Robinson+Cole

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July 11, 2017

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

Re: **Notice of Exempt Modification – Facility Modification**
157 Chestnut Hill Road, Stafford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 150-foot level of the existing 182-foot tower at 157 Chestnut Hill Road in Stafford, Connecticut (the "Property"). The tower is owned by SBA Network Services, Inc. ("SBA"). The Council approved Cellco's use of this tower in 2002. Cellco now intends to replace six (6) of its existing antennas with three (3) model SBNHH-1DS65B, 700/2100 MHz antennas and three (3) model SBNHH-1DS65B, 1900 MHz antennas, all at the same 150-foot level on the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") behind its antennas and two (2) HYBRIFLEX™ fiber optic antenna cables. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cables.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent Anthony Frassinelli, First Selectman for the Town of Stafford; David Perkins, Stafford's Zoning Enforcement Officer; SBA, the tower owner and Troiano Realty Corp., the owner of the Property.

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 RRH's will be located at the 150-foot level on the 182-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 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 worst-case General Power Density table for Cellco's modified facility is included in Attachment 2.

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

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

A copy of the parcel map and property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 5. A copy of the stamped Certificate of Mailing will be forwarded to the Council upon receipt.

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:
Anthony Frassinelli, Stafford First Selectman
David Perkins, Stafford Zoning Enforcement Officer
Troiano Realty Corp.
SBA Network Services, Inc.
Tim Parks, Verizon Wireless

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D65B

6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

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

Electrical Specifications

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

Electrical Specifications, BASTA*

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

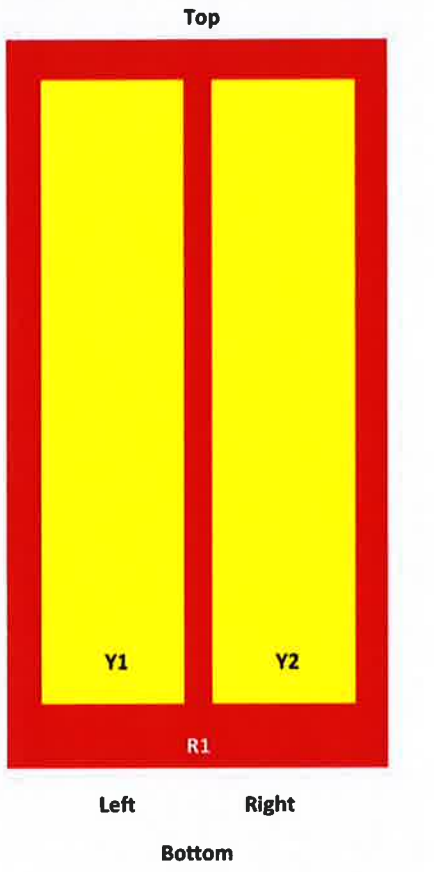
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Array Layout

Product Specifications

SBNHH-1D65B

SBNHH 65



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

View from the front of the antenna

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

General Specifications

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

Mechanical Specifications

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

Product Specifications

COMMSCOPE®

SBNHH-1D65B

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

Dimensions

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

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

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

Regulatory Compliance/Certifications

Agency	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

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

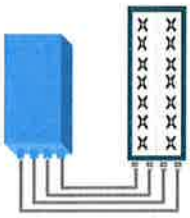
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

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

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.

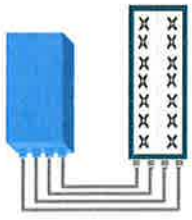
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the 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 580W 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 WIRELESS PRODUCT DATASHEET

RRH2X60-AWS FOR BAND 4 APPLICATIONS

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

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

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

SUPERIOR RF PERFORMANCE

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

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

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

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

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

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

OPTIMIZED TCO

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

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

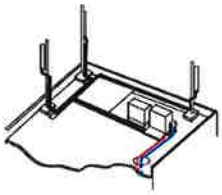
EASY INSTALLATION

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

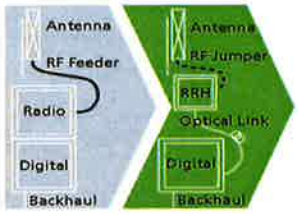
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation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

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

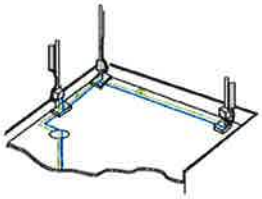
Installation can easily be done by a single person as the Alcatel–Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

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

BENEFITS

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

TECHNICAL SPECIFICATIONS

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

Dimensions and weights

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

Electrical Data

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

RF Characteristics

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

Connectivity

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

Environmental specifications

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

Safety and Regulatory Data

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

Alcatel·Lucent

AT THE SPEED OF IDEAS™

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

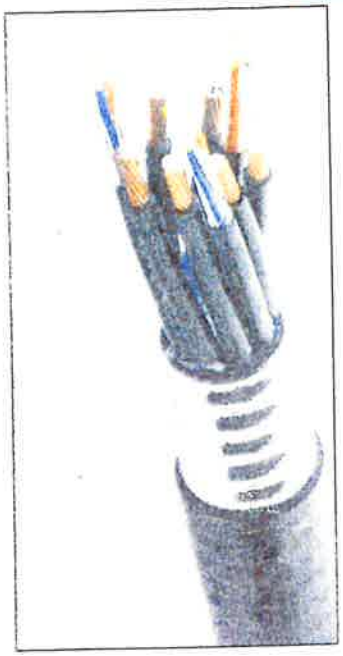


Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

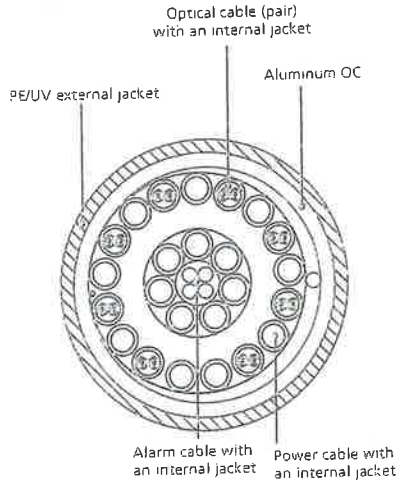


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Stafford 3								
Tower Height: 182Ft.								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*T-Mobile	2	1630	177	1900	0.0401	1.0000	0.40%	
*T-Mobile	2	815	177	1900	0.0200	1.0000	0.20%	
*T-Mobile	2	815	177	1900	0.0200	1.0000	0.20%	
*T-Mobile	1	676	175	700	0.0085	0.4667	0.18%	
*AT&T	2	728	170	880	0.0195	0.5867	0.33%	
*AT&T	2	1154	170	1900	0.0309	1.0000	0.31%	
*AT&T	1	364	170	880	0.0049	0.5867	0.08%	
*AT&T	4	692	170	1900	0.0370	1.0000	0.37%	
*AT&T	1	1615	170	734	0.0216	0.4893	0.44%	
Verizon PCS	**11**	**825**	**150**	**0.1450**	**1970**	**1.0000**	**14.50%**	
Verizon Cellular	**9**	**421**	**150**	**0.0606**	**869**	**0.5793**	**10.45%**	
Verizon AWS	**1**	**2302**	**150**	**0.0368**	**2145**	**1.0000**	**3.68%**	
Verizon 700	**1**	**290**	**150**	**0.0046**	**746**	**0.4973**	**0.93%**	
								32.08%
* Source: Siting Council								

ATTACHMENT 3

ALLPRO
CONSULTING GROUP, INC.
9221 Lyndon B. Johnson Freeway, #204, Dallas, TX 75243 ★ PHONE 972-231-8893 ★ FAX 1-866-364-8375
www.allprocgi.com ★ e-mail: info@allprocgi.com

Tower Structural Analysis Report for SBA Network Services, Inc.

Existing 182' Self Supported Tower

SBA Site Name: Troiano Realty
SBA Site ID: CT13617-A-03
Application #: 19713, v1
Carrier Name: Verizon
Carrier Site ID: 118019

Site Location:
157 Chestnut Hill Road
Stafford Springs, CT 06076

Latitude: 41.977417°
Longitude: -72.383306°

ACGI Job # 17-2586
(Ref. Previous SA ACGI # 15-4990, dated 11/11/2015)

ANALYSIS RESULTS		
Tower Components	98.7 %	**Pass**
Tower Base Foundation	86.0 %	**Pass**
Net Stress Change	2.7 %	**Changed From Previous SA by Allpro Consulting Group, Inc., ACGI Job # 15-4990 dated 11/11/2015**

Prepared By:
Tao Xiang, EIT

STATE OF CONNECTICUT
JOJI M. GEORGE
No. 24444
LICENSED
PROFESSIONAL ENGINEER

06/28/2017
Approved By:
Joji M. George, P.E.
CT PE # 24444

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MISCELLANEOUS PLOTS III
CALCULATION PRINTOUT IV
MATHCAD CALCULATION PRINTOUT V

1. ANALYSIS SUMMARY

The existing 182' Self Supported Tower located in Stafford Springs, CT was analyzed by Allpro Consulting Group, Inc (ACGI) for the existing loads and the proposed Verizon antennas and coaxes as authorized by SBA Communication Corp. Based on the results of the analysis, the existing tower with mentioned proposed and existing loading is found to be in compliance with TIA-222-G Addendum 2, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2012 International Building Code (IBC 2012).

2. SCOPE & SOURCE OF INFORMATION

The purpose of this structural analysis is to determine whether the existing structure is capable of supporting additional proposed loads.

SOURCE OF INFORMATION		
Tower Data:	Rohn Industries, Inc.	-Original Tower Drawings by Rohn Industries, Inc. (Project # 49944AE, dated 12/17/2001)
	FDH Velocitel	-Previous Structural Analysis by FDH Velocitel (FDH Project # 15BROJ1400, dated 06/10/2015)
	Allpro Consulting Group, Inc.	-Previous Structural Analysis by Allpro Consulting Group, Inc., (ACGI # 15-4990, dated 11/11/2015)
Foundation Data:	Rohn Industries, Inc.	- Existing MAT foundation data is as per original foundation design by Rohn Industries, Inc. (Project # 49944AE, Drawing #A012939, dated 12/18/2001)
Geotechnical Report:	Jaworski Geotech, Inc.	Soil data is as per Geotechnical Report by Jaworski Geotech, Inc. (Project # 01659G, dated 10/19/2001)
Loading Data:	Allpro Consulting Group, Inc.	-Existing Loading as per previous Structural Analysis by Allpro Consulting Group, Inc., (ACGI # 15-4990, dated 11/11/2015)
	SBA Communication Corp.	-Proposed final loading for Verizon as per sbasite.com, Application ID# 19719, v1
Authorization:	SBA Communication Corp.	

3. ANALYSIS METHODS & DATA

The analysis was performed in accordance with Telecommunication Industry Association specification TIA-222-G-Addendum 2. The tower was modeled using TNX Tower, a 3-D finite element program. TNX Tower is a general-purpose modeling, analysis, and design program created specifically for communication towers using the EIA-222-C, EIA-222-D, TIA/EIA-222-F or TIA-222-G standards. The 3-D model included the tower, with existing appurtenances and all proposed loads.

