Robinson+Cole

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August 21, 2018

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

Re: **Notice of Exempt Modification – Facility Modification**
4 Elkington Farm Road, New Milford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 132-foot level on the existing 150-foot tower at 4 Elkington Farm Road in New Milford, Connecticut (the "Property"). The tower is owned by American Tower Corporation ("ATC"). The Council approved Cellco's use of this tower in 2003. Cellco now intends to replace six (6) of its existing antennas with three (3) model JAHH-65B-R3B, 700/2100 MHz antennas and three (3) model JAHH-65B-R3B, 850/1900 MHz antennas, all at the same level on the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") behind its antennas 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 New Milford Mayor, Pete Bass; Kathy Castagnetta, New Milford's Town Planner; Canterbury School Inc., the owner of the Property; and ATC, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed at the 132-foot level of the 150-foot tower.

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

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

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

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

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

A copy of the parcel map and owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 5.

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Pete Bass, Mayor
Kathy Castagnetta, Town Planner
Canterbury School Inc.
ATC
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

JAHH-65B-R3B

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

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

Electrical Specifications

Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.5	15.8	18.0	18.4	18.5	18.8
Beamwidth, Horizontal, degrees	67	65	63	63	65	68
Beamwidth, Vertical, degrees	12.4	10.5	5.7	5.2	4.9	4.4
Beam Tilt, degrees	2–14	2–14	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	18	18	20	20	21	23
Front-to-Back Ratio at 180°, dB	32	34	31	35	36	38
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, 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	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
Gain by Beam Tilt, average, dBi	2 ° | 14.3	2 ° | 15.0	0 ° | 17.2	0 ° | 17.6	0 ° | 17.7	0 ° | 17.9
	8 ° | 14.3	8 ° | 14.9	5 ° | 17.6	5 ° | 18.2	5 ° | 18.3	5 ° | 18.7
	14 ° | 14.3	14 ° | 15.4	10 ° | 17.6	10 ° | 18.2	10 ° | 18.3	10 ° | 18.7
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.4	±4	±2.4	±2.9	±2.7
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.5	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	18	17	17	18	19	18
Front-to-Back Total Power at 180° ± 30°, dB	25	24	26	29	27	29
CPR at Boresight, dB	22	23	20	21	21	24
CPR at Sector, dB	11	12	11	11	11	8

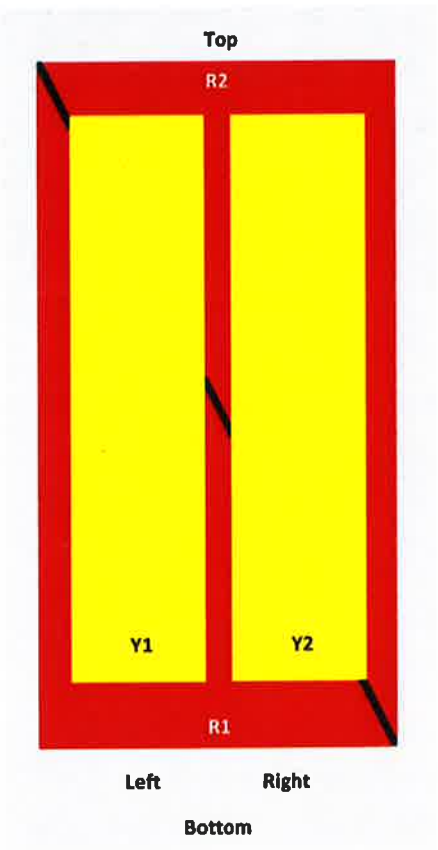
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Product Specifications

JAHH-65B-R3B

Array Layout

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



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANxxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxxx3
Y2	1695-2360	7-8		

View from the front of the antenna

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

General Specifications

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

Mechanical Specifications

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

Product Specifications

JAHH-65B-R3B

Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	746.0 N @ 150 km/h 167.7 lbf @ 150 km/h
Wind Loading, lateral	243.0 N @ 150 km/h 54.6 lbf @ 150 km/h
Wind Loading, rear	776.0 N @ 150 km/h 174.5 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

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

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

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

Regulatory Compliance/Certifications

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

Product Specifications

JAHH-65B-R3B

Included Products

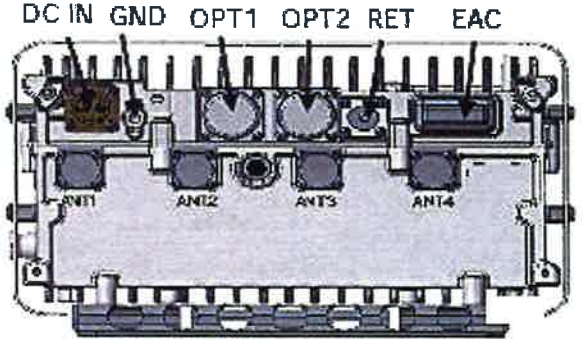
BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

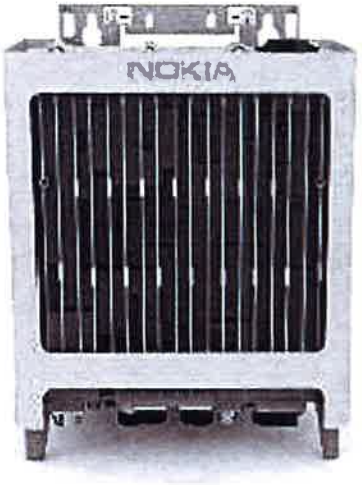
* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

AHCA AirScale RRH 4T4R B5 160W

Supported Frequency bands	3GPP band 5
Frequencies	DL 869-894MHz, UL 824-849MHz
Number of TX/RX paths/pipes	4TX/4RX
Instantaneous Bandwidth IBW	25MHz (Full Band)
Occupied Bandwidth OBW	25MHz (Full Band)
Output Power	4T4R @ 40W / 2T4R @ 60W
RF Sharing	LTE, WCDMA, LTE + NB-IoT supported
256 QAM Back Off	No backoff at 40W and 0.8dB at 60W.
Supply Voltage / Voltage Range	DC-48V / -36V to -60V
Typical Power Consumption	365W [50% ETSI Busy Hour Load at 4TX @ 40W]
	529W [100% RF Load at 4 TX @ 40W]
	574W [100% RF Load at 4 TX @ 40W with SBT and AISG ON]
Antenna Ports	4 Ports, 4.3-10+
Optical Ports	2x CPRI 9.8 Gbps
ALD Control Interfaces	AISG3.0 from ANT1,2, 3, 4 and RET (Power supply ANT1 and ANT3)
Other Interfaces	External Alarm MDR-26 Serial connector (4 inputs, 1 Output) DC Circular Power Connector





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

NOKIA

ALCATEL-LUCENT B25 RRH4X30

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

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

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

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

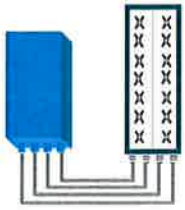
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2) RX Diversity scheme	2.0 dB typ. (<2.5 dB max) 2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.) Volume (w/ solar shield) in L Weight (w/ solar shield) in kg (lb)	538 x 304 x 182 (21.2" x 12.0" x 7.2") 30 24 (53)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 530W typical @100% RF load
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 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 4 RF Tx & 4 RF Rx monitor ports 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

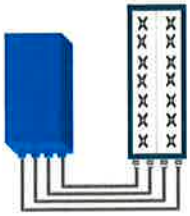
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): 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

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
Mechanical Properties			
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Fiber Optic Properties			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
DC Power Cable Properties			
Size (Power)		[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
Environmental			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

* This data is provisional and subject to change

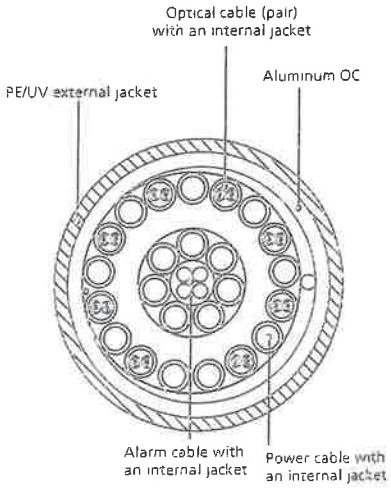


Figure 2: Construction Detail

ATTACHMENT 2

	General	Power	Density					
Site Name: New Milford								
Tower Height: 150Ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T	1	142	154	880	0.0023	0.5867	0.04%	
*AT&T	2	296	154	880	0.0097	0.5867	0.17%	
*AT&T	1	525	154	1900	0.0086	1.0000	0.09%	
*AT&T	1	1476	154	734	0.0242	0.4893	0.50%	
*AT&T	2	3664	154	1900	0.1203	1.0000	1.20%	
*PageNet	2	165	157	930	0.0052	0.6200	0.08%	
*Nextel	9	100	110	851	0.0299	0.5673	0.53%	
*Sprint	3	693	140	1900	0.0416	1.0000	0.42%	
*Sprint	1	390	140	850	0.0078	0.5667	0.14%	
*Sprint	2	693	140	2500	0.0278	1.0000	0.28%	
VZW PCS	**1**	**5062**	**132**	**0.1045**	**1970**	**1.0000**	**10.45%**	
VZW Cellular	**3**	**343**	**132**	**0.0212**	**869**	**0.5793**	**3.67%**	
VZW Cellular	**1**	**3709**	**132**	**0.0765**	**880**	**0.5866**	**13.05%**	
VZW AWS	**1**	**7770**	**132**	**0.1603**	**2145**	**1.0000**	**16.03%**	
VZW 700	**1**	**2062**	**132**	**0.0426**	**746**	**0.4973**	**8.56%**	
								55.18%
* Source: Siting Council								

ATTACHMENT 3

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Structural Analysis Report

Structure	:	**150 ft Monopole**
ATC Site Name	:	**New Milford CT 2, CT**
ATC Site Number	:	**302523**
Engineering Number	:	**OAA707682_C3_01**
Proposed Carrier	:	**Verizon Wireless**
Carrier Site Name	:	**New Milford**
Carrier Site Number	:	**N/A**
Site Location	:	**4 Elkington Farm Rd** **New Milford, CT 06776-2909** **41.590861,-73.408600**
County	:	**Litchfield**
Date	:	**August 4, 2017**
Max Usage	:	**108%**
Result	:	**Fail**

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

Reviewed By:

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Aug 4 2017 2:49 PM cosign

COA: PEC.0001553

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Introduction

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

Supporting Documents

Tower Drawings	ITT Meyer per AT&T Design Spec. AT-8935, dated April 13, 1984
Foundation Drawing	SNET Job #3C239, dated April 20, 1990
Geotechnical Report	JSEC Job #14974-NM, dated January 28, 2002
Modifications	Scientel CMS Modification Drawings, dated March 7, 2002 ATC Project #41658239, dated December 22, 2008 ATC Project #50496632, dated October 22, 2012

Analysis

The tower was analyzed using tnxTower 7.0.7.0 analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	93 mph (3-Second Gust V_{ASD}) / 120 mph (3-Second Gust V_{ULT})
Basic Wind Speed w/ Ice:	40 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.20, S_1 = 0.07
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure does not meet the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report after the modifications listed below are completed:

- Reinforce shaft from 105' to 120'
- Reinforce flange bolts at 110'

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

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	152.0	1	Andrew ABT-DFDM-ADB	Low Profile Platform	(12) 1 1/4" Coax (2) 0.78" 8 AWG 6 (1) 0.39" Cable (1) 3" conduit	AT&T Mobility
		6	Powerwave TT19-08BP111-001			
		3	Ericsson RRUS 11 (Band 12)			
		3	Ericsson RRUS-12 B2			
		1	SSB			
		6	Powerwave 7770.00A			
		3	KMW AM-X-CD-16-65-00T-RET			
143.0	145.0	3	Alcatel-Lucent 800MHz 2X50W RRH w/ Filter	Platform w/ Handrails	(4) 1 1/4" Hybriflex	Sprint Nextel
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
	143.0	3	RFS RFS APXV9TM14-ALU-I20			
		3	RFS APXVSPP18-C-A20			
132.0	132.0	3	Alcatel-Lucent B66A RRH 4x45	Low Profile Platform	(6) 1 5/8" Coax (1) 1.58" Hybrid	Verizon
		1	RFS DB-T1-6Z-8AB-0Z			
		4	Antel LPA-80080/6CF ___			
		2	Antel LPA-80063/6CF			
75.0	75.0	1	PCTEL GPS-TMG-HR-26N	Flush	(1) 1/2" Coax	Sprint Nextel

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
132.0	132.0	1	Antel BXA-171063-8BF-EDIN-X	-	(6) 1 5/8" Coax	Verizon
		2	Antel BXA-171085-8BF-EDIN-X			
		3	Commscope SBNHH-1D65B			
		6	RFS FD9R6004/2C-3L			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
132.0	132.0	3	Nokia B5 RRH4x40-850	Low Profile Platform	(1) 1.58" Hybrid	Verizon
		3	Alcatel-Lucent B25 RRH4x30			
		3	Alcatel-Lucent B13 RRH4x30-4R 700U			
		1	RFS DB-T1-6Z-8AB-0Z			
		6	Commscope JAHH-65B-R3B			

[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 in place of the removed Verizon Wireless coax.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	84%	Pass
Shaft	106%	Fail
Base Plate	43%	Pass
Flanges	108%	Fail
Reinforcement*	84%	Pass

***Termination limits reinforcement capacity**

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,332.2	72%
Axial (Kips)	39.6	16%
Shear (Kips)	22.7	13%

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 (in)	Sway (Rotation) (°)
132.0	Nokia B5 RRH4x40-850	Verizon Wireless	16.923	1.570
	Alcatel-Lucent B25 RRH4x30			
	Alcatel-Lucent B13 RRH4x30-4R 700U			
	RFS DB-T1-6Z-8AB-0Z			
	Commscope JAHH-65B-R3B			

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

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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:

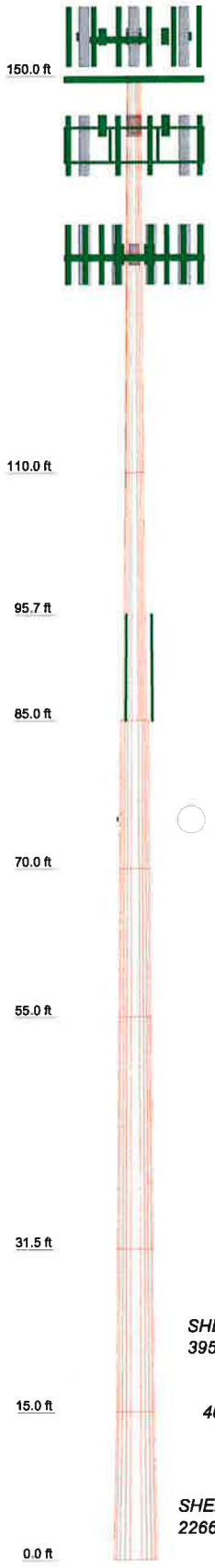
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- 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.



Length (ft)	15.00	15.00	15.00	25.00	40.00				
Number of Sides	12	12	12	12	12				
Thickness (in)	0.5362	0.4977	0.4720	0.3918	0.3722	0.2500	0.1875		
Top Dia (in)	44.0460	41.5760	38.0580	35.6910	33.3250	21.2500	15.0000		
Bot Dia (in)	52.0640	44.0460	41.5760	38.0580	35.6910	27.6100	21.2500		
Grade				A572-65					
Tube Length (ft)						10.69			
Reinf Size						2 1/2			
Reinf Grade						A615-75			
Weight (lb)	4187.9	3807.3	4782.2	2349.5	2088.2	1655.9	1474.1		20345.1

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Andrew ABT-DFDM-ADB	150	APXV9TM14-ALU-I20	143
(2) TT19-08BP111-001	150	APXVSPP18-C-A20	143
(2) TT19-08BP111-001	150	APXVSPP18-C-A20	143
(2) TT19-08BP111-001	150	APXVSPP18-C-A20	143
RRUS 11 (Band 12) (55 lb)	150	Round Platform w/ Handrails	143
RRUS 11 (Band 12) (55 lb)	150	B5 RRH4x40-850	132
RRUS 11 (Band 12) (55 lb)	150		
RRUS-12 B2	150	B5 RRH4x40-850	132
RRUS-12 B2	150	B5 RRH4x40-850	132
RRUS-12 B2	150	B25 RRH4x30	132
(2) 7770.00	150	B25 RRH4x30	132
(2) 7770.00	150	B25 RRH4x30	132
(2) 7770.00	150	B13 RRH4x30-4R 700U	132
AM-X-CD-16-65-00T-RET	150	B13 RRH4x30-4R 700U	132
AM-X-CD-16-65-00T-RET	150	B13 RRH4x30-4R 700U	132
AM-X-CD-16-65-00T-RET	150	B66A RRH 4x45	132
Round Low Profile Platform	150	B66A RRH 4x45	132
800 MHz 2X50W RRH w/ Filter	143	B66A RRH 4x45	132
800 MHz 2X50W RRH w/ Filter	143	DB-T1-6Z-8AB-0Z	132
800 MHz 2X50W RRH w/ Filter	143	DB-T1-6Z-8AB-0Z	132
1900 MHz 4X45 RRH	143	(2) LPA-80080/6CF ___	132
1900 MHz 4X45 RRH	143	(2) LPA-80080/6CF ___	132
1900 MHz 4X45 RRH	143	(2) JAHH-65B-R3B	132
TD-RRH8x20-25 w/ Solar Shield	143	(2) JAHH-65B-R3B	132
TD-RRH8x20-25 w/ Solar Shield	143	(2) JAHH-65B-R3B	132
TD-RRH8x20-25 w/ Solar Shield	143	(2) LPA-80063/6CF	132
APXV9TM14-ALU-I20	143	Round Low Profile Platform	132
APXV9TM14-ALU-I20	143	GPS-TMG-HR-26N	75

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	A615-75	75 ksi	100 ksi

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Tower wrap from 0' to 85'. This model considers an equivalent Moment of Inertia for tower Sections 3 through 7.
9. TOWER RATING: 106.4%

ALL REACTIONS ARE FACTORED

AXIAL
69987 lb

SHEAR
3950 lb

MOMENT
457950 lb-ft

TORQUE 107 lb-ft
40 mph WIND - 1.0000 in ICE

AXIAL
39601 lb

SHEAR
22668 lb

MOMENT
2332242 lb-ft

TORQUE 525 lb-ft
REACTIONS - 93 mph WIND

AMERICAN TOWER CORPORATION
Tower Analysis

American Tower Engineering
3500 Regency Parkway, Suite 100
Cary, NC 27518
Phone: (919) 468-0112
FAX: (919) 466-5414

Job:	302523 - New Milford CT 2, CT		
Project:	OAA707682		
Client:	Verizon Wireless	Drawn by: John Bigham	App'd:
Code:	TIA-222-G	Date: 08/04/17	Scale: N
Path:	C:\Users\john.bigham\Desktop\TNX\302523 - New Milford CT 2, CT.eri		Dwg No.

