Robinson+Cole

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Also admitted in Massachusetts

December 28, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
90 North Plains Industrial Road, Wallingford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 138-foot level of the existing 178.5-foot tower at 90 North Plains Industrial Road in Wallingford, Connecticut (the "Property"). The tower is owned by American Tower Corporation ("ATC"). The Council approved Cellco's use of the tower in 2001. Cellco now intends to modify its facility by replacing nine (9) of its existing antennas with three (3) model SBNHH-1D65B, 700 MHz antennas; three (3) model SBNHH-1D65B, 1900 MHz antennas; and three (3) model SBNHH-1D65B, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") and one (1) HYBRIFLEX™ fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to William W. Dickinson, Jr., Mayor of the Town of Wallingford. A copy of this letter is also being sent to Bilkays Express 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. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be located at the 138-foot level on the 178.5-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/or 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. A cumulative General Power Density table for Cellco's modified facility is included behind Attachment 2.

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

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

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:
William W. Dickinson, Jr., Wallingford Mayor
Bilkays Express Company
ATC
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

SBNH-1D65B

Andrew® Dualband Antenna, 698–896 MHz and 1710–2360 MHz, 65° horizontal beamwidth, internal RET.

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

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1710–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.8	14.6	17.8	18.1	18.5	18.5
Beamwidth, Horizontal, degrees	68	66	70	65	62	59
Beamwidth, Vertical, degrees	12.1	11.0	5.7	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	17	16	15	14	16	15
Front-to-Back Ratio at 180°, dB	29	32	31	28	30	31
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	1710–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.1	17.5	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.9	±0.4	±0.3	±0.5	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 14.6	0 ° | 14.3	0 ° | 17.5	0 ° | 17.8	0 ° | 18.0	0 ° | 18.0
	7 ° | 14.6	7 ° | 14.3	3 ° | 17.5	3 ° | 18.0	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	±1.7	±3.3	±2.3	±4.9	±4.5	±4.4
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.7	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	17	16	15	14	15	14
Front-to-Back Total Power at 180° ± 30°, dB	25	25	28	25	25	26
CPR at Boresight, dB	21	22	19	20	19	23
CPR at Sector, dB	13	11	16	13	13	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.

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray

Product Specifications

SBNH-1D65B

Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	4
Wind Loading, maximum	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	1848.0 mm | 72.8 in
Width	301.0 mm | 11.9 in
Net Weight	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
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
RET System	Teletilt®

Packed Dimensions

Depth	299.0 mm | 11.8 in
Length	1970.0 mm | 77.6 in
Width	409.0 mm | 16.1 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

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

Product Specifications

SBNH-1D65B

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.

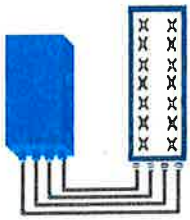
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

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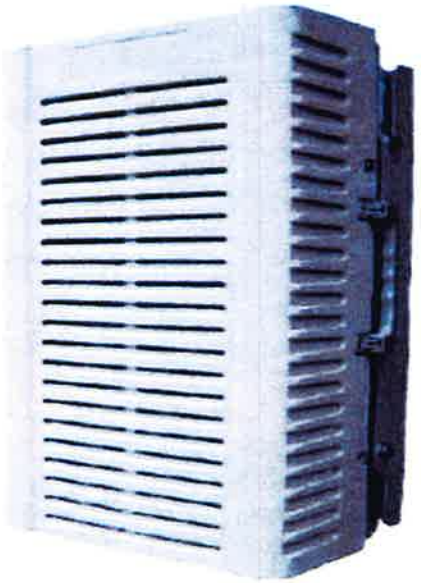
Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W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

PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

	RRH2x60
RF Output Power	2x60W
Instantaneous Bandwidth	20MHz
Transmitter	2 TX
Receiver 1900 HW version 1900A HW version	2 Branch RX – LA6.0.1 4 Branch RX – LR13.3
Features	AISG 2.0 for RET/TMA
	Internal Smart Bias-T
Power	-48VDC
CPRI Ports	2 CPRI Rate 3 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (top mounted)

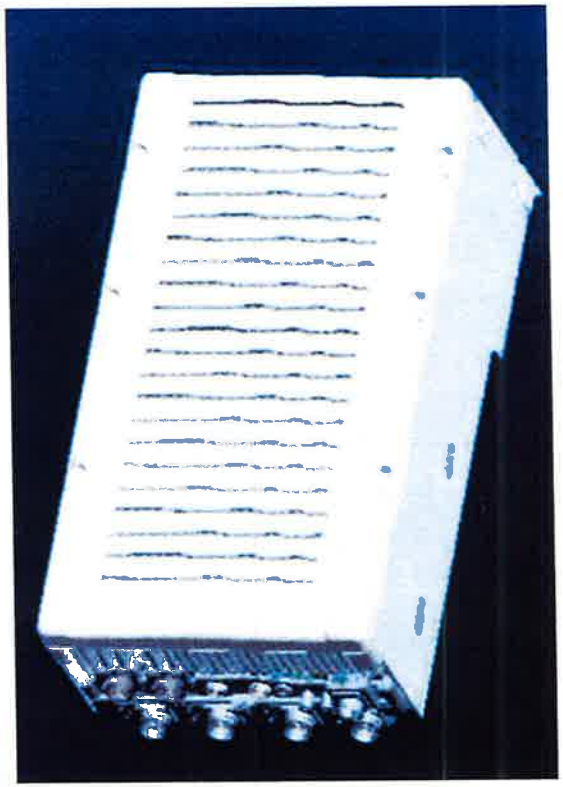


** Not a Verizon Wireless deployed product

NEW PCS RF MODULES FOR VZW
RRH2X60 - HW CHARACTERISTICS

LR14.3

	RRH2x60
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC
	Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w)x 9.4" (d)**
Weight	55lb**



**- Includes solar shield but not mounting brackets (8 lbs.)

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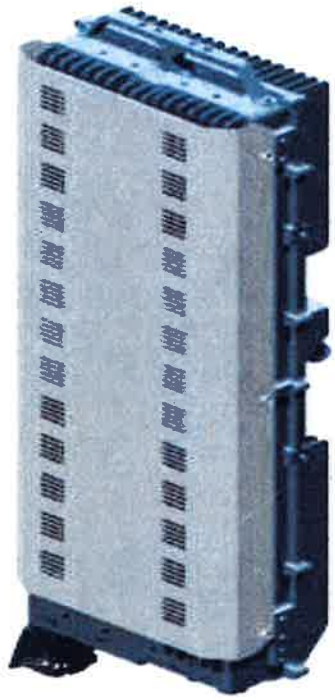
ALCATEL-LUCENT WIRELESS PRODUCT DATASHEET

RRH2X60-AWS FOR BAND 4 APPLICATIONS

The Alcatel-Lucent RRH2x60-AWS is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent RRH2x60-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

The Alcatel-Lucent RRH2x60-AWS integrates all the latest technologies. This allows to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

It supports multiple discontinuous LTE carriers within an instantaneous bandwidth of 45 MHz corresponding to the entire AWS B4 spectrum.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

OPTIMIZED TCO

The Alcatel-Lucent RRH2x60-AWS is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

The Alcatel-Lucent RRH2x60-AWS is a very cost-effective solution to deploy LTE MIMO.

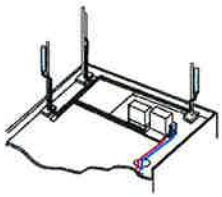
EASY INSTALLATION

The RRH2x60-AWS includes a reversible mounting bracket which allows for ease of installation behind an antenna, or on a rooftop knee wall while providing easy access to the mid body RF connectors.

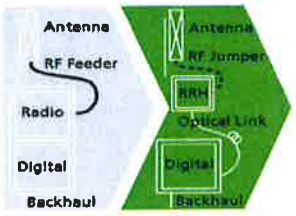
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent RRH2x60-AWS is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

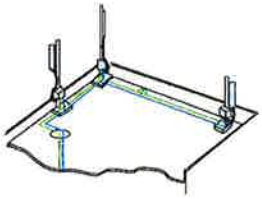
Installation can easily be done by a single person as the Alcatel–Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

- RRH2x60-AWS integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- RRH2x60-AWS is optimized for LTE operation
- RRH2x60-AWS is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

BENEFITS

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights

- HxWxD : 510x285x186mm (27 l with solar shield)
- Weight : 20 kg (44 lbs)

Electrical Data

- Power Supply : -48V DC (-40.5 to -57V)
- Power Consumption (ETSI average traffic load reference) : 250W @2x60W

RF Characteristics

- Frequency band: 1710-1755, UL / 2110-2155 MHz, DL (3GPP band 4)
- Output power: 2x60W at antenna connectors
- Technology supported: LTE
- Instantaneous bandwidth: 45 MHz
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -105 dBm for LTE

Connectivity

- Two CPRI optical ports for daisychaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 500m using MM fiber, up to 20km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Six external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089, GR 3108, OET-65
- Safety : IEC60950-1, EN 60825-1, UL, ANSI/NFPA 70, CAN/CSA-C22.2
- Regulatory : FCC Part 15 Class B, CE Mark – European Directive : 2002/95/EC (ROHS); 2002/96/EC (WEEE); 1999/5/EC (R&TTE)
- Health : EN 50385

Alcatel·Lucent

AT THE SPEED OF IDEAS™

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 RoHS Compliant
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

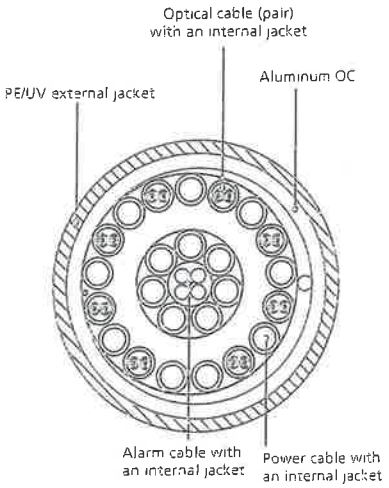


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Wallingford 3								
Tower Height: 178.5'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Sprint CDMA/LTE	3	693	118	0.0596	1900	1.0000	0.60%	
*Sprint CDMA/LTE	1	390	118	0.0112	850	0.5667	0.20%	
*Sprint CDMA/LTE	2	693	118	0.0397	2500	1.0000	0.40%	
*Clearwire	2	153	166	0.0043	2496	1.0000	0.04%	
*Clearwire	1	211	166	0.0030	11 GHz	1.0000	0.03%	
*MetroPCS	3	727	128	0.0527	2135	1.0000	0.53%	
*MetroPCS	1	1200	128	0.0290	2130	1.0000	0.29%	
*T-Mobile GSM/UMTS	2	12	148	0.0004	1950	1.0000	0.00%	
*T-Mobile UMTS	2	12	148	0.0004	2100	1.0000	0.00%	
*T-Mobile LTE	2	24	148	0.0009	2100	1.0000	0.01%	
*XM Sat Radio	2	443	170	0.0118	2337.49	1.0000	0.12%	
*AT&T UMTS	1	500	160	0.0076	1900	1.0000	0.08%	
*AT&T UMTS	2	500	160	0.0152	880	0.5867	0.26%	
*AT&T LTE	1	500	160	0.0076	1900	1.0000	0.08%	
*AT&T LTE	1	500	160	0.0076	2300	1.0000	0.08%	
*AT&T LTE	1	500	160	0.0076	700	0.4667	0.16%	
*Sprint Nextel iDEN	12	100	181	0.0141	851	0.5673	0.25%	
*Sprint Nextel WiMAX	3	562	181	0.0198	2657	1.0000	0.20%	
Verizon	**1**	**2349**	**138**	**0.0444**	**1970**	**1.0000**	**4.44%**	
Verizon	**9**	**393**	**138**	**0.0668**	**869**	**0.5793**	**11.53%**	
Verizon	**1**	**2306**	**138**	**0.0435**	**2145**	**1.0000**	**4.35%**	
Verizon	**1**	**1050**	**138**	**0.0198**	**746**	**0.4973**	**3.99%**	
								27.6%
* Source: Siting Council								

ATTACHMENT 3

AMERICAN TOWER®
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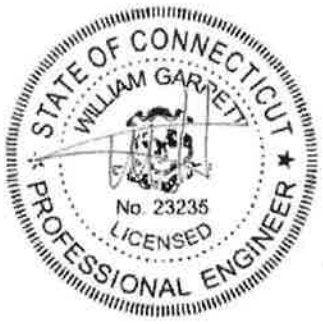
Structural Analysis Report

Structure	:	**178.5 ft Monopole**
ATC Site Name	:	**Bilkays Express, CT**
ATC Site Number	:	**302467**
Engineering Number	:	**63449523**
Proposed Carrier	:	**Verizon Wireless**
Carrier Site Name	:	**Wallingford 3**
Carrier Site Number	:	**N/A**
Site Location	:	**90 North Plains Industrial Rd.** **Wallingford, CT 06492-2334** **41.480761,-72.817700**
County	:	**New Haven**
Date	:	**December 14, 2015**
Max Usage	:	**63%**
Result	:	**Pass**

Reviewed by:
William Garrett, PE
Chief Engineer



Dec 14 2015 3:32 PM

Prepared By:
John D. Bigham, E.I.
Structural Engineer II

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Eng. Number 63449523
December 14, 2015

Table of Contents

AMERICAN TOWER®
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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 178.5 ft monopole to reflect the change in loading by Verizon Wireless.

Supporting Documents

Tower Drawings	FWT Job #18357, dated March 19, 1999
Foundation Drawing	FWT Job #18357, dated March 19, 1999
Geotechnical Report	Tectonic Work Order #1170.C947C, dated March 11, 1999

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:	105 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.24, S_1 = 0.062
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					
178.5	181.0	12	Decibel DB844H90E-XY	Low Profile Platform	(12) 1 5/8" Coax	Sprint Nextel
171.0	165.0	3	NextNet BTS-2500	Side Arms	(6) 5/16" Coax (2) 1/2" Coax	Clearwire
		3	Argus LLPX310R			
		1	DragonWave A-ANT-11G-2-C			
		1	DragonWave A-ANT-18G-2-C			
163.0		2	Generic TTA	Flush	(2) 2" Conduit	
160.0	160.0	6	Powerwave 7020	Low Profile Platform	(12) 1 5/8" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (2) 3" Conduit	AT&T Mobility
		6	Powerwave LGP21401			
		2	Raycap DC6-48-60-18-8F (23.5" Height)			
		3	Ericsson RRUS-11 800MHz			
		3	Ericsson RRUS 11 (Band 7)			
		3	Ericsson RRUS-12 B2			
		3	Ericsson RRUS-32			
		3	Powerwave 7770.00			
		3	KMW AM-X-CD-16-65-00T-RET			
		3	CCI OPA-65R-LCUU-H6			
148.0	150.0	6	Ericsson KRY 112 144/1	Low Profile Platform	(12) 1 5/8" Coax (1) 1 1/4" Hybriflex Cab	T-Mobile
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR 21, 1.3M, B4A B2P			
135.0	138.0	1	RFS DB-T1-6Z-8AB-0Z	Low Profile Platform	(18) 1 5/8" Coax (1) 1 5/8" Hybriflex	Verizon
		3	Antel BXA-80063-6BF-EDIN-X			
128.0	130.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax (1) 7/8" Coax	Metro PCS
	128.0	1	Nortel NTGB01MA			
116.0	122.0	3	RFS RFS APXV9TM14-ALU-I20	Low Profile Platform	(4) 1 1/4" Hybriflex	Sprint Nextel
		3	RFS APXVSPP18-C-A20			
	120.0	3	Alcatel-Lucent 800MHz RRH			
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
20.0	20.0	1	PCTEL GPS-TMG-HR-26N	Standoff	(1) 1/2" Coax	

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
No loading considered as to be removed						

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
135.0	138.0	3	Alcatel-Lucent RRH 2X60-1900	Low Profile Platform	(1) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent RRH2X60 700			
		3	Alcatel-Lucent RRH2X60-AWS			
		1	RFS DB-T1-6Z-8AB-0Z			
		9	Commscope SBNHH-1D65B			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	60%	Pass
Shaft	57%	Pass
Base Plate	26%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	5,041.5	63%
Axial (Kips)	116.7	25%
Shear (Kips)	41.4	63%

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) (°)
171.0	DragonWave A-ANT-11G-2-C	Clearwire	1.218	0.737
	DragonWave A-ANT-18G-2-C			
135.0	Alcatel-Lucent RRH2X60-AWS	Verizon Wireless	0.773	0.660
	Alcatel-Lucent RRH 2X60-1900			
	RFS DB-T1-6Z-8AB-0Z			
	Commscope SBNHH-1D65B			

***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:

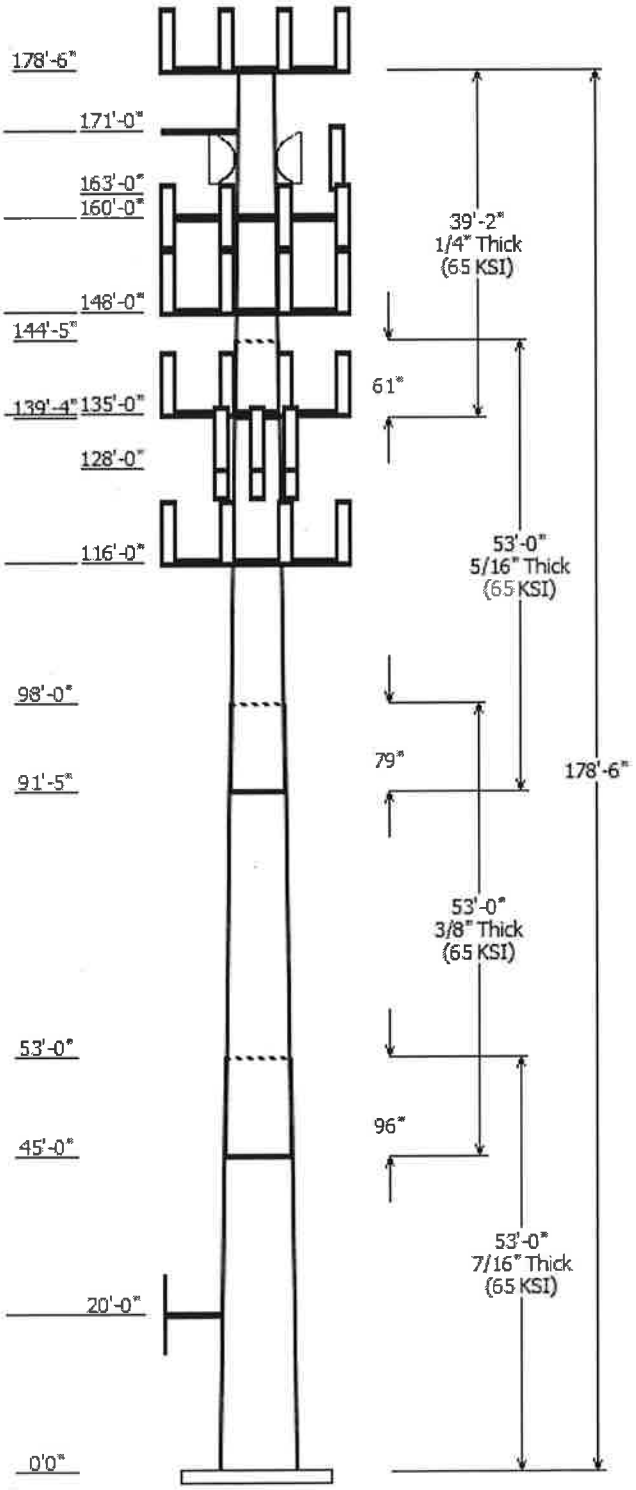
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- 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