SITE DATA	
SBA Site Name:	Troiano Realty
SBA Site Number:	CT13617-A-03
Carrier Site ID:	Verizon, 118019
City, State:	Stafford Springs, CT
County:	Tolland County
Code Wind Load Requirement:	TIA-222-G & 2012 International Building Code (IBC 2012) (123 mph Ultimate wind speed equivalent to 95 mph nominal wind speed)
Wind Load Used:	TIA-222-G Code: • Nominal wind speed of 95 mph (3 second gust wind speed) • Structure Class II. • Exposure Category C. • Topographic Category 1. • Crest Height 0.00 ft. • A wind speed of 50 mph is used in combination with ice. • Nominal ice thickness of 1 in.
Seismic Check	Ss = 0.174g < 1.0g, thus seismic loading can be ignored as per 2.7.3 of the TIA-222-G code.

TOWER DATA	
Tower Type:	Self-Supported Tower
Height:	182'
Cross Section:	Triangular
Steel Strength:	Legs – 50 ksi , Braces – 36 ksi
Type of Foundation:	Mat Foundation with Pedestals

TOWER HISTORY	
Tower Manufacturer / Model:	Rohn Industries, Inc.
Date of Original Design:	12/17/2001
Previous Modifications:	N/A
Original Design Code Requirements:	ANSI/TIA-222-F

4. CONCLUSIONS

RESULT SUMMARY		
MEMBER	***% Capacity***	***Result***
Legs	**98.7 %**	**Pass**
Diagonals	**92.3 %**	**Pass**
Girt	**10.6 %**	**Pass**
Bolt Checks	**89.5 %**	**Pass**
Foundation (see attached MathCAD for details)	**Safety Factor against Overturning: SF: 1.744 > 1.5 (86.0 %)**	**Pass**
	Soil Pressure: 2.401 ksf < 12.0 ksf (Soil Bearing Capacity) (20.0 %)	**Pass**
	Shear: 49 kips < 99.78 kips (Shear Capacity) (50.0 %)	**Pass**
OVERALL TOWER RATING = 98.7 %		

As per the results of the analysis, the existing tower is in code compliance for the proposed and existing antenna loads.

Maximum tower member stress **is less than allowable,** making it in code compliance under the TIA-222-G code and 2012 International Building Code (IBC 2012) requirements.

5. DISCLAIMER

Installation procedures and related loading are not within the scope of this analysis. A contractor experienced in similar work should perform all installation work. The engineering services provided by Allpro Consulting Group, Inc. (ACGI) are limited to the computer analysis and calculations of the structure with the proposed and existing loads. This analysis is considered void if the loading mentioned in this report is changed or is different as installed. It is assumed that the existing structure is properly maintained and is in good condition free of any defects. Scope of this analysis does not include existing connections, except as noted in this report.

ACGI does not make any warranties, expressed or implied in connection with this engineering analysis report and disclaims any liability arising from deficiencies or any existing conditions of the original structure. ACGI will not be responsible for consequential or incidental damages sustained by any parties as a result of any data or conclusions included in this Report. The maximum liability of ACGI pursuant to this report shall be limited to the consulting fee received for the preparation of the report.

6. ASSUMPTIONS

This analysis was completed based on the following assumptions:

- Tower has been properly maintained
- Tower erection was in accordance to manufacturer drawings
- Leg flanges have been properly designed by manufacturer to not be a limiting reaction
- Welds have been properly designed and installed by manufacturer to not be a limiting reaction
- Foundation was constructed in accordance to manufacturer drawings
- Foundation does not have structural damage
- Bolts have been properly tightened according to manufacturer specifications
- Appurtenance, mount and transmission line sizes and weights are best estimates using the tnxTower database and manufacturer information

7. APPURTENANCE LISTING

EXISTING LOAD DESCRIPTION					
ELEV (ft.)	Qty.	Antenna Description	Mount Type & Qty.	TX. LINE (in)	TENANT
177'±	3	RFS APXV18-206516S-C-A20	(3) SF-HPM3-96 T-Arms	(12) 1-5/8"	T-Mobile
175'±	3	Commscope LNX-6515DS-VTM			
	3	Allen Telecom FE15501P77/75M TMA			
	3	RFS ATMAA1412D-1A20 TMA			
	3	Bias T's Kathrein 782 11056			
169.52'±	9	Powerwave P65-17-XLH	(3) 15' T-Frames	(12) 1-5/8" (1) 3/8" RET Cable (1) 3" Flex Conduit (2) DC Cables	AT&T
	3	KMW AM-X-CD-16-6500T			
	12	ADC ClearGain TMAs			
	6	Ericsson RRUS11 RRUs			
	1	Raycap DC-48-60-18-8F Surge Arrestor			
150'±	1	Antel BXA-70063-4CF Antenna	(3) 12.75' T-Frames	(13) 1-5/8"	Verizon
	2	Antel BXA-70080-4CF-EDIN 0 Antenna			
	3	Antel BXA-171085-8BF-EDIN-2 Antenna			
	2	Antel LPA-80063-4CF-EDIN-5 Antenna			
	4	Antel LPA-80080-4CF-EDIN 2 Antenna			
	6	RFS FD9R6004/2C-3L Diplexers			
	1	Alcatel Lucent KS24019-L112A GPS			

FINAL VERIZON LOAD DESCRIPTION					
ELEV (ft.)	Qty.	Antenna Description	Mount Type & Qty.	TX. LINE (in)	TENANT
150'±	6	Commscope SBNHH-1D65B	(3) V-Frame VFA12-HD	(13) 1-5/8" (2) 1-5/8" Fiber	Verizon
	4	Antel LPA-80080-4CF-EDIN-2			
	2	Antel LPA-80063-4CF-EDIN-5			
	3	Alcatel Lucent RRH2x60-700U			
	3	Alcatel Lucent RRH2x60-PCS			
	3	Alcatel Lucent RRH2x60-AWS			
	6	RFS FD9R6004/2C-3L Diplexers			
	1	Alcatel Lucent KS24019-L112A			
	1	RFS DB-T1-6Z-8AB-0Z			

Notes:

1. ACGI should be notified of any discrepancies found in the data listed in this report.
2. Notify ACGI if any potential physical and other interference with existing antennas for a redesign.