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Litchfield County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 40 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Tower wrap from 0' to 85'. This model considers an equivalent Moment of Inertia for tower Sections 3 through 7..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-110.00	40.00	0.00	12	15.0000	21.2500	0.1875	0.7500	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L2	110.00-85.00	25.00	0.00	12	21.2500	27.6100	0.2500	1.0000	A572-65 (65 ksi)
L3	85.00-70.00	15.00	0.00	12	33.3250	35.6910	0.3722	1.4888	A572-65 (65 ksi)
L4	70.00-55.00	15.00	0.00	12	35.6910	38.0580	0.3918	1.5673	A572-65 (65 ksi)
L5	55.00-31.50	23.50	0.00	12	38.0580	41.5760	0.4720	1.8882	A572-65 (65 ksi)
L6	31.50-15.00	16.50	0.00	12	41.5760	44.0460	0.4977	1.9908	A572-65 (65 ksi)
L7	15.00-0.00	15.00		12	44.0460	52.0640	0.5362	2.1449	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	15.5291	8.9430	250.4541	5.3029	7.7700	32.2335	507.4880	4.4015	3.5175	18.76
	21.9996	12.7165	720.0669	7.5404	11.0075	65.4160	1459.0508	6.2587	5.1925	27.693
L2	21.9996	16.9050	951.5678	7.5180	11.0075	86.4472	1928.1342	8.3201	5.0250	20.1
	28.5840	22.0248	2104.4088	9.7949	14.3020	147.1411	4264.1028	10.8399	6.7295	26.918
L3	34.5006	39.4945	5474.0206	11.7971	17.2624	317.1075	11091.8499	19.4380	7.9336	21.315
	36.9500	42.3301	6739.8046	12.6441	18.4879	364.5515	13656.6715	20.8336	8.5677	23.018
L4	36.9500	44.5367	7083.2568	12.6371	18.4879	383.1285	14352.5987	21.9196	8.5151	21.732
	39.4005	47.5231	8605.8524	13.4845	19.7140	436.5341	17437.7901	23.3894	9.1494	23.351
L5	39.4005	57.1295	10301.4312	13.4558	19.7140	522.5428	20873.4924	28.1174	8.9345	18.927
	43.0426	62.4767	13473.2267	14.7152	21.5364	625.6035	27300.4100	30.7491	9.8773	20.925
L6	43.0426	65.8318	14179.0407	14.7060	21.5364	658.3766	28730.5806	32.4004	9.8085	19.708
	45.5998	69.7902	16893.6340	15.5903	22.8158	740.4348	34231.0826	34.3486	10.4705	21.038
L7	45.5998	75.1266	18153.2042	15.5765	22.8158	795.6408	36783.3132	36.9750	10.3672	19.334
	53.9006	88.9710	30152.0589	18.4469	26.9692	1118.0203	61096.2459	43.7888	12.5161	23.341

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-110.00				1	1	1			
L2 110.00-85.00				1	1	1			
L3 85.00-70.00				1	1	1			
L4 70.00-55.00				1	1	1			
L5 55.00-31.50				1	1	1			
L6 31.50-15.00				1	1	1			
L7 15.00-0.00				1	1	1			

Pole Reinforcing Data

Height Above Base ft	Segment Length ft	No. of Segments	Offset in	Grade	Type	Size	Unbraced Length ft	K	Bolt Hole Dia. in	Bolts per Row	Shear Lag Factor U
85.00	10.69	3	7.5625	A615-75 (75 ksi)	Solid Round	2 1/2	2.50	0.80	0.7500	12	1.000

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
1 5/8" Coax	B	Surface Ar (CaAa)	132.00 - 85.00	6	6	0.500 0.500	1.9800		0.82
1.58" (40.1mm) Hybrid	B	Surface Ar (CaAa)	132.00 - 85.00	2	2	0.500 0.500	1.5800		1.61
***									
Wrap Seams	A	Surface Ar (CaAa)	85.00 - 0.00	1	1	0.000 0.000	0.1875		2.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 1/4" Coax	A	No	Inside Pole	150.00 - 5.00	12	No Ice	0.00	0.63
						1/2" Ice	0.00	0.63
						1" Ice	0.00	0.63
0.78" (19.7 mm) 8 AWG 6	A	No	Inside Pole	150.00 - 5.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
0.39" (10 mm) Cable	A	No	Inside Pole	150.00 - 5.00	1	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
3" Conduit	A	No	Inside Pole	150.00 - 5.00	1	No Ice	0.00	7.58
						1/2" Ice	0.00	7.58
						1" Ice	0.00	7.58
***								
1 1/4" Hybriflex Cable	A	No	Inside Pole	143.00 - 5.00	4	No Ice	0.00	1.00
						1/2" Ice	0.00	1.00
						1" Ice	0.00	1.00
***								
1 5/8" Coax	B	No	Inside Pole	85.00 - 5.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
1.58" (40.1mm) Hybrid	B	No	Inside Pole	85.00 - 5.00	2	No Ice	0.00	1.61
						1/2" Ice	0.00	1.61
						1" Ice	0.00	1.61
***								
1/2" Coax	C	No	Inside Pole	75.00 - 5.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	150.00-110.00	A	0.000	0.000	0.000	0.000	787.60
		B	0.000	0.000	33.088	0.000	179.08
		C	0.000	0.000	0.000	0.000	0.00
L2	110.00-85.00	A	0.000	0.000	0.000	0.000	509.75
		B	0.000	0.000	37.600	0.000	203.50
		C	0.000	0.000	0.000	0.000	0.00
L3	85.00-70.00	A	0.000	0.000	0.281	0.000	335.85
		B	0.000	0.000	0.000	0.000	122.10
		C	0.000	0.000	0.000	0.000	0.75
L4	70.00-55.00	A	0.000	0.000	0.281	0.000	335.85
		B	0.000	0.000	0.000	0.000	122.10
		C	0.000	0.000	0.000	0.000	2.25
L5	55.00-31.50	A	0.000	0.000	0.441	0.000	526.16
		B	0.000	0.000	0.000	0.000	191.29
		C	0.000	0.000	0.000	0.000	3.52
L6	31.50-15.00	A	0.000	0.000	0.309	0.000	369.44
		B	0.000	0.000	0.000	0.000	134.31
		C	0.000	0.000	0.000	0.000	2.48
L7	15.00-0.00	A	0.000	0.000	0.281	0.000	233.90
		B	0.000	0.000	0.000	0.000	81.40
		C	0.000	0.000	0.000	0.000	1.50

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	150.00-110.00	A	2.292	0.000	0.000	0.000	0.000	787.60
		B		0.000	0.000	66.575	0.000	1171.72
		C		0.000	0.000	0.000	0.000	0.00
L2	110.00-85.00	A	2.228	0.000	0.000	0.000	0.000	509.75
		B		0.000	0.000	74.845	0.000	1292.19
		C		0.000	0.000	0.000	0.000	0.00
L3	85.00-70.00	A	2.178	0.000	0.000	6.815	0.000	430.27
		B		0.000	0.000	0.000	0.000	122.10
		C		0.000	0.000	0.000	0.000	0.75
L4	70.00-55.00	A	2.132	0.000	0.000	6.676	0.000	426.44
		B		0.000	0.000	0.000	0.000	122.10
		C		0.000	0.000	0.000	0.000	2.25
L5	55.00-31.50	A	2.054	0.000	0.000	10.094	0.000	658.35
		B		0.000	0.000	0.000	0.000	191.29
		C		0.000	0.000	0.000	0.000	3.52
L6	31.50-15.00	A	1.931	0.000	0.000	6.680	0.000	451.86
		B		0.000	0.000	0.000	0.000	134.31
		C		0.000	0.000	0.000	0.000	2.48
L7	15.00-0.00	A	1.720	0.000	0.000	5.440	0.000	294.01
		B		0.000	0.000	0.000	0.000	81.40
		C		0.000	0.000	0.000	0.000	1.50

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	150.00-110.00	0.8025	0.4633	0.8590	0.4959
L2	110.00-85.00	1.1868	0.6852	1.2114	0.6994
L3	85.00-70.00	-0.0235	-0.0136	-0.4497	-0.2597
L4	70.00-55.00	-0.0235	-0.0136	-0.4485	-0.2589
L5	55.00-31.50	-0.0235	-0.0136	-0.4422	-0.2553
L6	31.50-15.00	-0.0235	-0.0136	-0.4263	-0.2462
L7	15.00-0.00	-0.0235	-0.0136	-0.3950	-0.2281

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	9	1 5/8" Coax	110.00 - 132.00	1.0000	1.0000
L1	11	1.58" (40.1mm) Hybrid	110.00 - 132.00	1.0000	1.0000
L2	9	1 5/8" Coax	85.00 - 110.00	1.0000	1.0000
L2	11	1.58" (40.1mm) Hybrid	85.00 - 110.00	1.0000	1.0000
L3	15	Wrap Seams	70.00 - 85.00	1.0000	1.0000
L4	15	Wrap Seams	55.00 - 70.00	1.0000	1.0000
L5	15	Wrap Seams	31.50 - 55.00	1.0000	1.0000
L6	15	Wrap Seams	15.00 - 31.50	1.0000	1.0000
L7	15	Wrap Seams	0.00 - 15.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Andrew ABT-DFDM-ADB	C	From Leg	1.00	0.0000	150.00	No Ice	0.05	0.05	1.10
			0.00			1/2" Ice	0.11	0.11	1.80
			4.00			1" Ice	0.17	0.17	2.50
(2) TT19-08BP111-001	A	From Leg	3.00	0.0000	150.00	No Ice	0.55	0.45	16.00
			0.00			1/2" Ice	0.65	0.53	21.80
			4.00			1" Ice	0.75	0.63	29.22
(2) TT19-08BP111-001	B	From Leg	3.00	0.0000	150.00	No Ice	0.55	0.45	16.00
			0.00			1/2" Ice	0.65	0.53	21.80
			4.00			1" Ice	0.75	0.63	29.22
(2) TT19-08BP111-001	C	From Leg	3.00	0.0000	150.00	No Ice	0.55	0.45	16.00
			0.00			1/2" Ice	0.65	0.53	21.80
			4.00			1" Ice	0.75	0.63	29.22
RRUS 11 (Band 12) (55 lb)	A	From Leg	3.00	0.0000	150.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			4.00			1" Ice	2.92	1.36	96.56

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RRUS 11 (Band 12) (55 lb)	B	From Leg	3.00	0.0000	150.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			4.00			1" Ice	2.92	1.36	96.56
RRUS 11 (Band 12) (55 lb)	C	From Leg	3.00	0.0000	150.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			4.00			1" Ice	2.92	1.36	96.56
RRUS-12 B2	A	From Leg	3.00	0.0000	150.00	No Ice	3.15	1.29	58.00
			0.00			1/2" Ice	3.36	1.44	81.22
			4.00			1" Ice	3.59	1.60	107.64
RRUS-12 B2	B	From Leg	3.00	0.0000	150.00	No Ice	3.15	1.29	58.00
			0.00			1/2" Ice	3.36	1.44	81.22
			4.00			1" Ice	3.59	1.60	107.64
RRUS-12 B2	C	From Leg	3.00	0.0000	150.00	No Ice	3.15	1.29	58.00
			0.00			1/2" Ice	3.36	1.44	81.22
			4.00			1" Ice	3.59	1.60	107.64
(2) 7770.00	A	From Leg	4.00	0.0000	150.00	No Ice	5.51	2.93	35.00
			0.00			1/2" Ice	5.87	3.27	67.63
			4.00			1" Ice	6.23	3.63	105.06
(2) 7770.00	B	From Leg	4.00	0.0000	150.00	No Ice	5.51	2.93	35.00
			0.00			1/2" Ice	5.87	3.27	67.63
			4.00			1" Ice	6.23	3.63	105.06
(2) 7770.00	C	From Leg	4.00	0.0000	150.00	No Ice	5.51	2.93	35.00
			0.00			1/2" Ice	5.87	3.27	67.63
			4.00			1" Ice	6.23	3.63	105.06
AM-X-CD-16-65-00T-RET	A	From Leg	4.00	0.0000	150.00	No Ice	8.02	4.64	48.50
			0.00			1/2" Ice	8.48	5.09	95.00
			4.00			1" Ice	8.94	5.54	147.50
AM-X-CD-16-65-00T-RET	B	From Leg	4.00	0.0000	150.00	No Ice	8.02	4.64	48.50
			0.00			1/2" Ice	8.48	5.09	95.00
			4.00			1" Ice	8.94	5.54	147.50
AM-X-CD-16-65-00T-RET	C	From Leg	4.00	0.0000	150.00	No Ice	8.02	4.64	48.50
			0.00			1/2" Ice	8.48	5.09	95.00
			4.00			1" Ice	8.94	5.54	147.50
Round Low Profile Platform	C	None		0.0000	150.00	No Ice	21.70	21.70	1500.00
						1/2" Ice	27.20	27.20	1700.00
						1" Ice	32.70	32.70	1900.00
***									
800 MHz 2X50W RRH w/ Filter	A	From Leg	3.00	0.0000	143.00	No Ice	2.06	1.93	64.00
			0.00			1/2" Ice	2.24	2.11	86.12
			2.00			1" Ice	2.43	2.29	111.30
800 MHz 2X50W RRH w/ Filter	B	From Leg	3.00	0.0000	143.00	No Ice	2.06	1.93	64.00
			0.00			1/2" Ice	2.24	2.11	86.12
			2.00			1" Ice	2.43	2.29	111.30
800 MHz 2X50W RRH w/ Filter	C	From Leg	3.00	0.0000	143.00	No Ice	2.06	1.93	64.00
			0.00			1/2" Ice	2.24	2.11	86.12
			2.00			1" Ice	2.43	2.29	111.30
1900 MHz 4X45 RRH	A	From Leg	3.00	0.0000	143.00	No Ice	2.32	2.24	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			2.00			1" Ice	2.74	2.65	109.50
1900 MHz 4X45 RRH	B	From Leg	3.00	0.0000	143.00	No Ice	2.32	2.24	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			2.00			1" Ice	2.74	2.65	109.50
1900 MHz 4X45 RRH	C	From Leg	3.00	0.0000	143.00	No Ice	2.32	2.24	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			2.00			1" Ice	2.74	2.65	109.50
TD-RRH8x20-25 w/ Solar Shield	A	From Leg	3.00	0.0000	143.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.30	1.71	97.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			2.00					1" Ice	4.56	1.90	127.80
TD-RRH8x20-25 w/ Solar Shield	B	From Leg	3.00			0.0000	143.00	No Ice	4.05	1.53	70.00
			0.00					1/2" Ice	4.30	1.71	97.14
			2.00					1" Ice	4.56	1.90	127.80
TD-RRH8x20-25 w/ Solar Shield	C	From Leg	3.00			0.0000	143.00	No Ice	4.05	1.53	70.00
			0.00					1/2" Ice	4.30	1.71	97.14
			2.00					1" Ice	4.56	1.90	127.80
APXV9TM14-ALU-I20	A	From Leg	4.00			0.0000	143.00	No Ice	6.34	3.61	55.10
			0.00					1/2" Ice	6.72	3.97	94.63
			0.00					1" Ice	7.10	4.33	139.22
APXV9TM14-ALU-I20	B	From Leg	4.00			0.0000	143.00	No Ice	6.34	3.61	55.10
			0.00					1/2" Ice	6.72	3.97	94.63
			0.00					1" Ice	7.10	4.33	139.22
APXV9TM14-ALU-I20	C	From Leg	4.00			0.0000	143.00	No Ice	6.34	3.61	55.10
			0.00					1/2" Ice	6.72	3.97	94.63
			0.00					1" Ice	7.10	4.33	139.22
APXVSPP18-C-A20	A	From Leg	4.00			0.0000	143.00	No Ice	8.02	5.28	57.00
			0.00					1/2" Ice	8.48	5.74	106.52
			0.00					1" Ice	8.94	6.20	162.12
APXVSPP18-C-A20	B	From Leg	4.00			0.0000	143.00	No Ice	8.02	5.28	57.00
			0.00					1/2" Ice	8.48	5.74	106.52
			0.00					1" Ice	8.94	6.20	162.12
APXVSPP18-C-A20	C	From Leg	4.00			0.0000	143.00	No Ice	8.02	5.28	57.00
			0.00					1/2" Ice	8.48	5.74	106.52
			0.00					1" Ice	8.94	6.20	162.12
Round Platform w/ Handrails	C	None				0.0000	143.00	No Ice	27.20	27.20	2000.00
								1/2" Ice	34.20	34.20	2400.00
								1" Ice	41.20	41.20	2800.00
***											
B5 RRH4x40-850	A	From Leg	3.00			0.0000	132.00	No Ice	1.32	0.40	48.50
			0.00					1/2" Ice	1.80	0.48	60.40
			0.00					1" Ice	2.28	0.57	72.30
B5 RRH4x40-850	B	From Leg	3.00			0.0000	132.00	No Ice	1.32	0.40	48.50
			0.00					1/2" Ice	1.80	0.48	60.40
			0.00					1" Ice	2.28	0.57	72.30
B5 RRH4x40-850	C	From Leg	3.00			0.0000	132.00	No Ice	1.32	0.40	48.50
			0.00					1/2" Ice	1.80	0.48	60.40
			0.00					1" Ice	2.28	0.57	72.30
B25 RRH4x30	A	From Leg	3.00			0.0000	132.00	No Ice	2.12	1.29	53.00
			0.00					1/2" Ice	2.31	1.45	70.33
			0.00					1" Ice	2.50	1.61	90.48
B25 RRH4x30	B	From Leg	3.00			0.0000	132.00	No Ice	2.12	1.29	53.00
			0.00					1/2" Ice	2.31	1.45	70.33
			0.00					1" Ice	2.50	1.61	90.48
B25 RRH4x30	C	From Leg	3.00			0.0000	132.00	No Ice	2.12	1.29	53.00
			0.00					1/2" Ice	2.31	1.45	70.33
			0.00					1" Ice	2.50	1.61	90.48
B13 RRH4x30-4R 700U	A	From Leg	3.00			0.0000	132.00	No Ice	2.17	1.63	57.20
			0.00					1/2" Ice	2.36	1.80	76.88
			0.00					1" Ice	2.56	1.98	99.53
B13 RRH4x30-4R 700U	B	From Leg	3.00			0.0000	132.00	No Ice	2.17	1.63	57.20
			0.00					1/2" Ice	2.36	1.80	76.88
			0.00					1" Ice	2.56	1.98	99.53
B13 RRH4x30-4R 700U	C	From Leg	3.00			0.0000	132.00	No Ice	2.17	1.63	57.20
			0.00					1/2" Ice	2.36	1.80	76.88
			0.00					1" Ice	2.56	1.98	99.53
B66A RRH 4x45	A	From Leg	3.00			0.0000	132.00	No Ice	2.58	1.63	67.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	2.79	1.81	87.47
			0.00			1" Ice	3.01	2.00	111.06
B66A RRH 4x45	B	From Leg	3.00	0.0000	132.00	No Ice	2.58	1.63	67.00
			0.00			1/2" Ice	2.79	1.81	87.47
			0.00			1" Ice	3.01	2.00	111.06
B66A RRH 4x45	C	From Leg	3.00	0.0000	132.00	No Ice	2.58	1.63	67.00
			0.00			1/2" Ice	2.79	1.81	87.47
			0.00			1" Ice	3.01	2.00	111.06
DB-T1-6Z-8AB-0Z	B	From Leg	1.00	0.0000	132.00	No Ice	4.80	2.00	44.00
			0.00			1/2" Ice	5.07	2.19	80.13
			0.00			1" Ice	5.35	2.39	120.22
DB-T1-6Z-8AB-0Z	C	From Leg	1.00	0.0000	132.00	No Ice	4.80	2.00	44.00
			0.00			1/2" Ice	5.07	2.19	80.13
			0.00			1" Ice	5.35	2.39	120.22
(2) LPA-80080/6CF ___	A	From Leg	4.00	0.0000	132.00	No Ice	8.63	5.42	21.00
			0.00			1/2" Ice	9.93	5.75	57.00
			0.00			1" Ice	11.23	6.09	93.00
(2) LPA-80080/6CF ___	B	From Leg	4.00	0.0000	132.00	No Ice	8.63	5.42	21.00
			0.00			1/2" Ice	9.93	5.75	57.00
			0.00			1" Ice	11.23	6.09	93.00
(2) JAHH-65B-R3B	A	From Leg	4.00	0.0000	132.00	No Ice	9.11	5.98	60.60
			0.00			1/2" Ice	9.58	6.44	118.68
			0.00			1" Ice	10.05	6.91	183.05
(2) JAHH-65B-R3B	B	From Leg	4.00	0.0000	132.00	No Ice	9.11	5.98	60.60
			0.00			1/2" Ice	9.58	6.44	118.68
			0.00			1" Ice	10.05	6.91	183.05
(2) JAHH-65B-R3B	C	From Leg	4.00	0.0000	132.00	No Ice	9.11	5.98	60.60
			0.00			1/2" Ice	9.58	6.44	118.68
			0.00			1" Ice	10.05	6.91	183.05
(2) LPA-80063/6CF	C	From Leg	4.00	0.0000	132.00	No Ice	9.59	5.42	27.00
			0.00			1/2" Ice	11.18	5.75	60.00
			0.00			1" Ice	12.77	6.09	93.00
Round Low Profile Platform	C	None		0.0000	132.00	No Ice	21.70	21.70	1500.00
						1/2" Ice	27.20	27.20	1700.00
						1" Ice	32.70	32.70	1900.00
***									
GPS-TMG-HR-26N	C	From Leg	0.50	0.0000	75.00	No Ice	0.08	0.08	0.60
			0.00			1/2" Ice	0.12	0.12	1.99
			0.00			1" Ice	0.18	0.18	4.11
***									

