | 196.12 | 4.95 | -0.56 | 0.096 |
| 90.00 | -2.66 | -1.02 | 0.00 | -9.85 | 0.00 | 9.85 | 547.45 | 273.73 | 359.07 | 177.33 | 5.56 | -0.61 | 0.060 |
| 95.00 | -2.45 | -0.95 | 0.00 | -4.76 | 0.00 | 4.76 | 519.35 | 259.67 | 322.95 | 159.49 | 6.22 | -0.64 | 0.035 |
| 100.00 | 0.00 | -0.92 | 0.00 | 0.00 | 0.00 | 0.00 | 491.24 | 245.62 | 288.74 | 142.60 | 6.90 | -0.66 | 0.000 |

## Analysis Summary

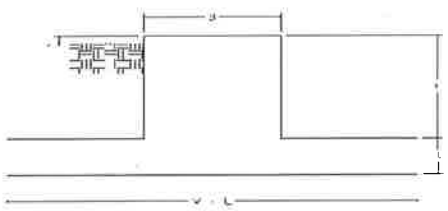
| Load Case | Reactions Shear FX (kips) | Shear FZ (kips) | Axial FY (kips) | Moment MX (ft-kips) | Moment MY (ft-kips) | Moment MZ (ft-kips) | Max Usage Elev (ft) | Interaction Ratio |
|---|---|---|---|---|---|---|---|---|
| 1.2D + 1.6W | 17.18 | 0.00 | 25.79 | 0.00 | 0.00 | 1254.39 | 75.00 | 0.83 |
| 0.9D + 1.6W | 17.17 | 0.00 | 19.33 | 0.00 | 0.00 | 1241.90 | 75.00 | 0.81 |
| 1.2D + 1.0Di + 1.0Wi | 4.20 | 0.00 | 50.01 | 0.00 | 0.00 | 321.98 | 75.00 | 0.25 |
| (1.2 + 0.2Sds) * DL + E ELFM | 1.04 | 0.00 | 25.76 | 0.00 | 0.00 | 85.45 | 75.00 | 0.07 |
| (1.2 + 0.2Sds) * DL + E EMAM | 1.76 | 0.00 | 25.76 | 0.00 | 0.00 | 153.55 | 75.00 | 0.15 |
| (0.9 - 0.2Sds) * DL + E ELFM | 1.04 | 0.00 | 17.91 | 0.00 | 0.00 | 84.43 | 75.00 | 0.06 |
| (0.9 - 0.2Sds) * DL + E EMAM | 1.76 | 0.00 | 17.91 | 0.00 | 0.00 | 151.59 | 75.00 | 0.15 |
| 1.0D + 1.0W | 4.11 | 0.00 | 21.53 | 0.00 | 0.00 | 298.19 | 75.00 | 0.20 |

## Additional Steel Summary

| Elev From (ft) | Elev To (ft) | Member | Intermediate Connectors VQ/I (lb/in) | Shear Applied (kips) | Shear phiVn (kips) | Upper Termination Connectors MQ/I (kips) | phiVn (kips) | Num Reqd | Num Actual | Lower Termination Connectors MQ/I (kips) | phiVn (kips) | Num Reqd | Num Actual | Max Member Pu (kip) | phiPn (kip) | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 75.0 | (4) SOL-#20 All Thre | 307.2 | 9.2 | 16.8 | 68.8 | 12.0 | 6 | 6 | 0.0 | 12.0 | 0 | 0 | 228.1 | 330.5 | 0.690 |

| | |
|---|---|
| Site Name: | Rkhl - Rocky Hill, CT |
| Site Number: | 302479 |
| Engineering Number: | 0 |
| Engineer: | T. Deters |
| Date: | 11/16/16 |
| Tower Type: | MP |