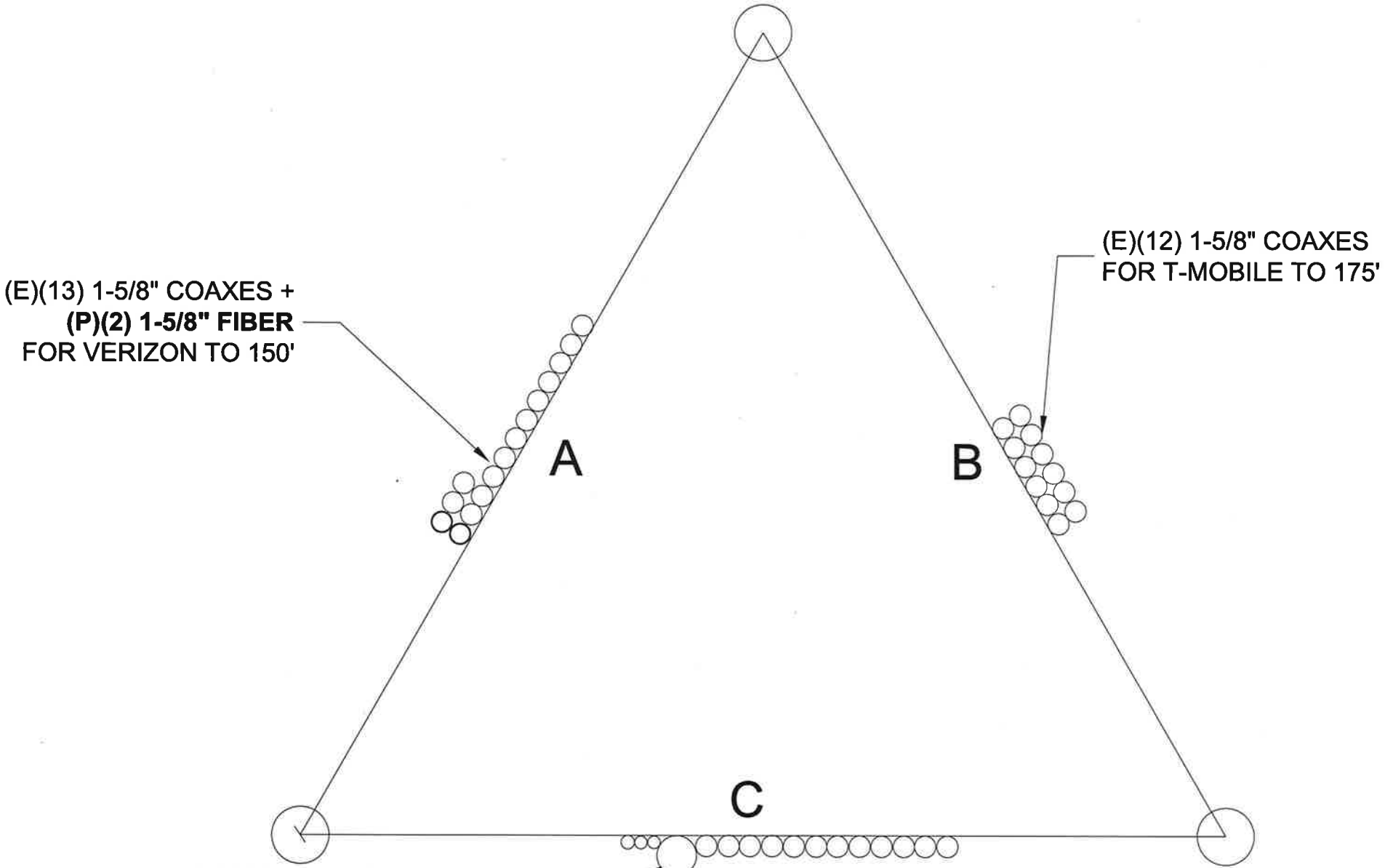
8. SUMMARY OF WORKING PERCENTAGE OF STRUCTURAL COMPONENTS

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	182 - 161.9	Leg	ROHN 2.5 STD	3	-21.25	63.44	33.5	Pass
		Diagonal	L1 3/4x1 3/4x3/16	9	-4.62	11.43	40.4	Pass
							79.5 (b)	
		Top Girt	L1 3/4x1 3/4x3/16	4	-0.22	6.62	3.4	Pass
							3.6 (b)	
T2	161.9 - 141.8	Leg	ROHN 3 STD	39	-87.25	88.44	98.7	Pass
		Diagonal	L2x2x1/4	44	-8.30	18.97	43.8	Pass
							89.5 (b)	
T3	141.8 - 121.6	Leg	ROHN 4 EH	70	-139.03	183.25	75.9	Pass
		Diagonal	L2x2x3/16	81	-4.44	11.73	37.8	Pass
							68.6 (b)	
		Top Girt	L1 3/4x1 3/4x3/16	73	-0.61	6.43	9.6	Pass
							10.6 (b)	
T4	121.6 - 101.4	Leg	ROHN 5 EH	106	-176.39	253.98	69.5	Pass
							76.5 (b)	
		Diagonal	L2x2x3/16	114	-5.02	7.75	64.8	Pass
							73.7 (b)	
T5	101.4 - 81.1	Leg	ROHN 5 EH	133	-207.98	238.38	87.2	Pass
		Diagonal	L2 1/2x2 1/2x3/16	141	-5.64	9.36	60.3	Pass
							71.5 (b)	
T6	81.1 - 60.9	Leg	ROHN 6 EHS	154	-239.82	274.25	87.4	Pass
		Diagonal	L2 1/2x2 1/2x3/16	162	-6.37	7.30	87.3	Pass
T7	60.9 - 40.7	Leg	ROHN 6 EH	175	-271.33	342.43	79.2	Pass
		Diagonal	L2 1/2x2 1/2x1/4	182	-6.86	7.43	92.3	Pass
T8	40.7 - 20.3	Leg	ROHN 8 EHS	196	-298.03	384.46	77.5	Pass
		Diagonal	L3x3x1/4	204	-7.84	8.89	88.1	Pass
T9	20.3 - 0	Leg	ROHN 8 EH	211	-326.88	503.62	64.9	Pass
		Diagonal	L3 1/2x3 1/2x1/4	219	-8.87	12.07	73.5	Pass
							Summary	
						Leg (T2)	98.7	Pass
						Diagonal (T7)	92.3	Pass
						Top Girt (T3)	10.6	Pass
						Bolt Checks	89.5	Pass
						RATING =	**98.7**	**Pass**

APPENDIX

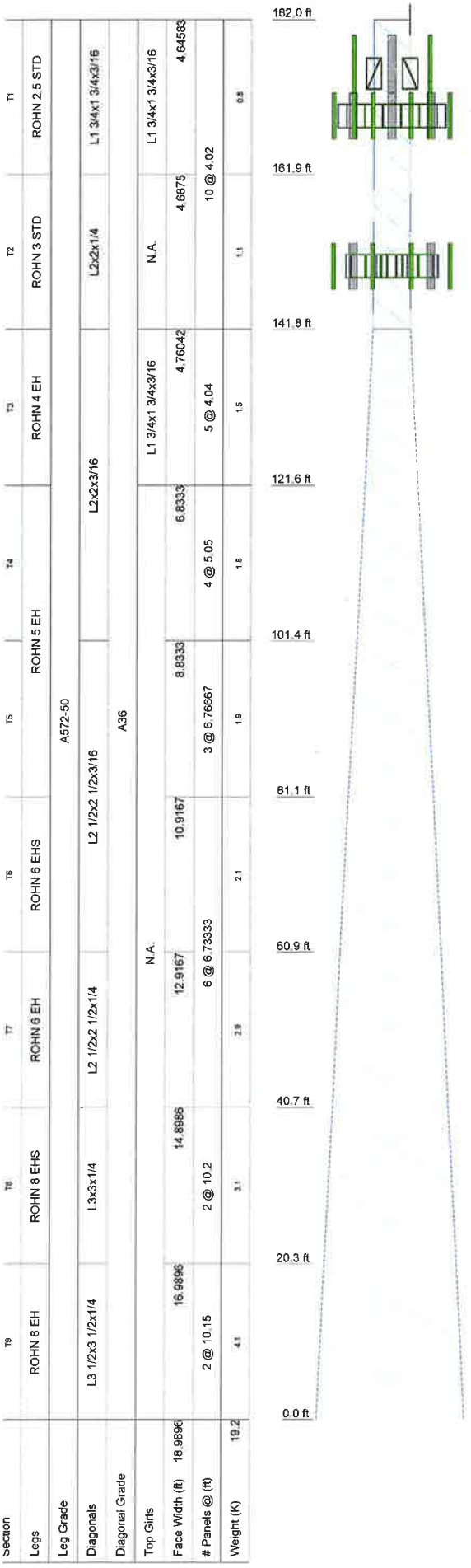
COAX LAYOUT



COAX LAYOUT

N.T.S

TOWER ELEVATION DRAWING



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

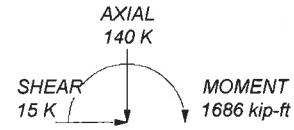
TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 95 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 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 RATING: 98.7%

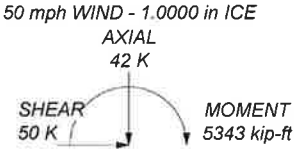
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 334 K
SHEAR: 31 K

UPLIFT: -299 K
SHEAR: 28 K



TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 2 kip-ft
REACTIONS - 95 mph WIND

Allpro Consulting Group Inc.
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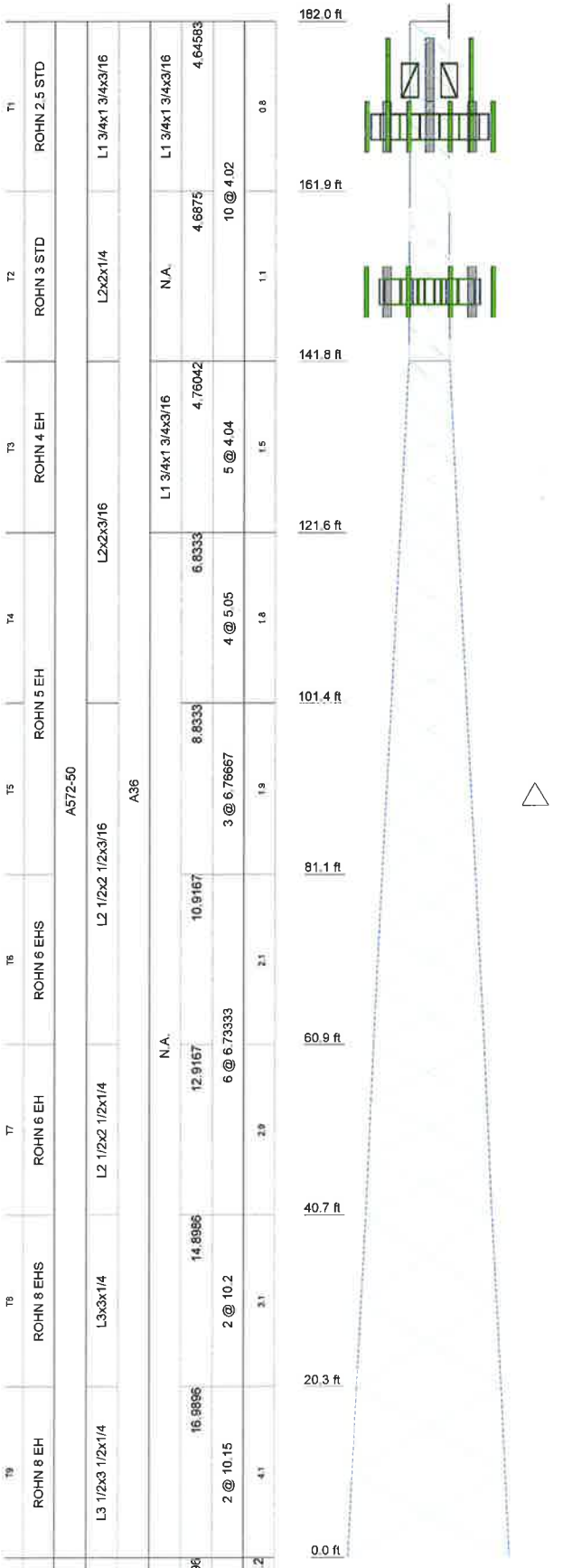
Dallas, TX 75243
Phone: 972-231-8893
FAX: 866-364-8375

Job: 17-2586			
Project: CT13617-A-03 Troiano Realty			
Client: SBA	Drawn by: TXiang	App'd:	
Code: TIA-222-G	Date: 06/28/17	Scale: N	
Path:		Dwg No.	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(E) Lighting Rod	182	(E) Pirod 15' T-Frame Sector Mount (1) (ATI)	169.52
(E) APXV18-206516S-C-A20 (T-Mobile)	177	(E) Pirod 15' T-Frame Sector Mount (1) (ATI)	169.52
(E) APXV18-206516S-C-A20 (T-Mobile)	177	(3) (E) P65-17-XLH (ATI)	169.52
(E) APXV18-206516S-C-A20 (T-Mobile)	177	(3) (E) P65-17-XLH (ATI)	169.52
(E) LNX-6515DS-A1M (T-Mobile)	175	(3) (E) P65-17-XLH (ATI)	169.52
(E) LNX-6515DS-A1M (T-Mobile)	175	(E) AM-X-CD-16-65-00T-RET (ATI)	169.52
(E) FE15501P77/75 (T-Mobile)	175	(2) (E) LPA-80080-4CF-EDIN-2 (Verizon)	150
(E) FE15501P77/75 (T-Mobile)	175	(2) (E) LPA-80080-4CF-EDIN-5 (Verizon)	150
(E) FE15501P77/75 (T-Mobile)	175	(3) (E) RRH2x60 (Verizon)	150
(E) ATMAA1412D-1A20 (T-Mobile)	175	(3) (E) RRH2x60 (Verizon)	150
(E) ATMAA1412D-1A20 (T-Mobile)	175	(3) (E) RRH2x60 (Verizon)	150
(E) ATMAA1412D-1A20 (T-Mobile)	175	(2) (E) FD9R6004/1C-3L Diplexer (Verizon)	150
(P) Kathrein (T-Mobile)	175	(2) (E) FD9R6004/1C-3L Diplexer (Verizon)	150
(P) Kathrein (T-Mobile)	175	(2) (E) FD9R6004/1C-3L Diplexer (Verizon)	150
(P) Kathrein (T-Mobile)	175	(E) KS24019-L112A GPS (Verizon)	150
(E) LNX-6515DS-A1M (T-Mobile)	175	(E) DB-T1-6Z-8AB-0Z (Verizon)	150
(P) SF-HPM3-96 (T-Mobile)	175	VFA12-HD (Verizon)	150
(P) SF-HPM3-96 (T-Mobile)	175	VFA12-HD (Verizon)	150
(P) SF-HPM3-96 (T-Mobile)	175	VFA12-HD (Verizon)	150
(E) AM-X-CD-16-65-00T-RET (ATI)	169.52	(2) (E) SBNHH-1D65B (Verizon)	150
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(4) (E) ADC CleanGain TMAs (ATI)	169.52	(2) (E) SBNHH-1D65B (Verizon)	150
(4) (E) ADC CleanGain TMAs (ATI)	169.52	(2) (E) LPA-80080-4CF-EDIN-2 (Verizon)	150
(4) (E) ADC CleanGain TMAs (ATI)	169.52		
(2) (E) RRUS 11 (ATI)	169.52		
(2) (E) RRUS 11 (ATI)	169.52		
(2) (E) RRUS 11 (ATI)	169.52		
(E) DC6-48-60-18-8F (ATI)	169.52		
(E) Pirod 15' T-Frame Sector Mount (1) (ATI)	169.52		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
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7. Topographic Category 1 with Crest Height of 0.00 ft