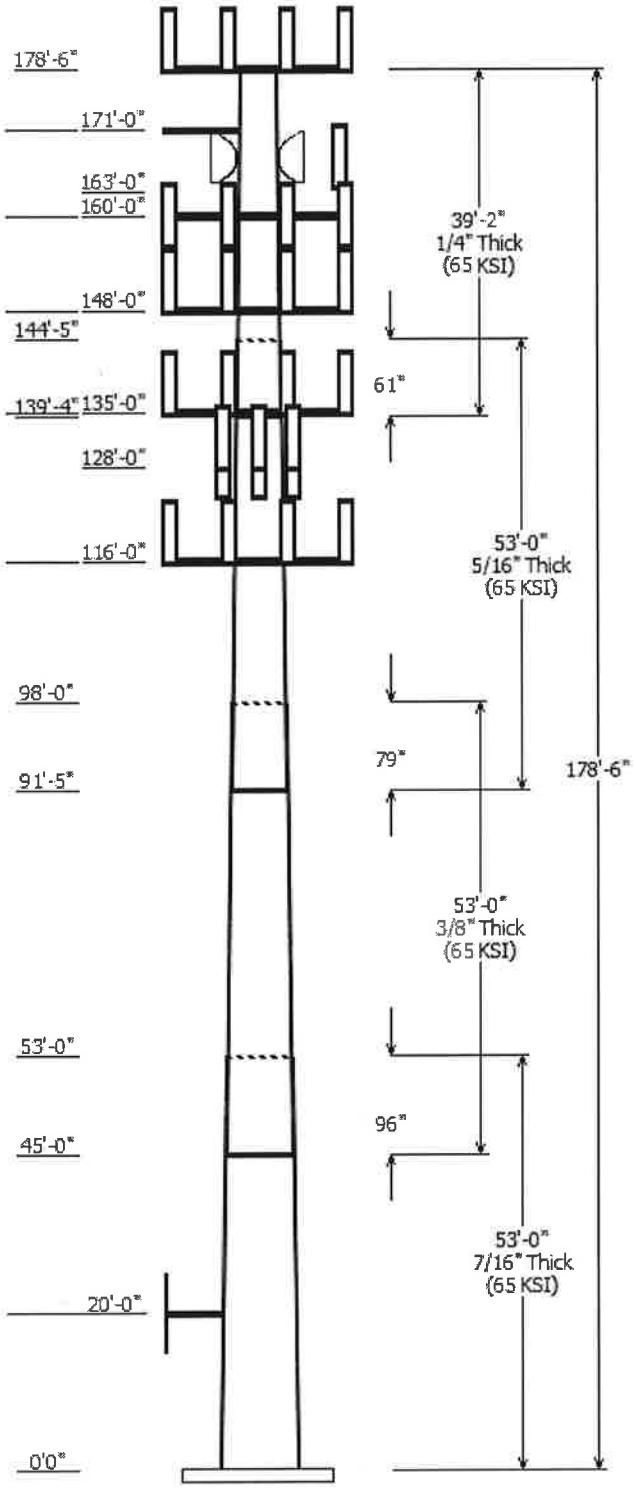
Pole :	302467	Code:	ANSI/TIA-222-G
Description :	178.5' FWT Monopole		
Client :	VERIZON WIRELESS	Struct Class :	II
Location :	Bilkays Express, CT		
Shape :	18 Sides	Exposure :	B
Height :	178.50 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.25140 (in/ft)		

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	53.000	58.67	72.00	0.438		0.000	0.251400	65
2	53.000	48.11	61.43	0.375	Slip Joint	96.000	0.251400	65
3	53.000	37.06	50.39	0.313	Slip Joint	79.000	0.251400	65
4	39.167	29.00	38.84	0.250	Slip Joint	61.000	0.251400	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
178.500	181.000	12	Decibel DB844H90E-XY
178.500	178.500	1	Flat Low Profile Platform
171.000	165.000	1	DragonWave A-ANT-11G-2-C
171.000	165.000	3	Argus LLPX310R
171.000	165.000	3	NextNet BTS-2500
171.000	165.000	1	DragonWave A-ANT-18G-2-C
171.000	171.000	1	Side Arms
163.000	165.000	2	Generic TTA
160.000	160.000	3	KMW AM-X-CD-16-65-00T-RET
160.000	160.000	3	Ericsson RRUS-12 B2
160.000	160.000	3	Ericsson RRUS-11 800 MHz
160.000	160.000	3	CCI OPA-65R-LCUU-H6
160.000	160.000	6	Powerwave Allgon LGP21401
160.000	160.000	1	Flat Low Profile Platform
160.000	160.000	3	Powerwave Allgon 7770.00
160.000	160.000	3	Ericsson RRUS-32
160.000	160.000	3	Ericsson RRUS 11 (Band 7)
160.000	160.000	2	Raycap DC6-48-60-18-8F (23.5"
160.000	160.000	6	Powerwave Allgon 7020
148.000	150.000	3	Ericsson AIR 21, 1.3M, B4A B2P
148.000	150.000	3	Ericsson AIR 21, 1.3 M, B2A B4
148.000	150.000	6	Ericsson KRY 112 144/1
148.000	148.000	1	Round Low Profile Platform
135.000	138.000	3	Alcatel-Lucent RRH 2X60-1900
135.000	138.000	3	Alcatel-Lucent RRH2X60-AWS
135.000	138.000	3	Antel BXA-80063-6BF-EDIN-X
135.000	138.000	1	RFS DB-T1-6Z-8AB-0Z
135.000	138.000	1	RFS DB-T1-6Z-8AB-0Z
135.000	138.000	3	Alcatel-Lucent RRH2x60 700
135.000	138.000	9	Commscope SBNHH-1D65B
135.000	135.000	1	Round Low Profile Platform
128.000	128.000	1	Nortel NTGB01MA
128.000	130.000	3	RFS APXV18-206517S-C
116.000	122.000	3	RFS RFS APXV9TM14-ALU-I20
116.000	120.000	3	Alcatel-Lucent TD-RRH8x20-25
116.000	122.000	3	RFS APXVSPP18-C-A20
116.000	116.000	1	Round Low Profile Platform
116.000	120.000	3	Alcatel-Lucent 1900 MHz 4X45
116.000	120.000	3	Alcatel-Lucent 800 MHz RRH
20.000	20.000	1	Standoff
20.000	20.000	1	PCTEL GPS-TMG-HR-26N



Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	20.000	1/2" Coax	Yes
0.000	116.0	1 1/4" Hybriflex	Yes
0.000	128.0	1 5/8" Coax	Yes
0.000	128.0	7/8" Coax	No
0.000	135.0	1 5/8" Coax	No
0.000	135.0	1 5/8" Hybriflex	No
0.000	135.0	1 5/8" Hybriflex	No
0.000	148.0	1 1/4" Hybriflex	Yes
0.000	148.0	1 5/8" Coax	No
0.000	160.0	0.39" Fiber Trunk	No
0.000	160.0	0.78" 8 AWG 6	No
0.000	160.0	1 5/8" Coax	No
0.000	160.0	3" Conduit	No
0.000	163.0	2" Conduit	Yes
0.000	171.0	1/2" Coax	Yes
0.000	171.0	5/16" Coax	No
0.000	178.5	1 5/8" Coax	No

Load Cases

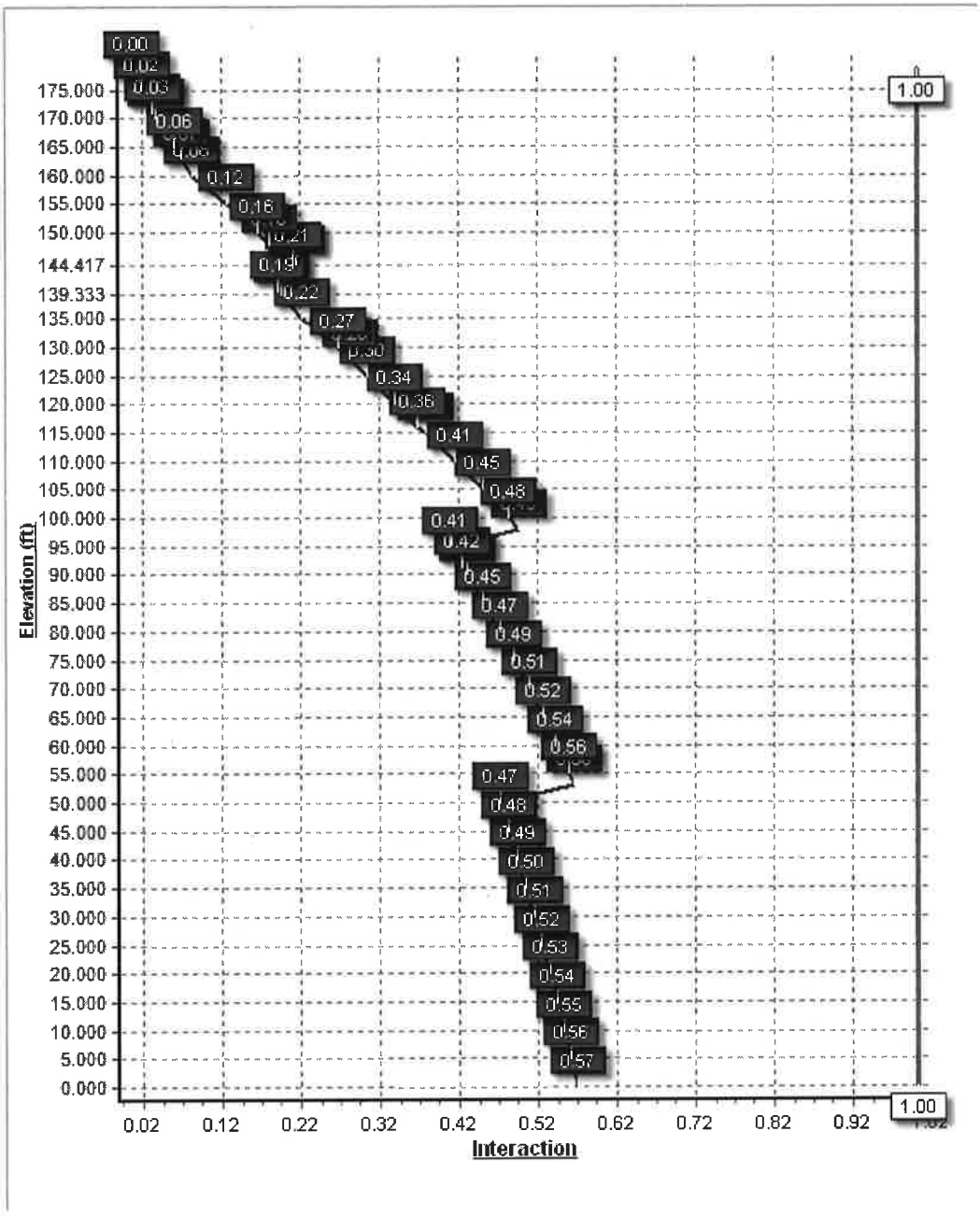
1.2D + 1.6W	105 mph with No Ice
0.9D + 1.6W	105 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	5041.50	41.40	77.04
0.9D + 1.6W	4998.15	41.38	57.77
1.2D + 1.0Di + 1.0Wi	1188.61	9.94	116.75
(1.2 + 0.2Sds) * DL + E ELFM	350.61	2.62	77.75
(1.2 + 0.2Sds) * DL + E EMAM	391.32	3.36	77.75
(0.9 - 0.2Sds) * DL + E ELFM	346.84	2.62	52.74
(0.9 - 0.2Sds) * DL + E EMAM	386.78	3.35	52.74
1.0D + 1.0W	1023.39	8.44	64.23

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	171.00	14.612	0.737
1.0D + 1.0W	171.00	14.612	0.737


Elevation (ft)
175.000
170.000
165.000
160.000
155.000
150.000
144.417
139.333
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction
1.00
1.00

Site Number:	**302467**	**Code: ANSI/TIA-222-G**	
Site Name:	**Bilkays Express, CT**	**Engineering Number: 63449523**	**12/14/2015 11:45:49 AM**
Customer:	**VERIZON WIRELESS**		

Analysis Parameters

Location:	**New Haven County, CT**		
Code:	**ANSI/TIA-222-G**	**Height (ft):**	**178.**
Shape:	**18 Sides**	**Base Diameter (in):**	**72.00**
Pole Type:	**Taper**	**Top Diameter (in):**	**29.00**
Pole Manfacturer:	**FWT**	**Taper (in/ft) :**	**0.251**

Ice & Wind Parameters

Structure Class:	**II**	**Design Wind Speed Without Ice:**	**105 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:**	**0.75 in**

Seismic Parameters

Analysis Method:	**Equivalent Modal Analysis & Equivalent Lateral Force Methods**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**2.11**				
T_L (sec):	**6**	**p:**	**1.3**	**C_s:**	**0.031**
S_s:	**0.240**	**S_1:**	**0.062**	**C_s Max:**	**0.031**
F_a:	**1.600**	**F_v:**	**2.400**	**C_s Min:**	**0.030**
S_{ds}:	**0.256**	**S_{d1}:**	**0.099**		

Load Cases

1.2D + 1.6W	**105 mph with No Ice**
0.9D + 1.6W	**105 mph with No Ice (Reduced DL)**
1.2D + 1.0Di + 1.0Wi	**50 mph with 0.75 in Radial Ice**
(1.2 + 0.2Sds) * DL + E ELFM	**Seismic Equivalent Lateral Forces Method**
(1.2 + 0.2Sds) * DL + E EMAM	**Seismic Equivalent Modal Analysis Method**
(0.9 - 0.2Sds) * DL + E ELFM	**Seismic (Reduced DL) Equivalent Lateral Forces Method**
(0.9 - 0.2Sds) * DL + E EMAM	**Seismic (Reduced DL) Equivalent Modal Analysis Method**
1.0D + 1.0W	**Serviceability 60 mph**

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:45:49 AM

Customer: VERIZON WIRELESS

Shaft Section Properties

							Bottom						Top						
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in²)	Ix (in⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in²)	Ix (in⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.000	0.4375	65		0.00	16,253	72.00	0.00	99.37	64295.3	27.61	164.57	58.67	53.00	80.87	34653.6	22.24	134.12	0.251401
2-18	53.000	0.3750	65	Slip	96.00	11,677	61.43	45.00	72.68	34236.4	27.48	163.83	48.11	98.00	56.82	16359.2	21.21	128.30	0.251401
3-18	53.000	0.3125	65	Slip	79.00	7,766	50.39	91.42	49.67	15739.6	27.02	161.26	37.06	144.42	36.46	6222.7	19.51	118.62	0.251401
4-18	39.167	0.2500	65	Slip	61.00	3,561	38.84	139.33	30.63	5764.1	25.99	155.39	29.00	178.50	22.81	2382.3	19.04	116.00	0.251401
					Shaft Weight	39,257													

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)
178.50	Decibel DB844H90E-XY	12	14.00	3.610	0.92	126.96	3.938	0.92	0.000	2.500
178.50	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,159.96	45.548	1.00	0.000	0.000
171.00	Argus LLPX310R	3	28.60	4.290	0.73	138.17	5.202	0.73	0.000	-6.000
171.00	DragonWave A-ANT-11G-2-C	1	27.00	4.690	1.00	125.91	5.983	1.00	0.000	-6.000
171.00	DragonWave A-ANT-18G-2-C	1	27.10	4.690	1.00	126.15	5.983	1.00	0.000	-6.000
171.00	NextNet BTS-2500	3	35.00	1.820	0.50	93.07	2.371	0.50	0.000	-6.000
171.00	Side Arms	1	560.00	8.500	1.00	1,035.16	15.712	1.00	0.000	0.000
163.00	Generic TTA	2	10.00	1.200	1.00	56.25	1.670	1.00	0.000	2.000
160.00	CCI OPA-65R-LCUU-H6	3	73.00	9.660	0.79	306.09	11.033	0.79	0.000	0.000
160.00	Ericsson RRUS 11 (Band 7)	3	50.70	2.790	0.67	137.64	3.473	0.67	0.000	0.000
160.00	Ericsson RRUS-11 800 MHz	3	54.00	2.520	0.67	143.87	3.181	0.67	0.000	0.000
160.00	Ericsson RRUS-12 B2	3	58.00	3.150	0.67	153.96	3.868	0.67	0.000	0.000
160.00	Ericsson RRUS-32	3	77.00	3.310	0.67	174.93	4.601	0.67	0.000	0.000
160.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,152.40	45.325	1.00	0.000	0.000
160.00	KMW AM-X-CD-16-65-00T-	3	48.50	8.020	0.79	238.43	9.321	0.79	0.000	0.000
160.00	Powerwave Allgon 7020	6	2.20	0.400	0.50	18.04	0.623	0.50	0.000	0.000
160.00	Powerwave Allgon 7770.00	3	35.00	5.510	0.77	170.90	6.565	0.77	0.000	0.000
160.00	Powerwave Allgon LGP21401	6	14.10	1.100	0.50	68.23	2.657	0.50	0.000	0.000
160.00	Raycap DC6-48-60-18-8F	2	20.00	1.260	1.00	101.01	2.525	1.00	0.000	0.000
148.00	Ericsson AIR 21, 1.3 M, B2A	3	83.00	6.050	0.86	251.56	7.145	0.86	0.000	2.000
148.00	Ericsson AIR 21, 1.3M, B4A	3	81.50	6.090	0.85	250.02	7.190	0.85	0.000	2.000
148.00	Ericsson KRY 112 144/1	6	11.00	0.410	0.50	27.33	0.634	0.50	0.000	2.000
148.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,147.69	40.893	1.00	0.000	0.000
135.00	Alcatel-Lucent RRH 2X60-	3	39.60	1.880	0.67	107.79	2.465	0.67	0.000	3.000
135.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.67	129.02	3.133	0.67	0.000	3.000
135.00	Alcatel-Lucent RRH2X60-	3	44.00	1.880	0.67	112.19	2.465	0.67	0.000	3.000
135.00	Antel BXA-80063-6BF-EDIN-X	3	19.20	7.260	0.78	161.91	9.893	0.78	0.000	3.000
135.00	Commscope SBNHH-1D65B	9	50.70	8.170	0.83	251.16	9.460	0.83	0.000	3.000
135.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	4.800	0.67	185.64	5.662	0.67	0.000	3.000
135.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	4.800	0.67	185.64	5.662	0.67	0.000	3.000
135.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,141.22	40.701	1.00	0.000	0.000
128.00	Nortel NTGB01MA	1	1.00	0.090	0.50	12.18	0.322	0.50	0.000	0.000
128.00	RFS APXV18-206517S-C	3	26.40	5.160	0.80	141.49	6.386	0.80	0.000	2.000
116.00	Alcatel-Lucent 1900 MHz	3	60.00	2.320	0.67	152.18	2.974	0.67	0.000	4.000
116.00	Alcatel-Lucent 800 MHz RRH	3	53.00	2.130	0.67	137.65	2.728	0.67	0.000	4.000
116.00	Alcatel-Lucent TD-RRH8x20-	3	70.00	4.050	0.67	160.12	5.708	0.67	0.000	4.000
116.00	RFS APXVSPP18-C-A20	3	57.00	8.020	0.83	250.56	9.279	0.83	0.000	6.000
116.00	RFS RFS APXV9TM14-ALU-I20	3	55.10	6.340	0.78	195.10	8.466	0.78	0.000	6.000
116.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,132.47	40.442	1.00	0.000	0.000
20.00	PCTEL GPS-TMG-HR-26N	1	0.60	0.090	1.00	8.11	0.228	1.00	0.000	0.000
20.00	Standoff	1	75.00	2.500	1.00	146.50	3.906	1.00	0.000	0.000
	Totals	119	12442.70			28,158.97			Number of Loadings :	41

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
0.00	178.50	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Sprint Nextel
0.00	171.00	2	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire
0.00	171.00	6	5/16" Coax	0.31	0.05	N	0.00	N	Clearwire
0.00	163.00	2	2" Conduit	2.38	3.65	N	2.38	Y	Clearwire
0.00	160.00	2	0.39" Fiber Trunk	0.39	0.07	N	0.00	N	AT&T Mobility
0.00	160.00	4	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	160.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
0.00	160.00	2	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	148.00	1	1 1/4" Hybriflex Cab	1.54	1.00	N	1.54	Y	T-Mobile
0.00	148.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile
0.00	135.00	18	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon Wireless
0.00	135.00	1	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon Wireless
0.00	135.00	1	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon Wireless
0.00	128.00	6	1 5/8" Coax	1.98	0.82	N	0.00	Y	Metro PCS
0.00	128.00	1	7/8" Coax	1.09	0.33	N	0.00	N	
0.00	116.00	4	1 1/4" Hybriflex	1.54	1.00	N	0.00	Y	Sprint Nextel
0.00	20.00	1	1/2" Coax	0.63	0.15	N	0.00	Y	Sprint Nextel