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	20345.07					
Bracing Weight	535.71					
Total Member Self-Weight	20880.77			153.82	-29.96	
Total Weight	33000.80			153.82	-29.96	

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 0 deg - No Ice		16.46	-13960.36	-1368816.62	-2203.14	-3.68
Wind 30 deg - No Ice		7131.00	-12242.07	-1200996.67	-702422.58	159.57
Wind 60 deg - No Ice		12190.97	-6994.44	-686213.43	-1199935.76	280.06
Wind 90 deg - No Ice		14067.42	-16.46	-2019.36	-1384307.14	325.51
Wind 120 deg - No Ice		12174.51	6965.92	682757.01	-1197762.58	283.74
Wind 150 deg - No Ice		7019.45	12081.79	1184630.40	-690286.52	165.95
Wind 180 deg - No Ice		-16.46	13960.36	1369124.25	2143.23	3.68
Wind 210 deg - No Ice		-7131.00	12242.07	1201304.30	702362.66	-159.57
Wind 240 deg - No Ice		-12190.97	6994.44	686521.07	1199875.85	-280.06
Wind 270 deg - No Ice		-14067.42	16.46	2327.00	1384247.23	-325.51
Wind 300 deg - No Ice		-12174.51	-6965.92	-682449.37	1197702.66	-283.74
Wind 330 deg - No Ice		-7019.45	-12081.79	-1184322.77	690226.61	-165.95
Member Ice	13601.79					
Total Weight Ice	63386.94			1116.93	-1252.52	
Wind 0 deg - Ice		7.27	-3832.32	-392252.20	-2212.55	-3.41
Wind 30 deg - Ice		1987.85	-3413.47	-348848.91	-205672.52	44.60
Wind 60 deg - Ice		3344.84	-1922.46	-196399.05	-345540.15	80.66
Wind 90 deg - Ice		3858.09	-7.27	156.90	-398247.35	95.10
Wind 120 deg - Ice		3337.57	1909.86	196970.08	-344580.11	84.06
Wind 150 deg - Ice		1922.75	3315.25	341304.57	-198918.52	50.50
Wind 180 deg - Ice		-7.27	3832.32	394486.06	-292.49	3.41
Wind 210 deg - Ice		-1987.85	3413.47	351082.76	203167.48	-44.60
Wind 240 deg - Ice		-3344.84	1922.46	198632.91	343035.11	-80.66
Wind 270 deg - Ice		-3858.09	7.27	2076.96	395742.31	-95.10
Wind 300 deg - Ice		-3337.57	-1909.86	-194736.22	342075.07	-84.06
Wind 330 deg - Ice		-1922.75	-3315.25	-339070.71	196413.48	-50.50
Total Weight	33000.80			153.82	-29.96	
Wind 0 deg - Service		6.13	-5199.10	-509724.12	-757.49	-1.37
Wind 30 deg - Service		2655.72	-4559.18	-447224.77	-261532.57	59.43
Wind 60 deg - Service		4540.15	-2604.86	-255509.67	-446815.97	104.30
Wind 90 deg - Service		5238.98	-6.13	-702.75	-515479.39	121.23
Wind 120 deg - Service		4534.02	2594.24	254321.04	-446006.64	105.67
Wind 150 deg - Service		2614.18	4499.49	441228.27	-257012.87	61.80
Wind 180 deg - Service		-6.13	5199.10	509937.30	861.18	1.37
Wind 210 deg - Service		-2655.72	4559.18	447437.95	261636.26	-59.43
Wind 240 deg - Service		-4540.15	2604.86	255722.85	446919.66	-104.30
Wind 270 deg - Service		-5238.98	6.13	915.92	515583.08	-121.23
Wind 300 deg - Service		-4534.02	-2594.24	-254107.86	446110.33	-105.67
Wind 330 deg - Service		-2614.18	-4499.49	-441015.09	257116.56	-61.80

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice

Comb. No.	Description
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	150 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30067.85	-1258.90	-1214.96
			Max. Mx	8	-11387.08	-383804.63	423.71
			Max. My	14	-11418.10	529.97	-377773.73
			Max. Vy	20	-13095.00	383610.86	-865.39
			Max. Vx	14	12909.74	529.97	-377773.73
			Max. Torque	8			-530.28
L2	110 - 85	Pole	Max Tension	30	62127.13	-40244.07	-450.35
			Max. Compression	26	-33318.45	-2052.38	-1690.12
			Max. Mx	8	-13273.60	-576472.93	734.41
			Max. My	14	-13294.15	794.69	-567771.25
			Max. Vy	8	13873.54	-576472.93	734.41
			Max. Vx	14	13692.31	794.69	-567771.25
			Max. Torque	8			-526.41
	85 - 95.69	Reinforcing	Max Tension	20	157564.38	-0.18	227.58

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	8	-161944.36	-1.05	-274.27
			Max. Mx	14	-2011.43	274.89	-0.92
			Max. My	20	157350.56	1.36	278.11
			Max. Vy	14	-10.96	274.89	-0.92
			Max. Vx	20	-11.73	1.36	278.11
L3	85 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41579.28	-2451.04	-1957.00
			Max. Mx	8	-18389.49	-961635.24	1411.05
			Max. My	14	-18404.82	1483.77	-948299.15
			Max. Vy	20	-16241.10	961197.54	-2101.58
			Max. Vx	14	16059.89	1483.77	-948299.15
			Max. Torque	8			-526.36
L4	70 - 55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46603.28	-2274.63	-1852.93
			Max. Mx	8	-21879.19	-1215806.65	1848.67
			Max. My	14	-21891.04	1944.32	-1199791.50
			Max. Vy	20	-17679.43	1215494.50	-2491.39
			Max. Vx	14	17499.26	1944.32	-1199791.50
			Max. Torque	8			-526.21
L5	55 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55870.16	-1990.10	-1684.80
			Max. Mx	8	-28689.84	-1655815.59	2534.48
			Max. My	14	-28696.57	2666.76	-1635647.59
			Max. Vy	20	-19801.50	1655716.18	-3089.96
			Max. Vx	14	19623.25	2666.76	-1635647.59
			Max. Torque	8			-525.83
L6	31.5 - 15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62913.49	-1791.76	-1567.47
			Max. Mx	20	-34045.09	1993369.35	-3499.28
			Max. My	14	-34047.94	3172.19	-1970273.96
			Max. Vy	20	-21138.78	1993369.35	-3499.28
			Max. Vx	14	20963.18	3172.19	-1970273.96
			Max. Torque	8			-525.47
L7	15 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69987.10	-1615.88	-1463.24
			Max. Mx	20	-39596.52	2320330.93	-3860.41
			Max. My	14	-39596.49	3632.57	-2294516.18
			Max. Vy	20	-22513.81	2320330.93	-3860.41
			Max. Vx	2	-22340.38	-3676.57	2294082.69
			Max. Torque	8			-525.34

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	26	69987.10	0.40	0.36
	Max. H_x	20	39600.87	22506.15	-26.34

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_z	3	29700.60	-26.34	22334.11
	Max. M_x	2	2294082.69	-26.34	22332.81
	Max. M_z	8	2320113.91	-22504.06	26.33
	Max. Torsion	20	522.29	22506.15	-26.34
	Min. Vert	21	29700.59	22505.38	-26.34
	Min. H_x	9	29700.59	-22505.38	26.33
	Min. H_z	15	29700.60	26.34	-22334.11
	Min. M_x	14	-2294516.18	26.33	-22332.80
	Min. M_z	20	-2320330.93	22506.15	-26.34
	Min. Torsion	8	-525.31	-22504.06	26.33

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	33000.80	0.00	0.00	153.82	-29.96	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	39600.76	26.34	-22332.81	-2294082.69	-3676.57	-15.13
0.9 Dead+1.6 Wind 0 deg - No Ice	29700.60	26.34	-22334.11	-2265899.11	-3612.78	-12.95
1.2 Dead+1.6 Wind 30 deg - No Ice	39600.96	11409.52	-19587.18	-2012825.12	-1177386.09	261.54
0.9 Dead+1.6 Wind 30 deg - No Ice	29700.72	11409.55	-19587.23	-1988050.88	-1162804.12	261.39
1.2 Dead+1.6 Wind 60 deg - No Ice	39600.96	19505.43	-11191.03	-1150309.47	-2011555.76	458.76
0.9 Dead+1.6 Wind 60 deg - No Ice	29700.72	19505.48	-11191.06	-1136124.92	-1986582.91	456.54
1.2 Dead+1.6 Wind 90 deg - No Ice	39600.76	22504.06	-26.33	-3448.36	-2320113.91	525.31
0.9 Dead+1.6 Wind 90 deg - No Ice	29700.59	22505.38	-26.33	-3458.41	-2291474.69	521.62
1.2 Dead+1.6 Wind 120 deg - No Ice	39600.96	19479.09	11145.41	1144406.88	-2007929.93	450.14
0.9 Dead+1.6 Wind 120 deg - No Ice	29700.72	19479.14	11145.43	1130187.49	-1983001.31	446.00
1.2 Dead+1.6 Wind 150 deg - No Ice	39600.96	11231.05	19330.75	1985641.25	-1157232.01	261.12
0.9 Dead+1.6 Wind 150 deg - No Ice	29700.72	11231.08	19330.80	1961010.27	-1142855.94	257.64
1.2 Dead+1.6 Wind 180 deg - No Ice	39600.76	-26.33	22332.80	2294516.18	3632.57	12.25
0.9 Dead+1.6 Wind 180 deg - No Ice	29700.60	-26.34	22334.11	2266210.19	3600.00	10.14
1.2 Dead+1.6 Wind 210 deg - No Ice	39600.96	-11409.52	19587.18	2013318.40	1177243.45	-238.22
0.9 Dead+1.6 Wind 210 deg - No Ice	29700.72	-11409.55	19587.23	1988416.75	1162699.54	-238.47
1.2 Dead+1.6 Wind 240 deg - No Ice	39600.96	-19505.43	11191.03	1150663.69	2011419.06	-434.18
0.9 Dead+1.6 Wind 240 deg - No Ice	29700.72	-19505.48	11191.06	1136366.54	1986483.14	-432.28
1.2 Dead+1.6 Wind 270 deg - No Ice	39600.87	-22506.15	26.34	3860.39	2320330.93	-522.29
0.9 Dead+1.6 Wind 270 deg - No Ice	29700.59	-22505.38	26.34	3753.92	2291468.71	-518.70

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.6 Wind 300 deg - No Ice	39600.96	-19479.09	-11145.41	-1143927.84	2007775.70	-471.68
0.9 Dead+1.6 Wind 300 deg - No Ice	29700.72	-19479.14	-11145.43	-1129831.49	1982889.20	-467.31
1.2 Dead+1.6 Wind 330 deg - No Ice	39600.96	-11231.05	-19330.75	-1985276.25	1157073.08	-287.18
0.9 Dead+1.6 Wind 330 deg - No Ice	29700.72	-11231.08	-19330.80	-1960760.02	1142740.17	-283.23
1.2 Dead+1.0 Ice+1.0 Temp	69987.10	-0.40	-0.36	1463.24	-1615.88	0.15
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	69987.10	7.27	-3831.98	-442828.95	-2881.51	-2.67
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	69987.10	1987.67	-3413.17	-393369.86	-232554.51	51.55
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	69987.10	3344.54	-1922.29	-221551.65	-390853.76	91.63
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	69987.10	3857.74	-7.28	522.37	-450412.55	106.98
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	69987.10	3337.26	1909.69	222889.10	-389764.35	93.65
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	69987.10	1922.57	3314.95	385965.91	-225158.61	55.50
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	69987.10	-7.28	3831.97	446055.92	-700.80	2.82
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	69987.10	-1987.68	3413.16	396597.55	228973.22	-50.58
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	69987.10	-3344.55	1922.28	224778.36	387273.63	-90.52
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	69987.10	-3857.75	7.27	2703.10	446832.63	-106.52
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	69987.10	-3337.27	-1909.69	-219664.12	386182.99	-94.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	69987.10	-1922.58	-3314.95	-382740.44	221576.06	-56.01
Dead+Wind 0 deg - Service	33000.79	6.13	-5198.38	-530260.26	-889.71	-3.02
Dead+Wind 30 deg - Service	33000.79	2655.35	-4558.55	-465178.09	-272198.28	60.27
Dead+Wind 60 deg - Service	33000.79	4539.52	-2604.50	-265772.11	-465021.65	106.87
Dead+Wind 90 deg - Service	33000.79	5238.24	-6.13	-666.38	-536465.95	124.26
Dead+Wind 120 deg - Service	33000.79	4533.39	2593.88	264666.00	-464177.80	108.31
Dead+Wind 150 deg - Service	33000.79	2613.81	4498.87	459129.45	-267525.32	63.86
Dead+Wind 180 deg - Service	33000.79	-6.13	5198.38	530617.37	799.25	2.88
Dead+Wind 210 deg - Service	33000.79	-2655.35	4558.55	465535.22	272107.96	-58.79
Dead+Wind 240 deg - Service	33000.79	-4539.52	2604.50	266128.44	464931.45	-105.25
Dead+Wind 270 deg - Service	33000.79	-5238.25	6.13	1022.57	536375.72	-124.09
Dead+Wind 300 deg - Service	33000.79	-4533.39	-2593.88	-264309.48	464086.83	-109.74
Dead+Wind 330 deg - Service	33000.79	-2613.82	-4498.87	-458772.82	267434.23	-65.45