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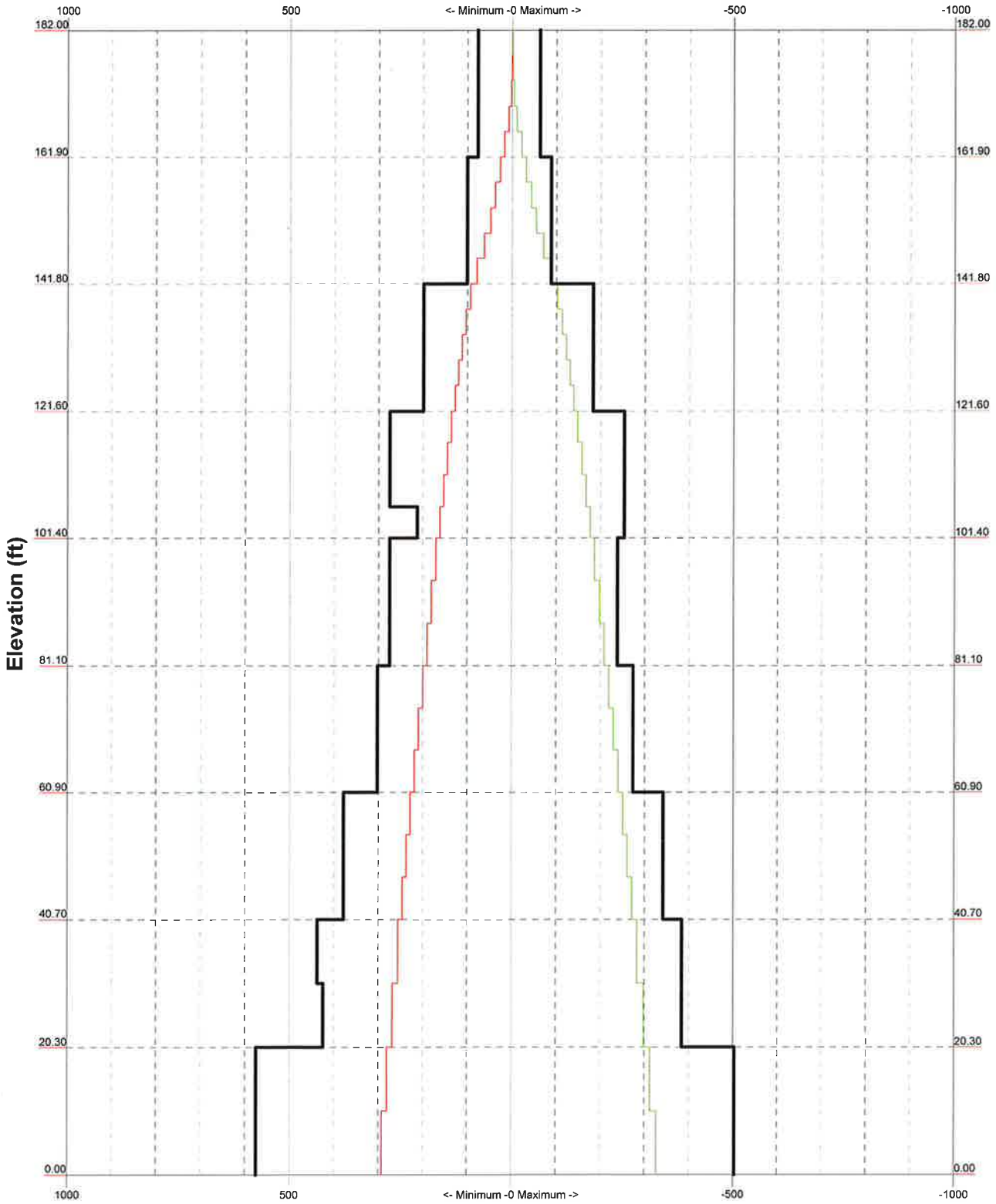
Project: CT13617-A-03 Troiano Realty		
Client: SBA	Drawn by: TXiang	App'd:
Code: TIA-222-G	Date: 06/28/17	Scale: N
Path:		Dwg No.

MISCELLANEOUS PLOTS

TIA-222-G - 95 mph/50 mph 1.0000 in Ice Exposure C

Leg Capacity ——— **Leg Compression (K)**



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Job: ***17-2586***		
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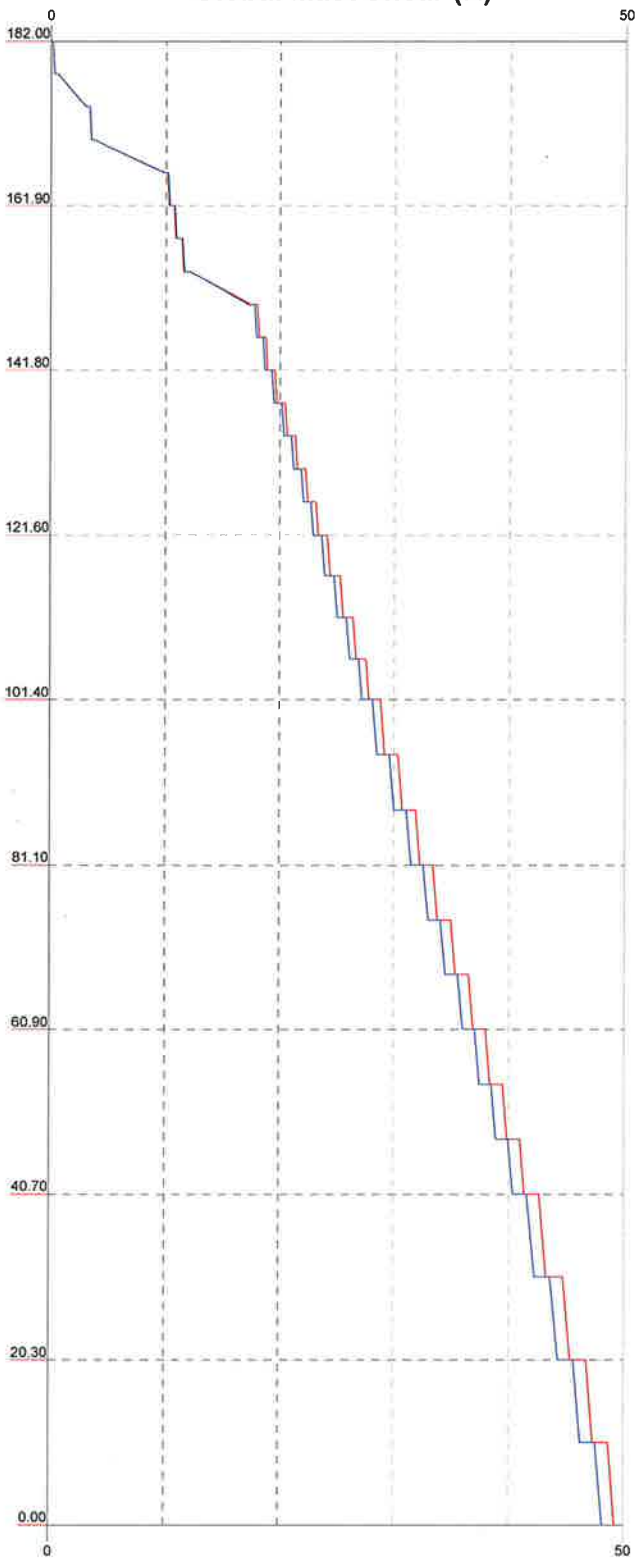
Client: SBA	Drawn by: TXiang	App'd:
Code: TIA-222-G	Date: 06/28/17	Scale: N
Path:		Dwg No.

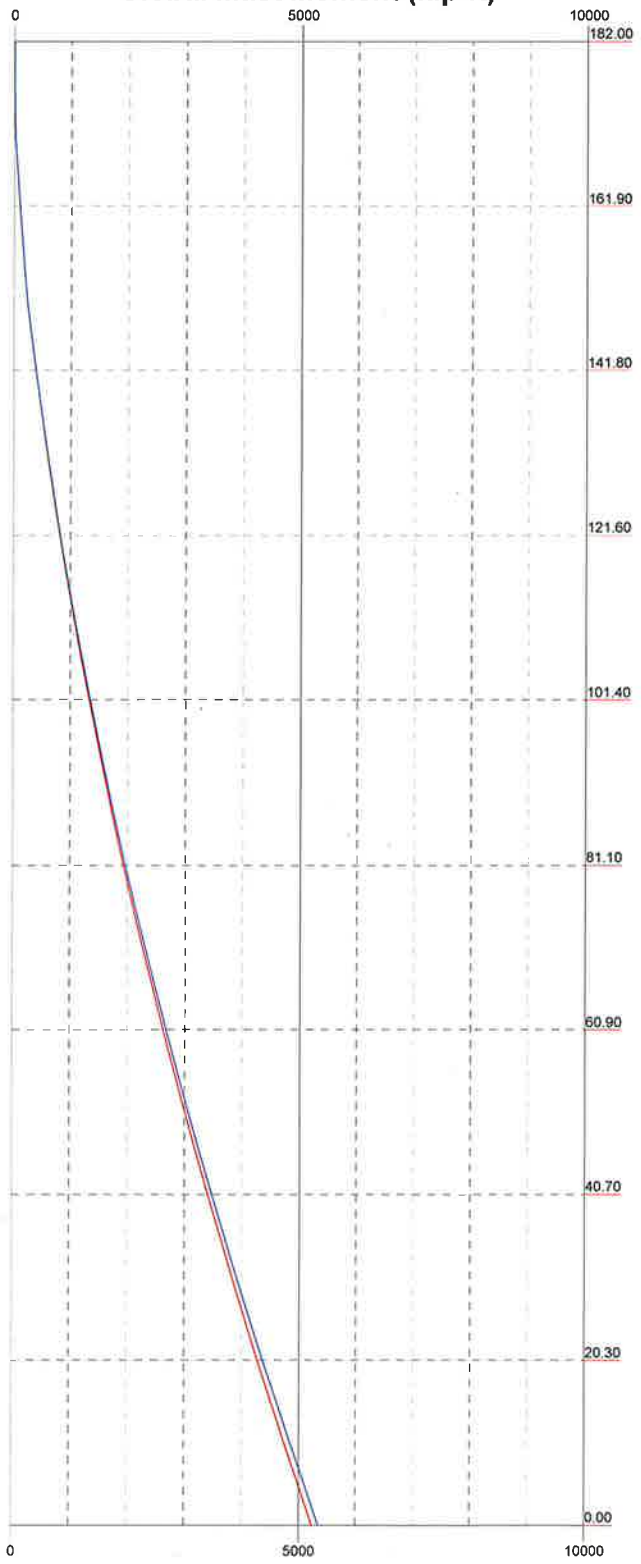
Vx Vz

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)