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



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

| | | | | | |
|---|---|---|---|---|---|
| Design / Analysis / Mapping: | Analysis | | | | |
| Compression/Leg: | 25.8 | k | Concrete Strength ($f'_c$): | 3000 | psi |
| Uplift/Leg: | 0.0 | k | Pad Tension Steel Depth: | 32.00 | in |
| Total Shear: | 17.2 | k | $\phi_{Shear}$: | 0.75 | |
| Moment: | 1254.4 | k-ft | $\phi_{Flexure\ /\ Tension}$: | 0.90 | |
| Tower + Appurtenance Weight: | 25.8 | k | $\phi_{Compression}$: | 0.65 | |
| Depth to Base of Foundation (l + t - h): | 8.00 | ft | $\beta$: | 0.85 | |
| Diameter of Pier (d): | 6.00 | ft | Bottom Pad Rebar Size #: | 10 | |
| Height of Pier above Ground (h): | 0.50 | | # of Bottom Pad Rebar: | 36 | |
| Width of Pad (W): | 18.00 | ft | Pad Bottom Steel Area: | 45.72 | $in^2$ |
| Length of Pad (L): | 18.00 | ft | Pad Steel $F_y$: | 60000 | psi |
| Thickness of Pad (t): | 3.00 | ft | Top Pad Rebar Size #: | 5 | |
| Tower Leg Center to Center: | 0.00 | ft | # of Top Pad Rebar: | 36 | |
| Number of Tower Legs: | 1.0 | (1 if MP or GT) | Pad Top Steel Area: | 11.16 | $in^2$ |
| Tower Center from Mat Center: | 0.00 | ft | Pier Rebar Size #: | 11 | |
| Depth Below Ground Surface to Water Table: | 99.00 | ft | Pier Steel Area (Single Bar): | 1.56 | $in^2$ |
| Unit Weight of Concrete: | 150.0 | pcf | # of Pier Rebar: | 14 | |
| Unit Weight of Soil Above Water Table: | 100.0 | pcf | Pier Steel $F_y$: | 60000 | psi |
| Unit Weight of Water: | 62.4 | pcf | Pier Cage Diameter: | 64.0 | in |
| Unit Weight of Soil Below Water Table: | 50.0 | pcf | Rebar Strain Limit: | 0.008 | |
| Friction Angle of Uplift: | 0.0 | Degrees | Steel Elastic Modulus: | 29000 | ksi |
| Ultimate Coefficient of Shear Friction: | 0.35 | | Tie Rebar Size #: | 4 | |
| Ultimate Compressive Bearing Pressure: | 30000.0 | psf | Tie Steel Area (Single Bar): | 0.20 | $in^2$ |
| Ultimate Passive Pressure on Pad Face: | 0.0 | psf | Tie Spacing: | 12 | in |
| $\phi_{Soil\ and\ Concrete\ Weight}$: | 0.9 | | Tie Steel $F_y$: | 60000 | psi |
| $\phi_{Soil}$: | 0.75 | | | | |

## Overturning Moment Usage

| | | |
|---|---|---|
| Design OTM: | 1400.4 | k-ft |
| OTM Resistance: | 2741.7 | k-ft |
| Design OTM / OTM Resistance: | 0.51 | Result: OK |

## Soil Bearing Pressure Usage

| | | |
|---|---|---|
| Net Bearing Pressure: | 2414 | psf |
| Factored Nominal Bearing Pressure: | 22500 | psf |
| Net Bearing Pressure/Factored Nominal Bearing Pressure: | 0.11 | Result: OK |
| Load Direction Controling Design Bearing Pressure: | Diagonal to Pad Edge | |