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	Fy (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.4375	72.000	99.370	64,295.3	27.61	164.57	68.9	1758.	0.0	0.0
5.00		0.4375	70.743	97.624	60,966.4	27.10	161.70	69.5	1697.	0.0	1,675.8
10.00		0.4375	69.486	95.879	57,754.4	26.59	158.83	70.1	1637.	0.0	1,646.1
15.00		0.4375	68.229	94.134	54,657.3	26.09	155.95	70.7	1577.	0.0	1,616.4
20.00		0.4375	66.972	92.388	51,672.9	25.58	153.08	71.3	1519.	0.0	1,586.7
25.00		0.4375	65.715	90.643	48,799.2	25.07	150.21	71.9	1462.	0.0	1,557.0
30.00		0.4375	64.458	88.897	46,034.1	24.57	147.33	72.5	1406.	0.0	1,527.3
35.00		0.4375	63.201	87.152	43,375.4	24.06	144.46	73.1	1351.	0.0	1,497.6
40.00		0.4375	61.944	85.406	40,821.1	23.55	141.59	73.7	1298.	0.0	1,467.9
45.00	Bot - Section 2	0.4375	60.687	83.661	38,369.2	23.05	138.71	74.3	1245.	0.0	1,438.2
50.00		0.4375	59.430	81.915	36,017.4	22.54	135.84	74.9	1193.	0.0	2,632.3
53.00	Top - Section 1	0.3750	59.426	70.283	30,963.7	26.53	158.47	70.2	1026.	0.0	1,552.9
55.00		0.3750	58.923	69.684	30,179.4	26.30	157.13	70.5	1008.	0.0	476.3
60.00		0.3750	57.666	68.188	28,277.0	25.70	153.78	71.2	965.8	0.0	1,172.9
65.00		0.3750	56.409	66.692	26,456.3	25.11	150.42	71.9	923.8	0.0	1,147.4
70.00		0.3750	55.152	65.196	24,715.5	24.52	147.07	72.6	882.7	0.0	1,122.0
75.00		0.3750	53.895	63.700	23,052.8	23.93	143.72	73.3	842.5	0.0	1,096.5
80.00		0.3750	52.638	62.204	21,466.3	23.34	140.37	73.9	803.2	0.0	1,071.1
85.00		0.3750	51.381	60.708	19,954.4	22.75	137.02	74.6	764.9	0.0	1,045.6
90.00		0.3750	50.124	59.212	18,515.2	22.16	133.66	75.3	727.6	0.0	1,020.1
91.42	Bot - Section 3	0.3750	49.768	58.788	18,120.3	21.99	132.71	75.5	717.1	0.0	284.4
95.00		0.3750	48.867	57.715	17,146.9	21.57	130.31	76.0	691.1	0.0	1,310.5
98.00	Top - Section 2	0.3125	48.738	48.030	14,230.2	26.09	155.96	70.7	575.1	0.0	1,078.7
100.0		0.3125	48.235	47.531	13,791.5	25.81	154.35	71.0	563.2	0.0	325.2
105.0		0.3125	46.978	46.285	12,734.5	25.10	150.33	71.9	533.9	0.0	798.1
110.0		0.3125	45.721	45.038	11,732.9	24.39	146.31	72.7	505.4	0.0	776.9
115.0		0.3125	44.464	43.791	10,785.2	23.68	142.28	73.6	477.8	0.0	755.7
116.0		0.3125	44.213	43.542	10,602.0	23.54	141.48	73.7	472.3	0.0	148.6
120.0		0.3125	43.207	42.544	9,890.0	22.97	138.26	74.4	450.8	0.0	585.9
125.0		0.3125	41.950	41.298	9,045.8	22.26	134.24	75.2	424.7	0.0	713.2
128.0		0.3125	41.196	40.550	8,563.1	21.83	131.83	75.7	409.4	0.0	417.8
130.0		0.3125	40.693	40.051	8,251.0	21.55	130.22	76.1	399.4	0.0	274.3
135.0		0.3125	39.436	38.804	7,504.2	20.84	126.19	76.9	374.8	0.0	670.8
139.3	Bot - Section 4	0.3125	38.347	37.724	6,894.6	20.23	122.71	77.6	354.1	0.0	564.2
140.0		0.3125	38.179	37.557	6,803.9	20.13	122.17	77.7	351.0	0.0	154.7
144.4	Top - Section 3	0.2500	37.569	29.611	5,210.3	25.09	150.27	71.9	273.2	0.0	1,007.8
145.0		0.2500	37.422	29.495	5,149.1	24.98	149.69	72.0	271.0	0.0	58.7
148.0		0.2500	36.668	28.896	4,842.0	24.45	146.67	72.6	260.1	0.0	298.0
150.0		0.2500	36.165	28.497	4,644.2	24.10	144.66	73.1	252.9	0.0	195.3
155.0		0.2500	34.908	27.500	4,173.4	23.21	139.63	74.1	235.5	0.0	476.4
160.0		0.2500	33.651	26.503	3,735.6	22.32	134.60	75.1	218.6	0.0	459.4
163.0		0.2500	32.897	25.904	3,488.2	21.79	131.59	75.8	208.8	0.0	267.5
165.0		0.2500	32.394	25.505	3,329.5	21.44	129.58	76.2	202.4	0.0	174.9
170.0		0.2500	31.137	24.508	2,954.0	20.55	124.55	77.2	186.9	0.0	425.5
171.0		0.2500	30.886	24.308	2,882.4	20.37	123.54	77.4	183.8	0.0	83.1
175.0		0.2500	29.880	23.510	2,607.8	19.66	119.52	78.3	171.9	0.0	325.4
178.5		0.2500	29.000	22.812	2,382.3	19.04	116.00	79.0	161.8	0.0	275.8
											39,257.1

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:45:49 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W 105 mph with No Ice 23 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Wind Load Factor : 1.60

Applied Segment Forces Summary

		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		324.2	0.0					0.0	0.0	324.2	0.0	0.0	0.0
5.00		642.7	2,011.0					0.0	496.9	642.7	2,507.8	0.0	0.0
10.00		631.2	1,975.3					0.0	496.9	631.2	2,472.2	0.0	0.0
15.00		619.8	1,939.7					0.0	496.9	619.8	2,436.6	0.0	0.0
20.00	Appertunance(s)	608.4	1,904.1	85.6	0.0	0.0	90.7	0.0	496.9	694.0	2,491.7	0.0	0.0
25.00		597.0	1,868.4					0.0	496.0	597.0	2,364.4	0.0	0.0
30.00		592.5	1,832.8					0.0	496.0	592.5	2,328.8	0.0	0.0
35.00		600.1	1,797.2					0.0	496.0	600.1	2,293.1	0.0	0.0
40.00		611.1	1,761.5					0.0	496.0	611.1	2,257.5	0.0	0.0
45.00	Bot - Section 2	623.1	1,725.9					0.0	496.0	623.1	2,221.9	0.0	0.0
50.00		505.6	3,158.8					0.0	496.0	505.6	3,654.8	0.0	0.0
53.00	Top - Section 1	317.6	1,863.5					0.0	297.6	317.6	2,161.1	0.0	0.0
55.00		446.4	571.5					0.0	198.4	446.4	769.9	0.0	0.0
60.00		638.9	1,407.4					0.0	496.0	638.9	1,903.4	0.0	0.0
65.00		639.5	1,376.9					0.0	496.0	639.5	1,872.9	0.0	0.0
70.00		638.6	1,346.4					0.0	496.0	638.6	1,842.3	0.0	0.0
75.00		636.5	1,315.8					0.0	496.0	636.5	1,811.8	0.0	0.0
80.00		633.3	1,285.3					0.0	496.0	633.3	1,781.2	0.0	0.0
85.00		629.0	1,254.7					0.0	496.0	629.0	1,750.7	0.0	0.0
90.00		401.5	1,224.2					0.0	496.0	401.5	1,720.1	0.0	0.0
91.42	Bot - Section 3	313.2	341.3					0.0	140.5	313.2	481.8	0.0	0.0
95.00		412.0	1,572.6					0.0	355.4	412.0	1,928.0	0.0	0.0
98.00	Top - Section 2	311.1	1,294.5					0.0	297.6	311.1	1,592.0	0.0	0.0
100.00		431.5	390.2					0.0	198.4	431.5	588.6	0.0	0.0
105.00		610.9	957.7					0.0	496.0	610.9	1,453.7	0.0	0.0
110.00		602.5	932.3					0.0	496.0	602.5	1,428.2	0.0	0.0
115.00		358.3	906.8					0.0	496.0	358.3	1,402.8	0.0	0.0
116.00	Appertunance(s)	294.3	178.3	3,101.7	0.0	10,932.6	2,862.4	0.0	99.2	3,396.1	3,139.9	0.0	0.0
120.00		524.4	703.0					0.0	377.6	524.4	1,080.6	0.0	0.0
125.00		460.4	855.9					0.0	472.0	460.4	1,327.8	0.0	0.0
128.00	Appertunance(s)	284.0	501.3	499.8	0.0	996.0	96.2	0.0	283.2	783.8	880.7	0.0	0.0
130.00		391.4	329.1					0.0	176.2	391.4	505.3	0.0	0.0
135.00	Appertunance(s)	515.0	805.0	5,045.8	0.0	11,829.6	3,027.4	0.0	440.5	5,560.8	4,272.8	0.0	0.0
139.33	Bot - Section 4	273.1	677.1					0.0	291.5	273.1	968.5	0.0	0.0
140.00		277.2	185.7					0.0	44.8	277.2	230.5	0.0	0.0
144.42	Top - Section 3	272.1	1,209.4					0.0	297.1	272.1	1,506.4	0.0	0.0
145.00		192.4	70.4					0.0	39.2	192.4	109.6	0.0	0.0
148.00	Appertunance(s)	265.7	357.6	2,487.9	0.0	2,711.9	2,471.4	0.0	201.8	2,753.5	3,030.8	0.0	0.0
150.00		361.8	234.4					0.0	108.5	361.8	342.9	0.0	0.0
155.00		507.4	571.6					0.0	271.3	507.4	842.9	0.0	0.0
160.00	Appertunance(s)	397.1	551.3	4,886.5	0.0	0.0	3,391.7	0.0	271.3	5,283.6	4,214.2	0.0	0.0
163.00	Appertunance(s)	243.3	321.0	96.9	0.0	193.7	24.0	0.0	63.8	340.1	408.7	0.0	0.0
165.00		332.5	209.9					0.0	25.0	332.5	234.9	0.0	0.0
170.00		282.4	510.6					0.0	62.5	282.4	573.0	0.0	0.0
171.00	Appertunance(s)	228.6	99.7	1,387.8	0.0	-5,554.4	965.9	0.0	12.5	1,616.4	1,078.0	0.0	0.0
175.00		337.8	390.5					0.0	47.2	337.8	437.8	0.0	0.0
178.50	Appertunance(s)	155.5	331.0	3,087.8	0.0	4,128.7	2,001.6	0.0	41.3	3,243.3	2,373.9	0.0	0.0

Site Number:	**302467**	**Code: ANSI/TIA-222-G**	
Site Name:	**Bilkays Express, CT**	**Engineering Number: 63449523**	**12/14/2015 11:45:53 AM**
Customer:	**VERIZON WIRELESS**		

Load Case: 1.2D + 1.6W — 105 mph with No Ice — 23 Iterations

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

Wind Importance Factor : 1.00

Totals:	41,652.6	77,076.6	0.00	0.00

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:45:53 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W 105 mph with No Ice 23 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	-77.04	-41.40	0.00	-5,041.50	0.00	5,041.50	6,164.54	3,082.27	18,158.3	9,092.69	0.00	0.00	0.567
5.00	-74.45	-40.90	0.00	-4,834.49	0.00	4,834.49	6,108.61	3,054.31	17,675.6	8,850.97	0.06	-0.11	0.559
10.00	-71.90	-40.40	0.00	-4,629.99	0.00	4,629.99	6,050.81	3,025.41	17,193.4	8,609.50	0.23	-0.22	0.550
15.00	-69.39	-39.91	0.00	-4,427.98	0.00	4,427.98	5,991.14	2,995.57	16,712.0	8,368.43	0.52	-0.33	0.541
20.00	-66.83	-39.33	0.00	-4,228.45	0.00	4,228.45	5,929.59	2,964.80	16,231.6	8,127.91	0.93	-0.44	0.532
25.00	-64.39	-38.84	0.00	-4,031.81	0.00	4,031.81	5,866.18	2,933.09	15,752.7	7,888.07	1.46	-0.56	0.522
30.00	-61.99	-38.35	0.00	-3,837.63	0.00	3,837.63	5,800.89	2,900.44	15,275.4	7,649.08	2.11	-0.67	0.513
35.00	-59.63	-37.84	0.00	-3,645.90	0.00	3,645.90	5,733.73	2,866.86	14,800.1	7,411.07	2.87	-0.79	0.503
40.00	-57.30	-37.31	0.00	-3,456.72	0.00	3,456.72	5,664.70	2,832.35	14,327.0	7,174.19	3.76	-0.90	0.492
45.00	-55.02	-36.76	0.00	-3,270.17	0.00	3,270.17	5,593.79	2,796.90	13,856.5	6,938.58	4.77	-1.02	0.481
50.00	-51.31	-36.27	0.00	-3,086.37	0.00	3,086.37	5,521.02	2,760.51	13,388.9	6,704.40	5.90	-1.14	0.470
53.00	-49.12	-35.96	0.00	-2,977.55	0.00	2,977.55	4,440.13	2,220.06	10,789.7	5,402.88	6.64	-1.21	0.562
55.00	-48.31	-35.58	0.00	-2,905.63	0.00	2,905.63	4,419.76	2,209.88	10,648.2	5,332.01	7.16	-1.26	0.556
60.00	-46.34	-35.00	0.00	-2,727.75	0.00	2,727.75	4,367.53	2,183.77	10,295.0	5,155.16	8.55	-1.39	0.540
65.00	-44.40	-34.42	0.00	-2,552.75	0.00	2,552.75	4,313.43	2,156.72	9,942.96	4,978.87	10.08	-1.53	0.523
70.00	-42.50	-33.83	0.00	-2,380.67	0.00	2,380.67	4,257.46	2,128.73	9,592.32	4,803.29	11.75	-1.66	0.506
75.00	-40.63	-33.23	0.00	-2,211.55	0.00	2,211.55	4,199.61	2,099.81	9,243.38	4,628.56	13.56	-1.79	0.488
80.00	-38.80	-32.63	0.00	-2,045.41	0.00	2,045.41	4,139.90	2,069.95	8,896.45	4,454.84	15.51	-1.92	0.469
85.00	-37.00	-32.02	0.00	-1,882.29	0.00	1,882.29	4,078.31	2,039.15	8,551.80	4,282.26	17.59	-2.05	0.449
90.00	-35.25	-31.61	0.00	-1,722.19	0.00	1,722.19	4,014.85	2,007.42	8,209.74	4,110.97	19.81	-2.18	0.428
91.42	-34.74	-31.31	0.00	-1,677.41	0.00	1,677.41	3,996.52	1,998.26	8,113.34	4,062.70	20.46	-2.22	0.422
95.00	-32.79	-30.87	0.00	-1,565.21	0.00	1,565.21	3,949.51	1,974.76	7,870.56	3,941.13	22.16	-2.31	0.406
98.00	-31.18	-30.53	0.00	-1,472.59	0.00	1,472.59	3,056.80	1,528.40	6,090.92	3,049.99	23.64	-2.38	0.493
100.00	-30.56	-30.13	0.00	-1,411.53	0.00	1,411.53	3,039.33	1,519.67	5,992.84	3,000.87	24.64	-2.43	0.481
105.00	-29.06	-29.52	0.00	-1,260.90	0.00	1,260.90	2,994.36	1,497.18	5,748.30	2,878.42	27.27	-2.57	0.448
110.00	-27.60	-28.92	0.00	-1,113.29	0.00	1,113.29	2,947.52	1,473.76	5,504.94	2,756.56	30.03	-2.70	0.414
115.00	-26.18	-28.52	0.00	-968.72	0.00	968.72	2,898.80	1,449.40	5,263.06	2,635.44	32.94	-2.83	0.377
116.00	-23.18	-25.00	0.00	-929.26	0.00	929.26	2,888.83	1,444.42	5,214.89	2,611.32	33.53	-2.86	0.364
120.00	-22.09	-24.46	0.00	-829.26	0.00	829.26	2,848.21	1,424.11	5,022.95	2,515.21	35.96	-2.95	0.338
125.00	-20.75	-23.96	0.00	-706.95	0.00	706.95	2,795.75	1,397.88	4,784.91	2,396.01	39.11	-3.06	0.303
128.00	-19.89	-23.15	0.00	-634.06	0.00	634.06	2,763.38	1,381.69	4,643.19	2,325.05	41.06	-3.12	0.280
130.00	-19.38	-22.76	0.00	-587.76	0.00	587.76	2,741.42	1,370.71	4,549.22	2,277.99	42.38	-3.16	0.265
135.00	-15.40	-16.99	0.00	-462.15	0.00	462.15	2,685.21	1,342.61	4,316.17	2,161.29	45.74	-3.26	0.220
139.33	-14.44	-16.67	0.00	-388.54	0.00	388.54	2,634.99	1,317.49	4,116.57	2,061.34	48.73	-3.33	0.194
140.00	-14.21	-16.39	0.00	-377.43	0.00	377.43	2,627.14	1,313.57	4,086.07	2,046.07	49.19	-3.34	0.190
144.42	-12.72	-16.03	0.00	-305.05	0.00	305.05	1,915.99	957.99	2,941.42	1,472.89	52.31	-3.40	0.214
145.00	-12.61	-15.84	0.00	-295.70	0.00	295.70	1,911.69	955.84	2,923.20	1,463.77	52.72	-3.41	0.209
148.00	-9.74	-12.92	0.00	-245.46	0.00	245.46	1,889.17	944.59	2,829.77	1,416.99	54.88	-3.45	0.179
150.00	-9.41	-12.54	0.00	-219.63	0.00	219.63	1,873.79	936.89	2,767.71	1,385.91	56.33	-3.48	0.164
155.00	-8.59	-11.99	0.00	-156.91	0.00	156.91	1,834.01	917.01	2,613.49	1,308.69	60.01	-3.54	0.125
160.00	-4.71	-6.46	0.00	-96.95	0.00	96.95	1,792.37	896.18	2,460.85	1,232.25	63.73	-3.58	0.081
163.00	-4.32	-6.10	0.00	-77.38	0.00	77.38	1,766.48	883.24	2,370.14	1,186.83	65.99	-3.60	0.068
165.00	-4.11	-5.75	0.00	-65.18	0.00	65.18	1,748.85	874.42	2,310.07	1,156.75	67.50	-3.61	0.059
170.00	-3.55	-5.43	0.00	-36.43	0.00	36.43	1,703.46	851.73	2,161.44	1,082.33	71.29	-3.63	0.036
171.00	-2.58	-3.75	0.00	-31.00	0.00	31.00	1,694.16	847.08	2,132.00	1,067.58	72.06	-3.64	0.031
175.00	-2.16	-3.39	0.00	-15.99	0.00	15.99	1,656.20	828.10	2,015.26	1,009.13	75.10	-3.65	0.017
178.50	0.00	-3.24	0.00	-4.13	0.00	4.13	1,622.00	811.00	1,914.55	958.70	77.78	-3.65	0.004

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:45:53 AM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W — 105 mph with No Ice (Reduced DL) — 23 Iterations

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

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		324.2	0.0					0.0	0.0	324.2	0.0	0.0	0.0
5.00		642.7	1,508.2					0.0	372.6	642.7	1,880.9	0.0	0.0
10.00		631.2	1,481.5					0.0	372.6	631.2	1,854.2	0.0	0.0
15.00		619.8	1,454.8					0.0	372.6	619.8	1,827.4	0.0	0.0
20.00	Appertunance(s)	608.4	1,428.1	85.6	0.0	0.0	68.0	0.0	372.6	694.0	1,868.7	0.0	0.0
25.00		597.0	1,401.3					0.0	372.0	597.0	1,773.3	0.0	0.0
30.00		592.5	1,374.6					0.0	372.0	592.5	1,746.6	0.0	0.0
35.00		600.1	1,347.9					0.0	372.0	600.1	1,719.8	0.0	0.0
40.00		611.1	1,321.1					0.0	372.0	611.1	1,693.1	0.0	0.0
45.00	Bot - Section 2	623.1	1,294.4					0.0	372.0	623.1	1,666.4	0.0	0.0
50.00		505.6	2,369.1					0.0	372.0	505.6	2,741.1	0.0	0.0
53.00	Top - Section 1	317.6	1,397.6					0.0	223.2	317.6	1,620.8	0.0	0.0
55.00		446.4	428.6					0.0	148.8	446.4	577.4	0.0	0.0
60.00		638.9	1,055.6					0.0	372.0	638.9	1,427.6	0.0	0.0
65.00		639.5	1,032.7					0.0	372.0	639.5	1,404.6	0.0	0.0
70.00		638.6	1,009.8					0.0	372.0	638.6	1,381.7	0.0	0.0
75.00		636.5	986.9					0.0	372.0	636.5	1,358.8	0.0	0.0
80.00		633.3	963.9					0.0	372.0	633.3	1,335.9	0.0	0.0
85.00		629.0	941.0					0.0	372.0	629.0	1,313.0	0.0	0.0
90.00		401.5	918.1					0.0	372.0	401.5	1,290.1	0.0	0.0
91.42	Bot - Section 3	313.2	256.0					0.0	105.4	313.2	361.4	0.0	0.0
95.00		412.0	1,179.4					0.0	266.6	412.0	1,446.0	0.0	0.0
98.00	Top - Section 2	311.1	970.8					0.0	223.2	311.1	1,194.0	0.0	0.0
100.00		431.5	292.7					0.0	148.8	431.5	441.4	0.0	0.0
105.00		610.9	718.3					0.0	372.0	610.9	1,090.2	0.0	0.0
110.00		602.5	699.2					0.0	372.0	602.5	1,071.2	0.0	0.0
115.00		358.3	680.1					0.0	372.0	358.3	1,052.1	0.0	0.0
116.00	Appertunance(s)	294.3	133.7	3,101.7	0.0	10,932.6	2,146.8	0.0	74.4	3,396.1	2,354.9	0.0	0.0
120.00		524.4	527.3					0.0	283.2	524.4	810.5	0.0	0.0
125.00		460.4	641.9					0.0	354.0	460.4	995.9	0.0	0.0
128.00	Appertunance(s)	284.0	376.0	499.8	0.0	996.0	72.2	0.0	212.4	783.8	660.5	0.0	0.0
130.00		391.4	246.8					0.0	132.1	391.4	379.0	0.0	0.0
135.00	Appertunance(s)	515.0	603.7	5,045.8	0.0	11,829.6	2,270.5	0.0	330.3	5,560.8	3,204.6	0.0	0.0
139.33	Bot - Section 4	273.0	507.8					0.0	218.6	273.0	726.4	0.0	0.0
140.00		275.3	139.2					0.0	33.6	275.3	172.9	0.0	0.0
144.42	Top - Section 3	270.0	907.0					0.0	222.8	270.0	1,129.8	0.0	0.0
145.00		190.1	52.8					0.0	29.4	190.1	82.2	0.0	0.0
148.00	Appertunance(s)	263.6	268.2	2,487.9	0.0	2,711.9	1,853.5	0.0	151.3	2,751.5	2,273.1	0.0	0.0
150.00		361.8	175.8					0.0	81.4	361.8	257.1	0.0	0.0
155.00		507.4	428.7					0.0	203.4	507.4	632.2	0.0	0.0
160.00	Appertunance(s)	397.1	413.5	4,886.5	0.0	0.0	2,543.8	0.0	203.4	5,283.6	3,160.7	0.0	0.0
163.00	Appertunance(s)	243.3	240.7	96.9	0.0	193.7	18.0	0.0	47.8	340.1	306.6	0.0	0.0
165.00		332.5	157.4					0.0	18.7	332.5	176.2	0.0	0.0
170.00		282.4	382.9					0.0	46.8	282.4	429.8	0.0	0.0
171.00	Appertunance(s)	228.6	74.7	1,387.8	0.0	-5,554.4	724.4	0.0	9.4	1,616.4	808.5	0.0	0.0
175.00		337.8	292.9					0.0	35.4	337.8	328.3	0.0	0.0
178.50	Appertunance(s)	155.5	248.3	3,087.8	0.0	4,128.7	1,501.2	0.0	31.0	3,243.3	1,780.5	0.0	0.0