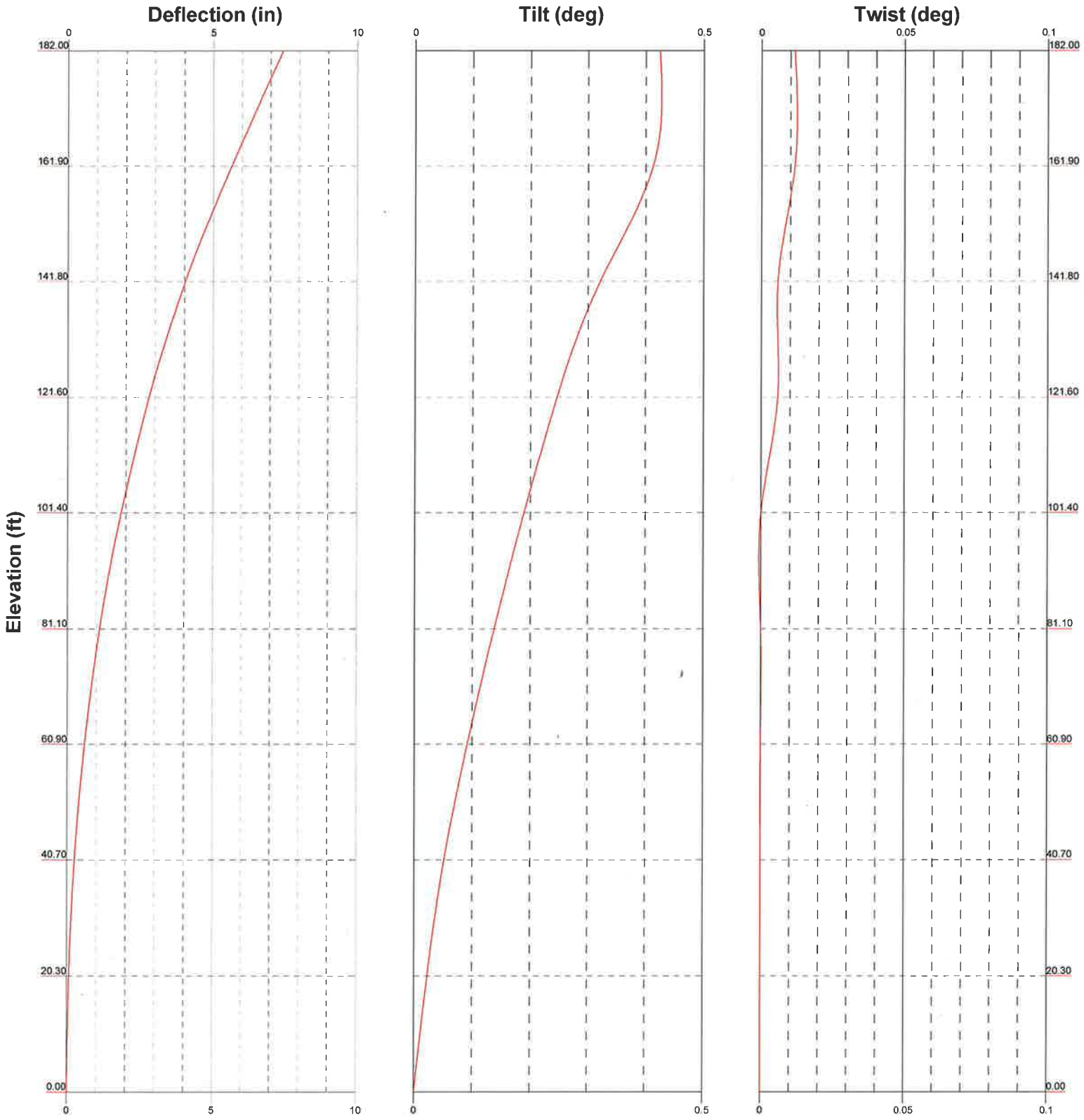


Allpro Consulting Group Inc.
9221 Lyndon B, Johnson Freeway, #204
Dallas, TX 75243
Phone: 972-231-8893
FAX: 866-364-8375

Job: ***17-2586***		
Project: ***CT13617-A-03 Troiano Realty***		
Client: SBA	Drawn by: TXiang	App'd:
Code: TIA-222-G	Date: 06/28/17	Scale: N
Path:		Dwg No.

TIA-222-G - Service - 60 mph

Maximum Values



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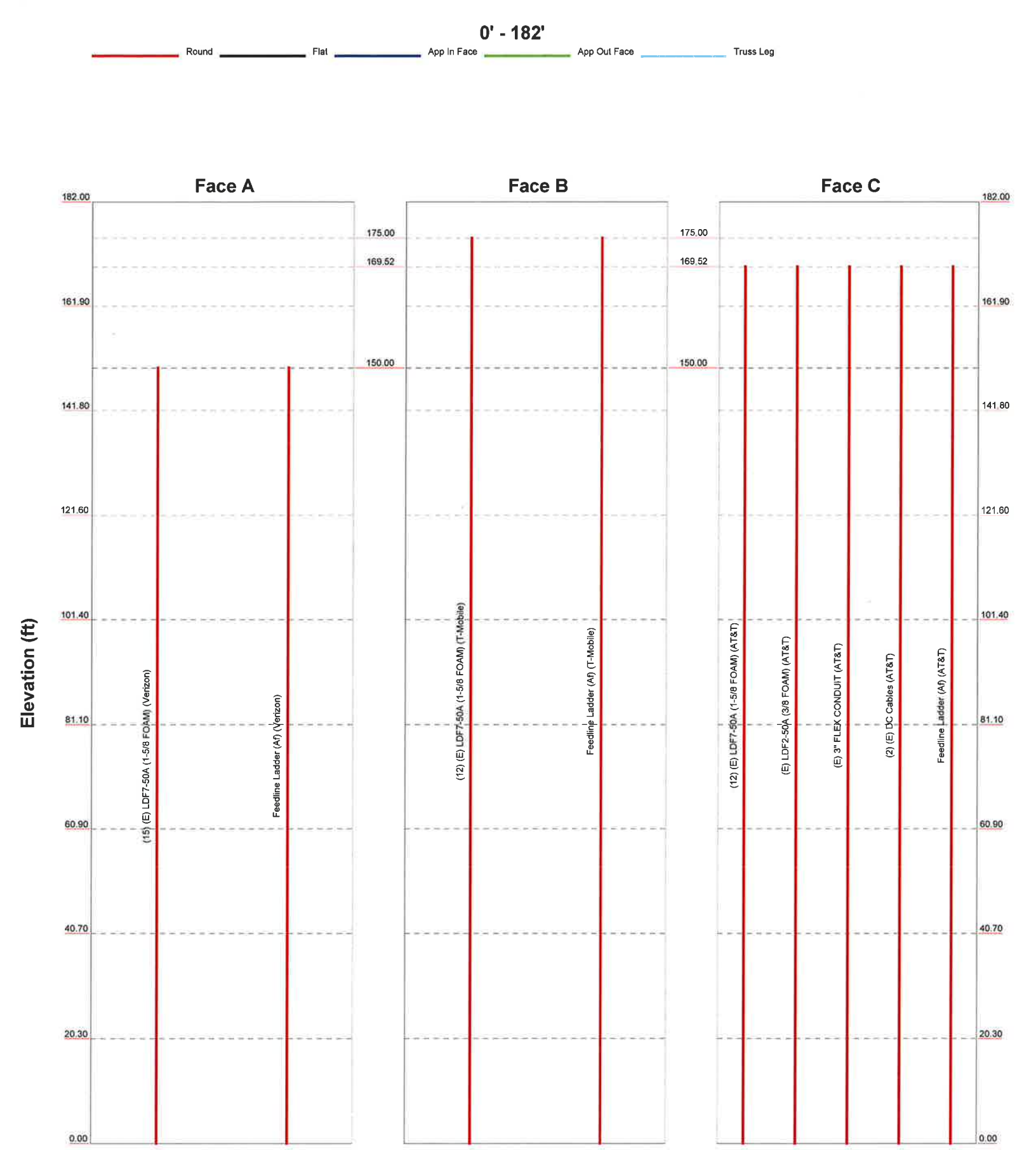

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CALCULATION PRINTOUT

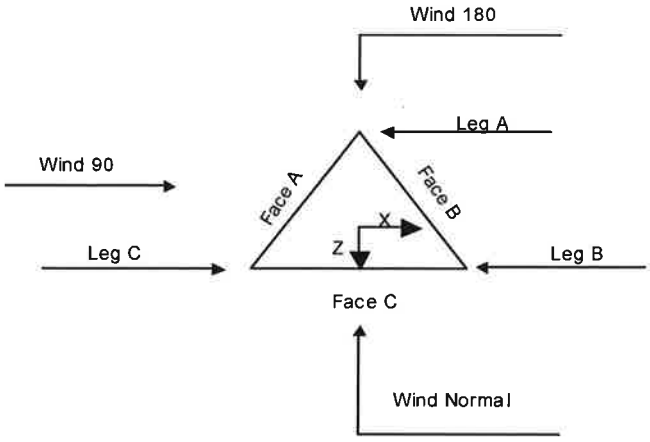
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 182.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.65 ft at the top and 18.99 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Tolland County, Connecticut.
Basic wind speed of 95 mph.
Structure Class II.
Exposure Category C.
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 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member 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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	182.00-161.90			4.65	1	20.10
T2	161.90-141.80			4.69	1	20.10
T3	141.80-121.60			4.76	1	20.20
T4	121.60-101.40			6.83	1	20.20
T5	101.40-81.10			8.83	1	20.30
T6	81.10-60.90			10.92	1	20.20
T7	60.90-40.70			12.92	1	20.20
T8	40.70-20.30			14.90	1	20.40
T9	20.30-0.00			16.99	1	20.30

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	182.00-161.90	4.02	X Brace	No	No	0.0000	0.0000
T2	161.90-141.80	4.02	X Brace	No	No	0.0000	0.0000
T3	141.80-121.60	4.04	X Brace	No	No	0.0000	0.0000
T4	121.60-101.40	5.05	X Brace	No	No	0.0000	0.0000
T5	101.40-81.10	6.77	X Brace	No	No	0.0000	0.0000
T6	81.10-60.90	6.73	X Brace	No	No	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T7	60.90-40.70	6.73	X Brace	No	No	0.0000	0.0000
T8	40.70-20.30	10.20	X Brace	No	No	0.0000	0.0000
T9	20.30-0.00	10.15	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 182.00-161.90	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 161.90-141.80	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 141.80-121.60	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 121.60-101.40	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T5 101.40-81.10	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 81.10-60.90	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 60.90-40.70	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 40.70-20.30	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T9 20.30-0.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 182.00-161.90	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 141.80-121.60	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	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
T1 182.00-161.90	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