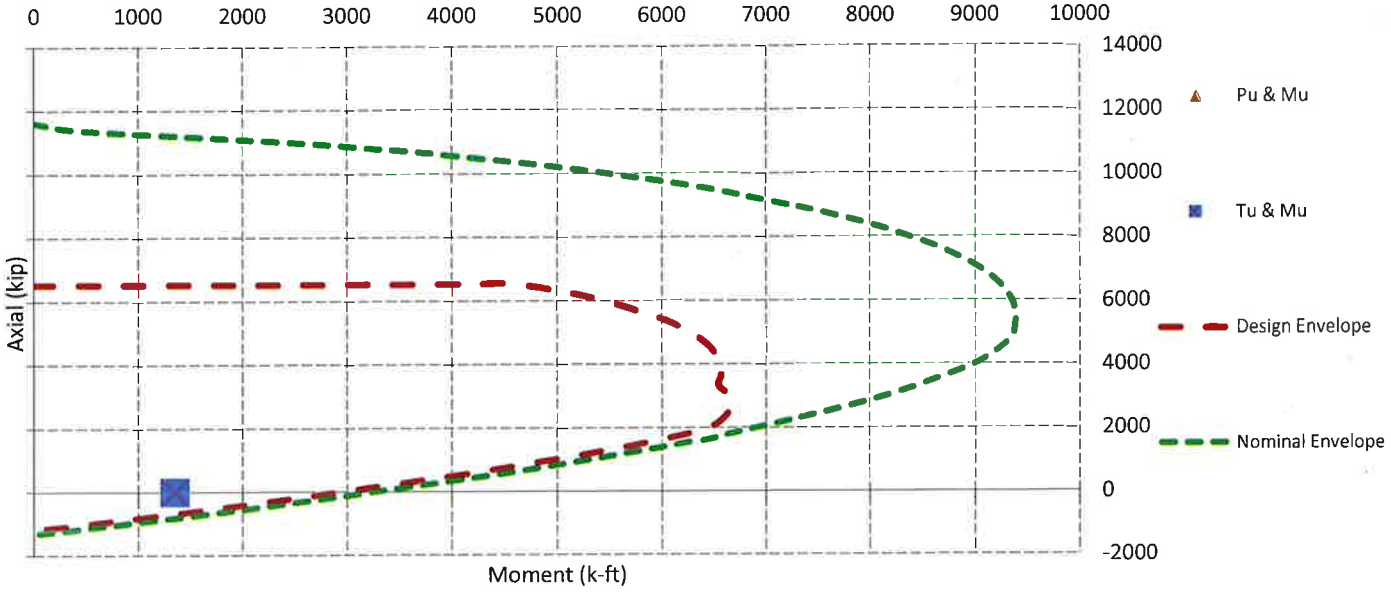
## Sliding Factor of Safety

| | | |
|---|---|---|
| Total Factored Sliding Resistance: | 88.9 | k |
| Sliding Design / Sliding Resistance: | 0.19 | Result: OK |