Load Case: 0.9D + 1.6W — 105 mph with No Ice (Reduced DL) — 23 Iterations

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

Wind Importance Factor : 1.00

Totals:	41,644.1	57,807.4	0.00	0.00

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:45:56 AM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W 105 mph with No Ice (Reduced DL) 23 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-57.77	-41.38	0.00	-4,998.15	0.00	4,998.15	6,164.54	3,082.27	18,158.3	9,092.69	0.00	0.00	0.559
5.00	-55.81	-40.84	0.00	-4,791.27	0.00	4,791.27	6,108.61	3,054.31	17,675.6	8,850.97	0.06	-0.11	0.551
10.00	-53.88	-40.30	0.00	-4,587.09	0.00	4,587.09	6,050.81	3,025.41	17,193.4	8,609.50	0.23	-0.22	0.542
15.00	-51.98	-39.78	0.00	-4,385.57	0.00	4,385.57	5,991.14	2,995.57	16,712.0	8,368.43	0.52	-0.33	0.533
20.00	-50.04	-39.17	0.00	-4,186.69	0.00	4,186.69	5,929.59	2,964.80	16,231.6	8,127.91	0.92	-0.44	0.524
25.00	-48.19	-38.65	0.00	-3,990.85	0.00	3,990.85	5,866.18	2,933.09	15,752.7	7,888.07	1.45	-0.55	0.514
30.00	-46.38	-38.13	0.00	-3,797.60	0.00	3,797.60	5,800.89	2,900.44	15,275.4	7,649.08	2.09	-0.67	0.505
35.00	-44.59	-37.60	0.00	-3,606.94	0.00	3,606.94	5,733.73	2,866.86	14,800.1	7,411.07	2.85	-0.78	0.495
40.00	-42.83	-37.05	0.00	-3,418.95	0.00	3,418.95	5,664.70	2,832.35	14,327.0	7,174.19	3.72	-0.90	0.484
45.00	-41.10	-36.48	0.00	-3,233.70	0.00	3,233.70	5,593.79	2,796.90	13,856.5	6,938.58	4.73	-1.01	0.474
50.00	-38.31	-35.99	0.00	-3,051.29	0.00	3,051.29	5,521.02	2,760.51	13,388.9	6,704.40	5.85	-1.13	0.462
53.00	-36.66	-35.68	0.00	-2,943.32	0.00	2,943.32	4,440.13	2,220.06	10,789.7	5,402.88	6.58	-1.20	0.553
55.00	-36.04	-35.27	0.00	-2,871.97	0.00	2,871.97	4,419.76	2,209.88	10,648.2	5,332.01	7.09	-1.25	0.547
60.00	-34.55	-34.68	0.00	-2,695.60	0.00	2,695.60	4,367.53	2,183.77	10,295.0	5,155.16	8.47	-1.38	0.531
65.00	-33.08	-34.08	0.00	-2,522.20	0.00	2,522.20	4,313.43	2,156.72	9,942.96	4,978.87	9.98	-1.51	0.514
70.00	-31.64	-33.48	0.00	-2,351.78	0.00	2,351.78	4,257.46	2,128.73	9,592.32	4,803.29	11.64	-1.64	0.497
75.00	-30.23	-32.87	0.00	-2,184.39	0.00	2,184.39	4,199.61	2,099.81	9,243.38	4,628.56	13.42	-1.77	0.479
80.00	-28.84	-32.26	0.00	-2,020.04	0.00	2,020.04	4,139.90	2,069.95	8,896.45	4,454.84	15.35	-1.90	0.461
85.00	-27.48	-31.65	0.00	-1,858.74	0.00	1,858.74	4,078.31	2,039.15	8,551.80	4,282.26	17.41	-2.03	0.441
90.00	-26.16	-31.24	0.00	-1,700.50	0.00	1,700.50	4,014.85	2,007.42	8,209.74	4,110.97	19.60	-2.16	0.420
91.42	-25.78	-30.94	0.00	-1,656.25	0.00	1,656.25	3,996.52	1,998.26	8,113.34	4,062.70	20.25	-2.19	0.414
95.00	-24.30	-30.51	0.00	-1,545.39	0.00	1,545.39	3,949.51	1,974.76	7,870.56	3,941.13	21.93	-2.28	0.399
98.00	-23.09	-30.17	0.00	-1,453.87	0.00	1,453.87	3,056.80	1,528.40	6,090.92	3,049.99	23.39	-2.36	0.485
100.00	-22.62	-29.76	0.00	-1,393.53	0.00	1,393.53	3,039.33	1,519.67	5,992.84	3,000.87	24.39	-2.41	0.472
105.00	-21.49	-29.15	0.00	-1,244.74	0.00	1,244.74	2,994.36	1,497.18	5,748.30	2,878.42	26.98	-2.54	0.440
110.00	-20.38	-28.55	0.00	-1,098.99	0.00	1,098.99	2,947.52	1,473.76	5,504.94	2,756.56	29.71	-2.67	0.406
115.00	-19.31	-28.16	0.00	-956.25	0.00	956.25	2,898.80	1,449.40	5,263.06	2,635.44	32.58	-2.80	0.370
116.00	-17.10	-24.67	0.00	-917.16	0.00	917.16	2,888.83	1,444.42	5,214.89	2,611.32	33.17	-2.82	0.357
120.00	-16.27	-24.14	0.00	-818.47	0.00	818.47	2,848.21	1,424.11	5,022.95	2,515.21	35.58	-2.92	0.331
125.00	-15.27	-23.65	0.00	-697.78	0.00	697.78	2,795.75	1,397.88	4,784.91	2,396.01	38.69	-3.03	0.297
128.00	-14.63	-22.84	0.00	-625.84	0.00	625.84	2,763.38	1,381.69	4,643.19	2,325.05	40.61	-3.09	0.275
130.00	-14.25	-22.45	0.00	-580.15	0.00	580.15	2,741.42	1,370.71	4,549.22	2,277.99	41.91	-3.13	0.260
135.00	-11.33	-16.74	0.00	-456.07	0.00	456.07	2,685.21	1,342.61	4,316.17	2,161.29	45.24	-3.22	0.215
139.33	-10.61	-16.43	0.00	-383.56	0.00	383.56	2,634.99	1,317.49	4,116.57	2,061.34	48.19	-3.29	0.190
140.00	-10.44	-16.15	0.00	-372.60	0.00	372.60	2,627.14	1,313.57	4,086.07	2,046.07	48.65	-3.30	0.186
144.42	-9.32	-15.82	0.00	-301.27	0.00	301.27	1,915.99	957.99	2,941.42	1,472.89	51.73	-3.36	0.210
145.00	-9.24	-15.63	0.00	-292.04	0.00	292.04	1,911.69	955.84	2,923.20	1,463.77	52.14	-3.37	0.205
148.00	-7.13	-12.75	0.00	-242.44	0.00	242.44	1,889.17	944.59	2,829.77	1,416.99	54.27	-3.41	0.175
150.00	-6.89	-12.38	0.00	-216.93	0.00	216.93	1,873.79	936.89	2,767.71	1,385.91	55.71	-3.44	0.160
155.00	-6.28	-11.84	0.00	-155.02	0.00	155.02	1,834.01	917.01	2,613.49	1,308.69	59.34	-3.50	0.122
160.00	-3.44	-6.38	0.00	-95.80	0.00	95.80	1,792.37	896.18	2,460.85	1,232.25	63.02	-3.54	0.080
163.00	-3.15	-6.02	0.00	-76.48	0.00	76.48	1,766.48	883.24	2,370.14	1,186.83	65.25	-3.56	0.066
165.00	-3.00	-5.68	0.00	-64.44	0.00	64.44	1,748.85	874.42	2,310.07	1,156.75	66.75	-3.57	0.057
170.00	-2.59	-5.37	0.00	-36.05	0.00	36.05	1,703.46	851.73	2,161.44	1,082.33	70.49	-3.59	0.035
171.00	-1.88	-3.71	0.00	-30.68	0.00	30.68	1,694.16	847.08	2,132.00	1,067.58	71.25	-3.59	0.030
175.00	-1.57	-3.35	0.00	-15.85	0.00	15.85	1,656.20	828.10	2,015.26	1,009.13	74.26	-3.60	0.017
178.50	0.00	-3.24	0.00	-4.13	0.00	4.13	1,622.00	811.00	1,914.55	958.70	76.90	-3.61	0.004

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:45:56 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 22 Iterations

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

Dead Load Factor : 1.20 Ice Importance Factor : 1.00

Wind Load Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		87.5	0.0					0.0	0.0	87.5	0.0	0.0	0.0
5.00		173.9	2,533.0					0.0	684.3	173.9	3,217.3	0.0	0.0
10.00		171.4	2,548.9					0.0	710.1	171.4	3,259.0	0.0	0.0
15.00		168.7	2,533.2					0.0	723.6	168.7	3,256.8	0.0	0.0
20.00	Appertunance(s)	165.9	2,507.2	19.4	0.0	0.0	191.2	0.0	733.1	185.2	3,431.4	0.0	0.0
25.00		163.0	2,475.8					0.0	723.2	163.0	3,199.0	0.0	0.0
30.00		162.1	2,441.1					0.0	728.7	162.1	3,169.8	0.0	0.0
35.00		164.4	2,404.2					0.0	733.4	164.4	3,137.6	0.0	0.0
40.00		167.7	2,365.5					0.0	737.5	167.7	3,103.1	0.0	0.0
45.00	Bot - Section 2	171.2	2,325.6					0.0	741.2	171.2	3,066.8	0.0	0.0
50.00		139.0	3,760.4					0.0	744.6	139.0	4,505.0	0.0	0.0
53.00	Top - Section 1	87.4	2,223.0					0.0	448.2	87.4	2,671.3	0.0	0.0
55.00		123.0	810.4					0.0	299.4	123.0	1,109.8	0.0	0.0
60.00		176.3	1,996.0					0.0	750.4	176.3	2,746.4	0.0	0.0
65.00		176.7	1,957.9					0.0	753.0	176.7	2,710.9	0.0	0.0
70.00		176.7	1,919.3					0.0	755.5	176.7	2,674.8	0.0	0.0
75.00		176.5	1,880.2					0.0	757.8	176.5	2,637.9	0.0	0.0
80.00		175.9	1,840.6					0.0	759.9	175.9	2,600.6	0.0	0.0
85.00		175.0	1,800.7					0.0	762.0	175.0	2,562.7	0.0	0.0
90.00		111.8	1,760.5					0.0	763.9	111.8	2,524.4	0.0	0.0
91.42	Bot - Section 3	87.3	492.8					0.0	216.8	87.3	709.6	0.0	0.0
95.00		114.9	1,954.7					0.0	549.0	114.9	2,503.7	0.0	0.0
98.00	Top - Section 2	86.9	1,610.8					0.0	460.3	86.9	2,071.1	0.0	0.0
100.00		120.7	599.6					0.0	307.2	120.7	906.8	0.0	0.0
105.00		171.1	1,469.7					0.0	769.2	171.1	2,239.0	0.0	0.0
110.00		169.1	1,433.5					0.0	770.9	169.1	2,204.4	0.0	0.0
115.00		100.7	1,397.0					0.0	772.4	100.7	2,169.5	0.0	0.0
116.00	Appertunance(s)	82.9	276.1	646.8	0.0	1,952.1	4,946.4	0.0	154.7	729.7	5,377.1	0.0	0.0
120.00		147.9	1,086.4					0.0	550.1	147.9	1,636.5	0.0	0.0
125.00		130.1	1,323.5					0.0	688.6	130.1	2,012.1	0.0	0.0
128.00	Appertunance(s)	80.4	778.0	88.3	0.0	174.7	452.7	0.0	413.7	168.7	1,644.3	0.0	0.0
130.00		111.0	511.8					0.0	220.5	111.0	732.2	0.0	0.0
135.00	Appertunance(s)	146.3	1,249.3	975.5	0.0	2,047.1	6,612.0	0.0	551.6	1,121.8	8,412.9	0.0	0.0
139.33	Bot - Section 4	77.7	1,053.3					0.0	388.3	77.7	1,441.6	0.0	0.0
140.00		78.5	244.1					0.0	59.8	78.5	303.9	0.0	0.0
144.42	Top - Section 3	77.0	1,586.8					0.0	396.3	77.0	1,983.1	0.0	0.0
145.00		54.3	120.1					0.0	52.4	54.3	172.5	0.0	0.0
148.00	Appertunance(s)	75.4	608.9	531.9	0.0	459.2	4,028.3	0.0	269.5	607.3	4,906.7	0.0	0.0
150.00		103.8	400.0					0.0	141.7	103.8	541.7	0.0	0.0
155.00		145.9	972.9					0.0	354.6	145.9	1,327.5	0.0	0.0
160.00	Appertunance(s)	114.5	940.1	976.0	0.0	0.0	7,131.1	0.0	355.0	1,090.5	8,426.1	0.0	0.0
163.00	Appertunance(s)	70.3	549.9	19.1	0.0	38.2	116.5	0.0	114.1	89.4	780.5	0.0	0.0
165.00		96.4	360.6					0.0	36.1	96.4	396.7	0.0	0.0
170.00		82.0	874.1					0.0	90.5	82.0	964.5	0.0	0.0
171.00	Appertunance(s)	66.6	172.0	285.2	0.0	-985.2	1,965.8	0.0	18.1	351.9	2,155.9	0.0	0.0
175.00		98.7	671.2					0.0	47.2	98.7	718.4	0.0	0.0
178.50	Appertunance(s)	45.5	570.3	610.6	0.0	638.3	3,817.1	0.0	41.3	656.1	4,428.7	0.0	0.0

Site Number:	**302467**	**Code: ANSI/TIA-222-G**	
Site Name:	**Bilkays Express, CT**	**Engineering Number: 63449523**	**12/14/2015 11:45:59 AM**
Customer:	**VERIZON WIRELESS**		

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 22 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.20
Wind Load Factor : 1.00

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Totals:	10,002.6	116,751.	0.00	0.00

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:45:59 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 22 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	-116.75	-9.94	0.00	-1,188.61	0.00	1,188.61	6,164.54	3,082.27	18,158.3	9,092.69	0.00	0.00	0.150
5.00	-113.53	-9.82	0.00	-1,138.91	0.00	1,138.91	6,108.61	3,054.31	17,675.6	8,850.97	0.01	-0.03	0.147
10.00	-110.26	-9.69	0.00	-1,089.82	0.00	1,089.82	6,050.81	3,025.41	17,193.4	8,609.50	0.06	-0.05	0.145
15.00	-107.00	-9.57	0.00	-1,041.34	0.00	1,041.34	5,991.14	2,995.57	16,712.0	8,368.43	0.12	-0.08	0.142
20.00	-103.57	-9.43	0.00	-993.49	0.00	993.49	5,929.59	2,964.80	16,231.6	8,127.91	0.22	-0.10	0.140
25.00	-100.36	-9.31	0.00	-946.34	0.00	946.34	5,866.18	2,933.09	15,752.7	7,888.07	0.34	-0.13	0.137
30.00	-97.19	-9.18	0.00	-899.81	0.00	899.81	5,800.89	2,900.44	15,275.4	7,649.08	0.50	-0.16	0.134
35.00	-94.05	-9.05	0.00	-853.90	0.00	853.90	5,733.73	2,866.86	14,800.1	7,411.07	0.68	-0.19	0.132
40.00	-90.94	-8.92	0.00	-808.64	0.00	808.64	5,664.70	2,832.35	14,327.0	7,174.19	0.88	-0.21	0.129
45.00	-87.87	-8.78	0.00	-764.05	0.00	764.05	5,593.79	2,796.90	13,856.5	6,938.58	1.12	-0.24	0.126
50.00	-83.36	-8.65	0.00	-720.17	0.00	720.17	5,521.02	2,760.51	13,388.9	6,704.40	1.39	-0.27	0.123
53.00	-80.69	-8.57	0.00	-694.22	0.00	694.22	4,440.13	2,220.06	10,789.7	5,402.88	1.56	-0.28	0.147
55.00	-79.58	-8.47	0.00	-677.08	0.00	677.08	4,419.76	2,209.88	10,648.2	5,332.01	1.68	-0.30	0.145
60.00	-76.83	-8.32	0.00	-634.73	0.00	634.73	4,367.53	2,183.77	10,295.0	5,155.16	2.01	-0.33	0.141
65.00	-74.12	-8.17	0.00	-593.13	0.00	593.13	4,313.43	2,156.72	9,942.96	4,978.87	2.37	-0.36	0.136
70.00	-71.44	-8.01	0.00	-552.30	0.00	552.30	4,257.46	2,128.73	9,592.32	4,803.29	2.76	-0.39	0.132
75.00	-68.80	-7.85	0.00	-512.24	0.00	512.24	4,199.61	2,099.81	9,243.38	4,628.56	3.18	-0.42	0.127
80.00	-66.19	-7.69	0.00	-472.98	0.00	472.98	4,139.90	2,069.95	8,896.45	4,454.84	3.64	-0.45	0.122
85.00	-63.63	-7.53	0.00	-434.51	0.00	434.51	4,078.31	2,039.15	8,551.80	4,282.26	4.12	-0.48	0.117
90.00	-61.10	-7.42	0.00	-396.87	0.00	396.87	4,014.85	2,007.42	8,209.74	4,110.97	4.64	-0.51	0.112
91.42	-60.39	-7.34	0.00	-386.36	0.00	386.36	3,996.52	1,998.26	8,113.34	4,062.70	4.79	-0.52	0.110
95.00	-57.89	-7.22	0.00	-360.06	0.00	360.06	3,949.51	1,974.76	7,870.56	3,941.13	5.19	-0.54	0.106
98.00	-55.82	-7.13	0.00	-338.40	0.00	338.40	3,056.80	1,528.40	6,090.92	3,049.99	5.53	-0.56	0.129
100.00	-54.91	-7.02	0.00	-324.15	0.00	324.15	3,039.33	1,519.67	5,992.84	3,000.87	5.77	-0.57	0.126
105.00	-52.67	-6.85	0.00	-289.06	0.00	289.06	2,994.36	1,497.18	5,748.30	2,878.42	6.38	-0.60	0.118
110.00	-50.46	-6.69	0.00	-254.79	0.00	254.79	2,947.52	1,473.76	5,504.94	2,756.56	7.02	-0.63	0.110
115.00	-48.29	-6.58	0.00	-221.36	0.00	221.36	2,898.80	1,449.40	5,263.06	2,635.44	7.70	-0.66	0.101
116.00	-42.92	-5.79	0.00	-212.83	0.00	212.83	2,888.83	1,444.42	5,214.89	2,611.32	7.84	-0.66	0.096
120.00	-41.28	-5.64	0.00	-189.65	0.00	189.65	2,848.21	1,424.11	5,022.95	2,515.21	8.40	-0.69	0.090
125.00	-39.27	-5.50	0.00	-161.43	0.00	161.43	2,795.75	1,397.88	4,784.91	2,396.01	9.14	-0.71	0.081
128.00	-37.63	-5.32	0.00	-144.75	0.00	144.75	2,763.38	1,381.69	4,643.19	2,325.05	9.59	-0.73	0.076
130.00	-36.90	-5.21	0.00	-134.11	0.00	134.11	2,741.42	1,370.71	4,549.22	2,277.99	9.89	-0.73	0.072
135.00	-28.50	-3.99	0.00	-106.00	0.00	106.00	2,685.21	1,342.61	4,316.17	2,161.29	10.67	-0.76	0.060
139.33	-27.06	-3.90	0.00	-88.72	0.00	88.72	2,634.99	1,317.49	4,116.57	2,061.34	11.37	-0.77	0.053
140.00	-26.75	-3.82	0.00	-86.12	0.00	86.12	2,627.14	1,313.57	4,086.07	2,046.07	11.47	-0.77	0.052
144.42	-24.77	-3.72	0.00	-69.26	0.00	69.26	1,915.99	957.99	2,941.42	1,472.89	12.20	-0.79	0.060
145.00	-24.60	-3.66	0.00	-67.09	0.00	67.09	1,911.69	955.84	2,923.20	1,463.77	12.29	-0.79	0.059
148.00	-19.70	-2.99	0.00	-55.64	0.00	55.64	1,889.17	944.59	2,829.77	1,416.99	12.79	-0.80	0.050
150.00	-19.16	-2.88	0.00	-49.66	0.00	49.66	1,873.79	936.89	2,767.71	1,385.91	13.13	-0.81	0.046
155.00	-17.83	-2.72	0.00	-35.25	0.00	35.25	1,834.01	917.01	2,613.49	1,308.69	13.98	-0.82	0.037
160.00	-9.42	-1.51	0.00	-21.64	0.00	21.64	1,792.37	896.18	2,460.85	1,232.25	14.85	-0.83	0.023
163.00	-8.64	-1.41	0.00	-17.07	0.00	17.07	1,766.48	883.24	2,370.14	1,186.83	15.37	-0.83	0.019
165.00	-8.25	-1.31	0.00	-14.24	0.00	14.24	1,748.85	874.42	2,310.07	1,156.75	15.72	-0.84	0.017
170.00	-7.29	-1.21	0.00	-7.70	0.00	7.70	1,703.46	851.73	2,161.44	1,082.33	16.60	-0.84	0.011
171.00	-5.14	-0.83	0.00	-6.48	0.00	6.48	1,694.16	847.08	2,132.00	1,067.58	16.77	-0.84	0.009
175.00	-4.42	-0.72	0.00	-3.16	0.00	3.16	1,656.20	828.10	2,015.26	1,009.13	17.48	-0.84	0.006
178.50	0.00	-0.66	0.00	-0.64	0.00	0.64	1,622.00	811.00	1,914.55	958.70	18.10	-0.84	0.001