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
T2 161.90-141.80	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 141.80-121.60	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 121.60-101.40	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 101.40-81.10	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 81.10-60.90	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 60.90-40.70	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 40.70-20.30	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 20.30-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 182.00-161.90	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 161.90-141.80	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 141.80-121.60	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 121.60-101.40	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 101.40-81.10	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 81.10-60.90	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 60.90-40.70	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 40.70-20.30	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 20.30-0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 182.00-161.90	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 161.90-141.80	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 141.80-121.60	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 121.60-101.40	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 101.40-81.10	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 81.10-60.90	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 60.90-40.70	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 40.70-20.30	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 20.30-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 182.00-161.90	Flange	0.7500 A325N	4	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 161.90-141.80	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 141.80-121.60	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 121.60-101.40	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 101.40-81.10	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 81.10-60.90	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 60.90-40.70	Flange	1.0000 A325N	8	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 40.70-20.30	Flange	1.0000 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 20.30-0.00	Flange	1.0000 A325N	0	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(E) LDF7-50A (1-5/8 FOAM)	A	No	Ar (CaAa)	150.00 - 0.00	15	12	0.5000	1.9800		0.82

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(Verizon) **********										
(E) LDF7-50A (1-5/8 FOAM) (T-Mobile) **********	B	No	Ar (CaAa)	175.00 - 0.00	12	6	0.5000	1.9800		0.82
(E) LDF7-50A (1-5/8 FOAM) (AT&T)	C	No	Ar (CaAa)	169.52 - 0.00	12	12	0.5000	1.9800		0.82
(E) LDF2-50A (3/8 FOAM) (AT&T)	C	No	Ar (CaAa)	169.52 - 0.00	1	1	0.4400	0.4400		0.08
(E) 3" FLEX CONDUIT (AT&T)	C	No	Ar (CaAa)	169.52 - 0.00	1	1	0.5000	3.0000		0.50
(E) DC Cables (AT&T) **********	C	No	Ar (CaAa)	169.52 - 0.00	2	2	0.4800	0.4800		0.20
Feedline Ladder (Af) (Verizon)	A	No	Af (CaAa)	150.00 - 0.00	1	1	0.5000	1.5000		8.40
Feedline Ladder (Af) (T-Mobile)	B	No	Af (CaAa)	175.00 - 0.00	1	1	0.5000	1.5000		8.40
Feedline Ladder (Af) (AT&T)	C	No	Af (CaAa)	169.52 - 0.00	1	1	0.5000	1.5000		8.40

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 K
T1	182.00-161.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	34.401	0.000	0.24
		C	0.000	0.000	23.363	0.000	0.15
T2	161.90-141.80	A	0.000	0.000	26.404	0.000	0.17
		B	0.000	0.000	52.783	0.000	0.37
		C	0.000	0.000	61.627	0.000	0.39
T3	141.80-121.60	A	0.000	0.000	65.044	0.000	0.42
		B	0.000	0.000	53.045	0.000	0.37
		C	0.000	0.000	61.933	0.000	0.39
T4	121.60-101.40	A	0.000	0.000	65.044	0.000	0.42
		B	0.000	0.000	53.045	0.000	0.37
		C	0.000	0.000	61.933	0.000	0.39
T5	101.40-81.10	A	0.000	0.000	65.366	0.000	0.42
		B	0.000	0.000	53.308	0.000	0.37
		C	0.000	0.000	62.240	0.000	0.39
T6	81.10-60.90	A	0.000	0.000	65.044	0.000	0.42
		B	0.000	0.000	53.045	0.000	0.37
		C	0.000	0.000	61.933	0.000	0.39
T7	60.90-40.70	A	0.000	0.000	65.044	0.000	0.42
		B	0.000	0.000	53.045	0.000	0.37
		C	0.000	0.000	61.933	0.000	0.39
T8	40.70-20.30	A	0.000	0.000	65.688	0.000	0.42
		B	0.000	0.000	53.570	0.000	0.37
		C	0.000	0.000	62.546	0.000	0.39
T9	20.30-0.00	A	0.000	0.000	65.366	0.000	0.42
		B	0.000	0.000	53.308	0.000	0.37
		C	0.000	0.000	62.240	0.000	0.39

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 K
T1	182.00-161.90	A	2.359	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	44.152	0.000	1.04
		C		0.000	0.000	55.974	0.000	1.03
T2	161.90-141.80	A	2.330	0.000	0.000	41.873	0.000	0.89
		B		0.000	0.000	67.432	0.000	1.59
		C		0.000	0.000	146.918	0.000	2.67
T3	141.80-121.60	A	2.297	0.000	0.000	102.814	0.000	2.16
		B		0.000	0.000	67.413	0.000	1.57
		C		0.000	0.000	146.820	0.000	2.64
T4	121.60-101.40	A	2.259	0.000	0.000	102.427	0.000	2.13
		B		0.000	0.000	67.004	0.000	1.55
		C		0.000	0.000	145.866	0.000	2.60
T5	101.40-81.10	A	2.214	0.000	0.000	102.474	0.000	2.10
		B		0.000	0.000	66.851	0.000	1.54
		C		0.000	0.000	145.456	0.000	2.56
T6	81.10-60.90	A	2.159	0.000	0.000	101.409	0.000	2.05
		B		0.000	0.000	65.931	0.000	1.50
		C		0.000	0.000	143.360	0.000	2.48
T7	60.90-40.70	A	2.088	0.000	0.000	100.684	0.000	2.00
		B		0.000	0.000	65.167	0.000	1.46
		C		0.000	0.000	141.574	0.000	2.40
T8	40.70-20.30	A	1.984	0.000	0.000	100.612	0.000	1.94
		B		0.000	0.000	64.685	0.000	1.42
		C		0.000	0.000	140.343	0.000	2.30
T9	20.30-0.00	A	1.778	0.000	0.000	98.008	0.000	1.77
		B		0.000	0.000	62.140	0.000	1.31
		C		0.000	0.000	134.448	0.000	2.06

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	182.00-161.90	1.4455	0.5172	0.8099	0.6008
T2	161.90-141.80	0.3837	0.7004	0.2379	0.9261
T3	141.80-121.60	-0.5501	0.1460	-0.4355	0.5510
T4	121.60-101.40	-0.7082	0.2146	-0.6008	0.7792
T5	101.40-81.10	-0.8658	0.2823	-0.7504	0.9838
T6	81.10-60.90	-0.9998	0.3415	-0.8774	1.1533
T7	60.90-40.70	-1.1438	0.4032	-1.0096	1.3214
T8	40.70-20.30	-1.2599	0.4548	-1.1696	1.5116
T9	20.30-0.00	-1.3769	0.5062	-1.3279	1.6583

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	3	(E) LDF7-50A (1-5/8 FOAM)	161.90 - 175.00	0.6000	0.4432
T1	5	(E) LDF7-50A (1-5/8 FOAM)	161.90 - 169.52	0.6000	0.4432
T1	6	(E) LDF2-50A (3/8 FOAM)	161.90 - 169.52	0.6000	0.4432
T1	7	(E) 3" FLEX CONDUIT	161.90 - 169.52	0.6000	0.4432
T1	8	(E) DC Cables	161.90 - 169.52	0.6000	0.4432
T1	11	Feedline Ladder (Af)	161.90 - 175.00	0.6000	0.4432
T1	12	Feedline Ladder (Af)	161.90 - 169.52	0.6000	0.4432
T2	1	(E) LDF7-50A (1-5/8 FOAM)	141.80 - 150.00	0.6000	0.4506
T2	3	(E) LDF7-50A (1-5/8 FOAM)	141.80 - 161.90	0.6000	0.4506
T2	5	(E) LDF7-50A (1-5/8 FOAM)	141.80 - 161.90	0.6000	0.4506
T2	6	(E) LDF2-50A (3/8 FOAM)	141.80 - 161.90	0.6000	0.4506
T2	7	(E) 3" FLEX CONDUIT	141.80 - 161.90	0.6000	0.4506
T2	8	(E) DC Cables	141.80 - 161.90	0.6000	0.4506
T2	10	Feedline Ladder (Af)	141.80 - 150.00	0.6000	0.4506
T2	11	Feedline Ladder (Af)	141.80 - 161.90	0.6000	0.4506
T2	12	Feedline Ladder (Af)	141.80 - 161.90	0.6000	0.4506
T3	1	(E) LDF7-50A (1-5/8 FOAM)	121.60 - 141.80	0.6000	0.4756
T3	3	(E) LDF7-50A (1-5/8 FOAM)	121.60 - 141.80	0.6000	0.4756
T3	5	(E) LDF7-50A (1-5/8 FOAM)	121.60 - 141.80	0.6000	0.4756
T3	6	(E) LDF2-50A (3/8 FOAM)	121.60 - 141.80	0.6000	0.4756
T3	7	(E) 3" FLEX CONDUIT	121.60 - 141.80	0.6000	0.4756
T3	8	(E) DC Cables	121.60 - 141.80	0.6000	0.4756
T3	10	Feedline Ladder (Af)	121.60 - 141.80	0.6000	0.4756
T3	11	Feedline Ladder (Af)	121.60 - 141.80	0.6000	0.4756
T3	12	Feedline Ladder (Af)	121.60 - 141.80	0.6000	0.4756
T4	1	(E) LDF7-50A (1-5/8 FOAM)	101.40 - 121.60	0.6000	0.5881
T4	3	(E) LDF7-50A (1-5/8 FOAM)	101.40 - 121.60	0.6000	0.5881
T4	5	(E) LDF7-50A (1-5/8 FOAM)	101.40 - 121.60	0.6000	0.5881
T4	6	(E) LDF2-50A (3/8 FOAM)	101.40 - 121.60	0.6000	0.5881
T4	7	(E) 3" FLEX CONDUIT	101.40 - 121.60	0.6000	0.5881
T4	8	(E) DC Cables	101.40 - 121.60	0.6000	0.5881