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-33000.80	0.00	-0.00	33000.80	-0.00	0.000%
2	26.34	-39600.96	-22336.57	-26.34	39600.76	22332.81	0.008%
3	26.34	-29700.72	-22336.57	-26.34	29700.60	22334.11	0.007%
4	11409.59	-39600.96	-19587.31	-11409.52	39600.96	19587.18	0.000%
5	11409.59	-29700.72	-19587.31	-11409.55	29700.72	19587.23	0.000%
6	19505.56	-39600.96	-11191.10	-19505.43	39600.96	11191.03	0.000%
7	19505.56	-29700.72	-11191.10	-19505.48	29700.72	11191.06	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
8	22507.87	-39600.96	-26.34	-22504.06	39600.76	26.33	0.008%
9	22507.87	-29700.72	-26.34	-22505.38	29700.59	26.33	0.007%
10	19479.22	-39600.96	11145.47	-19479.09	39600.96	-11145.41	0.000%
11	19479.22	-29700.72	11145.47	-19479.14	29700.72	-11145.43	0.000%
12	11231.12	-39600.96	19330.87	-11231.05	39600.96	-19330.75	0.000%
13	11231.12	-29700.72	19330.87	-11231.08	29700.72	-19330.80	0.000%
14	-26.34	-39600.96	22336.57	26.33	39600.76	-22332.80	0.008%
15	-26.34	-29700.72	22336.57	26.34	29700.60	-22334.11	0.007%
16	-11409.59	-39600.96	19587.31	11409.52	39600.96	-19587.18	0.000%
17	-11409.59	-29700.72	19587.31	11409.55	29700.72	-19587.23	0.000%
18	-19505.56	-39600.96	11191.10	19505.43	39600.96	-11191.03	0.000%
19	-19505.56	-29700.72	11191.10	19505.48	29700.72	-11191.06	0.000%
20	-22507.87	-39600.96	26.34	22506.15	39600.87	-26.34	0.004%
21	-22507.87	-29700.72	26.34	22505.38	29700.59	-26.34	0.007%
22	-19479.22	-39600.96	-11145.47	19479.09	39600.96	11145.41	0.000%
23	-19479.22	-29700.72	-11145.47	19479.14	29700.72	11145.43	0.000%
24	-11231.12	-39600.96	-19330.87	11231.05	39600.96	19330.75	0.000%
25	-11231.12	-29700.72	-19330.87	11231.08	29700.72	19330.80	0.000%
26	0.00	-69987.10	0.00	0.40	69987.10	0.36	0.001%
27	7.27	-69987.10	-3832.32	-7.27	69987.10	3831.98	0.000%
28	1987.85	-69987.10	-3413.47	-1987.67	69987.10	3413.17	0.000%
29	3344.84	-69987.10	-1922.46	-3344.54	69987.10	1922.29	0.000%
30	3858.09	-69987.10	-7.27	-3857.74	69987.10	7.28	0.001%
31	3337.57	-69987.10	1909.86	-3337.26	69987.10	-1909.69	0.000%
32	1922.75	-69987.10	3315.25	-1922.57	69987.10	-3314.95	0.000%
33	-7.27	-69987.10	3832.32	7.28	69987.10	-3831.97	0.000%
34	-1987.85	-69987.10	3413.47	1987.68	69987.10	-3413.16	0.000%
35	-3344.84	-69987.10	1922.46	3344.55	69987.10	-1922.28	0.000%
36	-3858.09	-69987.10	7.27	3857.75	69987.10	-7.27	0.000%
37	-3337.57	-69987.10	-1909.86	3337.27	69987.10	1909.69	0.000%
38	-1922.75	-69987.10	-3315.25	1922.58	69987.10	3314.95	0.000%
39	6.13	-33000.80	-5199.10	-6.13	33000.79	5198.38	0.002%
40	2655.72	-33000.80	-4559.18	-2655.35	33000.79	4558.55	0.002%
41	4540.15	-33000.80	-2604.86	-4539.52	33000.79	2604.50	0.002%
42	5238.98	-33000.80	-6.13	-5238.24	33000.79	6.13	0.002%
43	4534.02	-33000.80	2594.24	-4533.39	33000.79	-2593.88	0.002%
44	2614.18	-33000.80	4499.49	-2613.81	33000.79	-4498.87	0.002%
45	-6.13	-33000.80	5199.10	6.13	33000.79	-5198.38	0.002%
46	-2655.72	-33000.80	4559.18	2655.35	33000.79	-4558.55	0.002%
47	-4540.15	-33000.80	2604.86	4539.52	33000.79	-2604.50	0.002%
48	-5238.98	-33000.80	6.13	5238.25	33000.79	-6.13	0.002%
49	-4534.02	-33000.80	-2594.24	4533.39	33000.79	2593.88	0.002%
50	-2614.18	-33000.80	-4499.49	2613.82	33000.79	4498.87	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	15	0.00010417	0.00013338
3	Yes	15	0.00006743	0.00010262
4	Yes	19	0.00000001	0.00011480
5	Yes	19	0.00000001	0.00007743
6	Yes	19	0.00000001	0.00011053
7	Yes	19	0.00000001	0.00007450
8	Yes	15	0.00010390	0.00014527

9	Yes	15	0.00006724	0.00011146
10	Yes	19	0.00000001	0.00011258
11	Yes	19	0.00000001	0.00007598
12	Yes	19	0.00000001	0.00010982
13	Yes	19	0.00000001	0.00007411
14	Yes	15	0.00010418	0.00013357
15	Yes	15	0.00006744	0.00010273
16	Yes	19	0.00000001	0.00011341
17	Yes	19	0.00000001	0.00007643
18	Yes	19	0.00000001	0.00011325
19	Yes	19	0.00000001	0.00007641
20	Yes	16	0.00004766	0.00007213
21	Yes	15	0.00006736	0.00011742
22	Yes	19	0.00000001	0.00010929
23	Yes	19	0.00000001	0.00007371
24	Yes	19	0.00000001	0.00011142
25	Yes	19	0.00000001	0.00007527
26	Yes	11	0.00000001	0.00004431
27	Yes	18	0.00000001	0.00008248
28	Yes	18	0.00000001	0.00009065
29	Yes	18	0.00000001	0.00009005
30	Yes	18	0.00000001	0.00008524
31	Yes	18	0.00000001	0.00009084
32	Yes	18	0.00000001	0.00009032
33	Yes	18	0.00000001	0.00008421
34	Yes	18	0.00000001	0.00009088
35	Yes	18	0.00000001	0.00008946
36	Yes	18	0.00000001	0.00008330
37	Yes	18	0.00000001	0.00008774
38	Yes	18	0.00000001	0.00008739
39	Yes	15	0.00000001	0.00004279
40	Yes	15	0.00000001	0.00005089
41	Yes	15	0.00000001	0.00004807
42	Yes	15	0.00000001	0.00004372
43	Yes	15	0.00000001	0.00005136
44	Yes	15	0.00000001	0.00004807
45	Yes	15	0.00000001	0.00004291
46	Yes	15	0.00000001	0.00004914
47	Yes	15	0.00000001	0.00005147
48	Yes	15	0.00000001	0.00004368
49	Yes	15	0.00000001	0.00004764
50	Yes	15	0.00000001	0.00004979

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 110	23.816	42	1.9073	0.0050
L2	110 - 85	10.092	46	1.1349	0.0012
L3	85 - 70	5.623	46	0.6783	0.0004
L4	70 - 55	3.703	46	0.5425	0.0003
L5	55 - 31.5	2.212	46	0.4059	0.0002
L6	31.5 - 15	0.671	46	0.2190	0.0001
L7	15 - 0	0.135	46	0.0910	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
150.00	Andrew ABT-DFDM-ADB	42	23.816	1.9073	0.0051	13001
143.00	800 MHz 2X50W RRH w/ Filter	42	21.076	1.7768	0.0042	9287
132.00	B5 RRH4x40-850	42	16.923	1.5695	0.0030	3611
75.00	GPS-TMG-HR-26N	46	4.301	0.5826	0.0003	6649

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	150 - 110	103.164	8	8.2846	0.0212
L2	110 - 85	43.716	16	4.9244	0.0049
L3	85 - 70	24.353	16	2.9409	0.0015
L4	70 - 55	16.035	16	2.3513	0.0011
L5	55 - 31.5	9.575	16	1.7583	0.0007
L6	31.5 - 15	2.903	16	0.9480	0.0003
L7	15 - 0	0.582	16	0.3939	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
150.00	Andrew ABT-DFDM-ADB	8	103.164	8.2846	0.0216	3088
143.00	800 MHz 2X50W RRH w/ Filter	8	91.297	7.7166	0.0181	2205
132.00	B5 RRH4x40-850	8	73.309	6.8148	0.0129	854
75.00	GPS-TMG-HR-26N	16	18.624	2.5252	0.0012	1538

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
L1	150 - 110 (1)	TP21.25x15x0.1875 4.8.2 (1.06 CR) - 1	40.00	0.00	0.0	12.7165	-11387.10	852766.00	0.013
L2	110 - 85 (2)	TP27.61x21.25x0.25	25.00	0.00	0.0	19.8356	-13273.60	1402030.00	0.009
L3	85 - 70 (3)	TP35.691x33.325x0.3722	15.00	0.00	0.0	42.3301	-18380.60	3032900.00	0.006
L4	70 - 55 (4)	TP38.058x35.691x0.3918	15.00	0.00	0.0	47.5231	-21872.00	3389480.00	0.006
L5	55 - 31.5 (5)	TP41.576x38.058x0.472	23.50	0.00	0.0	62.4767	-28685.60	4605160.00	0.006
L6	31.5 - 15 (6)	TP44.046x41.576x0.4977	16.50	0.00	0.0	69.7902	-34043.30	5136070.00	0.007
L7	15 - 0 (7)	TP52.064x44.046x0.5362	15.00	0.00	0.0	75.1266	-34055.50	5537580.00	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 110 (1)	TP21.25x15x0.1875	383805.00	365565.83	1.050	0.00	365565.83	0.000
L2	110 - 85 (2)	TP27.61x21.25x0.25	576473.33	702260.00	0.821	0.00	702260.00	0.000
L3	85 - 70 (3)	TP35.691x33.325x0.3722	961900.00	2176641.67	0.442	0.00	2176641.67	0.000
L4	70 - 55 (4)	TP38.058x35.691x0.3918	1218616.67	2594566.67	0.470	0.00	2594566.67	0.000
L5	55 - 31.5 (5)	TP41.576x38.058x0.472	1662616.67	3842766.67	0.433	0.00	3842766.67	0.000
L6	31.5 - 15 (6)	TP44.046x41.576x0.4977	2002908.33	4540900.00	0.441	0.00	4540900.00	0.000
L7	15 - 0 (7)	TP52.064x44.046x0.5362	2002908.33	4887225.00	0.410	0.00	4887225.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 110 (1)	TP21.25x15x0.1875	13094.40	426383.00	0.031	526.70	741254.17	0.001
L2	110 - 85 (2)	TP27.61x21.25x0.25	13873.60	701016.00	0.020	524.62	1423966.67	0.000
L3	85 - 70 (3)	TP35.691x33.325x0.3722	16408.50	1516450.00	0.011	238.67	4413550.00	0.000
L4	70 - 55 (4)	TP38.058x35.691x0.3918	17845.20	1694740.00	0.011	238.49	5260975.00	0.000
L5	55 - 31.5 (5)	TP41.576x38.058x0.472	19965.40	2302580.00	0.009	238.31	7791933.33	0.000
L6	31.5 - 15 (6)	TP44.046x41.576x0.4977	21301.40	2568040.00	0.008	238.24	9207500.00	0.000
L7	15 - 0 (7)	TP52.064x44.046x0.5362	21383.10	2802810.00	0.008	238.24	9909750.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 110 (1)	0.013	1.050	0.000	0.031	0.001	**1.064** ✗	1.000	4.8.2 ✗
L2	110 - 85 (2)	0.009	0.821	0.000	0.020	0.000	0.831 ✓	1.000	4.8.2 ✓
L3	85 - 70 (3)	0.006	0.442	0.000	0.011	0.000	0.448 ✓	1.000	4.8.2 ✓
L4	70 - 55 (4)	0.006	0.470	0.000	0.011	0.000	0.476 ✓	1.000	4.8.2 ✓
L5	55 - 31.5 (5)	0.006	0.433	0.000	0.009	0.000	0.439 ✓	1.000	4.8.2 ✓
L6	31.5 - 15 (6)	0.007	0.441	0.000	0.008	0.000	0.448 ✓	1.000	4.8.2 ✓
L7	15 - 0 (7)	0.006	0.410	0.000	0.008	0.000	0.416	1.000	4.8.2 ✓

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio ✔	Allow. Stress Ratio	Criteria

Reinforcing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L2	95.69 - 85	2 1/2	10.69	2.50	38.4 K=0.80	4.9087	-161944.00	281863.00	0.575 [1]

[1] P_u / ϕP_n controls

Reinforcing Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L2	95.69 - 85	2 1/2	274.27	14648.42	0.019	0.00	14648.42	0.000

Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio ✔	Allow. Stress Ratio	Criteria
L2	95.69 - 85	2 1/2	0.575	0.019	0.000	0.575 [1]	1.000	4.8.1 ✔

[1] P_u / ϕP_n controls

Tension Checks

Reinforcing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L2	95.69 - 85	2 1/2	10.69	2.50	48.0	4.9087	157564.00	331340.00	0.476 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Reinforcing Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L2	95.69 - 85	2 1/2	227.58	14648.42	0.016	0.00	14648.42	0.000

Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L2	95.69 - 85	2 1/2	0.476	0.016	0.000	0.476 [1] ✔	1.000	4.8.1 ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	150 - 110	Pole	TP21.25x15x0.1875	1	-11387.10	852766.00	106.4	Fail ✘
L2	110 - 85	Pole	TP27.61x21.25x0.25	2	-13273.60	1402030.00	83.1	Pass
	95.69 - 85	Reinforcing	2 1/2	8	-161944.00	281863.00	57.5	Pass
L3	85 - 70	Pole	TP35.691x33.325x0.3722	3	-18380.60	3032900.00	44.8	Pass
L4	70 - 55	Pole	TP38.058x35.691x0.3918	4	-21872.00	3389480.00	47.6	Pass
L5	55 - 31.5	Pole	TP41.576x38.058x0.472	5	-28685.60	4605160.00	43.9	Pass
L6	31.5 - 15	Pole	TP44.046x41.576x0.4977	6	-34043.30	5136070.00	44.8	Pass
L7	15 - 0	Pole	TP52.064x44.046x0.5362	7	-34055.50	5537580.00	41.6	Pass
						Summary		
						Pole (L1)	106.4	Fail ✘
						Reinforcing (L2)	57.5	Pass
						RATING =	**106.4**	**Fail ✘**

Code Rev.	G	
Moment	2332.2 k-ft	
Axial	39.6 k	

Date	8/4/2017
Engineer	John.Bigham
Site #	302523
Carrier	VERIZON WIRELESS

Base/Flange Plate	Plate Type	*Baseplate*	
	Pole Diameter	52.064	in
	Pole Thickness	0.375	in
	Plate Diameter	63.084	in
	Plate Thickness	2	in
	Plate Fy	60	ksi
	Weld Length	0.25	in
	ϕ_s Resistance	508.43	k-in
	Applied	216.36	k-in
Stiffeners	#	*0*	

Bolts	#	*16*	
	Bolt Circle	58	in
	(R)adial / (S)quare	R	
●	Diameter	1.5	in
	Hole Diameter	1.625	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	134.90	k
	Applied	113.55	k
Reinforcement ●	#	*0*	
Extra Bolts O	#	*8*	
	Bolt Circle	44	in
	(R)adial / (S)quare	S	
	Bolt Gap	6	in
	Offset Angle	45	°
	Diameter	2.25	in
	Type	A615	
	Fy	75	ksi
	Fu	100	ksi
	ϕ_s Resistance	259.82	k
	Applied	165.52	k

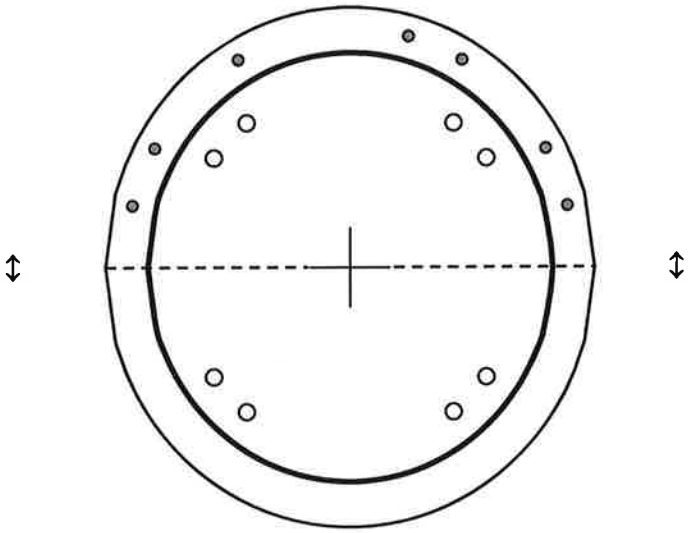


Plate Stress Ratio:
0.43 (Pass)

Bolt Stress Ratio:
0.84 (Pass)

Extra Bolt Stress Ratio:
0.64 (Pass)

Base/Flange Plate			
	Plate Type	*Flange @ 15.0 ft*	
	Pole Diameter	41.726	in
	Pole Thickness	0.3125	in
	Plate Diameter	54.652	in
	Plate Thickness	2	in
	Plate Fy	60	ksi
	Weld Length	0.25	in
	ϕ_s Resistance	589.89	k-in
	Applied	308.01	k-in
Stiffeners	#	*0*	

Bolts			
	#	*12*	
	Bolt Circle	49.652	in
	(R)adial / (S)quare	R	
●	Diameter	1.5	in
	Hole Diameter	1.625	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	126.47	k
	Applied	106.19	k
Reinforcement ●	#	*0*	
Extra Bolts O	#	*0*	

Code Rev.	*G*
Moment	2002.9 k-ft
Act. Moment	1353.9 k-ft
Axial	34.0 k

Date	8/4/2017
Engineer	John.Bigham
Site #	302523
Carrier	VERIZON WIRELESS

Required Flange Thickness:

1.45 in OK

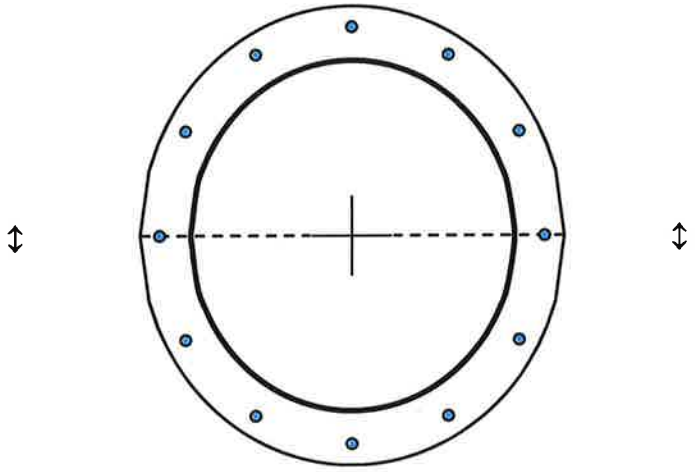


Plate Stress Ratio:

0.52 (Pass)

Bolt Stress Ratio:

0.84 (Pass)