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:45:59 AM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 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		66.2	0.0					0.0	0.0	66.2	0.0	0.0	0.0
5.00		131.2	1,675.8					0.0	414.1	131.2	2,089.9	0.0	0.0
10.00		128.8	1,646.1					0.0	414.1	128.8	2,060.2	0.0	0.0
15.00		126.5	1,616.4					0.0	414.1	126.5	2,030.5	0.0	0.0
20.00	Appertunance(s)	124.2	1,586.7	17.5	0.0	0.0	75.6	0.0	414.1	141.6	2,076.4	0.0	0.0
25.00		121.8	1,557.0					0.0	413.3	121.8	1,970.3	0.0	0.0
30.00		120.9	1,527.3					0.0	413.3	120.9	1,940.6	0.0	0.0
35.00		122.5	1,497.6					0.0	413.3	122.5	1,910.9	0.0	0.0
40.00		124.7	1,467.9					0.0	413.3	124.7	1,881.2	0.0	0.0
45.00	Bot - Section 2	127.2	1,438.2					0.0	413.3	127.2	1,851.5	0.0	0.0
50.00		103.2	2,632.3					0.0	413.3	103.2	3,045.6	0.0	0.0
53.00	Top - Section 1	64.8	1,552.9					0.0	248.0	64.8	1,800.9	0.0	0.0
55.00		91.1	476.3					0.0	165.3	91.1	641.6	0.0	0.0
60.00		130.4	1,172.9					0.0	413.3	130.4	1,586.2	0.0	0.0
65.00		130.5	1,147.4					0.0	413.3	130.5	1,560.7	0.0	0.0
70.00		130.3	1,122.0					0.0	413.3	130.3	1,535.3	0.0	0.0
75.00		129.9	1,096.5					0.0	413.3	129.9	1,509.8	0.0	0.0
80.00		129.2	1,071.1					0.0	413.3	129.2	1,484.4	0.0	0.0
85.00		128.4	1,045.6					0.0	413.3	128.4	1,458.9	0.0	0.0
90.00		81.9	1,020.1					0.0	413.3	81.9	1,433.4	0.0	0.0
91.42	Bot - Section 3	63.9	284.4					0.0	117.1	63.9	401.5	0.0	0.0
95.00		84.1	1,310.5					0.0	296.2	84.1	1,606.7	0.0	0.0
98.00	Top - Section 2	63.5	1,078.7					0.0	248.0	63.5	1,326.7	0.0	0.0
100.00		88.1	325.2					0.0	165.3	88.1	490.5	0.0	0.0
105.00		124.7	798.1					0.0	413.3	124.7	1,211.4	0.0	0.0
110.00		123.0	776.9					0.0	413.3	123.0	1,190.2	0.0	0.0
115.00		73.1	755.7					0.0	413.3	73.1	1,169.0	0.0	0.0
116.00	Appertunance(s)	60.1	148.6	633.0	0.0	2,231.1	2,385.3	0.0	82.7	693.1	2,616.5	0.0	0.0
120.00		107.0	585.9					0.0	314.6	107.0	900.5	0.0	0.0
125.00		94.0	713.2					0.0	393.3	94.0	1,106.5	0.0	0.0
128.00	Appertunance(s)	58.0	417.8	102.0	0.0	203.3	80.2	0.0	236.0	160.0	733.9	0.0	0.0
130.00		79.9	274.3					0.0	146.8	79.9	421.1	0.0	0.0
135.00	Appertunance(s)	105.1	670.8	1,029.7	0.0	2,414.2	2,522.8	0.0	367.1	1,134.8	3,560.7	0.0	0.0
139.33	Bot - Section 4	55.7	564.2					0.0	242.9	55.7	807.1	0.0	0.0
140.00		56.2	154.7					0.0	37.4	56.2	192.1	0.0	0.0
144.42	Top - Section 3	55.1	1,007.8					0.0	247.6	55.1	1,255.4	0.0	0.0
145.00		38.8	58.7					0.0	32.7	38.8	91.4	0.0	0.0
148.00	Appertunance(s)	53.8	298.0	507.7	0.0	553.4	2,059.5	0.0	168.2	561.5	2,525.7	0.0	0.0
150.00		73.8	195.3					0.0	90.4	73.8	285.7	0.0	0.0
155.00		103.5	476.4					0.0	226.1	103.5	702.4	0.0	0.0
160.00	Appertunance(s)	81.0	459.4	997.2	0.0	0.0	2,826.4	0.0	226.1	1,078.3	3,511.8	0.0	0.0
163.00	Appertunance(s)	49.6	267.5	19.8	0.0	39.5	20.0	0.0	53.1	69.4	340.6	0.0	0.0
165.00		67.9	174.9					0.0	20.8	67.9	195.8	0.0	0.0
170.00		57.6	425.5					0.0	52.1	57.6	477.5	0.0	0.0
171.00	Appertunance(s)	46.7	83.1	283.2	0.0	-1,133.5	804.9	0.0	10.4	329.9	898.4	0.0	0.0
175.00		68.9	325.4					0.0	39.4	68.9	364.8	0.0	0.0
178.50	Appertunance(s)	31.7	275.8	630.2	0.0	842.6	1,668.0	0.0	34.4	661.9	1,978.3	0.0	0.0

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 Iterations

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

Wind Importance Factor : 1.00

Totals:	8,498.81	64,230.5	0.00	0.00

Site Number: 302467 Code: ANSI/TIA-222-G

Site Name: Bilkays Express, CT Engineering Number: 63449523 12/14/2015 11:46:03 AM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-64.23	-8.44	0.00	-1,023.39	0.00	1,023.39	6,164.54	3,082.27	18,158.3	9,092.69	0.00	0.00	0.123
5.00	-62.14	-8.34	0.00	-981.16	0.00	981.16	6,108.61	3,054.31	17,675.6	8,850.97	0.01	-0.02	0.121
10.00	-60.07	-8.23	0.00	-939.48	0.00	939.48	6,050.81	3,025.41	17,193.4	8,609.50	0.05	-0.04	0.119
15.00	-58.04	-8.13	0.00	-898.32	0.00	898.32	5,991.14	2,995.57	16,712.0	8,368.43	0.11	-0.07	0.117
20.00	-55.96	-8.00	0.00	-857.69	0.00	857.69	5,929.59	2,964.80	16,231.6	8,127.91	0.19	-0.09	0.115
25.00	-53.99	-7.90	0.00	-817.68	0.00	817.68	5,866.18	2,933.09	15,752.7	7,888.07	0.30	-0.11	0.113
30.00	-52.04	-7.80	0.00	-778.18	0.00	778.18	5,800.89	2,900.44	15,275.4	7,649.08	0.43	-0.14	0.111
35.00	-50.13	-7.69	0.00	-739.20	0.00	739.20	5,733.73	2,866.86	14,800.1	7,411.07	0.58	-0.16	0.108
40.00	-48.24	-7.58	0.00	-700.75	0.00	700.75	5,664.70	2,832.35	14,327.0	7,174.19	0.76	-0.18	0.106
45.00	-46.39	-7.46	0.00	-662.86	0.00	662.86	5,593.79	2,796.90	13,856.5	6,938.58	0.97	-0.21	0.104
50.00	-43.34	-7.36	0.00	-625.53	0.00	625.53	5,521.02	2,760.51	13,388.9	6,704.40	1.20	-0.23	0.101
53.00	-41.54	-7.30	0.00	-603.44	0.00	603.44	4,440.13	2,220.06	10,789.7	5,402.88	1.35	-0.25	0.121
55.00	-40.90	-7.22	0.00	-588.84	0.00	588.84	4,419.76	2,209.88	10,648.2	5,332.01	1.45	-0.26	0.120
60.00	-39.31	-7.10	0.00	-552.74	0.00	552.74	4,367.53	2,183.77	10,295.0	5,155.16	1.74	-0.28	0.116
65.00	-37.75	-6.98	0.00	-517.24	0.00	517.24	4,313.43	2,156.72	9,942.96	4,978.87	2.05	-0.31	0.113
70.00	-36.21	-6.86	0.00	-482.34	0.00	482.34	4,257.46	2,128.73	9,592.32	4,803.29	2.38	-0.34	0.109
75.00	-34.70	-6.73	0.00	-448.05	0.00	448.05	4,199.61	2,099.81	9,243.38	4,628.56	2.75	-0.36	0.105
80.00	-33.21	-6.61	0.00	-414.37	0.00	414.37	4,139.90	2,069.95	8,896.45	4,454.84	3.15	-0.39	0.101
85.00	-31.75	-6.49	0.00	-381.32	0.00	381.32	4,078.31	2,039.15	8,551.80	4,282.26	3.57	-0.42	0.097
90.00	-30.31	-6.40	0.00	-348.88	0.00	348.88	4,014.85	2,007.42	8,209.74	4,110.97	4.02	-0.44	0.092
91.42	-29.91	-6.34	0.00	-339.81	0.00	339.81	3,996.52	1,998.26	8,113.34	4,062.70	4.15	-0.45	0.091
95.00	-28.30	-6.25	0.00	-317.08	0.00	317.08	3,949.51	1,974.76	7,870.56	3,941.13	4.49	-0.47	0.088
98.00	-26.98	-6.19	0.00	-298.32	0.00	298.32	3,056.80	1,528.40	6,090.92	3,049.99	4.79	-0.48	0.107
100.00	-26.48	-6.10	0.00	-285.95	0.00	285.95	3,039.33	1,519.67	5,992.84	3,000.87	5.00	-0.49	0.104
105.00	-25.27	-5.98	0.00	-255.43	0.00	255.43	2,994.36	1,497.18	5,748.30	2,878.42	5.53	-0.52	0.097
110.00	-24.08	-5.86	0.00	-225.54	0.00	225.54	2,947.52	1,473.76	5,504.94	2,756.56	6.09	-0.55	0.090
115.00	-22.91	-5.78	0.00	-196.26	0.00	196.26	2,898.80	1,449.40	5,263.06	2,635.44	6.68	-0.57	0.082
116.00	-20.30	-5.06	0.00	-188.25	0.00	188.25	2,888.83	1,444.42	5,214.89	2,611.32	6.80	-0.58	0.079
120.00	-19.40	-4.95	0.00	-168.00	0.00	168.00	2,848.21	1,424.11	5,022.95	2,515.21	7.29	-0.60	0.074
125.00	-18.29	-4.85	0.00	-143.23	0.00	143.23	2,795.75	1,397.88	4,784.91	2,396.01	7.93	-0.62	0.066
128.00	-17.56	-4.69	0.00	-128.47	0.00	128.47	2,763.38	1,381.69	4,643.19	2,325.05	8.33	-0.63	0.062
130.00	-17.14	-4.61	0.00	-119.09	0.00	119.09	2,741.42	1,370.71	4,549.22	2,277.99	8.59	-0.64	0.059
135.00	-13.59	-3.44	0.00	-93.63	0.00	93.63	2,685.21	1,342.61	4,316.17	2,161.29	9.28	-0.66	0.048
139.33	-12.78	-3.37	0.00	-78.74	0.00	78.74	2,634.99	1,317.49	4,116.57	2,061.34	9.88	-0.67	0.043
140.00	-12.59	-3.32	0.00	-76.49	0.00	76.49	2,627.14	1,313.57	4,086.07	2,046.07	9.98	-0.68	0.042
144.42	-11.33	-3.25	0.00	-61.84	0.00	61.84	1,915.99	957.99	2,941.42	1,472.89	10.61	-0.69	0.048
145.00	-11.24	-3.21	0.00	-59.95	0.00	59.95	1,911.69	955.84	2,923.20	1,463.77	10.69	-0.69	0.047
148.00	-8.72	-2.62	0.00	-49.77	0.00	49.77	1,889.17	944.59	2,829.77	1,416.99	11.13	-0.70	0.040
150.00	-8.44	-2.54	0.00	-44.53	0.00	44.53	1,873.79	936.89	2,767.71	1,385.91	11.42	-0.71	0.037
155.00	-7.74	-2.43	0.00	-31.82	0.00	31.82	1,834.01	917.01	2,613.49	1,308.69	12.17	-0.72	0.029
160.00	-4.24	-1.31	0.00	-19.66	0.00	19.66	1,792.37	896.18	2,460.85	1,232.25	12.92	-0.73	0.018
163.00	-3.90	-1.24	0.00	-15.70	0.00	15.70	1,766.48	883.24	2,370.14	1,186.83	13.38	-0.73	0.015
165.00	-3.70	-1.17	0.00	-13.22	0.00	13.22	1,748.85	874.42	2,310.07	1,156.75	13.69	-0.73	0.014
170.00	-3.23	-1.10	0.00	-7.39	0.00	7.39	1,703.46	851.73	2,161.44	1,082.33	14.46	-0.74	0.009
171.00	-2.33	-0.76	0.00	-6.29	0.00	6.29	1,694.16	847.08	2,132.00	1,067.58	14.61	-0.74	0.007
175.00	-1.97	-0.69	0.00	-3.25	0.00	3.25	1,656.20	828.10	2,015.26	1,009.13	15.23	-0.74	0.004
178.50	0.00	-0.66	0.00	-0.84	0.00	0.84	1,622.00	811.00	1,914.55	958.70	15.77	-0.74	0.001

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.24	
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}):	0.26	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	2.11	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.81	
Total Unfactored Dead Load:	64.23	k
Seismic Base Shear (E):	2.62	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)
46	176.75	310	3,547	0.014	37	388
45	173.00	365	4,012	0.016	42	456
44	170.50	93	1,001	0.004	10	117
43	167.50	478	4,954	0.020	51	597
42	164.00	196	1,955	0.008	20	245
41	161.50	321	3,114	0.012	32	401
40	157.50	685	6,363	0.025	66	858
39	152.50	702	6,152	0.024	64	879
38	149.00	286	2,400	0.010	25	357
37	146.50	466	3,797	0.015	39	583
36	144.71	91	728	0.003	8	114
35	142.21	1,255	9,691	0.038	100	1,571
34	139.67	192	1,435	0.006	15	240
33	137.17	807	5,837	0.023	61	1,010
32	132.50	1,038	7,052	0.028	73	1,299
31	129.00	421	2,726	0.011	28	527
30	126.50	654	4,085	0.016	42	818
29	122.50	1,107	6,525	0.026	68	1,385
28	118.00	901	4,963	0.020	51	1,127
27	115.50	231	1,226	0.005	13	289
26	112.50	1,169	5,911	0.023	61	1,463
25	107.50	1,190	5,544	0.022	57	1,489
24	102.50	1,211	5,177	0.021	54	1,516

23	99.00	490	1,969	0.008	20	614
22	96.50	1,327	5,085	0.020	53	1,660
21	93.21	1,607	5,784	0.023	60	2,010
20	90.71	402	1,376	0.005	14	502
19	87.50	1,433	4,604	0.018	48	1,794
18	82.50	1,459	4,213	0.017	44	1,825
17	77.50	1,484	3,829	0.015	40	1,857
16	72.50	1,510	3,453	0.014	36	1,889
15	67.50	1,535	3,086	0.012	32	1,921
14	62.50	1,561	2,730	0.011	28	1,953
13	57.50	1,586	2,387	0.009	25	1,985
12	54.00	642	862	0.003	9	803
11	51.50	1,801	2,221	0.009	23	2,253
10	47.50	3,046	3,246	0.013	34	3,811
9	42.50	1,852	1,614	0.006	17	2,317
8	37.50	1,881	1,308	0.005	14	2,354
7	32.50	1,911	1,026	0.004	11	2,391
6	27.50	1,941	771	0.003	8	2,428
5	22.50	1,970	545	0.002	6	2,465
4	17.50	2,001	351	0.001	4	2,503
3	12.50	2,030	194	0.001	2	2,541
2	7.50	2,060	78	0.000	1	2,578
1	2.50	2,090	11	0.000	0	2,615
Decibel DB844H90E-XY	178.50	168	1,955	0.008	20	210
Flat Low Profile Pla	178.50	1,500	17,456	0.069	181	1,877
NextNet BTS-2500	171.00	105	1,131	0.004	12	131
Argus LLPX310R	171.00	86	924	0.004	10	107
DragonWave A-ANT-11G	171.00	27	291	0.001	3	34
DragonWave A-ANT-18G	171.00	27	292	0.001	3	34
Side Arms	171.00	560	6,031	0.024	63	701
Generic TTA	163.00	20	198	0.001	2	25
Powerwave Allgon 702	160.00	13	126	0.000	1	17
Powerwave Allgon LGP	160.00	85	808	0.003	8	106
Raycap DC6-48-60-18-	160.00	40	382	0.002	4	50
Ericsson RRUS-11 800	160.00	162	1,547	0.006	16	203
Ericsson RRUS 11 (Ba	160.00	152	1,453	0.006	15	190
Ericsson RRUS-12 B2	160.00	174	1,662	0.007	17	218
Ericsson RRUS-32	160.00	231	2,206	0.009	23	289
Powerwave Allgon 777	160.00	105	1,003	0.004	10	131
KMW AM-X-CD-16-65-00	160.00	146	1,390	0.006	14	182
CCI OPA-65R-LCUU-H6	160.00	219	2,092	0.008	22	274
Flat Low Profile Pla	160.00	1,500	14,327	0.057	149	1,877
Ericsson KRY 112 144	148.00	66	548	0.002	6	83
Ericsson AIR 21, 1.3	148.00	249	2,066	0.008	21	312
Ericsson AIR 21, 1.3	148.00	244	2,029	0.008	21	306
Round Low Profile Pl	148.00	1,500	12,445	0.049	129	1,877
Alcatel-Lucent RRH2X	135.00	132	928	0.004	10	165
Alcatel-Lucent RRH 2	135.00	119	835	0.003	9	149
Alcatel-Lucent RRH2x	135.00	170	1,195	0.005	12	213
RFS DB-T1-6Z-8AB-0Z	135.00	44	309	0.001	3	55
RFS DB-T1-6Z-8AB-0Z	135.00	44	309	0.001	3	55
Antel BXA-80063-6BF-	135.00	58	405	0.002	4	72
Commscope SBNHH-1D65	135.00	456	3,207	0.013	33	571
Round Low Profile Pl	135.00	1,500	10,541	0.042	109	1,877
Nortel NTGB01MA	128.00	1	6	0.000	0	1
RFS APXV18-206517S-C	128.00	79	506	0.002	5	99
Alcatel-Lucent 800 M	116.00	159	850	0.003	9	199
Alcatel-Lucent 1900	116.00	180	962	0.004	10	225
Alcatel-Lucent TD-RR	116.00	210	1,122	0.004	12	263
RFS RFS APXV9TM14-AL	116.00	165	883	0.004	9	207
RFS APXVSPP18-C-A20	116.00	171	914	0.004	9	214
Round Low Profile Pl	116.00	1,500	8,016	0.032	83	1,877
PCTEL GPS-TMG-HR-26N	20.00	1	0	0.000	0	1
Standoff	20.00	75	17	0.000	0	94