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

| | | |
|---|---|---|
| Factored One Way Shear ($V_u$): | 83.1 | k |
| One Way Shear Capacity ($\phi V_c$): | 445.5 | k - ACI11.3.1.1 |
| $V_u / \phi V_c$: | 0.19 | Result: OK |
| Load Direction Controling Shear Capacity: | Diagonal to Pad Edge | |
| Lower Steel Pad Factored Moment ($M_u$): | 480.7 | k-ft |
| Lower Steel Pad Moment Capacity ($\phi M_n$): | 6148.2 | k-ft - ACI10.3 |
| $M_u / \phi M_n$: | 0.08 | Result: OK |
| Load Direction Controling Flexural Capacity: | Parallel to Pad Edge | |
| Upper Steel Pad Factored Moment ($M_u$): | 304.7 | k-ft |
| Upper Steel Pad Moment Capacity ($\phi M_n$): | 1581.1 | k-ft |
| $M_u / \phi M_n$: | 0.19 | Result: OK |
| Lower Pad Flexural Reinforcement Ratio: | 0.0066 | OK - Minimum Reinforcement Ratio Met - ACI10.5.1 |
| Upper Pad Flexural Reinforcement Ratio: | 0.0016 | OK - Minimum Reinforcement Ratio Met - ACI10.5.1 |
| Lower Pad Reinforcement Spacing: | 6 | in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4 |
| Upper Pad Reinforcement Spacing: | 6 | in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4 |
| Factored Punching Shear ($V_u$): | 0.0 | k |
| Nominal Punching Shear Capacity ($\phi_c V_n$): | 1718.0 | k - ACI11.12.2.1 |
| $V_u / \phi V_c$: | 0.00 | Result: OK |
| Factored Moment in Pier ($M_u$): | 1348.9 | k-ft |
| Pier Moment Capacity ($\phi M_n$): | 3087.5 | k-ft |
| $M_u / \phi M_n$: | 0.44 | Result: OK |
| Factored Shear in Pier ($V_u$): | 17.2 | k |
| Pier Shear Capacity ($\phi V_n$): | 335.6 | k |
| $V_u / \phi V_c$: | 0.05 | Result: OK |
| Pier Shear Reinforcement Ratio: | 0.0005 | No Ties Necessary for Shear - ACI11.5.6.1 |
| Factored Tension in Pier ($T_u$): | 0.0 | k |
| Pier Tension Capacity ($\phi T_n$): | 1179.4 | k |
| $T_u / \phi T_n$: | 0.00 | Result: OK |
| Factored Compression in Pier ($P_u$): | 25.8 | k |
| Pier Compression Capacity ($\phi P_n$): | 5369.9 | k - ACI10.3.6.2 |
| $P_u / \phi P_n$: | 0.00 | Result: OK |
| Pier Compression Reinforcement Ratio: | 0.005 | OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4 |
| $M_u/\phi_B M_n + T_u/\phi_T T_n$: | 0.44 | Result: OK |

Nominal and Design Moment Capacity and Factored Design Loads



| | | | |
|---|---|---|---|
| Base/Flange Plate | Plate Type | ***Baseplate*** | |
| | Pole Diameter | 30 | in |
| | Pole Thickness | 0.25 | in |
| | Plate Length | 44 | in |
| | Plate Thickness | 2 | in |
| | Plate Fy | 60 | ksi |
| | Weld Length | 0.3125 | in |
| | $\phi_s$ Resistance | 1574.97 | k-in |
| | Applied | 1222.86 | k-in |
| Stiffeners | # | ***0*** | |

| | | | |
|---|---|---|---|
| Bolts | # | ***8*** | |
| | Bolt Circle | 44 | in |
| | (R)adial / (S)quare | S | |
| | Bolt Gap | 6 | in |
| ● | Diameter | 2.25 | in |
| | Hole Diameter | 2.625 | in |
| | Type | A615-75 | |
| | Fy | 75 | ksi |
| | Fu | 100 | ksi |
| | $\phi_s$ Resistance | 259.82 | k |
| | Applied | 113.75 | k |
| Reinforcement | # | ***4*** | |
| ● | DYW. Circle | 36.879 | in |
| | Offset Angle | 0 | ° |
| | Type | #20 | |
| | Diameter | 2.5 | in |
| | Fu | 100 | ksi |
| Extra Bolts O | # | ***0*** | |

Code Rev. ***G***

Moment 1254.4 k-ft

Axial 25.8 k

| | |
|---|---|
| **Date** | 11/16/2016 |
| **Engineer** | T. Deters |
| **Site #** | 302479 |
| **Carrier** | Verizon |