Base/Flange Plate			
	Plate Type	*Flange @ 55.0 ft*	
	Pole Diameter	35.742	in
	Pole Thickness	0.25	in
	Plate Diameter	48.456	in
	Plate Thickness	2	in
	Plate Fy	60	ksi
	Weld Length	0.25	in
	ϕ_s Resistance	505.29	k-in
	Applied	206.17	k-in
Stiffeners	#	*0*	

Bolts			
	#	*12*	
	Bolt Circle	43.456	in
	(R)adial / (S)quare	R	
●	Diameter	1.5	in
	Hole Diameter	1.625	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	126.47	k
	Applied	73.78	k
Reinforcement ●	#	*0*	
Extra Bolts O	#	*0*	

Code Rev.	*G*
Moment	1215.6 k-ft
Act. Moment	821.7 k-ft
Axial	21.9 k

Date	8/4/2017
Engineer	John.Bigham
Site #	302523
Carrier	VERIZON WIRELESS

Required Flange Thickness:

1.28 in OK

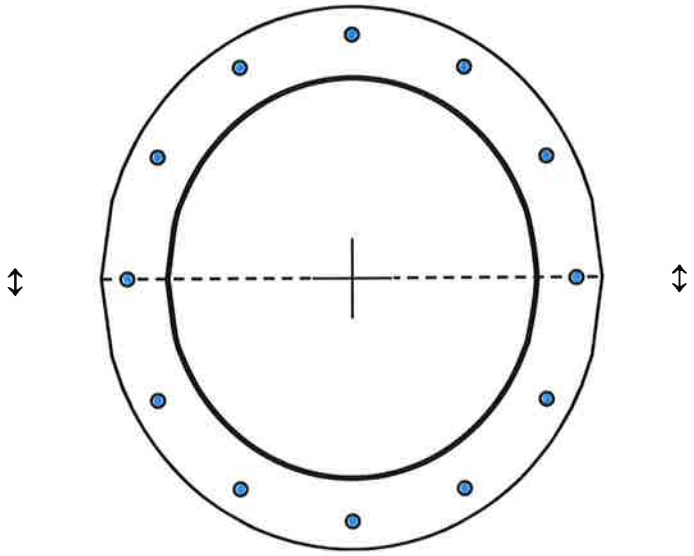


Plate Stress Ratio:

0.41 (Pass)

Bolt Stress Ratio:

0.58 (Pass)

Base/Flange Plate			
	Plate Type	*Flange @ 110.0 ft*	
	Pole Diameter	21.25	in
	Pole Thickness	0.1875	in
	Plate Diameter	28.5	in
	Plate Thickness	1	in
	Plate Fy	60	ksi
	Weld Length	0.25	in
	ϕ_s Resistance	201.01	k-in
	Applied	84.29	k-in
Stiffeners			
	#	*6*	*Show*
	Thickness	0.5	in
	Length	3.5	in
	Height	6	in
	Chamfer	0.5	in
	Offset Angle	0	°
	Fy	50	ksi

Bolts			
	#	*12*	
	Bolt Circle	25.75	in
	(R)adial / (S)quare	R	
●	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	58.64	k
Reinforcement ●			
	#	*0*	
Extra Bolts O			
	#	*0*	

Code Rev. *G*

Moment 383.8 k-ft
Axial 11.4 k

Date 8/4/2017
Engineer John.Bigham
Site # 302523
Carrier VERIZON WIRELESS

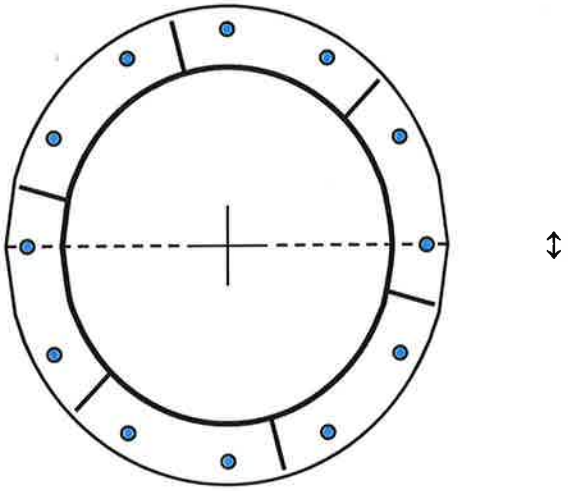
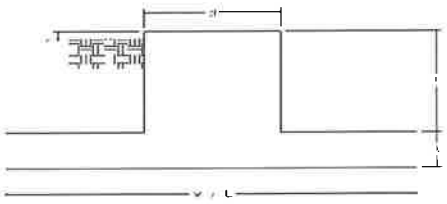


Plate Stress Ratio:
0.42 (Pass)

Bolt Stress Ratio:
1.08 (Fail)

Site Name:	New Milford CT2, CT
Site Number:	302523
Engineering Number:	OAA707682
Engineer:	John.Bigham
Date:	08/04/17
Tower Type:	MP

Program Last Updated: *5/13/2014*



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

Design / Analysis / Mapping:	Analysis				
Compression/Leg:	39.6	k	Concrete Strength (f'_c):	3000	psi
Uplift/Leg:		k	Pad Tension Steel Depth:	32.00	in
Total Shear:	22.7	k	ϕ_{Shear}:	0.75	
Moment:	2332.2	k-ft	$\phi_{Flexure\ /\ Tension}$:	0.90	
Tower + Appurtenance Weight:	33.0	k	$\phi_{Compression}$:	0.65	
Depth to Base of Foundation (l + t - h):	8.00	ft	β:	0.85	
Diameter of Pier (d):	12.00	ft	Bottom Pad Rebar Size #:	10	
Height of Pier above Ground (h):	0.50		# of Bottom Pad Rebar:	36	
Width of Pad (W):	18.00	ft	Pad Bottom Steel Area:	45.72	in^2
Length of Pad (L):	18.00	ft	Pad Steel F_y:	60000	psi
Thickness of Pad (t):	3.00	ft	Top Pad Rebar Size #:	5	
Tower Leg Center to Center:	0.00	ft	# of Top Pad Rebar:	36	
Number of Tower Legs:	1.0	(1 if MP or GT)	Pad Top Steel Area:	11.16	in^2
Tower Center from Mat Center:	0.00	ft	Pier Rebar Size #:	11	
Depth Below Ground Surface to Water Table:	99.00	ft	Pier Steel Area (Single Bar):	1.56	in^2
Unit Weight of Concrete:	150.0	pcf	# of Pier Rebar:	14	
Unit Weight of Soil Above Water Table:	115.0	pcf	Pier Steel F_y:	60000	psi
Unit Weight of Water:	62.4	pcf	Pier Cage Diameter:	136.0	in
Unit Weight of Soil Below Water Table:	52.6	pcf	Rebar Strain Limit:	0.008	
Friction Angle of Uplift:	30.0	Degrees	Steel Elastic Modulus:	29000	ksi
Ultimate Coefficient of Shear Friction:	0.50		Tie Rebar Size #:	4	
Ultimate Compressive Bearing Pressure:	37700.0	psf	Tie Steel Area (Single Bar):	0.20	in^2
Ultimate Passive Pressure on Pad Face:	900.0	psf	Tie Spacing:	12	in
$\phi_{Soil\ and\ Concrete\ Weight}$:	0.9		Tie Steel F_y:	60000	psi
ϕ_{Soil}:	0.75				

Overturning Moment Usage

Design OTM:	2525.2	k-ft
OTM Resistance:	3499.8	k-ft
Design OTM / OTM Resistance:	0.72	Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	4399	psf
Factored Nominal Bearing Pressure:	28275	psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.16	Result: OK
Load Direction Controling Design Bearing Pressure:	Diagonal to Pad Edge	

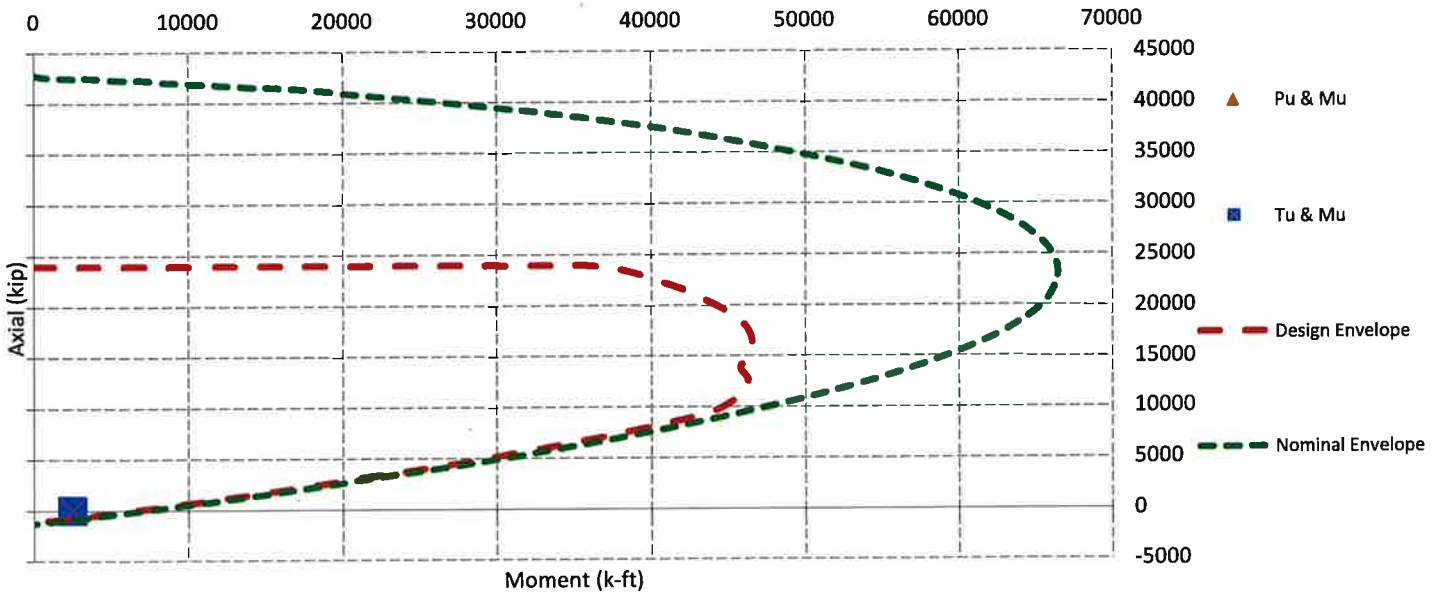
Sliding Factor of Safety

Total Factored Sliding Resistance:	178.3	k
Sliding Design / Sliding Resistance:	0.13	Result: OK

One Way Shear, Flexual Capacity, and Punching Shear

Factored One Way Shear (V_u):	58.3	k
One Way Shear Capacity (ϕV_c):	256.3	k - ACI11.3.1.1
$V_u / \phi V_c$:	0.23	Result: OK
Load Direction Controling Shear Capacity:	Diagonal to Pad Edge	
Lower Steel Pad Factored Moment (M_u):	337.4	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	4312.7	k-ft - ACI10.3
$M_u / \phi M_n$:	0.08	Result: OK
Load Direction Controling Flexural Capacity:	Diagonal to Pad Edge	
Upper Steel Pad Factored Moment (M_u):	132.8	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	1581.1	k-ft
$M_u / \phi M_n$:	0.08	Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0066	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0016	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	6	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	-478.5	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	2907.3	k - ACI11.12.2.1
$V_u / \phi V_c$:	0.16	Result: OK
Factored Moment in Pier (M_u):	2457.1	k-ft
Pier Moment Capacity (ϕM_n):	6560.9	k-ft
$M_u / \phi M_n$:	0.37	Result: OK
Factored Shear in Pier (V_u):	22.7	k
Pier Shear Capacity (ϕV_n):	1339.7	k
$V_u / \phi V_c$:	0.02	Result: OK
Pier Shear Reinforcement Ratio:	0.0001	No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0	k
Pier Tension Capacity (ϕT_n):	1179.4	k
$T_u / \phi T_n$:	0.00	Result: OK
Factored Compression in Pier (P_u):	39.6	k
Pier Compression Capacity (ϕP_n):	21566.3	k - ACI10.3.6.2
$P_u / \phi P_n$:	0.00	Result: OK
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.37	Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

302523 - NEW MILFORD CT 2, CONNECTICUT

150 FT MONOPOLE MODIFICATIONS

AS-BUILT SIGN-OFF		
DESCRIPTION	SIGNATURE	DATE
CONTRACTOR NAME		
CONTRACTOR REPRESENTATIVE (PRINT NAME)		
CONTRACTOR REPRESENTATIVE (SIGNATURE)		
REDEVELOPMENT P.M. (PRINT NAME)		
REDEVELOPMENT P.M. (SIGNATURE)		

PROJECT SUMMARY

ATC PROJECT NUMBER: OAA707682_C6_06

CUSTOMER: VERIZON WIRELESS

CUSTOMER SITE NAME: NEW MILFORD

CUSTOMER SITE NUMBER: N/A

SITE ADDRESS: 4 ELKINGTON FARM RD
NEW MILFORD, CT 06776

DATE: 02/16/18

GEOGRAPHIC COORDINATES: 41.59086111
-73.4086

PROJECT DESCRIPTION

THE MODIFICATIONS PRESENTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER ENGINEERING PROJECT NUMBER OAA707682_C3_01 DATED 08/04/17. SATISFACTORY COMPLETION OF THE WORK INDICATED ON THESE DRAWINGS WILL RESULT IN THE STRUCTURE MEETING THE REQUIREMENTS OF THE SPECIFICATIONS UNDER WHICH THE STRUCTURAL WAS COMPLETED.

SHEET	SHEET TITLE	REV.
B-1	BILL OF MATERIALS	0
IGN	IBC GENERAL NOTES	0
SIC	SPECIAL INSPECTION CHECKLIST	0
A-1	MODIFICATION PROFILE	0
A-2	REINFORCEMENT INSTALLATION DETAILS	0
A-2A	REINFORCEMENT INSTALLATION DETAILS (CONT'D)	0
F-1	#20 BAR BRACKET WELDMENT FABRICATION DETAILS	0
F-2	TERMINATION BRACKET WELDMENT FABRICATION DETAILS	0
#20SB	#20 STEP BOLT BRACKET INSTALLATION DETAILS	0

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CWB	02/16/18

ATC SITE NUMBER:
302523

ATC SITE NAME:
NEW MILFORD CT 2
CONNECTICUT

SITE ADDRESS:
4 ELKINGTON FARM RD
NEW MILFORD, CT 06776

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32598
LICENSED PROFESSIONAL ENGINEER

Authorized by "EOR"
Feb 23 2018 4:57 PM
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DRAWN BY:	CWB
APPROVED BY:	DAVI/KCI
DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C6_06

COVER

SHEET NUMBER:	REVISION:
COVER	0

BILL OF MATERIALS

QUANTITY REQUIRED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTION	LENGTH	SHEET LIST	PART WEIGHT	WEIGHT (lb)	NOTES
			DYWIDAG REINFORCEMENT MATERIAL & HARDWARE					
3	3	----	#20 DYWIDAG THREADBAR	4'-6"	A-1, A-3	75.2	225	GALVANIZED
6	6	----	#20 COUPLER W/ (2) HEX NUTS EA	----	----	----	----	GALVANIZED
12	12	302523-1	#20 BAR BRACKET WELDMENT	1'-0"	A-2, A-2A, F-1	27.0	324	ECCENTRIC
6	6	302523-2	#20 TERMINATION BRACKET WELDMENT	2'-6"	A-2, A-2A, F-2	67.6	406	ECCENTRIC
84	88	RUH4	RU-BOLT, 5/8"Ø X 3 1/8" C/C	----	----	----	----	(2) HHN-LKW-FW / GALVANIZED
54	57	LHMB16#2-HDG	HOLLO-BOLT, 5/8"Ø (M16) LINDAPTER	----	----	----	----	HOT-DIPPED GALVANIZED
12	17	#20SB	STEP BOLT WELDMENT	0'-7 1/4"	#20SB	2.5	43	
						TOTAL WEIGHT (lb)	998	PAGE 1 OF 1

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ATC SITE NAME:
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CONNECTICUT

SITE ADDRESS:
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NEW MILFORD, CT 06776

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DRAWN BY:	CWB
APPROVED BY:	DAVI/KCI
DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C5_06

BILL OF MATERIALS

SHEET NUMBER:	REVISION:
B-1	0

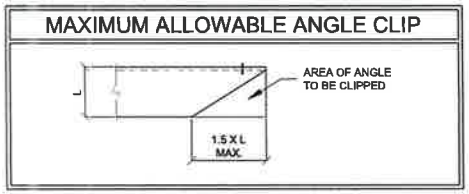
GENERAL

1. ALL WORK TO BE COMPLETED PER APPLICABLE LOCAL, STATE, FEDERAL CODES AND ORDINANCES AND COMPLY WITH ATC MASTER SPECIFICATIONS FOR WIRELESS TOWER SITES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND ABIDING BY ALL REQUIRED PERMITS.
2. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
4. ANY SUBSTITUTIONS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
5. ANY MANUFACTURED DESIGN ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN ELEMENTS MUST BE STAMPED BY AN ENGINEER PROFESSIONALLY REGISTERED IN THE STATE OF THE PROJECT, AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
6. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND OSHA SAFETY REGULATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER ANSI/TIA-322 AND ANSI/ASSE A10.48, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
8. CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

STRUCTURAL STEEL

1. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS, LATEST EDITION.
2. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
3. ALL U-BOLTS SHALL BE ASTM A36 OR EQUIVALENT, WITH LOCKING DEVICE, UNLESS NOTED OTHERWISE.
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH.
5. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES & GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
6. ALL STRUCTURAL STEEL EMBEDDED IN THE CONCRETE SHALL BE APPLIED WITH (2) BRUSHED COATS OF POLYGUARD CA-14 MASTIC OR EQUIVALENT. REFER TO THE MANUFACTURER SPECIFICATIONS FOR SURFACE PREPARATION AND APPLICATION. APPLICATION OF POLYGUARD 400 WRAP IS NOT ESSENTIAL.
7. CONTRACTOR SHALL PERFORM WORK ON ONLY ONE (1) TOWER FACE AND REPLACE/REINFORCE ONE (1) BOLT/MEMBER AT A TIME.
8. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.