		64,231	252,305	1.000	2,615	80,365

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)
46	176.75	310	3,547	0.014	37	263
45	173.00	365	4,012	0.016	42	310
44	170.50	93	1,001	0.004	10	79
43	167.50	478	4,954	0.020	51	405
42	164.00	196	1,955	0.008	20	166
41	161.50	321	3,114	0.012	32	272
40	157.50	685	6,363	0.025	66	582
39	152.50	702	6,152	0.024	64	596
38	149.00	286	2,400	0.010	25	243
37	146.50	466	3,797	0.015	39	396
36	144.71	91	728	0.003	8	78
35	142.21	1,255	9,691	0.038	100	1,066
34	139.67	192	1,435	0.006	15	163
33	137.17	807	5,837	0.023	61	685
32	132.50	1,038	7,052	0.028	73	881
31	129.00	421	2,726	0.011	28	357
30	126.50	654	4,085	0.016	42	555
29	122.50	1,107	6,525	0.026	68	939
28	118.00	901	4,963	0.020	51	764
27	115.50	231	1,226	0.005	13	196
26	112.50	1,169	5,911	0.023	61	992
25	107.50	1,190	5,544	0.022	57	1,010
24	102.50	1,211	5,177	0.021	54	1,028
23	99.00	490	1,969	0.008	20	416
22	96.50	1,327	5,085	0.020	53	1,126
21	93.21	1,607	5,784	0.023	60	1,364
20	90.71	402	1,376	0.005	14	341
19	87.50	1,433	4,604	0.018	48	1,217
18	82.50	1,459	4,213	0.017	44	1,238
17	77.50	1,484	3,829	0.015	40	1,260
16	72.50	1,510	3,453	0.014	36	1,282
15	67.50	1,535	3,086	0.012	32	1,303
14	62.50	1,561	2,730	0.011	28	1,325
13	57.50	1,586	2,387	0.009	25	1,346
12	54.00	642	862	0.003	9	545
11	51.50	1,801	2,221	0.009	23	1,529
10	47.50	3,046	3,246	0.013	34	2,585
9	42.50	1,852	1,614	0.006	17	1,572
8	37.50	1,881	1,308	0.005	14	1,597
7	32.50	1,911	1,026	0.004	11	1,622
6	27.50	1,941	771	0.003	8	1,647
5	22.50	1,970	545	0.002	6	1,672
4	17.50	2,001	351	0.001	4	1,698
3	12.50	2,030	194	0.001	2	1,723
2	7.50	2,060	78	0.000	1	1,749
1	2.50	2,090	11	0.000	0	1,774
Decibel DB844H90E-XY	178.50	168	1,955	0.008	20	143
Flat Low Profile Pla	178.50	1,500	17,456	0.069	181	1,273
NextNet BTS-2500	171.00	105	1,131	0.004	12	89
Argus LLPX310R	171.00	86	924	0.004	10	73
DragonWave A-ANT-11G	171.00	27	291	0.001	3	23
DragonWave A-ANT-18G	171.00	27	292	0.001	3	23
Side Arms	171.00	560	6,031	0.024	63	475
Generic TTA	163.00	20	198	0.001	2	17

Powerwave Allgon 702	160.00	13	126	0.000	1	11
Powerwave Allgon LGP	160.00	85	808	0.003	8	72
Raycap DC6-48-60-18-	160.00	40	382	0.002	4	34
Ericsson RRUS-11 800	160.00	162	1,547	0.006	16	138
Ericsson RRUS 11 (Ba	160.00	152	1,453	0.006	15	129
Ericsson RRUS-12 B2	160.00	174	1,662	0.007	17	148
Ericsson RRUS-32	160.00	231	2,206	0.009	23	196
Powerwave Allgon 777	160.00	105	1,003	0.004	10	89
KMW AM-X-CD-16-65-00	160.00	146	1,390	0.006	14	124
CCI OPA-65R-LCUU-H6	160.00	219	2,092	0.008	22	186
Flat Low Profile Pla	160.00	1,500	14,327	0.057	149	1,273
Ericsson KRY 112 144	148.00	66	548	0.002	6	56
Ericsson AIR 21, 1.3	148.00	249	2,066	0.008	21	211
Ericsson AIR 21, 1.3	148.00	244	2,029	0.008	21	208
Round Low Profile Pl	148.00	1,500	12,445	0.049	129	1,273
Alcatel-Lucent RRH2X	135.00	132	928	0.004	10	112
Alcatel-Lucent RRH 2	135.00	119	835	0.003	9	101
Alcatel-Lucent RRH2x	135.00	170	1,195	0.005	12	144
RFS DB-T1-6Z-8AB-0Z	135.00	44	309	0.001	3	37
RFS DB-T1-6Z-8AB-0Z	135.00	44	309	0.001	3	37
Antel BXA-80063-6BF-	135.00	58	405	0.002	4	49
Commscope SBNHH-1D65	135.00	456	3,207	0.013	33	387
Round Low Profile Pl	135.00	1,500	10,541	0.042	109	1,273
Nortel NTGB01MA	128.00	1	6	0.000	0	1
RFS APXV18-206517S-C	128.00	79	506	0.002	5	67
Alcatel-Lucent 800 M	116.00	159	850	0.003	9	135
Alcatel-Lucent 1900	116.00	180	962	0.004	10	153
Alcatel-Lucent TD-RR	116.00	210	1,122	0.004	12	178
RFS RFS APXV9TM14-AL	116.00	165	883	0.004	9	140
RFS APXVSPP18-C-A20	116.00	171	914	0.004	9	145
Round Low Profile Pl	116.00	1,500	8,016	0.032	83	1,273
PCTEL GPS-TMG-HR-26N	20.00	1	0	0.000	0	1
Standoff	20.00	75	17	0.000	0	64
		64,231	252,305	1.000	2,615	54,519

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	-77.75	-2.62	0.00	-350.61	0.00	350.61	6,164.54	3,082.27	18,158.3	9,092.69	0.00	0.00	0.051
5.00	-75.17	-2.63	0.00	-337.51	0.00	337.51	6,108.61	3,054.31	17,675.6	8,850.97	0.00	-0.01	0.050
10.00	-72.63	-2.64	0.00	-324.37	0.00	324.37	6,050.81	3,025.41	17,193.4	8,609.50	0.02	-0.02	0.050
15.00	-70.13	-2.64	0.00	-311.19	0.00	311.19	5,991.14	2,995.57	16,712.0	8,368.43	0.04	-0.02	0.049
20.00	-67.57	-2.64	0.00	-297.98	0.00	297.98	5,929.59	2,964.80	16,231.6	8,127.91	0.07	-0.03	0.048
25.00	-65.14	-2.64	0.00	-284.76	0.00	284.76	5,866.18	2,933.09	15,752.7	7,888.07	0.10	-0.04	0.047
30.00	-62.75	-2.64	0.00	-271.54	0.00	271.54	5,800.89	2,900.44	15,275.4	7,649.08	0.15	-0.05	0.046
35.00	-60.39	-2.63	0.00	-258.34	0.00	258.34	5,733.73	2,866.86	14,800.1	7,411.07	0.20	-0.06	0.045
40.00	-58.08	-2.62	0.00	-245.18	0.00	245.18	5,664.70	2,832.35	14,327.0	7,174.19	0.26	-0.06	0.044
45.00	-54.27	-2.59	0.00	-232.07	0.00	232.07	5,593.79	2,796.90	13,856.5	6,938.58	0.33	-0.07	0.043
50.00	-52.01	-2.57	0.00	-219.11	0.00	219.11	5,521.02	2,760.51	13,388.9	6,704.40	0.41	-0.08	0.042
53.00	-51.21	-2.57	0.00	-211.39	0.00	211.39	4,440.13	2,220.06	10,789.7	5,402.88	0.47	-0.09	0.051
55.00	-49.22	-2.54	0.00	-206.26	0.00	206.26	4,419.76	2,209.88	10,648.2	5,332.01	0.50	-0.09	0.050
60.00	-47.27	-2.52	0.00	-193.55	0.00	193.55	4,367.53	2,183.77	10,295.0	5,155.16	0.60	-0.10	0.048
65.00	-45.35	-2.49	0.00	-180.95	0.00	180.95	4,313.43	2,156.72	9,942.96	4,978.87	0.71	-0.11	0.047
70.00	-43.46	-2.46	0.00	-168.49	0.00	168.49	4,257.46	2,128.73	9,592.32	4,803.29	0.83	-0.12	0.045
75.00	-41.60	-2.42	0.00	-156.19	0.00	156.19	4,199.61	2,099.81	9,243.38	4,628.56	0.96	-0.13	0.044
80.00	-39.78	-2.38	0.00	-144.08	0.00	144.08	4,139.90	2,069.95	8,896.45	4,454.84	1.09	-0.14	0.042
85.00	-37.98	-2.34	0.00	-132.17	0.00	132.17	4,078.31	2,039.15	8,551.80	4,282.26	1.24	-0.14	0.040
90.00	-37.48	-2.32	0.00	-120.50	0.00	120.50	4,014.85	2,007.42	8,209.74	4,110.97	1.40	-0.15	0.039
91.42	-35.47	-2.26	0.00	-117.21	0.00	117.21	3,996.52	1,998.26	8,113.34	4,062.70	1.44	-0.16	0.038
95.00	-33.81	-2.21	0.00	-109.11	0.00	109.11	3,949.51	1,974.76	7,870.56	3,941.13	1.56	-0.16	0.036
98.00	-33.20	-2.19	0.00	-102.49	0.00	102.49	3,056.80	1,528.40	6,090.92	3,049.99	1.67	-0.17	0.044
100.00	-31.68	-2.13	0.00	-98.12	0.00	98.12	3,039.33	1,519.67	5,992.84	3,000.87	1.74	-0.17	0.043
105.00	-30.19	-2.08	0.00	-87.45	0.00	87.45	2,994.36	1,497.18	5,748.30	2,878.42	1.92	-0.18	0.040
110.00	-28.73	-2.01	0.00	-77.08	0.00	77.08	2,947.52	1,473.76	5,504.94	2,756.56	2.12	-0.19	0.038
115.00	-28.44	-2.00	0.00	-67.01	0.00	67.01	2,898.80	1,449.40	5,263.06	2,635.44	2.32	-0.20	0.035
116.00	-24.33	-1.81	0.00	-65.00	0.00	65.00	2,888.83	1,444.42	5,214.89	2,611.32	2.36	-0.20	0.033
120.00	-22.94	-1.74	0.00	-57.78	0.00	57.78	2,848.21	1,424.11	5,022.95	2,515.21	2.54	-0.21	0.031
125.00	-22.13	-1.69	0.00	-49.09	0.00	49.09	2,795.75	1,397.88	4,784.91	2,396.01	2.76	-0.22	0.028
128.00	-21.50	-1.66	0.00	-44.01	0.00	44.01	2,763.38	1,381.69	4,643.19	2,325.05	2.89	-0.22	0.027
130.00	-20.20	-1.58	0.00	-40.69	0.00	40.69	2,741.42	1,370.71	4,549.22	2,277.99	2.99	-0.22	0.025
135.00	-16.03	-1.32	0.00	-32.78	0.00	32.78	2,685.21	1,342.61	4,316.17	2,161.29	3.22	-0.23	0.021
139.33	-15.79	-1.31	0.00	-27.04	0.00	27.04	2,634.99	1,317.49	4,116.57	2,061.34	3.43	-0.23	0.019
140.00	-14.22	-1.20	0.00	-26.17	0.00	26.17	2,627.14	1,313.57	4,086.07	2,046.07	3.46	-0.23	0.018
144.42	-14.11	-1.20	0.00	-20.86	0.00	20.86	1,915.99	957.99	2,941.42	1,472.89	3.68	-0.24	0.022
145.00	-13.53	-1.15	0.00	-20.16	0.00	20.16	1,911.69	955.84	2,923.20	1,463.77	3.71	-0.24	0.021
148.00	-10.59	-0.94	0.00	-16.70	0.00	16.70	1,889.17	944.59	2,829.77	1,416.99	3.86	-0.24	0.017
150.00	-9.71	-0.87	0.00	-14.82	0.00	14.82	1,873.79	936.89	2,767.71	1,385.91	3.97	-0.24	0.016
155.00	-8.86	-0.80	0.00	-10.45	0.00	10.45	1,834.01	917.01	2,613.49	1,308.69	4.22	-0.25	0.013
160.00	-4.92	-0.47	0.00	-6.43	0.00	6.43	1,792.37	896.18	2,460.85	1,232.25	4.49	-0.25	0.008
163.00	-4.65	-0.45	0.00	-5.01	0.00	5.01	1,766.48	883.24	2,370.14	1,186.83	4.64	-0.25	0.007
165.00	-4.05	-0.40	0.00	-4.11	0.00	4.11	1,748.85	874.42	2,310.07	1,156.75	4.75	-0.25	0.006
170.00	-3.94	-0.39	0.00	-2.12	0.00	2.12	1,703.46	851.73	2,161.44	1,082.33	5.02	-0.25	0.004
171.00	-2.47	-0.25	0.00	-1.73	0.00	1.73	1,694.16	847.08	2,132.00	1,067.58	5.07	-0.25	0.003
175.00	-2.09	-0.21	0.00	-0.74	0.00	0.74	1,656.20	828.10	2,015.26	1,009.13	5.28	-0.25	0.002
178.50	0.00	-0.20	0.00	0.00	0.00	0.00	1,622.00	811.00	1,914.55	958.70	5.47	-0.26	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	-52.74	-2.62	0.00	-346.84	0.00	346.84	6,164.54	3,082.27	18,158.3	9,092.69	0.00	0.00	0.047
5.00	-51.00	-2.62	0.00	-333.75	0.00	333.75	6,108.61	3,054.31	17,675.6	8,850.97	0.00	-0.01	0.046
10.00	-49.27	-2.63	0.00	-320.63	0.00	320.63	6,050.81	3,025.41	17,193.4	8,609.50	0.02	-0.02	0.045
15.00	-47.57	-2.63	0.00	-307.48	0.00	307.48	5,991.14	2,995.57	16,712.0	8,368.43	0.04	-0.02	0.045
20.00	-45.84	-2.63	0.00	-294.33	0.00	294.33	5,929.59	2,964.80	16,231.6	8,127.91	0.06	-0.03	0.044
25.00	-44.19	-2.63	0.00	-281.18	0.00	281.18	5,866.18	2,933.09	15,752.7	7,888.07	0.10	-0.04	0.043
30.00	-42.57	-2.62	0.00	-268.05	0.00	268.05	5,800.89	2,900.44	15,275.4	7,649.08	0.15	-0.05	0.042
35.00	-40.97	-2.61	0.00	-254.94	0.00	254.94	5,733.73	2,866.86	14,800.1	7,411.07	0.20	-0.05	0.042
40.00	-39.40	-2.60	0.00	-241.88	0.00	241.88	5,664.70	2,832.35	14,327.0	7,174.19	0.26	-0.06	0.041
45.00	-36.81	-2.57	0.00	-228.88	0.00	228.88	5,593.79	2,796.90	13,856.5	6,938.58	0.33	-0.07	0.040
50.00	-35.28	-2.55	0.00	-216.04	0.00	216.04	5,521.02	2,760.51	13,388.9	6,704.40	0.41	-0.08	0.039
53.00	-34.74	-2.54	0.00	-208.40	0.00	208.40	4,440.13	2,220.06	10,789.7	5,402.88	0.46	-0.08	0.046
55.00	-33.39	-2.52	0.00	-203.32	0.00	203.32	4,419.76	2,209.88	10,648.2	5,332.01	0.50	-0.09	0.046
60.00	-32.07	-2.49	0.00	-190.74	0.00	190.74	4,367.53	2,183.77	10,295.0	5,155.16	0.59	-0.10	0.044
65.00	-30.76	-2.46	0.00	-178.28	0.00	178.28	4,313.43	2,156.72	9,942.96	4,978.87	0.70	-0.11	0.043
70.00	-29.48	-2.43	0.00	-165.97	0.00	165.97	4,257.46	2,128.73	9,592.32	4,803.29	0.82	-0.12	0.041
75.00	-28.22	-2.39	0.00	-153.82	0.00	153.82	4,199.61	2,099.81	9,243.38	4,628.56	0.94	-0.12	0.040
80.00	-26.98	-2.35	0.00	-141.87	0.00	141.87	4,139.90	2,069.95	8,896.45	4,454.84	1.08	-0.13	0.038
85.00	-25.77	-2.30	0.00	-130.12	0.00	130.12	4,078.31	2,039.15	8,551.80	4,282.26	1.22	-0.14	0.037
90.00	-25.42	-2.29	0.00	-118.61	0.00	118.61	4,014.85	2,007.42	8,209.74	4,110.97	1.38	-0.15	0.035
91.42	-24.06	-2.23	0.00	-115.37	0.00	115.37	3,996.52	1,998.26	8,113.34	4,062.70	1.42	-0.15	0.034
95.00	-22.93	-2.17	0.00	-107.38	0.00	107.38	3,949.51	1,974.76	7,870.56	3,941.13	1.54	-0.16	0.033
98.00	-22.52	-2.15	0.00	-100.86	0.00	100.86	3,056.80	1,528.40	6,090.92	3,049.99	1.65	-0.17	0.040
100.00	-21.49	-2.10	0.00	-96.55	0.00	96.55	3,039.33	1,519.67	5,992.84	3,000.87	1.72	-0.17	0.039
105.00	-20.48	-2.04	0.00	-86.05	0.00	86.05	2,994.36	1,497.18	5,748.30	2,878.42	1.90	-0.18	0.037
110.00	-19.49	-1.98	0.00	-75.84	0.00	75.84	2,947.52	1,473.76	5,504.94	2,756.56	2.09	-0.19	0.034
115.00	-19.29	-1.97	0.00	-65.93	0.00	65.93	2,898.80	1,449.40	5,263.06	2,635.44	2.29	-0.20	0.032
116.00	-16.50	-1.78	0.00	-63.96	0.00	63.96	2,888.83	1,444.42	5,214.89	2,611.32	2.33	-0.20	0.030
120.00	-15.56	-1.71	0.00	-56.85	0.00	56.85	2,848.21	1,424.11	5,022.95	2,515.21	2.50	-0.20	0.028
125.00	-15.01	-1.67	0.00	-48.30	0.00	48.30	2,795.75	1,397.88	4,784.91	2,396.01	2.72	-0.21	0.026
128.00	-14.58	-1.63	0.00	-43.30	0.00	43.30	2,763.38	1,381.69	4,643.19	2,325.05	2.85	-0.22	0.024
130.00	-13.70	-1.56	0.00	-40.04	0.00	40.04	2,741.42	1,370.71	4,549.22	2,277.99	2.95	-0.22	0.023
135.00	-10.88	-1.30	0.00	-32.26	0.00	32.26	2,685.21	1,342.61	4,316.17	2,161.29	3.18	-0.23	0.019
139.33	-10.71	-1.29	0.00	-26.61	0.00	26.61	2,634.99	1,317.49	4,116.57	2,061.34	3.39	-0.23	0.017
140.00	-9.65	-1.18	0.00	-25.76	0.00	25.76	2,627.14	1,313.57	4,086.07	2,046.07	3.42	-0.23	0.016
144.42	-9.57	-1.18	0.00	-20.53	0.00	20.53	1,915.99	957.99	2,941.42	1,472.89	3.63	-0.24	0.019
145.00	-9.17	-1.13	0.00	-19.85	0.00	19.85	1,911.69	955.84	2,923.20	1,463.77	3.66	-0.24	0.018
148.00	-7.19	-0.93	0.00	-16.44	0.00	16.44	1,889.17	944.59	2,829.77	1,416.99	3.81	-0.24	0.015
150.00	-6.59	-0.86	0.00	-14.59	0.00	14.59	1,873.79	936.89	2,767.71	1,385.91	3.91	-0.24	0.014
155.00	-6.01	-0.79	0.00	-10.29	0.00	10.29	1,834.01	917.01	2,613.49	1,308.69	4.17	-0.24	0.011
160.00	-3.34	-0.47	0.00	-6.34	0.00	6.34	1,792.37	896.18	2,460.85	1,232.25	4.42	-0.25	0.007
163.00	-3.15	-0.44	0.00	-4.94	0.00	4.94	1,766.48	883.24	2,370.14	1,186.83	4.58	-0.25	0.006
165.00	-2.75	-0.39	0.00	-4.05	0.00	4.05	1,748.85	874.42	2,310.07	1,156.75	4.68	-0.25	0.005
170.00	-2.67	-0.38	0.00	-2.09	0.00	2.09	1,703.46	851.73	2,161.44	1,082.33	4.95	-0.25	0.003
171.00	-1.68	-0.25	0.00	-1.71	0.00	1.71	1,694.16	847.08	2,132.00	1,067.58	5.00	-0.25	0.003
175.00	-1.41	-0.21	0.00	-0.73	0.00	0.73	1,656.20	828.10	2,015.26	1,009.13	5.21	-0.25	0.002
178.50	0.00	-0.20	0.00	0.00	0.00	0.00	1,622.00	811.00	1,914.55	958.70	5.39	-0.25	0.000