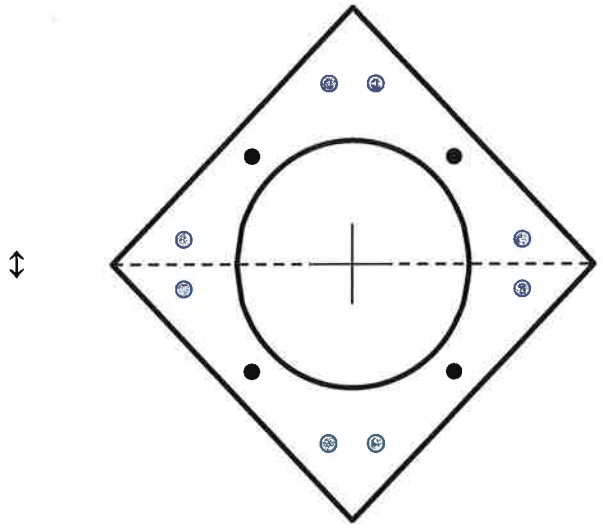


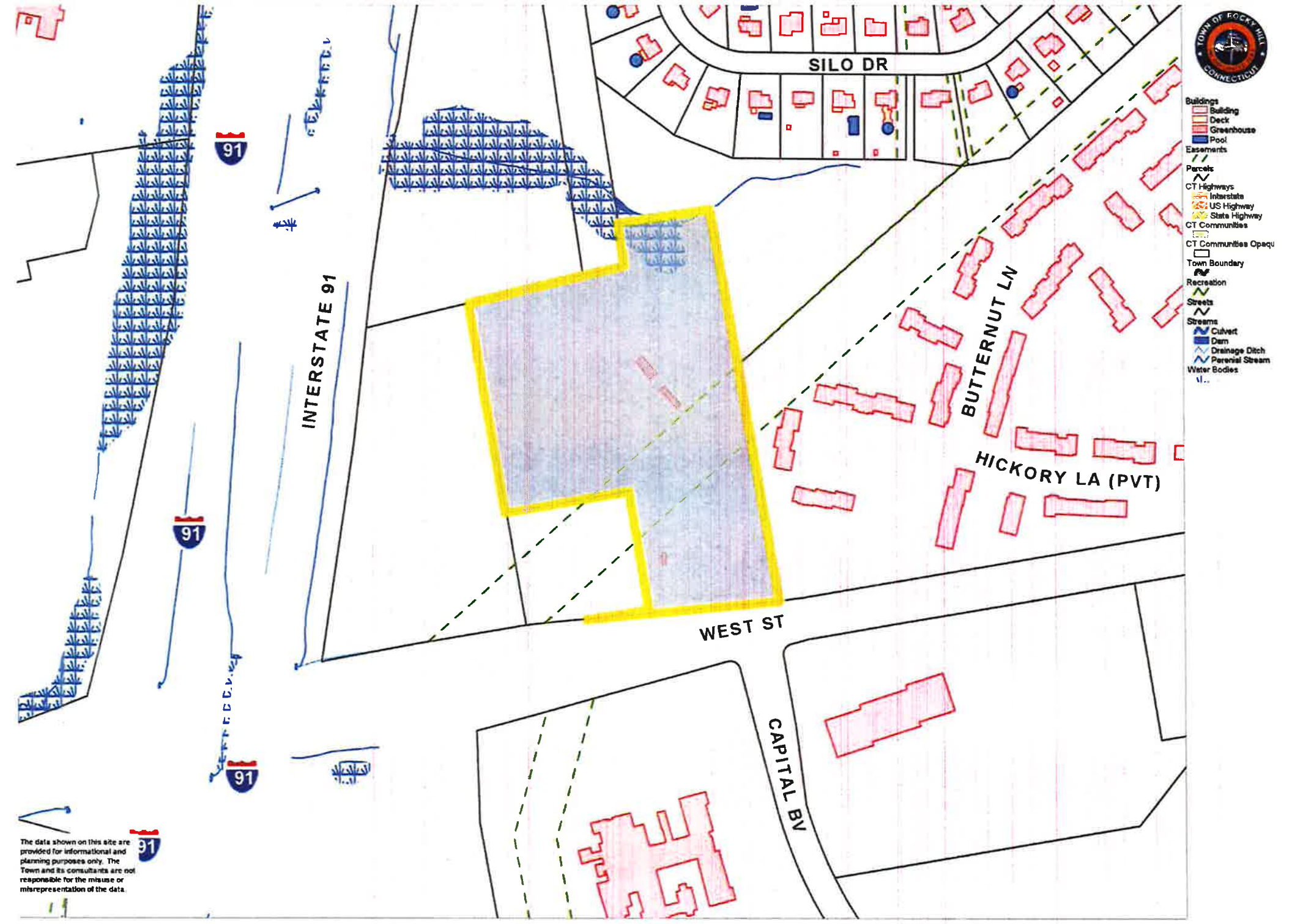
Plate Stress Ratio:

0.78 (Pass)

Bolt Stress Ratio:

0.44 (Pass)

# ATTACHMENT 4


SILO DR
INTERSTATE 91
BUTTERNUT LN
HICKORY LA (PVT)
WEST ST
CAPITAL BV
91
91
91
Buildings
Building
Deck
Greenhouse
Pool
Easements
Parcels
CT Highways
Interstate
US Highway
State Highway
CT Communities
CT Communities Opaqu
Town Boundary
Recreation
Streets
Streams
Culvert
Dam
Drainage Ditch
Perenial Stream
Water Bodies
The data shown on this site are provided for informational and planning purposes only. The Town and its consultants are not responsible for the misuse or misrepresentation of the data.
400
800 ft
Printed on 09/15/2016 at 03:16 PM
MapsOnline by PeopleGIS

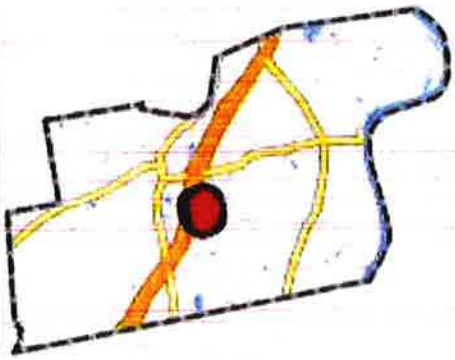
# Town of Rocky Hill Property Summary Report

## 699 WEST STREET

| | | | |
|---|---|---|---|
| **PARCEL ID:** | 12-192 | **ACCOUNT NUMBER:** | 001195 |
| **LOCATION:** | 699 WEST STREET | | |
| **OWNER NAME:** | CONNECTICUT LIGHT + POWER CO THE | | |

12-192-001 11/05/2012

| **OWNER OF RECORD** |
|---|
| CONNECTICUT LIGHT + POWER CO THE |
| PO BOX 270 |
| HARTFORD, CT 06141-0270 |



| | | | | | |
|---|---|---|---|---|---|
| **LIVING AREA:** | null | **ZONING:** | R-20 | **ACREAGE:** | 9.98 |

**SALES HISTORY**

| OWNER | BOOK / PAGE | SALE DATE | SALE PRICE |
|---|---|---|---|
| CONNECTICUT LIGHT + POWER CO THE | 139/ 448 | 01-Jul-1982 | $0.00 |

**CURRENT PARCEL VALUE**

| | | | | | |
|---|---|---|---|---|---|
| **TOTAL:** | $1,229,340.00 | **IMPROVEMENTS:** | $151,620.00 | **LAND:** | $1,077,720.00 |

**ASSESSING HISTORY**

| FISCAL YEAR | TOTAL VALUE | IMPROVEMENT VALUE | LAND VALUE |
|---|---|---|---|
| 2014 | $1,229,340.00 | $151,620.00 | $1,077,720.00 |
| 2013 | $1,229,340.00 | $151,620.00 | $1,077,720.00 |
| 2012 | $545,650.00 | $0.00 | $545,650.00 |
| 2011 | $545,650.00 | $0.00 | $545,650.00 |
| 2010 | $545,650.00 | $0.00 | $545,650.00 |
| 2009 | $545,650.00 | $0.00 | $545,650.00 |
| 2008 | $545,650.00 | $0.00 | $545,650.00 |
| 2007 | $73,080.00 | $0.00 | $73,080.00 |
| 2006 | $73,080.00 | $0.00 | $73,080.00 |