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	10	Feedline Ladder (Af)	101.40 - 121.60	0.6000	0.5881
T4	11	Feedline Ladder (Af)	101.40 - 121.60	0.6000	0.5881
T4	'12	Feedline Ladder (Af)	101.40 - 121.60	0.6000	0.5881
T5	1	(E) LDF7-50A (1-5/8 FOAM)	81.10 - 101.40	0.6000	0.6000
T5	3	(E) LDF7-50A (1-5/8 FOAM)	81.10 - 101.40	0.6000	0.6000
T5	5	(E) LDF7-50A (1-5/8 FOAM)	81.10 - 101.40	0.6000	0.6000
T5	6	(E) LDF2-50A (3/8 FOAM)	81.10 - 101.40	0.6000	0.6000
T5	7	(E) 3" FLEX CONDUIT	81.10 - 101.40	0.6000	0.6000
T5	8	(E) DC Cables	81.10 - 101.40	0.6000	0.6000
T5	10	Feedline Ladder (Af)	81.10 - 101.40	0.6000	0.6000
T5	11	Feedline Ladder (Af)	81.10 - 101.40	0.6000	0.6000
T5	12	Feedline Ladder (Af)	81.10 - 101.40	0.6000	0.6000
T6	1	(E) LDF7-50A (1-5/8 FOAM)	60.90 - 81.10	0.6000	0.6000
T6	3	(E) LDF7-50A (1-5/8 FOAM)	60.90 - 81.10	0.6000	0.6000
T6	5	(E) LDF7-50A (1-5/8 FOAM)	60.90 - 81.10	0.6000	0.6000
T6	6	(E) LDF2-50A (3/8 FOAM)	60.90 - 81.10	0.6000	0.6000
T6	7	(E) 3" FLEX CONDUIT	60.90 - 81.10	0.6000	0.6000
T6	8	(E) DC Cables	60.90 - 81.10	0.6000	0.6000
T6	10	Feedline Ladder (Af)	60.90 - 81.10	0.6000	0.6000
T6	11	Feedline Ladder (Af)	60.90 - 81.10	0.6000	0.6000
T6	12	Feedline Ladder (Af)	60.90 - 81.10	0.6000	0.6000
T7	1	(E) LDF7-50A (1-5/8 FOAM)	40.70 - 60.90	0.6000	0.6000
T7	3	(E) LDF7-50A (1-5/8 FOAM)	40.70 - 60.90	0.6000	0.6000
T7	5	(E) LDF7-50A (1-5/8 FOAM)	40.70 - 60.90	0.6000	0.6000
T7	6	(E) LDF2-50A (3/8 FOAM)	40.70 - 60.90	0.6000	0.6000
T7	7	(E) 3" FLEX CONDUIT	40.70 - 60.90	0.6000	0.6000
T7	8	(E) DC Cables	40.70 - 60.90	0.6000	0.6000
T7	10	Feedline Ladder (Af)	40.70 - 60.90	0.6000	0.6000
T7	11	Feedline Ladder (Af)	40.70 - 60.90	0.6000	0.6000
T7	12	Feedline Ladder (Af)	40.70 - 60.90	0.6000	0.6000
T8	1	(E) LDF7-50A (1-5/8 FOAM)	20.30 - 40.70	0.6000	0.6000
T8	3	(E) LDF7-50A (1-5/8 FOAM)	20.30 - 40.70	0.6000	0.6000
T8	5	(E) LDF7-50A (1-5/8 FOAM)	20.30 - 40.70	0.6000	0.6000
T8	6	(E) LDF2-50A (3/8 FOAM)	20.30 - 40.70	0.6000	0.6000
T8	7	(E) 3" FLEX CONDUIT	20.30 - 40.70	0.6000	0.6000
T8	8	(E) DC Cables	20.30 - 40.70	0.6000	0.6000
T8	10	Feedline Ladder (Af)	20.30 - 40.70	0.6000	0.6000
T8	11	Feedline Ladder (Af)	20.30 - 40.70	0.6000	0.6000
T8	12	Feedline Ladder (Af)	20.30 - 40.70	0.6000	0.6000
T9	1	(E) LDF7-50A (1-5/8 FOAM)	0.00 - 20.30	0.6000	0.6000
T9	3	(E) LDF7-50A (1-5/8 FOAM)	0.00 - 20.30	0.6000	0.6000
T9	5	(E) LDF7-50A (1-5/8 FOAM)	0.00 - 20.30	0.6000	0.6000
T9	6	(E) LDF2-50A (3/8 FOAM)	0.00 - 20.30	0.6000	0.6000
T9	7	(E) 3" FLEX CONDUIT	0.00 - 20.30	0.6000	0.6000
T9	8	(E) DC Cables	0.00 - 20.30	0.6000	0.6000
T9	10	Feedline Ladder (Af)	0.00 - 20.30	0.6000	0.6000
T9	11	Feedline Ladder (Af)	0.00 - 20.30	0.6000	0.6000
T9	12	Feedline Ladder (Af)	0.00 - 20.30	0.6000	0.6000

Discrete Tower Loads

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 K
(E)	A	From Leg	3.00	0.0000	177.00	No Ice	3.62	2.01	0.02
APXV18-206516S-C-A20			0.00			1/2" Ice	3.97	2.33	0.04
(T-Mobile)			0.00			1" Ice	4.36	2.66	0.06
(E)	B	From Leg	3.00	0.0000	177.00	No Ice	3.62	2.01	0.02
APXV18-206516S-C-A20			0.00			1/2" Ice	3.97	2.33	0.04
(T-Mobile)			0.00			1" Ice	4.36	2.66	0.06
(E)	C	From Leg	3.00	0.0000	177.00	No Ice	3.62	2.01	0.02
APXV18-206516S-C-A20			0.00			1/2" Ice	3.97	2.33	0.04
(T-Mobile)			0.00			1" Ice	4.36	2.66	0.06
(E) LNX-6515DS-A1M	A	From Leg	3.00	0.0000	175.00	No Ice	11.45	7.70	0.05
(T-Mobile)			0.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
(E) LNX-6515DS-A1M	B	From Leg	3.00	0.0000	175.00	No Ice	11.45	7.70	0.05
(T-Mobile)			0.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
(E) LNX-6515DS-A1M	C	From Leg	3.00	0.0000	175.00	No Ice	11.45	7.70	0.05
(T-Mobile)			0.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
(E) FE15501P77/75	A	From Leg	3.00	0.0000	175.00	No Ice	0.62	0.29	0.02
(T-Mobile)			0.00			1/2" Ice	0.73	0.36	0.02
			0.00			1" Ice	0.85	0.44	0.03
(E) FE15501P77/75	B	From Leg	3.00	0.0000	175.00	No Ice	0.62	0.29	0.02
(T-Mobile)			0.00			1/2" Ice	0.73	0.36	0.02
			0.00			1" Ice	0.85	0.44	0.03
(E) FE15501P77/75	C	From Leg	3.00	0.0000	175.00	No Ice	0.62	0.29	0.02
(T-Mobile)			0.00			1/2" Ice	0.73	0.36	0.02
			0.00			1" Ice	0.85	0.44	0.03
(E) ATMAA1412D-1A20	A	From Leg	3.00	0.0000	175.00	No Ice	0.47	1.17	0.01
(T-Mobile)			0.00			1/2" Ice	0.57	1.31	0.02
			0.00			1" Ice	0.68	1.46	0.03
(E) ATMAA1412D-1A20	B	From Leg	3.00	0.0000	175.00	No Ice	0.47	1.17	0.01
(T-Mobile)			0.00			1/2" Ice	0.57	1.31	0.02
			0.00			1" Ice	0.68	1.46	0.03
(E) ATMAA1412D-1A20	C	From Leg	3.00	0.0000	175.00	No Ice	0.47	1.17	0.01
(T-Mobile)			0.00			1/2" Ice	0.57	1.31	0.02
			0.00			1" Ice	0.68	1.46	0.03
(P) Kathrein	A	From Leg	3.00	0.0000	175.00	No Ice	0.10	0.17	0.00
(T-Mobile)			0.00			1/2" Ice	0.15	0.23	0.00
			0.00			1" Ice	0.20	0.29	0.01
(P) Kathrein	B	From Leg	3.00	0.0000	175.00	No Ice	0.10	0.17	0.00
(T-Mobile)			0.00			1/2" Ice	0.15	0.23	0.00
			0.00			1" Ice	0.20	0.29	0.01
(P) Kathrein	C	From Leg	3.00	0.0000	175.00	No Ice	0.10	0.17	0.00
(T-Mobile)			0.00			1/2" Ice	0.15	0.23	0.00
			0.00			1" Ice	0.20	0.29	0.01
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(3) (E) P65-17-XLH	A	From Leg	3.00	0.0000	169.52	No Ice	11.47	6.80	0.08
(AT&T)			0.00			1/2" Ice	12.08	7.38	0.14
			0.00			1" Ice	12.71	7.98	0.21
(3) (E) P65-17-XLH	B	From Leg	3.00	0.0000	169.52	No Ice	11.47	6.80	0.08
(AT&T)			0.00			1/2" Ice	12.08	7.38	0.14
			0.00			1" Ice	12.71	7.98	0.21
(3) (E) P65-17-XLH	C	From Leg	3.00	0.0000	169.52	No Ice	11.47	6.80	0.08
(AT&T)			0.00			1/2" Ice	12.08	7.38	0.14
			0.00			1" Ice	12.71	7.98	0.21
(E)	A	From Leg	3.00	0.0000	169.52	No Ice	6.62	4.13	0.03
AM-X-CD-16-65-00T-RET			0.00			1/2" Ice	7.05	4.54	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(AT&T)			0.00			1" Ice	7.50	4.95	0.12
(E)	B	From Leg	3.00	0.0000	169.52	No Ice	6.62	4.13	0.03
AM-X-CD-16-65-00T-RET			0.00			1/2" Ice	7.05	4.54	0.07
(AT&T)			0.00			1" Ice	7.50	4.95	0.12
(E)	C	From Leg	3.00	0.0000	169.52	No Ice	6.62	4.13	0.03
AM-X-CD-16-65-00T-RET			0.00			1/2" Ice	7.05	4.54	0.07
(AT&T)			0.00			1" Ice	7.50	4.95	0.12
(4) (E) ADC ClearGain	A	From Leg	3.00	0.0000	169.52	No Ice	1.54	0.80	0.03
TMAs			0.00			1/2" Ice	1.76	0.98	0.04
(AT&T)			0.00			1" Ice	1.98	1.15	0.05
(4) (E) ADC ClearGain	B	From Leg	3.00	0.0000	169.52	No Ice	1.54	0.80	0.03
TMAs			0.00			1/2" Ice	1.76	0.98	0.04
(AT&T)			0.00			1" Ice	1.98	1.15	0.05
(4) (E) ADC ClearGain	C	From Leg	3.00	0.0000	169.52	No Ice	1.54	0.80	0.03
TMAs			0.00			1/2" Ice	1.76	0.98	0.04
(AT&T)			0.00			1" Ice	1.98	1.15	0.05
(2) (E) RRUS 11	A	From Leg	3.00	0.0000	169.52	No Ice	0.32	1.33	0.05
(AT&T)			0.00			1/2" Ice	0.35	1.51	0.07
			0.00			1" Ice	0.37	1.69	0.09
(2) (E) RRUS 11	B	From Leg	3.00	0.0000	169.52	No Ice	0.32	1.33	0.05
(AT&T)			0.00			1/2" Ice	0.35	1.51	0.07
			0.00			1" Ice	0.37	1.69	0.09
(2) (E) RRUS 11	C	From Leg	3.00	0.0000	169.52	No Ice	0.32	1.33	0.05
(AT&T)			0.00			1/2" Ice	0.35	1.51	0.07
			0.00			1" Ice	0.37	1.69	0.09
(E) DC6-48-60-18-8F	A	From Leg	3.00	0.0000	169.52	No Ice	4.32	2.57	0.03
(AT&T)			0.00			1/2" Ice	4.60	2.80	0.06
			0.00			1" Ice	4.88	3.03	0.10
(E) Pirod 15' T-Frame Sector	A	From Leg	0.00	0.0000	169.52	No Ice	15.00	8.00	0.30
Mount (1)			0.00			1/2" Ice	20.60	12.80	0.40
(AT&T)			0.00			1" Ice	26.20	17.60	0.50
(E) Pirod 15' T-Frame Sector	B	From Leg	0.00	0.0000	169.52	No Ice	15.00	8.00	0.30
Mount (1)			0.00			1/2" Ice	20.60	12.80	0.40
(AT&T)			0.00			1" Ice	26.20	17.60	0.50
(E) Pirod 15' T-Frame Sector	C	From Leg	0.00	0.0000	169.52	No Ice	15.00	8.00	0.30
Mount (1)			0.00			1/2" Ice	20.60	12.80	0.40
(AT&T)			0.00			1" Ice	26.20	17.60	0.50
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(2) (E) SBNHH-1D65B	A	From Leg	3.00	0.0000	150.00	No Ice	8.29	5.34	0.04
(Verizon)			0.00			1/2" Ice	8.84	5.79	0.09
			0.00			1" Ice	9.40	6.26	0.15
(2) (E) SBNHH-1D65B	B	From Leg	3.00	0.0000	150.00	No Ice	8.29	5.34	0.04
(Verizon)			0.00			1/2" Ice	8.84	5.79	0.09
			0.00			1" Ice	9.40	6.26	0.15
(2) (E) SBNHH-1D65B	C	From Leg	3.00	0.0000	150.00	No Ice	8.29	5.34	0.04
(Verizon)			0.00			1/2" Ice	8.84	5.79	0.09
			0.00			1" Ice	9.40	6.26	0.15
(2) (E)	A	From Leg	3.00	0.0000	150.00	No Ice	2.62	6.06	0.01
LPA-80080-4CF-EDIN-2			0.00			1/2" Ice	2.92	6.45	0.05
(Verizon)			0.00			1" Ice	3.23	6.86	0.08
(2) (E)	B	From Leg	3.00	0.0000	150.00	No Ice	2.62	6.06	0.01
LPA-80080-4CF-EDIN-2			0.00			1/2" Ice	2.92	6.45	0.05
(Verizon)			0.00			1" Ice	3.23	6.86	0.08
(2) (E)	C	From Leg	3.00	0.0000	150.00	No Ice	7.01	6.08	0.02
LPA-80080-4CF-EDIN-5			0.00			1/2" Ice	7.42	6.48	0.07
(Verizon)			0.00			1" Ice	7.84	6.89	0.13
(3) (E) RRH2x60	A	From Leg	3.00	0.0000	150.00	No Ice	2.05	3.77	0.06