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.24
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.26
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.11
Redundancy Factor (p):	1.30

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
46	176.75	310	1.853	1.791	1.071	0.451	121	388
45	173.00	365	1.775	1.429	0.935	0.387	122	456
44	170.50	93	1.724	1.217	0.853	0.347	28	117
43	167.50	478	1.664	0.991	0.761	0.301	124	597
42	164.00	196	1.595	0.764	0.664	0.251	43	245
41	161.50	321	1.547	0.624	0.601	0.217	60	401
40	157.50	685	1.471	0.433	0.509	0.168	100	858
39	152.50	702	1.380	0.246	0.411	0.112	68	879
38	149.00	286	1.317	0.145	0.351	0.078	19	357
37	146.50	466	1.273	0.085	0.313	0.056	22	583
36	144.71	91	1.242	0.048	0.287	0.041	3	114
35	142.21	1,255	1.200	0.004	0.254	0.021	23	1,571
34	139.67	192	1.157	-0.032	0.224	0.004	1	240
33	137.17	807	1.116	-0.060	0.197	-0.012	-9	1,010
32	132.50	1,038	1.041	-0.097	0.153	-0.037	-33	1,299
31	129.00	421	0.987	-0.113	0.125	-0.051	-19	527
30	126.50	654	0.949	-0.119	0.108	-0.059	-34	818
29	122.50	1,107	0.890	-0.122	0.084	-0.069	-66	1,385
28	118.00	901	0.826	-0.116	0.062	-0.073	-57	1,127
27	115.50	231	0.791	-0.110	0.051	-0.073	-15	289
26	112.50	1,169	0.751	-0.101	0.041	-0.071	-72	1,463
25	107.50	1,190	0.685	-0.082	0.027	-0.062	-63	1,489
24	102.50	1,211	0.623	-0.061	0.017	-0.046	-48	1,516
23	99.00	490	0.581	-0.046	0.013	-0.032	-13	614
22	96.50	1,327	0.552	-0.035	0.010	-0.021	-24	1,660
21	93.21	1,607	0.515	-0.022	0.008	-0.006	-8	2,010
20	90.71	402	0.488	-0.012	0.007	0.006	2	502
19	87.50	1,433	0.454	0.000	0.006	0.020	25	1,794
18	82.50	1,459	0.404	0.017	0.006	0.039	49	1,825
17	77.50	1,484	0.356	0.031	0.008	0.054	69	1,857
16	72.50	1,510	0.312	0.043	0.011	0.064	84	1,889
15	67.50	1,535	0.270	0.052	0.015	0.070	94	1,921
14	62.50	1,561	0.232	0.058	0.019	0.074	100	1,953
13	57.50	1,586	0.196	0.063	0.024	0.075	103	1,985

12	54.00	642	0.173	0.066	0.027	0.075	41	803
11	51.50	1,801	0.157	0.067	0.029	0.074	116	2,253
10	47.50	3,046	0.134	0.069	0.032	0.073	193	3,811
9	42.50	1,852	0.107	0.071	0.036	0.072	115	2,317
8	37.50	1,881	0.083	0.072	0.039	0.070	115	2,354
7	32.50	1,911	0.063	0.072	0.041	0.069	114	2,391
6	27.50	1,941	0.045	0.071	0.042	0.067	113	2,428
5	22.50	1,970	0.030	0.068	0.041	0.065	111	2,465
4	17.50	2,001	0.018	0.063	0.037	0.061	106	2,503
3	12.50	2,030	0.009	0.054	0.031	0.054	96	2,541
2	7.50	2,060	0.003	0.039	0.022	0.042	76	2,578
1	2.50	2,090	0.000	0.016	0.008	0.019	35	2,615
Decibel DB844H90E-XY	178.50	168	1.890	1.980	1.140	0.483	70	210
Flat Low Profile Pla	178.50	1,500	1.890	1.980	1.140	0.483	628	1,877
NextNet BTS-2500	171.00	105	1.735	1.257	0.869	0.355	32	131
Argus LLPX310R	171.00	86	1.735	1.257	0.869	0.355	26	107
DragonWave A-ANT-11G	171.00	27	1.735	1.257	0.869	0.355	8	34
DragonWave A-ANT-18G	171.00	27	1.735	1.257	0.869	0.355	8	34
Side Arms	171.00	560	1.735	1.257	0.869	0.355	172	701
Generic TTA	163.00	20	1.576	0.706	0.638	0.237	4	25
Powerwave Allgon 702	160.00	13	1.519	0.548	0.565	0.198	2	17
Powerwave Allgon LGP	160.00	85	1.519	0.548	0.565	0.198	15	106
Raycap DC6-48-60-18-	160.00	40	1.519	0.548	0.565	0.198	7	50
Ericsson RRUS-11 800	160.00	162	1.519	0.548	0.565	0.198	28	203
Ericsson RRUS 11 (Ba	160.00	152	1.519	0.548	0.565	0.198	26	190
Ericsson RRUS-12 B2	160.00	174	1.519	0.548	0.565	0.198	30	218
Ericsson RRUS-32	160.00	231	1.519	0.548	0.565	0.198	40	289
Powerwave Allgon 777	160.00	105	1.519	0.548	0.565	0.198	18	131
KMW AM-X-CD-16-65-00	160.00	146	1.519	0.548	0.565	0.198	25	182
CCI OPA-65R-LCUU-H6	160.00	219	1.519	0.548	0.565	0.198	38	274
Flat Low Profile Pla	160.00	1,500	1.519	0.548	0.565	0.198	258	1,877
Ericsson KRY 112 144	148.00	66	1.299	0.120	0.335	0.069	4	83
Ericsson AIR 21, 1.3	148.00	249	1.299	0.120	0.335	0.069	15	312
Ericsson AIR 21, 1.3	148.00	244	1.299	0.120	0.335	0.069	15	306
Round Low Profile Pl	148.00	1,500	1.299	0.120	0.335	0.069	89	1,877
Alcatel-Lucent RRH2X	135.00	132	1.081	-0.080	0.175	-0.024	-3	165
Alcatel-Lucent RRH 2	135.00	119	1.081	-0.080	0.175	-0.024	-3	149
Alcatel-Lucent RRH2x	135.00	170	1.081	-0.080	0.175	-0.024	-4	213
RFS DB-T1-6Z-8AB-0Z	135.00	44	1.081	-0.080	0.175	-0.024	-1	55
RFS DB-T1-6Z-8AB-0Z	135.00	44	1.081	-0.080	0.175	-0.024	-1	55
Antel BXA-80063-6BF-	135.00	58	1.081	-0.080	0.175	-0.024	-1	72
Commscope SBNHH-	135.00	456	1.081	-0.080	0.175	-0.024	-10	571
Round Low Profile Pl	135.00	1,500	1.081	-0.080	0.175	-0.024	-32	1,877
Nortel NTGB01MA	128.00	1	0.972	-0.116	0.118	-0.055	0	1
RFS APXV18-206517S-C	128.00	79	0.972	-0.116	0.118	-0.055	-4	99
Alcatel-Lucent 800 M	116.00	159	0.798	-0.112	0.053	-0.074	-10	199
Alcatel-Lucent 1900	116.00	180	0.798	-0.112	0.053	-0.074	-11	225
Alcatel-Lucent TD-RR	116.00	210	0.798	-0.112	0.053	-0.074	-13	263
RFS RFS APXV9TM14-	116.00	165	0.798	-0.112	0.053	-0.074	-11	207
RFS APXVSPP18-C-A20	116.00	171	0.798	-0.112	0.053	-0.074	-11	214
Round Low Profile Pl	116.00	1,500	0.798	-0.112	0.053	-0.074	-96	1,877
PCTEL GPS-TMG-HR-	20.00	1	0.024	0.066	0.039	0.063	0	1
Standoff	20.00	75	0.024	0.066	0.039	0.063	4	94
		64,231	84.403	23.686	25.468	7.779	3,386	80,365

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)

46	176.75	310	1.853	1.791	1.071	0.451	121	263
45	173.00	365	1.775	1.429	0.935	0.387	122	310
44	170.50	93	1.724	1.217	0.853	0.347	28	79
43	167.50	478	1.664	0.991	0.761	0.301	124	405
42	164.00	196	1.595	0.764	0.664	0.251	43	166
41	161.50	321	1.547	0.624	0.601	0.217	60	272
40	157.50	685	1.471	0.433	0.509	0.168	100	582
39	152.50	702	1.380	0.246	0.411	0.112	68	596
38	149.00	286	1.317	0.145	0.351	0.078	19	243
37	146.50	466	1.273	0.085	0.313	0.056	22	396
36	144.71	91	1.242	0.048	0.287	0.041	3	78
35	142.21	1,255	1.200	0.004	0.254	0.021	23	1,066
34	139.67	192	1.157	-0.032	0.224	0.004	1	163
33	137.17	807	1.116	-0.060	0.197	-0.012	-9	685
32	132.50	1,038	1.041	-0.097	0.153	-0.037	-33	881
31	129.00	421	0.987	-0.113	0.125	-0.051	-19	357
30	126.50	654	0.949	-0.119	0.108	-0.059	-34	555
29	122.50	1,107	0.890	-0.122	0.084	-0.069	-66	939
28	118.00	901	0.826	-0.116	0.062	-0.073	-57	764
27	115.50	231	0.791	-0.110	0.051	-0.073	-15	196
26	112.50	1,169	0.751	-0.101	0.041	-0.071	-72	992
25	107.50	1,190	0.685	-0.082	0.027	-0.062	-63	1,010
24	102.50	1,211	0.623	-0.061	0.017	-0.046	-48	1,028
23	99.00	490	0.581	-0.046	0.013	-0.032	-13	416
22	96.50	1,327	0.552	-0.035	0.010	-0.021	-24	1,126
21	93.21	1,607	0.515	-0.022	0.008	-0.006	-8	1,364
20	90.71	402	0.488	-0.012	0.007	0.006	2	341
19	87.50	1,433	0.454	0.000	0.006	0.020	25	1,217
18	82.50	1,459	0.404	0.017	0.006	0.039	49	1,238
17	77.50	1,484	0.356	0.031	0.008	0.054	69	1,260
16	72.50	1,510	0.312	0.043	0.011	0.064	84	1,282
15	67.50	1,535	0.270	0.052	0.015	0.070	94	1,303
14	62.50	1,561	0.232	0.058	0.019	0.074	100	1,325
13	57.50	1,586	0.196	0.063	0.024	0.075	103	1,346
12	54.00	642	0.173	0.066	0.027	0.075	41	545
11	51.50	1,801	0.157	0.067	0.029	0.074	116	1,529
10	47.50	3,046	0.134	0.069	0.032	0.073	193	2,585
9	42.50	1,852	0.107	0.071	0.036	0.072	115	1,572
8	37.50	1,881	0.083	0.072	0.039	0.070	115	1,597
7	32.50	1,911	0.063	0.072	0.041	0.069	114	1,622
6	27.50	1,941	0.045	0.071	0.042	0.067	113	1,647
5	22.50	1,970	0.030	0.068	0.041	0.065	111	1,672
4	17.50	2,001	0.018	0.063	0.037	0.061	106	1,698
3	12.50	2,030	0.009	0.054	0.031	0.054	96	1,723
2	7.50	2,060	0.003	0.039	0.022	0.042	76	1,749
1	2.50	2,090	0.000	0.016	0.008	0.019	35	1,774
Decibel DB844H90E-XY	178.50	168	1.890	1.980	1.140	0.483	70	143
Flat Low Profile Pla	178.50	1,500	1.890	1.980	1.140	0.483	628	1,273
NextNet BTS-2500	171.00	105	1.735	1.257	0.869	0.355	32	89
Argus LLPX310R	171.00	86	1.735	1.257	0.869	0.355	26	73
DragonWave A-ANT-11G	171.00	27	1.735	1.257	0.869	0.355	8	23
DragonWave A-ANT-18G	171.00	27	1.735	1.257	0.869	0.355	8	23
Side Arms	171.00	560	1.735	1.257	0.869	0.355	172	475
Generic TTA	163.00	20	1.576	0.706	0.638	0.237	4	17
Powerwave Allgon 702	160.00	13	1.519	0.548	0.565	0.198	2	11
Powerwave Allgon LGP	160.00	85	1.519	0.548	0.565	0.198	15	72
Raycap DC6-48-60-18-	160.00	40	1.519	0.548	0.565	0.198	7	34
Ericsson RRUS-11 800	160.00	162	1.519	0.548	0.565	0.198	28	138
Ericsson RRUS 11 (Ba	160.00	152	1.519	0.548	0.565	0.198	26	129
Ericsson RRUS-12 B2	160.00	174	1.519	0.548	0.565	0.198	30	148
Ericsson RRUS-32	160.00	231	1.519	0.548	0.565	0.198	40	196
Powerwave Allgon 777	160.00	105	1.519	0.548	0.565	0.198	18	89
KMW AM-X-CD-16-65-00	160.00	146	1.519	0.548	0.565	0.198	25	124
CCI OPA-65R-LCUU-H6	160.00	219	1.519	0.548	0.565	0.198	38	186

Flat Low Profile Pla	160.00	1,500	1.519	0.548	0.565	0.198	258	1,273
Ericsson KRY 112 144	148.00	66	1.299	0.120	0.335	0.069	4	56
Ericsson AIR 21, 1.3	148.00	249	1.299	0.120	0.335	0.069	15	211
Ericsson AIR 21, 1.3	148.00	244	1.299	0.120	0.335	0.069	15	208
Round Low Profile Pl	148.00	1,500	1.299	0.120	0.335	0.069	89	1,273
Alcatel-Lucent RRH2X	135.00	132	1.081	-0.080	0.175	-0.024	-3	112
Alcatel-Lucent RRH 2	135.00	119	1.081	-0.080	0.175	-0.024	-3	101
Alcatel-Lucent RRH2x	135.00	170	1.081	-0.080	0.175	-0.024	-4	144
RFS DB-T1-6Z-8AB-0Z	135.00	44	1.081	-0.080	0.175	-0.024	-1	37
RFS DB-T1-6Z-8AB-0Z	135.00	44	1.081	-0.080	0.175	-0.024	-1	37
Antel BXA-80063-6BF-	135.00	58	1.081	-0.080	0.175	-0.024	-1	49
Commscope SBNHH-	135.00	456	1.081	-0.080	0.175	-0.024	-10	387
Round Low Profile Pl	135.00	1,500	1.081	-0.080	0.175	-0.024	-32	1,273
Nortel NTGB01MA	128.00	1	0.972	-0.116	0.118	-0.055	0	1
RFS APXV18-206517S-C	128.00	79	0.972	-0.116	0.118	-0.055	-4	67
Alcatel-Lucent 800 M	116.00	159	0.798	-0.112	0.053	-0.074	-10	135
Alcatel-Lucent 1900	116.00	180	0.798	-0.112	0.053	-0.074	-11	153
Alcatel-Lucent TD-RR	116.00	210	0.798	-0.112	0.053	-0.074	-13	178
RFS RFS APXV9TM14-	116.00	165	0.798	-0.112	0.053	-0.074	-11	140
RFS APXVSPP18-C-A20	116.00	171	0.798	-0.112	0.053	-0.074	-11	145
Round Low Profile Pl	116.00	1,500	0.798	-0.112	0.053	-0.074	-96	1,273
PCTEL GPS-TMG-HR-	20.00	1	0.024	0.066	0.039	0.063	0	1
Standoff	20.00	75	0.024	0.066	0.039	0.063	4	64
		64,231	84.403	23.686	25.468	7.779	3,386	54,519