MAXIMUM ALLOWABLE ANGLE CLIP



PAINT

1. AS REQUIRED, CLEAN AND PAINT PROPOSED STEEL ACCORDING TO FAA ADVISORY CIRCULAR AC 70/7460-1L.

WELDING

1. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
2. ALL WELDS SHALL BE INSPECTED VISUALLY. IF DIRECTED BY ENGINEER OF RECORD, 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE (100% IF REJECTABLE DEFECTS ARE FOUND) TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
3. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
4. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
5. ALL WELDING ON LATTICE TOWERS SHALL BE DONE WITH E70XX ELECTRODES. ALL WELDING ON POLE STRUCTURES SHALL BE DONE WITH E80XX ELECTRODES UNLESS NOTED OTHERWISE.
6. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

BOLT TIGHTENING PROCEDURE

1. STRUCTURAL CONNECTIONS TO BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC SPECIFICATIONS.
2. FLANGE BOLTS SHALL BE INSTALLED AND TIGHTENED USING DIRECT TENSION INDICATING (DTI) SQUIRTER WASHERS. DTI SQUIRTER WASHERS ARE TO BE INSTALLED AND ORIENTED / TIGHTENED PER MANUFACTURER SPECIFICATIONS TO ACHIEVE DESIRED LEVEL OF BOLT PRE-TENSION.
3. IN LIEU OF USING DTI SQUIRTER WASHERS, FLANGE BOLTS MAY BE TIGHTENED USING AISC / RCSC "TURN-OF-THE-NUT" METHOD, PENDING APPROVAL BY THE ENGINEER OF RECORD (EOR). TIGHTEN FLANGE BOLTS USING THE CHART BELOW:

BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS

1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
5/8"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
3/4"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
7/8"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS UP TO AND INCLUDING 4.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS UP TO AND INCLUDING 5.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS UP TO AND INCLUDING 5.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS UP TO AND INCLUDING 6.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT

BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS

1/2"	BOLTS 2.25 TO 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS 5.75 TO 11.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO 12.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

4. SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS", LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

   FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

   8.2.1 TURN-OF-NUT PRETENSIONING
   BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

5. ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

   ALL BOLT HOLES SHALL BE ALIGNED TO PERMIT INSERTION OF THE BOLTS WITHOUT UNDUE DAMAGE TO THE THREADS. BOLTS SHALL BE PLACED IN ALL HOLES WITH WASHERS POSITIONED AS REQUIRED AND NUTS THREADED TO COMPLETE THE ASSEMBLY. COMPACTING THE JOINT TO THE SNUG-TIGHT CONDITION SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT. THE SNUG-TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.

APPLICABLE CODES AND STANDARDS

1. ANSI/TIA: STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES, 222-G EDITION.
2. 2016 CONNECTICUT STATE BUILDING CODE.
3. 2012 INTERNATIONAL BUILDING CODE.
4. ACI 318: AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 318-02.
5. CRSI: CONCRETE REINFORCING STEEL INSTITUTE, MANUAL OF STANDARD PRACTICE, LATEST EDITION.
6. AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
7. AWS: AMERICAN WELDING SOCIETY D1.1, STRUCTURAL WELDING CODE, LATEST EDITION.

SPECIAL INSPECTION

1. A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH IBC 2012, SECTION 1704 AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
   a) STRUCTURAL WELDING (CONTINUOUS INSPECTION OF FIELD WELD ONLY)
   b) HIGH STRENGTH BOLTS (PERIODIC INSPECTION OF A325 EXTENSION FLANGE BOLTS TO BE TIGHTENED PER "TURN-OF-THE-NUT" METHOD)
2. THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER IN ACCORDANCE WITH IBC 2012, SECTION 1704. UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM SUCH WORK WITHOUT THE SPECIAL INSPECTIONS.

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IBC GENERAL NOTES

SHEET NUMBER:	REVISION:
IGN	0

MODIFICATION INSPECTION NOTES

THE SPECIAL INSPECTION (SI) PROCEDURE IS INTENDED TO CONFIRM THAT CONSTRUCTION AND INSTALLATION MEETS ENGINEERING DESIGN, ATC PROCEDURES AND ATC STANDARD SPECIFICATIONS FOR WIRELESS TOWER SITES.

TO ENSURE THAT THE REQUIREMENTS OF THE SI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR AND THE INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED FROM AMERICAN TOWER CORPORATION (ATC). IT IS EXPECTED THAT EACH PARTY WILL PROACTIVELY REACH OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR AMERICAN TOWER POINT OF CONTACT.

SPECIAL INSPECTOR

THE SPECIAL INSPECTOR IS REQUIRED TO CONTACT THE GENERAL CONTRACTOR AS SOON AS RECEIVING A PO FROM ATC. UPON RECEIVING A PO FROM ATC THE SPECIAL INSPECTOR AT A MINIMUM MUST:

- REVIEW THE REQUIREMENTS OF THE SI CHECKLIST.
- WORK WITH THE GENERAL CONTRACTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
- ANY CONCERNS WITH THE SCOPE OF WORK OR PROJECT COMMITMENT MUST BE RELAYED TO THE ATC POINT OF CONTACT IMMEDIATELY.

THE SPECIAL INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR INSPECTION AND TEST REPORTS, REVIEWING THESE DOCUMENTS FOR ADHERENCE TO CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE SI REPORT TO AMERICAN TOWER CORPORATION.

GENERAL CONTRACTOR

THE GENERAL CONTRACTOR IS REQUIRED TO CONTACT THE SI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE SI CHECKLIST.
- WORK WITH THE SI TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS.

THE GENERAL CONTRACTOR SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE SI CHECKLIST.

SPECIAL INSPECTION CHECKLIST

INSPECTION DOCUMENT	DESCRIPTION	INSPECTION TESTING REQUIRED	RESPONSIBILITY	SI REVIEW REQUIRED			INSPECTION FREQUENCY	
				PRE CX	DURING CX	POST CX	PERIODIC	CONTINUOUS
SPECIAL INSPECTION FIELD WORK & REPORT	DOCUMENTATION AND SITE VISIT CONDUCTED BY AN ATC APPROVED SPECIAL INSPECTOR AS REQUIRED BY ATC AND OTHER AUTHORITIES HAVING JURISDICTION. INSPECTION PARAMETERS TO FOLLOW ATC'S STANDARD SPECIFICATION FOR WIRELESS TOWER SITES.	✔	SI			✔		
ENGINEERING ASSEMBLY DRAWINGS	GC SHALL SUBMIT DRAWINGS TO SI FOR INCLUSION IN SI REPORT	✔	GC	✔				
FABRICATED MATERIAL VERIFICATION & INSPECTION	MTR AND OR MILL CERTIFICATIONS FOR SUPPLIED MATERIALS GC SHALL SUPPLY SI WITH REPORTS TO BE INCLUDED IN SI REPORT WHEN REQUIRED BY ATC	✔	SI	✔				
CERTIFIED WELD INSPECTION	INSPECTION AND REPORT OF STRUCTURAL WELDING PERFORMED DURING PROJECT COMPLETED BY A CWI AND INCLUDED WITHIN SI REPORT		GC / TA					
FOUNDATION INSPECTION & VERIFICATION	VISUAL OBSERVATION AND APPROVAL OF FOUNDATION EXCAVATION, REBAR PLACEMENT, CASING/SHORING/FORMING PLACEMENT, AND ANCHOR TEMPLATE AND ANCHOR PLACEMENT - TO BE SI APPROVED PRIOR TO CONCRETE POUR AND DOCUMENTED IN THE SI REPORT		SI					
ANCHOR, ROCK ANCHOR OR HELICAL PULL-OUT TEST	PULL TESTING OF INSTALLED ANCHORS TO BE COMPLETED AND DOCUMENTED IN SI REPORT		GC / TA					
CONCRETE INSPECTION & VERIFICATION	CONCRETE MIX DESIGN, SLUMP TEST, COMPRESSIVE TESTING, AND SAMPLE GATHERING TECHNIQUES ARE TO BE PROVIDED FOR INCLUSION IN THE SI REPORT. SI SHALL VERIFY CONCRETE PLACEMENT AS REQUIRED BY THE DESIGN DOCUMENTS (INSPECTION FREQUENCY IS MARKED CONTINUOUS)		GC / TA					
DYWIDAG PLACEMENT/ANCHOR BOLT EMBEDMENT - EPOXY/GROUT INSTALL	ANCHOR/BAR EMBEDMENT, HOLE SIZE, EPOXY/GROUT TYPE, INSTALLATION TEMPERATURE AND INSTALLATION SHALL BE VERIFIED BY THE SI AND INCLUDED IN THE SI REPORT		GC / SI					
BASE PLATE GROUT INSPECTION & VERIFICATION	BASE PLATE GROUTING TYPE AND PLACEMENT SHALL BE CONFIRMED BY THE SI AND INCLUDED IN THE SI REPORT		GC / SI					
EARTHWORK INSPECTION & VERIFICATION	EXCAVATION, FILL, SLOPE, GRADE AND OTHER EARTHWORK REQUIREMENTS PER PLANS SHALL BE VERIFIED BY THE SI AND INCLUDED IN THE SI REPORT		GC / TA					
COMPACTION VERIFICATION	CONTRACTOR SHALL PROVIDE AN INDEPENDENT THIRD PARTY CERTIFIED INSPECTION WHICH PROVIDES TEST RESULTS FOR COMPACTION TEST OF SOILS IN PLACE TO ASTM STANDARDS.		GC / TA					
GROUND TESTING & VERIFICATION	GC SHALL PROVIDE DOCUMENTATION SHOWING THAT THE GROUNDING SYSTEM SHALL HAVE A MEASURED RESISTANCE TO THE GROUND OF NOT MORE THAN THE RECOMMENDED 10 OHMS. PER THE ATC CONSTRUCTION SPECIFICATION UNDER SECTION 2.15 THIS DOCUMENTATION MUST BE AN INDEPENDENT CERTIFICATION.		GC					
STEEL CONSTRUCTION INSPECTION & VERIFICATION	VISUAL OBSERVATION AND APPROVAL OF STEEL CONSTRUCTION TO BE PERFORMED BY THE SI. INSPECTION TO INCLUDE VERIFICATION OF NEW CONSTRUCTION OR MODIFICATION OF EXISTING CONSTRUCTION PER ENGINEERED PLANS. DETAILED VERIFICATION SHALL BE INCLUDED IN SI REPORT.	✔	SI			✔	✔	
ON-SITE COLD GALVANIZING VERIFICATION	SI SHALL VERIFY WITH GC ALL COLD GALVANIZATION TYPE AND APPLICATION AND INCLUDE SUMMARY IN SI REPORT	✔	GC			✔	✔	
GUY WIRE TENSIONING & TOWER ALIGNMENT REPORT	GC SHALL PROVIDE SI EVIDENCE OF PROPER GUY TENSIONING AND TOWER PLUMB PER PLANS. SI SHALL VERIFY AND INCLUDE PLUMB AND TENSION REPORTING IN SI REPORT.		GC					
GC AS-BUILT DRAWINGS WITH CONSTRUCTION RED-LINES	GC SHALL SUBMIT "AS-BUILT" DRAWINGS INDICATING ANY APPROVED CHANGES TO ENGINEERED PLANS TO SI FOR APPROVAL/REVIEW AND INCLUSION IN SI REPORT	✔	GC			✔		
SI AS-BUILT DRAWINGS WITH INSPECTION RED-LINES (AS REQUIRED)	SI SHALL SUBMIT "AS-BUILT" DRAWINGS INDICATING ANY APPROVED CHANGES TO ENGINEERED PLANS WITHIN SI REPORT	✔	SI			✔		
TIA INSPECTION	SI SHALL COMPLETE TIA INSPECTION AND PROVIDE SEPARATE TIA INSPECTION DOCUMENTATION TO ATC CM		SI					
PHOTOGRAPHS	PHOTOGRAPHIC EVIDENCE OF SPECIAL INSPECTION, ON SITE REMEDIATION, AND ITEMS FAILING INSPECTION & REQUIRING FOLLOW UP TO BE INCLUDED WITHIN THE SI REPORT. COMPLETE PHOTO LOG IS TO BE SUBMITTED WITHIN SI REPORT.	✔	GC / SI			✔		

NOTE: SPECIAL INSPECTIONS ARE INTENDED TO BE A COLLABORATIVE EFFORT BETWEEN GC AND SI. WHENEVER POSSIBLE GC IS TO PROVIDE SI WITH PHOTOGRAPHIC OR OTHER ACCEPTABLE EVIDENCE OF PROPER INSTALLATION IF PERIODIC INSPECTION FREQUENCY IS ACCEPTABLE. THE GC AND SI SHALL WORK TO COMPILE EVIDENCE OF PROPER CONSTRUCTION AND LIMIT THE NUMBER OF SI SITE VISITS REQUIRED.

TABLE KEY:
SI - ATC APPROVED SPECIAL INSPECTOR
GC - GENERAL CONTRACTOR
TA - 3RD PARTY TESTING AGENCY
CX - CONSTRUCTION
CM - CONSTRUCTION MANAGER
ATC - AMERICAN TOWER CORPORATION

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CWB	02/16/18

ATC SITE NUMBER:
302523

ATC SITE NAME:
NEW MILFORD CT 2

CONNECTICUT

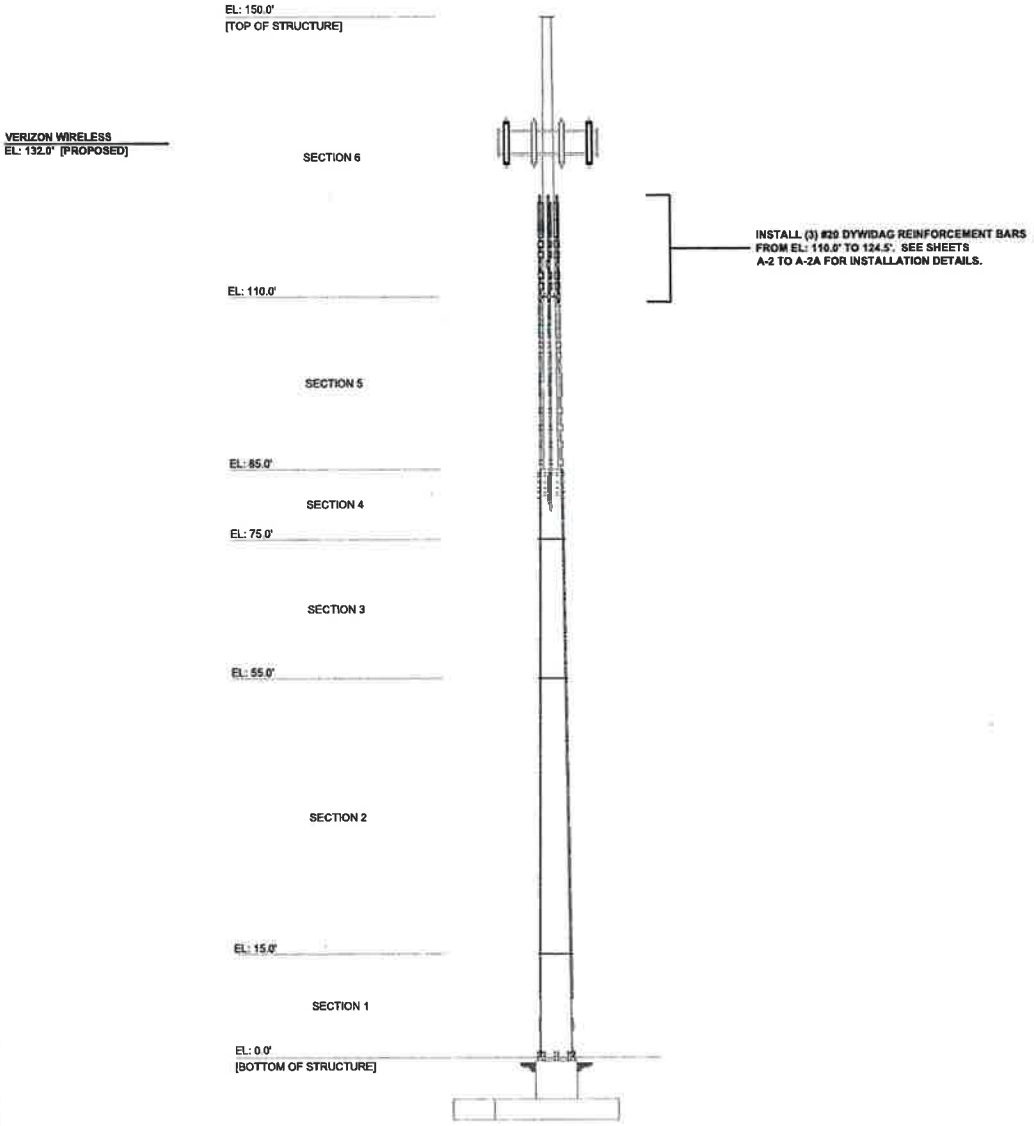
SITE ADDRESS:
4 ELKINGTON FARM RD
NEW MILFORD, CT 06776

Authorized by "EOR"
Feb 23 2018 4:57 PM
cosign

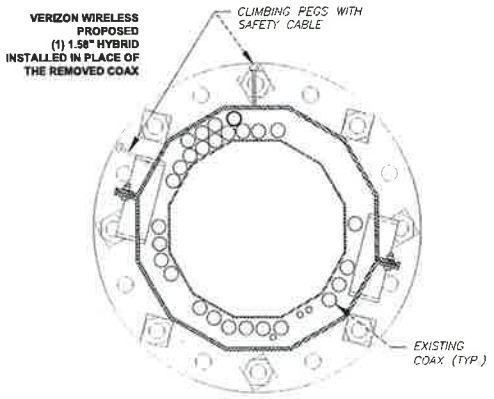
DRAWN BY:	CWB
APPROVED BY:	DAVI/KCI
DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C6_06

SPECIAL INSPECTION CHECKLIST

SHEET NUMBER:	REVISION:
SIC	0



TOWER ELEVATION VIEW



COAX DISTRIBUTION

NOTE:
CONTACT AMERICAN TOWER FIELD OPERATIONS WHEN EXISTING EQUIPMENT INTERFERES WITH INSTALLATION OF MODIFICATIONS. ONCE APPROVED, EXISTING EQUIPMENT MAY BE TEMPORARILY MOVED DURING INSTALLATION & REINSTALLED TO THE ORIGINAL HEIGHT & LOCATION BY CONTRACTOR POST COMPLETION OF MODIFICATIONS.

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

REV.	DESCRIPTION	BY	DATE
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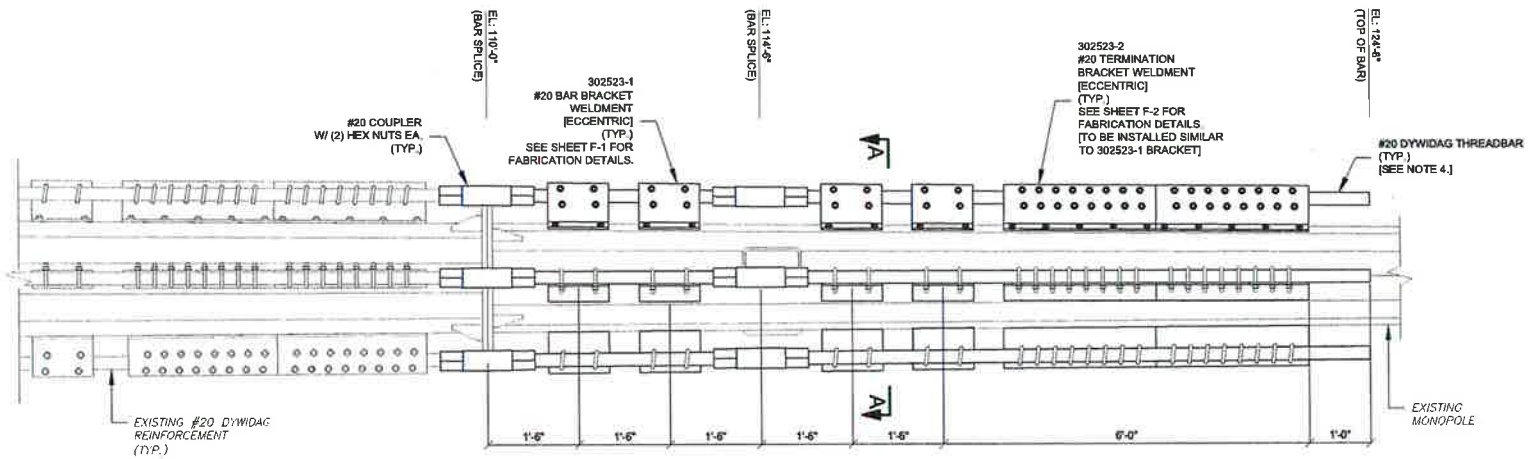
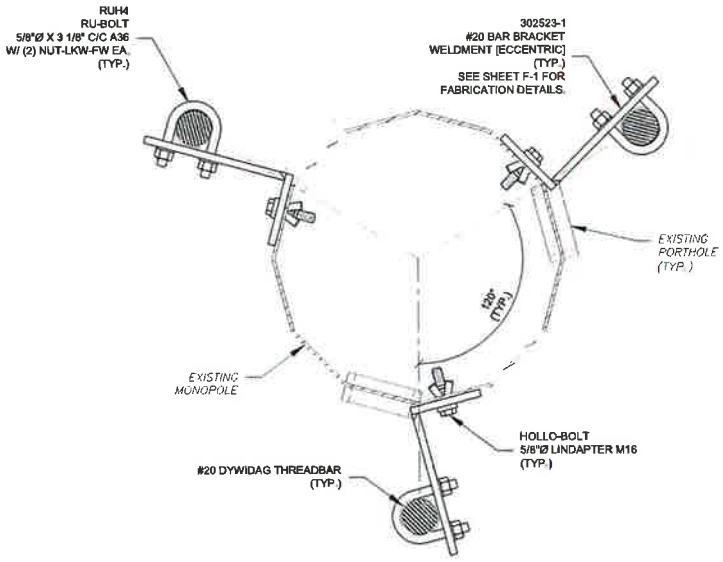
DRAWN BY:	CWB
APPROVED BY:	DAVI/KCI
DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C6_06

MODIFICATION PROFILE

SHEET NUMBER:	REVISION:
A-1	0



ELEVATION VIEW
#20 BAR BRACKET SPACING DETAIL



SECTION "A-A"
TYPICAL DETAIL

NOTES:
1. REPLACE ANY EXISTING STEP BOLTS THAT INTERFERE WITH NEW REINFORCING BARS. THE NEW STEP SHALL BE ATTACHED TO THE REINFORCING BARS IN THE SAME APPROXIMATE LOCATION. SEE SHEET #20SB FOR INSTALLATION DETAILS.
2. PLACE A BRACKET (302523-1) DIRECTLY ABOVE AND BELOW ANY EXISTING PORTHOLE AS REQUIRED.
3. SEE SHEET A-2A FOR #20 BAR BRACKET INSTALLATION DETAILS.
4. CONTRACTOR TO USE EXISTING 10'-0" LENGTH DYWIDAG REINFORCEMENT BARS CURRENTLY ON SITE IN ADDITION TO THE PROVIDED DURING INSTALLATION.

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CWB	02/16/18

ATC SITE NUMBER:
302523

ATC SITE NAME:
NEW MILFORD CT 2

CONNECTICUT

SITE ADDRESS:
4 ELKINGTON FARM RD
NEW MILFORD, CT 06776

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32595
LICENSED PROFESSIONAL ENGINEER

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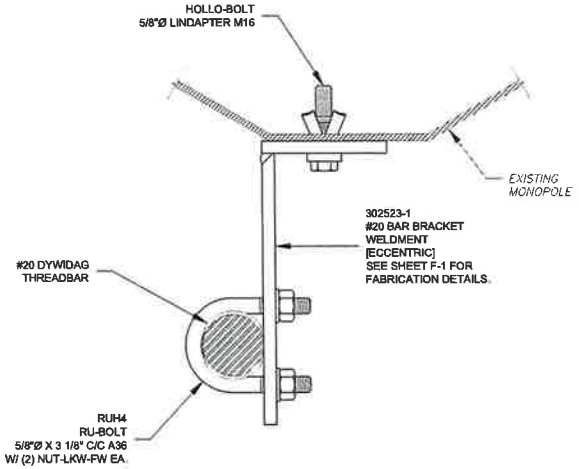
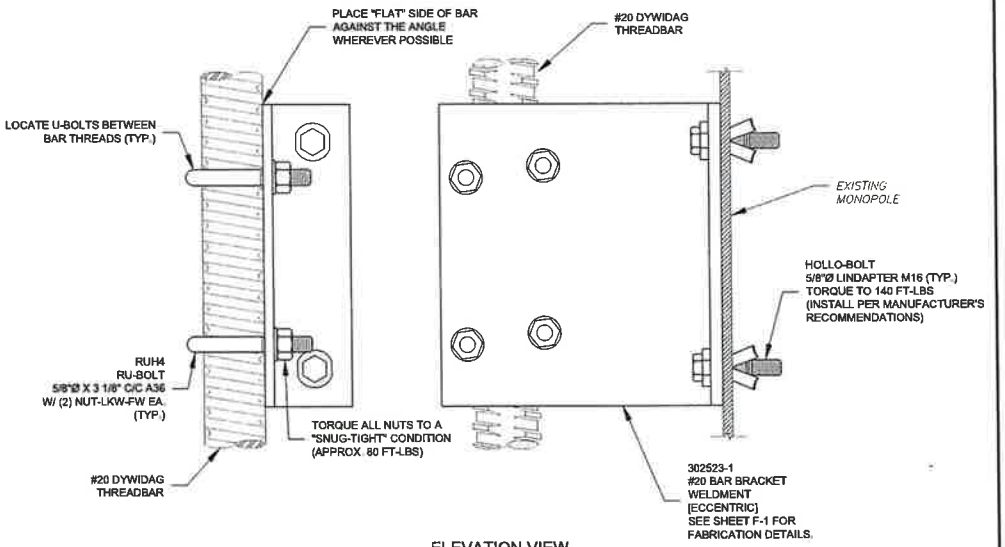
DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C6_06

REINFORCEMENT INSTALLATION DETAILS

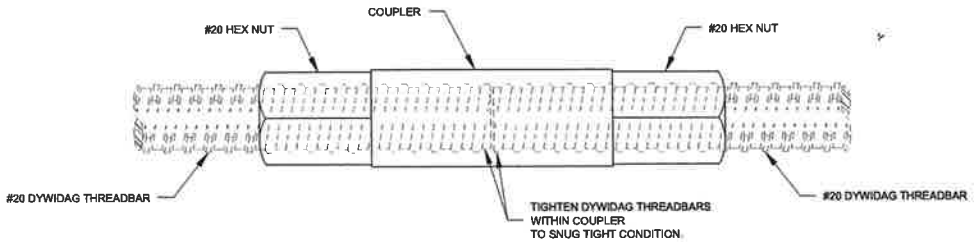
SHEET NUMBER:	REVISION:
A-2	0



PLAN VIEW
#20 BAR BRACKET ORIENTATION
[ECCENTRIC]



ELEVATION VIEW
#20 BAR BRACKET ORIENTATION
[ECCENTRIC]



COUPLER DETAIL
TYPICAL DETAIL

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SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	CWB	09/01/16

ATC SITE NUMBER:
302523

ATC SITE NAME:
NEW MILFORD CT 2

CONNECTICUT

SITE ADDRESS:
4 ELKINGTON FARM RD
NEW MILFORD, CT 06776

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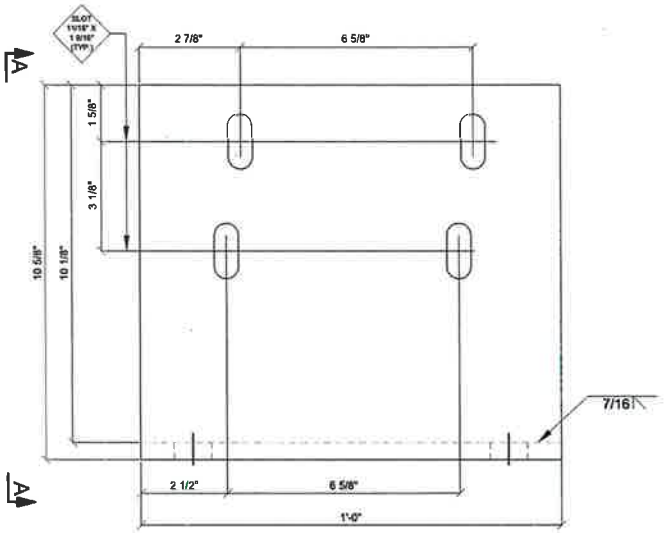
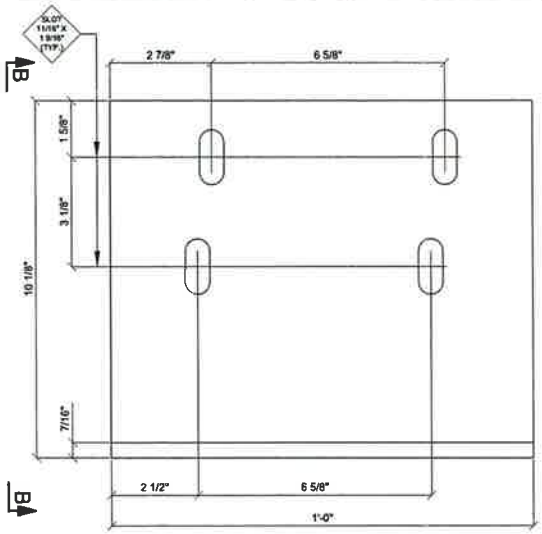
DRAWN BY:	CWB
APPROVED BY:	DAVIKCI
DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C6_06

REINFORCEMENT
INSTALLATION DETAILS
(CONT'D)

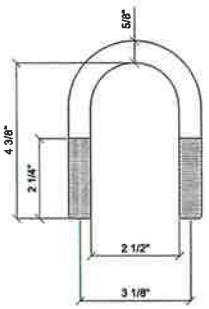
SHEET NUMBER:	REVISION:
A-2A	0



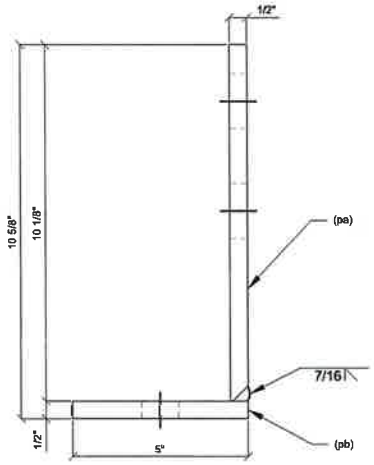
302523-1
#20 BAR BRACKET WELDMENT
[ECCENTRIC]



(pa)

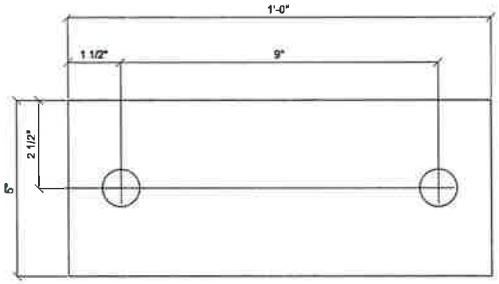


RUH4
RU-BOLT 5/8"Ø X 3 1/8" C/C



SECTION "A-A"
#20 BAR BRACKET WELDMENT

SECTION "B-B"
(pa)



(pb)

(pb)	1	PL 1/2" X 5"	1'-0"		8.5#
(pa)	1	PL 1/2" X 10 1/8"	1'-0"		17.2#
302523-1	1	#20 BAR BRACKET WELDMENT	1'-0"		25.7#
PART NO.	QTY	DESCRIPTION	LENGTH	NOTES	BLK WT
MATERIAL: A36		FINISH: GALVANIZED	HOLES: 1 1/16"Ø U.N.O.	GALV WT:	27.0#

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NEW MILFORD, CT 06776

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32595
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PROFESSIONAL ENGINEER

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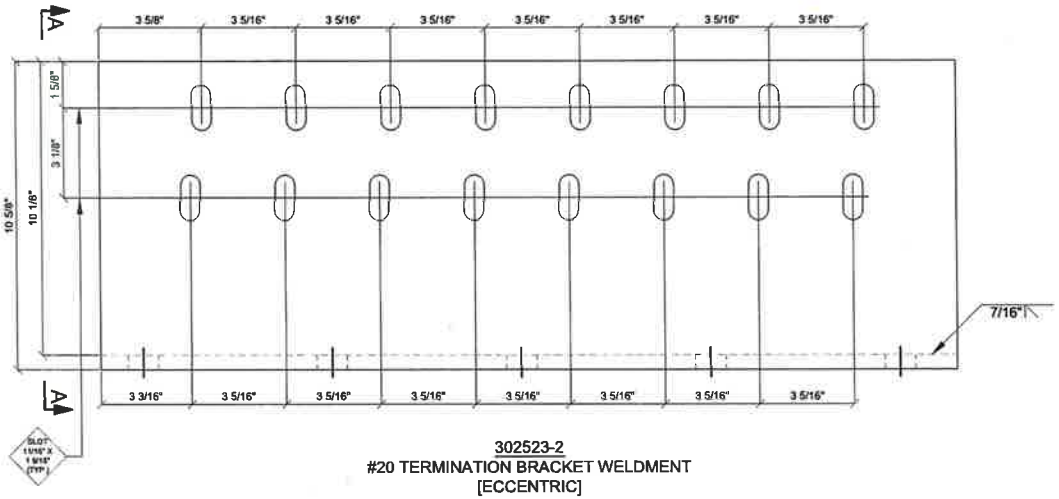
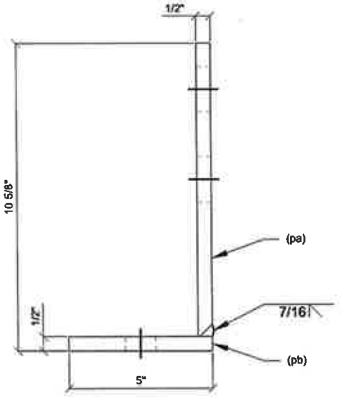
DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C6_06

#20 BAR BRACKET
WELDMENT
FABRICATION DETAILS

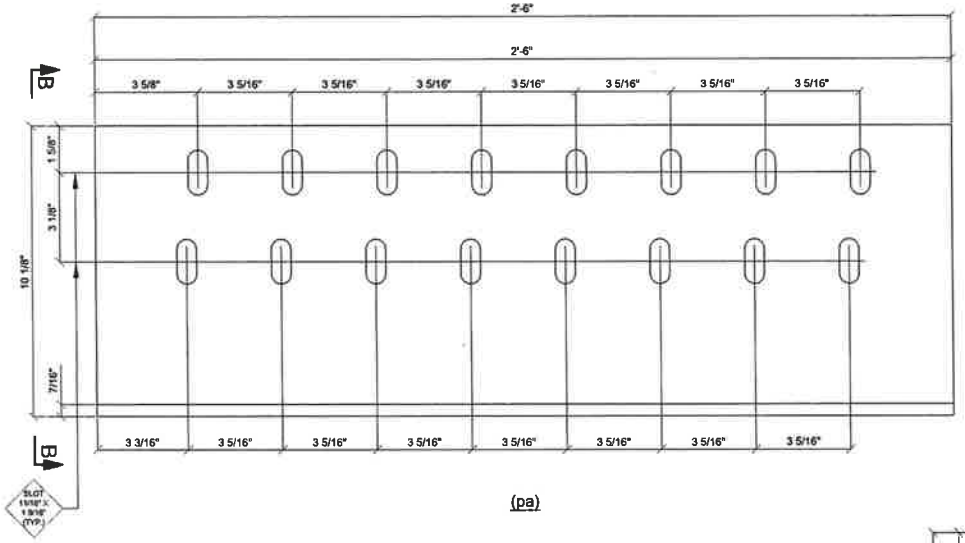
SHEET NUMBER:	REVISION:
F-1	0



302523-2
#20 TERMINATION BRACKET WELDMENT
[ECCENTRIC]

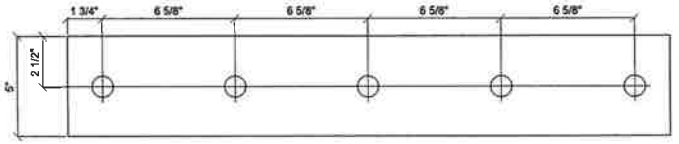


SECTION "A-A"
#20 TERMINATION BRACKET WELDMENT



(pa)

SECTION "B-B"
(pa)



(pb)

(pb)	1	PL 1/2" X 5"	2'-6"		21.3#
(pa)	1	PL 1/2" X 10 1/8"	2'-6"		43.1#
302523-2	1	#20 TERMINATION BRACKET WELDMENT	2'-6"		64.3#
PART NO.	QTY	DESCRIPTION	LENGTH	NOTES	BLK WT
MATERIAL: A36		FINISH: GALVANIZED	HOLES: 1 1/16"Ø U.N.O.	GALV WT:	67.6#