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	-77.75	-3.36	0.00	-391.32	0.00	391.32	6,164.54	3,082.27	18,158.3	9,092.69	0.00	0.00	0.056
5.00	-75.17	-3.29	0.00	-374.54	0.00	374.54	6,108.61	3,054.31	17,675.6	8,850.97	0.00	-0.01	0.055
10.00	-72.63	-3.21	0.00	-358.08	0.00	358.08	6,050.81	3,025.41	17,193.4	8,609.50	0.02	-0.02	0.054
15.00	-70.13	-3.11	0.00	-342.05	0.00	342.05	5,991.14	2,995.57	16,712.0	8,368.43	0.04	-0.03	0.053
20.00	-67.57	-3.00	0.00	-326.50	0.00	326.50	5,929.59	2,964.80	16,231.6	8,127.91	0.07	-0.03	0.052
25.00	-65.14	-2.90	0.00	-311.49	0.00	311.49	5,866.18	2,933.09	15,752.7	7,888.07	0.11	-0.04	0.051
30.00	-62.75	-2.79	0.00	-297.00	0.00	297.00	5,800.89	2,900.44	15,275.4	7,649.08	0.16	-0.05	0.050
35.00	-60.39	-2.68	0.00	-283.04	0.00	283.04	5,733.73	2,866.86	14,800.1	7,411.07	0.22	-0.06	0.049
40.00	-58.08	-2.58	0.00	-269.62	0.00	269.62	5,664.70	2,832.35	14,327.0	7,174.19	0.29	-0.07	0.048
45.00	-54.27	-2.39	0.00	-256.74	0.00	256.74	5,593.79	2,796.90	13,856.5	6,938.58	0.37	-0.08	0.047
50.00	-52.01	-2.27	0.00	-244.81	0.00	244.81	5,521.02	2,760.51	13,388.9	6,704.40	0.46	-0.09	0.046
53.00	-51.21	-2.24	0.00	-237.99	0.00	237.99	4,440.13	2,220.06	10,789.7	5,402.88	0.51	-0.09	0.056
55.00	-49.22	-2.14	0.00	-233.52	0.00	233.52	4,419.76	2,209.88	10,648.2	5,332.01	0.55	-0.10	0.055
60.00	-47.27	-2.04	0.00	-222.84	0.00	222.84	4,367.53	2,183.77	10,295.0	5,155.16	0.66	-0.11	0.054
65.00	-45.35	-1.95	0.00	-212.63	0.00	212.63	4,313.43	2,156.72	9,942.96	4,978.87	0.78	-0.12	0.053
70.00	-43.46	-1.87	0.00	-202.87	0.00	202.87	4,257.46	2,128.73	9,592.32	4,803.29	0.91	-0.13	0.052
75.00	-41.60	-1.81	0.00	-193.51	0.00	193.51	4,199.61	2,099.81	9,243.38	4,628.56	1.06	-0.14	0.052
80.00	-39.78	-1.76	0.00	-184.47	0.00	184.47	4,139.90	2,069.95	8,896.45	4,454.84	1.21	-0.15	0.051
85.00	-37.98	-1.74	0.00	-175.66	0.00	175.66	4,078.31	2,039.15	8,551.80	4,282.26	1.38	-0.17	0.050
90.00	-37.48	-1.74	0.00	-166.95	0.00	166.95	4,014.85	2,007.42	8,209.74	4,110.97	1.56	-0.18	0.050
91.42	-35.47	-1.75	0.00	-164.49	0.00	164.49	3,996.52	1,998.26	8,113.34	4,062.70	1.61	-0.18	0.049
95.00	-33.81	-1.77	0.00	-158.23	0.00	158.23	3,949.51	1,974.76	7,870.56	3,941.13	1.75	-0.19	0.049
98.00	-33.20	-1.79	0.00	-152.91	0.00	152.91	3,056.80	1,528.40	6,090.92	3,049.99	1.88	-0.20	0.061
100.00	-31.68	-1.83	0.00	-149.34	0.00	149.34	3,039.33	1,519.67	5,992.84	3,000.87	1.96	-0.20	0.060
105.00	-30.19	-1.90	0.00	-140.17	0.00	140.17	2,994.36	1,497.18	5,748.30	2,878.42	2.18	-0.22	0.059
110.00	-28.73	-1.97	0.00	-130.67	0.00	130.67	2,947.52	1,473.76	5,504.94	2,756.56	2.42	-0.23	0.057
115.00	-28.44	-1.99	0.00	-120.80	0.00	120.80	2,898.80	1,449.40	5,263.06	2,635.44	2.67	-0.25	0.056
116.00	-24.33	-2.19	0.00	-118.81	0.00	118.81	2,888.83	1,444.42	5,214.89	2,611.32	2.73	-0.25	0.054
120.00	-22.94	-2.25	0.00	-110.07	0.00	110.07	2,848.21	1,424.11	5,022.95	2,515.21	2.94	-0.26	0.052
125.00	-22.12	-2.29	0.00	-98.81	0.00	98.81	2,795.75	1,397.88	4,784.91	2,396.01	3.23	-0.28	0.049
128.00	-21.49	-2.31	0.00	-91.95	0.00	91.95	2,763.38	1,381.69	4,643.19	2,325.05	3.41	-0.29	0.047
130.00	-20.19	-2.34	0.00	-87.34	0.00	87.34	2,741.42	1,370.71	4,549.22	2,277.99	3.53	-0.29	0.046
135.00	-16.03	-2.38	0.00	-75.65	0.00	75.65	2,685.21	1,342.61	4,316.17	2,161.29	3.85	-0.31	0.041
139.33	-15.79	-2.38	0.00	-65.33	0.00	65.33	2,634.99	1,317.49	4,116.57	2,061.34	4.13	-0.32	0.038
140.00	-14.22	-2.35	0.00	-63.74	0.00	63.74	2,627.14	1,313.57	4,086.07	2,046.07	4.18	-0.32	0.037
144.42	-14.10	-2.35	0.00	-53.36	0.00	53.36	1,915.99	957.99	2,941.42	1,472.89	4.48	-0.33	0.044
145.00	-13.52	-2.32	0.00	-51.99	0.00	51.99	1,911.69	955.84	2,923.20	1,463.77	4.52	-0.33	0.043
148.00	-10.58	-2.17	0.00	-45.02	0.00	45.02	1,889.17	944.59	2,829.77	1,416.99	4.73	-0.34	0.037
150.00	-9.71	-2.09	0.00	-40.69	0.00	40.69	1,873.79	936.89	2,767.71	1,385.91	4.88	-0.35	0.035
155.00	-8.85	-1.99	0.00	-30.22	0.00	30.22	1,834.01	917.01	2,613.49	1,308.69	5.25	-0.36	0.028
160.00	-4.91	-1.42	0.00	-20.27	0.00	20.27	1,792.37	896.18	2,460.85	1,232.25	5.63	-0.37	0.019
163.00	-4.64	-1.37	0.00	-16.01	0.00	16.01	1,766.48	883.24	2,370.14	1,186.83	5.86	-0.37	0.016
165.00	-4.05	-1.24	0.00	-13.27	0.00	13.27	1,748.85	874.42	2,310.07	1,156.75	6.02	-0.37	0.014
170.00	-3.93	-1.22	0.00	-7.05	0.00	7.05	1,703.46	851.73	2,161.44	1,082.33	6.41	-0.38	0.009
171.00	-2.47	-0.84	0.00	-5.83	0.00	5.83	1,694.16	847.08	2,132.00	1,067.58	6.49	-0.38	0.007
175.00	-2.08	-0.71	0.00	-2.49	0.00	2.49	1,656.20	828.10	2,015.26	1,009.13	6.81	-0.38	0.004
178.50	0.00	-0.70	0.00	0.00	0.00	0.00	1,622.00	811.00	1,914.55	958.70	7.08	-0.38	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	-52.74	-3.35	0.00	-386.78	0.00	386.78	6,164.54	3,082.27	18,158.3	9,092.69	0.00	0.00	0.051
5.00	-51.00	-3.29	0.00	-370.01	0.00	370.01	6,108.61	3,054.31	17,675.6	8,850.97	0.00	-0.01	0.050
10.00	-49.27	-3.20	0.00	-353.58	0.00	353.58	6,050.81	3,025.41	17,193.4	8,609.50	0.02	-0.02	0.049
15.00	-47.57	-3.10	0.00	-337.59	0.00	337.59	5,991.14	2,995.57	16,712.0	8,368.43	0.04	-0.03	0.048
20.00	-45.84	-2.99	0.00	-322.11	0.00	322.11	5,929.59	2,964.80	16,231.6	8,127.91	0.07	-0.03	0.047
25.00	-44.19	-2.88	0.00	-307.17	0.00	307.17	5,866.18	2,933.09	15,752.7	7,888.07	0.11	-0.04	0.046
30.00	-42.57	-2.77	0.00	-292.76	0.00	292.76	5,800.89	2,900.44	15,275.4	7,649.08	0.16	-0.05	0.046
35.00	-40.97	-2.66	0.00	-278.90	0.00	278.90	5,733.73	2,866.86	14,800.1	7,411.07	0.22	-0.06	0.045
40.00	-39.40	-2.55	0.00	-265.60	0.00	265.60	5,664.70	2,832.35	14,327.0	7,174.19	0.29	-0.07	0.044
45.00	-36.81	-2.36	0.00	-252.84	0.00	252.84	5,593.79	2,796.90	13,856.5	6,938.58	0.36	-0.08	0.043
50.00	-35.28	-2.25	0.00	-241.05	0.00	241.05	5,521.02	2,760.51	13,388.9	6,704.40	0.45	-0.09	0.042
53.00	-34.74	-2.21	0.00	-234.31	0.00	234.31	4,440.13	2,220.06	10,789.7	5,402.88	0.51	-0.09	0.051
55.00	-33.39	-2.11	0.00	-229.90	0.00	229.90	4,419.76	2,209.88	10,648.2	5,332.01	0.55	-0.10	0.051
60.00	-32.07	-2.01	0.00	-219.37	0.00	219.37	4,367.53	2,183.77	10,295.0	5,155.16	0.65	-0.11	0.050
65.00	-30.76	-1.92	0.00	-209.31	0.00	209.31	4,313.43	2,156.72	9,942.96	4,978.87	0.77	-0.12	0.049
70.00	-29.48	-1.84	0.00	-199.72	0.00	199.72	4,257.46	2,128.73	9,592.32	4,803.29	0.90	-0.13	0.049
75.00	-28.22	-1.77	0.00	-190.52	0.00	190.52	4,199.61	2,099.81	9,243.38	4,628.56	1.04	-0.14	0.048
80.00	-26.98	-1.73	0.00	-181.66	0.00	181.66	4,139.90	2,069.95	8,896.45	4,454.84	1.20	-0.15	0.047
85.00	-25.77	-1.70	0.00	-173.03	0.00	173.03	4,078.31	2,039.15	8,551.80	4,282.26	1.36	-0.16	0.047
90.00	-25.43	-1.70	0.00	-164.52	0.00	164.52	4,014.85	2,007.42	8,209.74	4,110.97	1.54	-0.18	0.046
91.42	-24.06	-1.71	0.00	-162.11	0.00	162.11	3,996.52	1,998.26	8,113.34	4,062.70	1.59	-0.18	0.046
95.00	-22.94	-1.73	0.00	-155.98	0.00	155.98	3,949.51	1,974.76	7,870.56	3,941.13	1.73	-0.19	0.045
98.00	-22.52	-1.75	0.00	-150.79	0.00	150.79	3,056.80	1,528.40	6,090.92	3,049.99	1.85	-0.20	0.057
100.00	-21.49	-1.80	0.00	-147.29	0.00	147.29	3,039.33	1,519.67	5,992.84	3,000.87	1.93	-0.20	0.056
105.00	-20.48	-1.86	0.00	-138.32	0.00	138.32	2,994.36	1,497.18	5,748.30	2,878.42	2.15	-0.22	0.055
110.00	-19.49	-1.93	0.00	-129.01	0.00	129.01	2,947.52	1,473.76	5,504.94	2,756.56	2.39	-0.23	0.053
115.00	-19.29	-1.95	0.00	-119.35	0.00	119.35	2,898.80	1,449.40	5,263.06	2,635.44	2.64	-0.25	0.052
116.00	-16.50	-2.15	0.00	-117.40	0.00	117.40	2,888.83	1,444.42	5,214.89	2,611.32	2.69	-0.25	0.051
120.00	-15.56	-2.22	0.00	-108.80	0.00	108.80	2,848.21	1,424.11	5,022.95	2,515.21	2.90	-0.26	0.049
125.00	-15.00	-2.25	0.00	-97.72	0.00	97.72	2,795.75	1,397.88	4,784.91	2,396.01	3.18	-0.28	0.046
128.00	-14.58	-2.27	0.00	-90.97	0.00	90.97	2,763.38	1,381.69	4,643.19	2,325.05	3.36	-0.28	0.044
130.00	-13.70	-2.30	0.00	-86.43	0.00	86.43	2,741.42	1,370.71	4,549.22	2,277.99	3.48	-0.29	0.043
135.00	-10.87	-2.35	0.00	-74.92	0.00	74.92	2,685.21	1,342.61	4,316.17	2,161.29	3.79	-0.30	0.039
139.33	-10.71	-2.35	0.00	-64.72	0.00	64.72	2,634.99	1,317.49	4,116.57	2,061.34	4.07	-0.32	0.035
140.00	-9.64	-2.32	0.00	-63.15	0.00	63.15	2,627.14	1,313.57	4,086.07	2,046.07	4.12	-0.32	0.035
144.42	-9.56	-2.32	0.00	-52.89	0.00	52.89	1,915.99	957.99	2,941.42	1,472.89	4.42	-0.33	0.041
145.00	-9.17	-2.30	0.00	-51.54	0.00	51.54	1,911.69	955.84	2,923.20	1,463.77	4.46	-0.33	0.040
148.00	-7.18	-2.14	0.00	-44.64	0.00	44.64	1,889.17	944.59	2,829.77	1,416.99	4.67	-0.34	0.035
150.00	-6.58	-2.07	0.00	-40.36	0.00	40.36	1,873.79	936.89	2,767.71	1,385.91	4.81	-0.34	0.033
155.00	-6.00	-1.97	0.00	-29.99	0.00	29.99	1,834.01	917.01	2,613.49	1,308.69	5.17	-0.35	0.026
160.00	-3.33	-1.41	0.00	-20.13	0.00	20.13	1,792.37	896.18	2,460.85	1,232.25	5.55	-0.36	0.018
163.00	-3.15	-1.36	0.00	-15.90	0.00	15.90	1,766.48	883.24	2,370.14	1,186.83	5.78	-0.37	0.015
165.00	-2.74	-1.23	0.00	-13.18	0.00	13.18	1,748.85	874.42	2,310.07	1,156.75	5.93	-0.37	0.013
170.00	-2.66	-1.21	0.00	-7.00	0.00	7.00	1,703.46	851.73	2,161.44	1,082.33	6.32	-0.37	0.008
171.00	-1.67	-0.83	0.00	-5.80	0.00	5.80	1,694.16	847.08	2,132.00	1,067.58	6.40	-0.37	0.006
175.00	-1.41	-0.71	0.00	-2.48	0.00	2.48	1,656.20	828.10	2,015.26	1,009.13	6.71	-0.38	0.003
178.50	0.00	-0.70	0.00	0.00	0.00	0.00	1,622.00	811.00	1,914.55	958.70	6.99	-0.38	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	41.40	0.00	77.04	0.00	0.00	5041.50	0.00	0.57
0.9D + 1.6W	41.38	0.00	57.77	0.00	0.00	4998.15	0.00	0.56
1.2D + 1.0Di + 1.0Wi	9.94	0.00	116.75	0.00	0.00	1188.61	0.00	0.15
(1.2 + 0.2Sds) * DL + E ELFM	2.62	0.00	77.75	0.00	0.00	350.61	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	3.36	0.00	77.75	0.00	0.00	391.32	98.00	0.06
(0.9 - 0.2Sds) * DL + E ELFM	2.62	0.00	52.74	0.00	0.00	346.84	0.00	0.05
(0.9 - 0.2Sds) * DL + E EMAM	3.35	0.00	52.74	0.00	0.00	386.78	98.00	0.06
1.0D + 1.0W	8.44	0.00	64.23	0.00	0.00	1023.39	0.00	0.12

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
5,025.00	56.80	39.90	5,041.50	116.75	41.40	74.32

Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
60.0	2.750	85.000	Round	0	0.00	11.426	556.49	1166.52	0.48

Anchor Bolts

								Start	Compression			Tension		
Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Angle (deg)	Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
79.00	20	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	159.00	260.00	0.63	147.32	260.00	0.58

Base/Flange Plate	Plate Type	***Baseplate***
	Pole Diameter	72 in
	Pole Thickness	0.4375 in
	Plate Diameter	85 in
	Plate Thickness	2.75 in
	Plate Fy	60 ksi
	Weld Length	0.25 in
	ϕ_s Resistance	1149.41 k-in
	Applied	304.11 k-in
Stiffeners	#	***0***

Bolts ●	#	***20***
	Bolt Circle	79 in
	(R)adial / (S)quare	R
	Diameter	2.25 in
	Hole Diameter	2.625 in
	Type	18J
	Fy	75 ksi
	Fu	100 ksi
	ϕ_s Resistance	259.82 k
	Applied	156.96 k
Reinforcement ●	#	***0***
Extra Bolts O	#	***0***

Code Rev. **G**

Moment 5041.5 k-ft
Axial 77.0 k

Date 12/14/2015
Engineer JDB
Site # 302467
Carrier Verizon Wireless

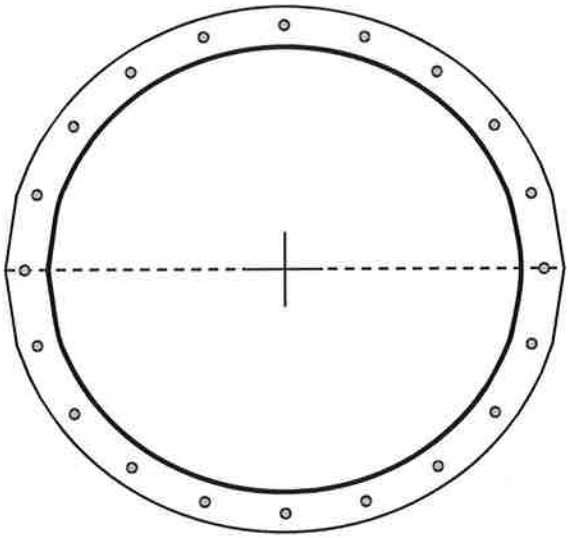
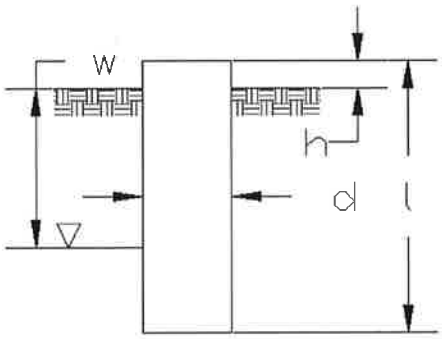


Plate Stress Ratio:
0.26 (Pass)

Bolt Stress Ratio:
0.60 (Pass)

Site Name:	Bilkay Express, CT, CT	*Program Last Updated:*	*5/13/2014*
Site Number:	302467	*American Tower Corporation*	
Engineer:	JDB		
Engineering Number:	63449523		
Date:	12/14/15		



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

Analyze or Design a Foundation?	Analyze	
Foundation Mapped:	N	
Moment (M):	5041.5	k-ft
Shear/Leg (V):	41.4	k
Axial Load (P):	77.0	k
Uplift/Leg (U):	0.0	k
Tower Type (GT / SST / MP):	MP	
Diameter of Caisson (d):	8.5	ft
Caisson Embedment (L-h):	29.5	ft
Caisson Height Above Ground (h):	0.5	ft
Depth Below Ground Surface to Water Table (w):	6.0	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Water:	62.4	pcf
Tension Skin Friction/Compression Skin Friction:	1.00	
Pullout Angle:	30.0	degrees

Engineer Notes

Soil Mechanical Properties

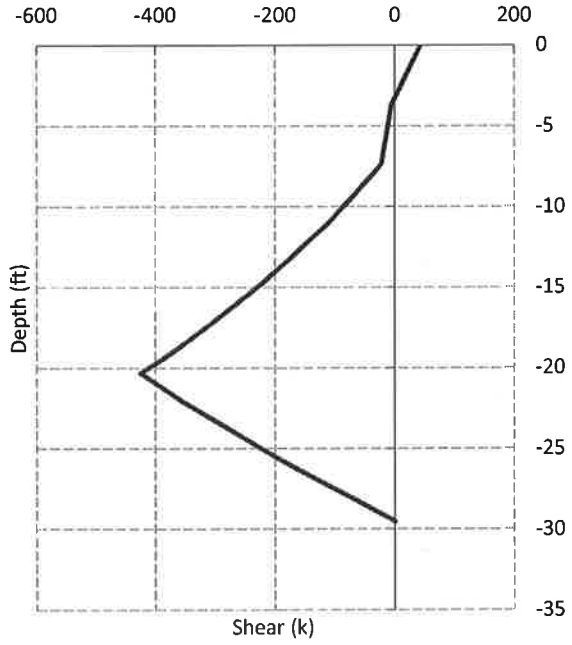
Depth (ft) Top	Depth (ft) Bottom	γ_{Soil} (pcf)	Cohesion (psf)	ϕ (degree)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)
0.0	5.0	125				
5.0	15.0	122		34	480	
15.0	20.0	122		34	690	
20.0	30.5	122		34	820	5000

Required Embedment:	22.8	ft - OK, Caisson Embedment Satisfactory
Volume of Concrete:	1702.4	ft^3 = 63.1 yd^3
Weight of Concrete (Buoyancy Effect Considered):	172.1	k
Average Soil Unit Weight:	72.8	pcf
Skin Friction Resistance:	428.3	k
Compressive Bearing Resistance:	283.7	k
Pullout Weight (Minus Concrete Weight):	1140.8	k
Nominal Uplift Capacity per Leg ($\phi_s T_n$):	450.3	k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	534.0	k
P_u:	132.3	k
$T_u/\phi_s T_n$:	0.00	Result: OK
$P_u/\phi_s P_n$:	0.25	Result: OK
Total Lateral Resistance:	2766.5	k
Inflection Point (Below Ground Surface):	20.3	ft
Design Overturning Moment At Inflection Point (M_D):	5903.0	k-ft
Nominal Moment Capacity ($\phi_s M_n$):	11595.2	k-ft
$M_D/\phi_s M_n$:	0.51	Result: OK
ϕ_s:	0.75	

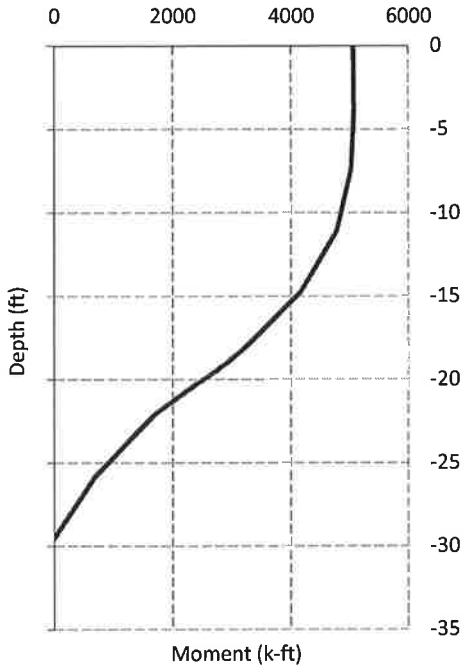
Caisson Strength Capacity

Concrete Compressive Strength (f'_c):	3000	psi
Vertical Steel Rebar Size #:	11	
Vertical Steel Rebar Area:	1.56	in^2
# of Vertical Steel Rebars:	27	
Vertical Steel Rebar Yield Strength (F_y):	60	ksi
Horizontal Tie / Stirrup Size #:	5	
Horizontal Tie / Stirrup Area:	0.31	in^2
Design Horizontal Tie / Stirrup Spacing:	12.0	in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	60	ksi
Rebar Cage Diameter:	94.0	in
Strength Bending/Tension Reduction Factor (ϕ_B):	0.90	ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (ϕ_V):	0.75	ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor (ϕ_V):	0.65	ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000	ksi
Design Moment (M_u):	5075.2	k-ft
Nominal Moment Capacity ($\phi_B M_n$):	8066.2	k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$:	0.63	Result: OK
Design Shear (V_u):	424.4	k
Nominal Shear Capacity ($\phi_V V_n$):	674.5	k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.63	Result: OK
Design Tension (T_u):	0.0	k
Nominal Tension Capacity ($\phi_T T_n$):	2274.5	k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00	Result: OK
Design Compression (P_u):	132.3	k
Nominal Compression Capacity ($\phi_P P_n$):	10779.3	k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.01	Result: OK
Bending Reinforcement Ratio:	0.005	ACI318-05 - 10.8.4 & 10.9.1
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.63	Result: OK

Design Factored Shear / Depth



Design Factored Moment / Depth



Nominal and Factored Moment Capacity and Factored Design Loads