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REV.	DESCRIPTION	BY	DATE
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4 ELKINGTON FARM RD
NEW MILFORD, CT 06776

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32589
LICENSED PROFESSIONAL ENGINEER

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DRAWN BY:	CWB
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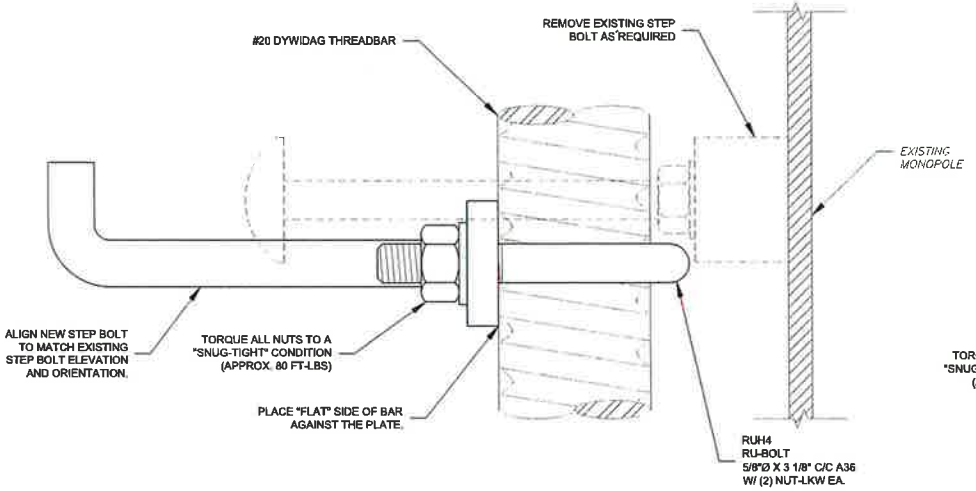
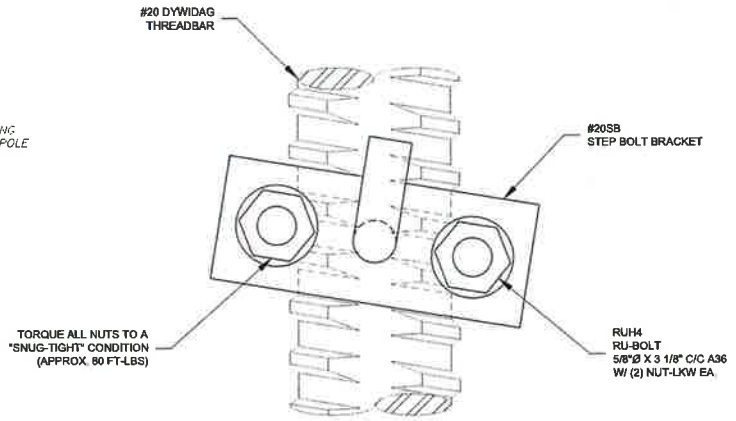
DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C6_06

TERMINATION BRACKET WELDMENT FABRICATION DETAILS

SHEET NUMBER:	REVISION:
F-2	0



#20SB INSTALLATION DETAILS
SIDE VIEW



#20SB INSTALLATION DETAILS
FRONT VIEW

NOTE:
STEP PEG SPACING IS NOT TO EXCEED 15" MAX. STAGGERED OR 30" MAX. ON ANY SINGLE SIDE OF THE DYWIDAG BAR.

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REV.	DESCRIPTION	BY	DATE
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NEW MILFORD CT 2
CONNECTICUT

SITE ADDRESS:
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NEW MILFORD, CT 06776

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DATE DRAWN:	02/16/18
ATC JOB NO:	OAA707682_C6_06

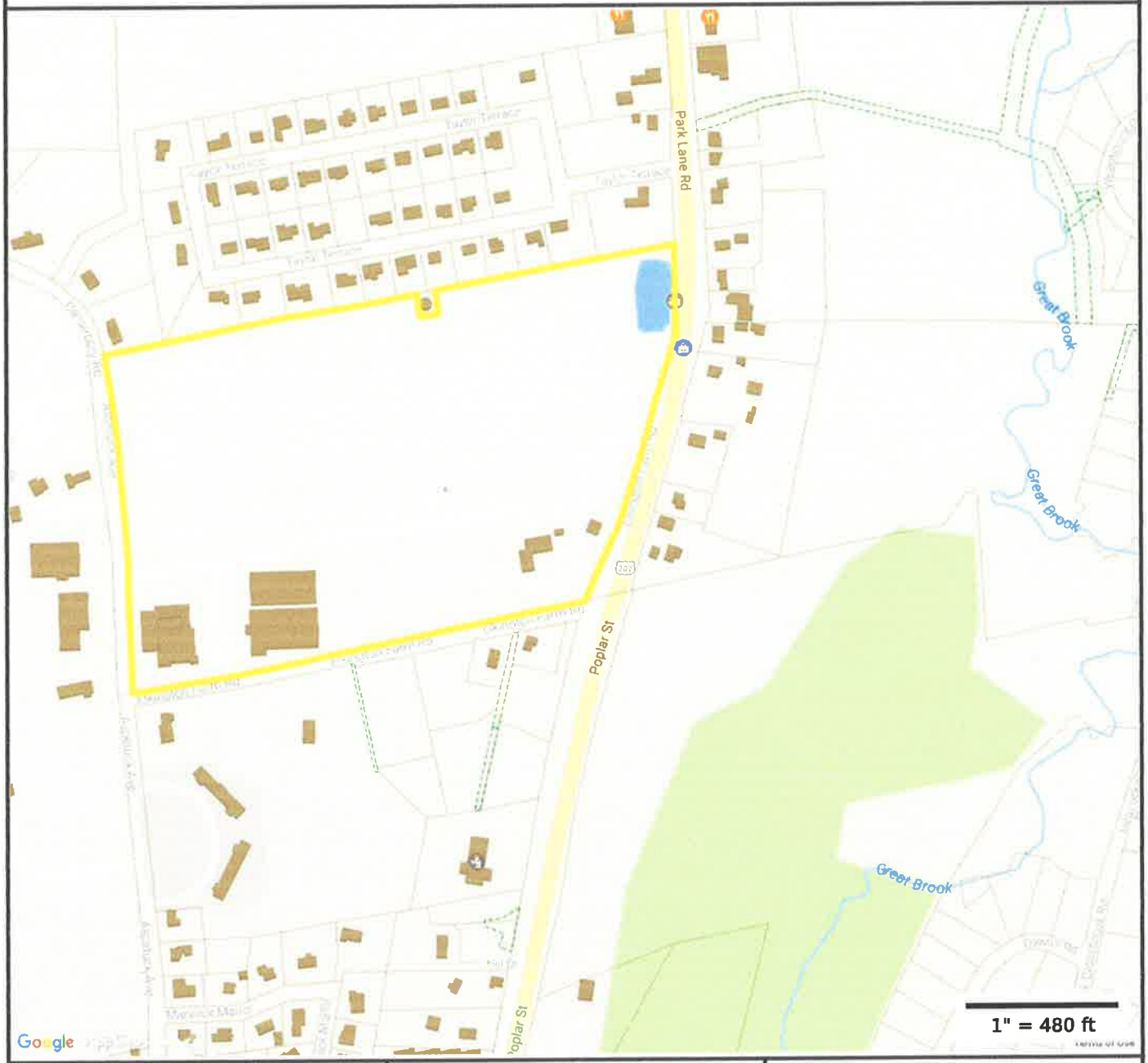
#20 STEP BOLT BRACKET
INSTALLATION DETAILS

SHEET NUMBER:	REVISION:
#20SB	0

ATTACHMENT 4

Town of New Milford, CT

February 9, 2017



Property Information

Property ID	35.4/37
Location	CANTERBURY RD
Owner	CANTERBURY SCHOOL INC

NEW MILFORD 1707 CONNECTICUT

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

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

Parcels updated 10/1/2014
Properties updated 02/09/2017

CANTERBURY RD

Location	CANTERBURY RD	**Mblu**	35/4 / 37/ /
Acct#	010997	**Owner**	CANTERBURY SCHOOL INC
Assessment	$9,900,940	**Appraisal**	$14,144,200
PID	6769	**Building Count**	4

Current Value

Appraisal

Valuation Year	Improvements	Land	Total
2015	$12,174,300	$1,969,900	$14,144,200

Assessment

Valuation Year	Improvements	Land	Total
2015	$8,522,010	$1,378,930	$9,900,940

Owner of Record

Owner	CANTERBURY SCHOOL INC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	101 ASPETUCK AVE NEW MILFORD, CT 06776	**Book & Page**	/
		Sale Date	

Ownership History

Ownership History

Owner	Sale Price	Certificate	Book & Page	Sale Date
CANTERBURY SCHOOL INC	$0		/	

Building Information

Building 1 : Section 1

Year Built:	1925
Living Area:	34,613
Replacement Cost:	$3,981,874
Building Percent Good:	60
Replacement Cost Less Depreciation:	$2,389,100

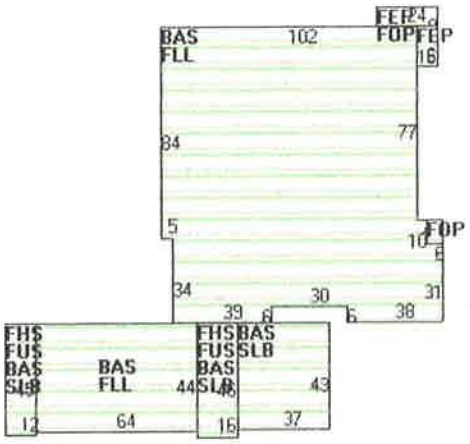
Building Attributes

STYLE	Gymnasium
MODEL	Comm/Ind
Grade	B
Stories:	2.5
Occupancy	1
Exterior Wall 1	Stone/Masonry
Exterior Wall 2	Brick/Masonry
Roof Structure	Gable
Roof Cover	Slate
Interior Wall 1	Drywall/Sheet
Interior Wall 2	Plastered
Interior Floor 1	Hardwood
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Oil
Heating Type	Hot Water
AC Type	None
Bldg Use	Pvt School Com
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	904I
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	22
% Comn Wall	0

Building Photo

(http://images.vgsi.com/photos/NewMilfordCTPhotos//\00\01\6

Building Layout



Building Sub-Areas (sq ft) **Legend**

Code	Description	Gross Area	Living Area
BAS	First Floor	17,719	17,719
FLL	Finished Lower Level	14,852	14,852
FUS	Finished Upper Story	1,276	1,276
FHS	Finished Half Story	1,276	766
FEP	Enclosed Porch	320	0
FOP	Open Porch	252	0
SLB	Slab	2,867	0
		38,562	34,613

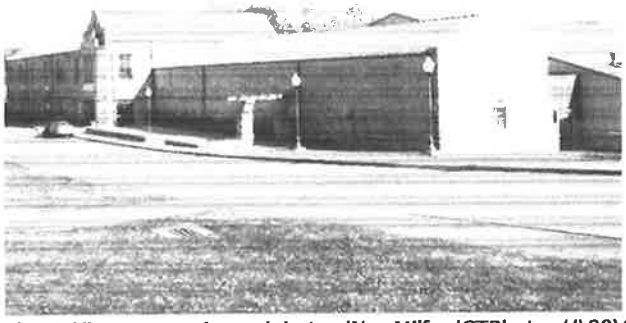
Building 2 : Section 1

Year Built:	1977
Living Area:	70,894
Replacement Cost:	$9,095,796
Building Percent Good:	78

Building Attributes : Bldg 2 of 4

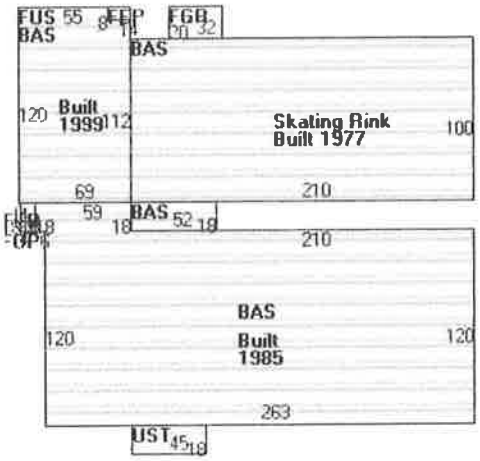
Field	Description
STYLE	Gymnasium
MODEL	Comm/Ind
Grade	B+
Stories:	1
Occupancy	1
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	Stone Veneer
Roof Structure	Gable
Roof Cover	Enamel Metal
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	Partial
Bldg Use	Pvt School Com
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	904I
Heat/AC	HEAT/AC SPLIT
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	20
% Comn Wall	0

Building Photo



(http://images.vgsi.com/photos/NewMilfordCTPhotos//\00\01\6

Building Layout



Building Sub-Areas (sq ft)

Legend

Code	Description	Gross Area	Living Area
BAS	First Floor	62,726	62,726
FUS	Finished Upper Story	8,168	8,168
FEP	Enclosed Porch	274	0
FGR	Garage	640	0
FOP	Open Porch	45	0
UST	Unfinished Utility Storage	810	0
		72,663	70,894

Building 3 : Section 1

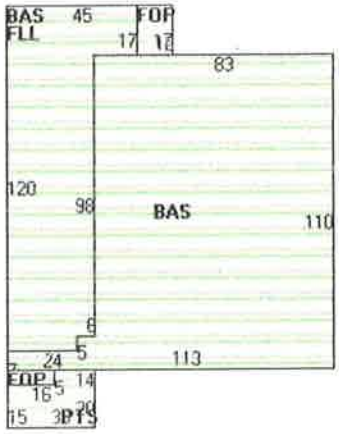
Year Built:	2008
Living Area:	17,020
Replacement Cost:	$2,174,816
Building Percent Good:	93
Replacement Cost Less Depreciation:	$2,022,600

Field	Description
STYLE	Auditorium
MODEL	Comm/Ind
Grade	B+
Stories:	1
Occupancy	1
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Slate
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr Abv Grad
Interior Floor 2	Concr Abv Grad
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	Partial
Bldg Use	Pvt School Com
Total Rooms	1
Total Bedrms	
Total Baths	11
1st Floor Use:	
Heat/AC	HEAT/AC PKGS
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	12
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/NewMilfordCTPhotos//default.jp

Building Layout



Building Sub-Areas (sq ft) **Legend**

Code	Description	Gross Area	Living Area
BAS	First Floor	13,195	13,195
FLL	Finished Lower Level	3,825	3,825
FOP	Open Porch	284	0
PTS	Patio - Stone	520	0
		17,824	17,020

Building 4 : Section 1

Year Built:	1900
Living Area:	2,092
Replacement Cost:	$250,990
Building Percent Good:	69
Replacement Cost Less Depreciation:	$173,200

Building Attributes : Bldg 4 of 4

Field	Description

Model	Residential
Grade	C
Stories	2
Occupancy	1
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shngl
Interior Wall 1	Plastered
Interior Wall 2	
Interior Flr 1	Pine/Soft Wood
Interior Flr 2	
Heat Fuel	Oil
Heat Type	Hot Water
AC Type	None
Total Bedrooms	3 Bedrooms
Full Bathrooms	2
Half Bathrooms	1
Total Xtra Fixtrs	
Total Rooms	6
Bath Style	Average
Kitchen Style	Average
Whirlpool Tub	
Fireplaces	
Fin Bsmt Area	
Bsmt Garages	
Insp. Letter	
Multi-House	

Building Photo

(http://images.vgsi.com/photos/NewMilfordCTPhotos//default.jp

Building Layout

Building Sub-Areas (sq ft) **Legend**

Code	Description	Gross Area	Living Area
BAS	First Floor	1,046	1,046
FUS	Finished Upper Story	1,046	1,046
BSM	Basement	1,046	0
FOP	Open Porch	84	0
WDK	Wood Deck	405	0
		3,627	2,092

Extra Features

Extra Features **Legend**

Code	Description	Size	Value	Bldg #
SPR	Sprinklers	1875 S.F.	$1,900	1
A/C	Air Conditioning	7650 S.F.	$28,500	3
SPR	Sprinklers	7650 S.F.	$12,100	3

	Air Conditioning	49762 S.F.	$155,300	2
	Elevator	2 Units	$39,000	2

Land

Land Use

Use Code	947
Description	Pvt School Com
Zone	R40/B1
Neighborhood	C110
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	41.87
Frontage	0
Depth	0
Assessed Value	$1,378,930
Appraised Value	$1,969,900

Outbuildings

Outbuildings — Legend

Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
LT1	Light (1)			7 Units	$6,600	3
SHD1	Shed	FR	Frame	288 S.F.	$1,700	4
TEN	Tenniś Court			6 Units	$126,000	2
PAV1	Paving Asph.			10800 S.F.	$16,200	3
PAV1	Paving Asph.			8576 S.F.	$10,300	1
LT1	Light (1)			8 Units	$7,500	2
SHD1	Shed	BR	Brick/Frame	140 S.F.	$1,500	1
GAR1	Garage	FR	Frame	624 S.F.	$11,500	2
SHD1	Shed	BR	Brick/Frame	140 S.F.	$1,500	1
SHD1	Shed	BR	Brick/Frame	140 S.F.	$1,500	1
SHD1	Shed	BR	Brick/Frame	140 S.F.	$1,500	1
PAT1	Patio	BR	Brick	2842 S.F.	$25,600	1

Valuation History

Appraisal

Valuation Year	Improvements	Land	Total
2014	$12,342,100	$1,903,600	$14,245,700
2009	$9,337,700	$1,439,400	$10,777,100
2009	$9,337,700	$1,439,400	$10,777,100

Assessment

Valuation Year	Improvements	Land	Total
2014	$8,639,470	$1,332,520	$9,971,990
2009	$6,536,390	$1,007,580	$7,543,970
2009	$6,536,390	$1,007,580	$7,543,970

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		3	neopost 08/21/2018 US POSTAGE $002.38 ZIP 06103 041L1220336
	Postmaster, per *(name of receiving employee)*		OLD STATE HOUSE STATION 06103 AUG 21 2018 USPS

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Pete Bass, Mayor Town of New Milford 10 Main Street New Milford, CT 06776				
2.	Kathy Castagnetta, AICP, Town Planner Town of New Milford 10 Main Street New Milford, CT 06776				
3.	Canterbury Schools, Inc. 101 Aspetuck Avenue New Milford, CT 06776				
4.					
5.					
6.					