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 K
(Verizon)			0.00			1/2" Ice	2.32	4.08	0.08
			0.00			1" Ice	2.60	4.39	0.10
(3) (E) RRH2x60	B	From Leg	3.00	0.0000	150.00	No Ice	2.05	3.77	0.06
(Verizon)			0.00			1/2" Ice	2.32	4.08	0.08
			0.00			1" Ice	2.60	4.39	0.10
(3) (E) RRH2x60	C	From Leg	3.00	0.0000	150.00	No Ice	2.05	3.77	0.06
(Verizon)			0.00			1/2" Ice	2.32	4.08	0.08
			0.00			1" Ice	2.60	4.39	0.10
(2) (E) FD9R6004/1C-3L	A	From Leg	3.00	0.0000	150.00	No Ice	0.08	0.37	0.00
Diplexer			0.00			1/2" Ice	0.14	0.45	0.01
(Verizon)			0.00			1" Ice	0.19	0.53	0.01
(2) (E) FD9R6004/1C-3L	B	From Leg	3.00	0.0000	150.00	No Ice	0.08	0.37	0.00
Diplexer			0.00			1/2" Ice	0.14	0.45	0.01
(Verizon)			0.00			1" Ice	0.19	0.53	0.01
(2) (E) FD9R6004/1C-3L	C	From Leg	3.00	0.0000	150.00	No Ice	0.08	0.37	0.00
Diplexer			0.00			1/2" Ice	0.14	0.45	0.01
(Verizon)			0.00			1" Ice	0.19	0.53	0.01
(E) KS24019-L112A GPS	A	From Leg	3.00	0.0000	150.00	No Ice	0.16	0.16	0.01
(Verizon)			0.00			1/2" Ice	0.25	0.25	0.01
			0.00			1" Ice	0.34	0.34	0.01
(E) DB-T1-6Z-8AB-0Z	A	From Leg	3.00	0.0000	150.00	No Ice	2.33	5.60	0.05
(Verizon)			0.00			1/2" Ice	2.63	6.01	0.09
			0.00			1" Ice	2.92	6.42	0.12
VFA12 -HD	A	From Leg	0.00	0.0000	150.00	No Ice	13.20	9.20	0.63
(Verizon)			0.00			1/2" Ice	19.50	14.60	0.81
			0.00			1" Ice	25.80	20.00	0.99
VFA12 -HD	B	From Leg	0.00	0.0000	150.00	No Ice	13.20	9.20	0.63
(Verizon)			0.00			1/2" Ice	19.50	14.60	0.81
			0.00			1" Ice	25.80	20.00	0.99
VFA12 -HD	C	From Leg	0.00	0.0000	150.00	No Ice	13.20	9.20	0.63
(Verizon)			0.00			1/2" Ice	19.50	14.60	0.81
			0.00			1" Ice	25.80	20.00	0.99
(E) Lighting Rod	B	From Leg	0.00	0.0000	182.00	No Ice	0.25	0.25	0.03
			0.00			1/2" Ice	0.66	0.66	0.03
			0.00			1" Ice	1.07	1.07	0.03
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(P) SF-HPM3-96	A	From Leg	0.00	0.0000	175.00	No Ice	8.20	3.80	0.28
(T-Mobile)			0.00			1/2" Ice	10.68	4.90	0.33
			0.00			1" Ice	13.16	6.00	0.38
(P) SF-HPM3-96	B	From Leg	0.00	0.0000	175.00	No Ice	8.20	3.80	0.28
(T-Mobile)			0.00			1/2" Ice	10.68	4.90	0.33
			0.00			1" Ice	13.16	6.00	0.38
(P) SF-HPM3-96	C	From Leg	0.00	0.0000	175.00	No Ice	8.20	3.80	0.28
(T-Mobile)			0.00			1/2" Ice	10.68	4.90	0.33
			0.00			1" Ice	13.16	6.00	0.38

Load Combinations

Comb. No.	Description
1	Dead Only

Comb. No.	Description
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
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 Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	182 - 161.9	7.438	42	0.4266	0.0095
T2	161.9 - 141.8	5.640	42	0.4125	0.0089
T3	141.8 - 121.6	4.026	42	0.3237	0.0068
T4	121.6 - 101.4	2.791	42	0.2466	0.0035

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T5	101.4 - 81.1	1.833	48	0.1916	0.0019
T6	81.1 - 60.9	1.107	48	0.1376	0.0012
T7	60.9 - 40.7	0.593	48	0.0907	0.0007
T8	40.7 - 20.3	0.257	48	0.0541	0.0004
T9	20.3 - 0	0.070	48	0.0229	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.00	(E) Lighting Rod	42	7.438	0.4266	0.0095	123121
177.00	(E) APXV18-206516S-C-A20	42	6.984	0.4278	0.0094	123121
175.00	(E) LNX-6515DS-A1M	42	6.803	0.4279	0.0094	87944
169.52	(3) (E) P65-17-XLH	42	6.311	0.4256	0.0093	49327
150.00	(2) (E) SBNHH-1D65B	42	4.645	0.3641	0.0079	13954

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	182 - 161.9	29.804	8	1.7063	0.0382
T2	161.9 - 141.8	22.608	8	1.6511	0.0358
T3	141.8 - 121.6	16.147	8	1.2970	0.0272
T4	121.6 - 101.4	11.194	8	0.9887	0.0140
T5	101.4 - 81.1	7.353	20	0.7683	0.0078
T6	81.1 - 60.9	4.442	20	0.5520	0.0049
T7	60.9 - 40.7	2.379	20	0.3637	0.0028
T8	40.7 - 20.3	1.033	20	0.2168	0.0016
T9	20.3 - 0	0.281	20	0.0917	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.00	(E) Lighting Rod	8	29.804	1.7063	0.0382	31081
177.00	(E) APXV18-206516S-C-A20	8	27.990	1.7117	0.0379	31081
175.00	(E) LNX-6515DS-A1M	8	27.266	1.7122	0.0378	22200
169.52	(3) (E) P65-17-XLH	8	25.296	1.7033	0.0372	12452
150.00	(2) (E) SBNHH-1D65B	8	18.625	1.4582	0.0316	3499

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	182	Leg	A325N	0.7500	4	4.41	29.82	0.148 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4.62	5.81	0.795 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	1	0.21	5.81	0.036 ✔	1	Member Block Shear
T2	161.9	Leg	A325N	0.8750	4	19.89	40.59	0.490 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	8.16	9.11	0.895 ✔	1	Member Block Shear
T3	141.8	Leg	A325N	1.0000	4	32.04	53.01	0.604 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4.68	6.83	0.686 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	1	0.62	5.81	0.106 ✔	1	Member Block Shear
T4	121.6	Leg	A325N	1.0000	4	40.58	53.01	0.765 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5.04	6.83	0.737 ✔	1	Member Block Shear
T5	101.4	Leg	A325N	1.0000	6	31.77	53.01	0.599 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5.60	7.83	0.715 ✔	1	Member Bearing
T6	81.1	Leg	A325N	1.0000	6	36.47	53.01	0.688 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6.33	7.83	0.808 ✔	1	Member Bearing
T7	60.9	Leg	A325N	1.0000	8	30.76	53.01	0.580 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6.85	10.44	0.656 ✔	1	Member Bearing
T8	40.7	Leg	A325N	1.0000	8	33.59	53.01	0.634 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	7.76	12.62	0.615 ✔	1	Member Bearing
T9	20.3	Diagonal	A325N	0.7500	1	8.67	12.62	0.687 ✔	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	182 - 161.9	ROHN 2.5 STD	20.10	4.02	50.9 K=1.00	1.7040	-21.25	63.44	0.335 [1] ✔
T2	161.9 - 141.8	ROHN 3 STD	20.10	4.02	41.5 K=1.00	2.2285	-87.25	88.44	0.987 [1] ✔
T3	141.8 - 121.6	ROHN 4 EH	20.24	4.05	32.9 K=1.00	4.4074	-139.03	183.25	0.759 [1] ✔
T4	121.6 - 101.4	ROHN 5 EH	20.23	5.06	33.0 K=1.00	6.1120	-176.39	253.98	0.695 [1] ✔
T5	101.4 - 81.1	ROHN 5 EH	20.34	6.78	44.2 K=1.00	6.1120	-207.98	238.38	0.872 [1] ✔

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	K	K	
T6	81.1 - 60.9	ROHN 6 EHS	20.23	6.74	36.4 K=1.00	6.7133	-239.82	274.25	0.874 [1] ✔
T7	60.9 - 40.7	ROHN 6 EH	20.23	6.74	36.9 K=1.00	8.4049	-271.33	342.43	0.792 [1] ✔
T8	40.7 - 20.3	ROHN 8 EHS	20.44	10.22	42.0 K=1.00	9.7193	-298.03	384.46	0.775 [1] ✔
T9	20.3 - 0	ROHN 8 EH	20.33	10.17	42.4 K=1.00	12.7627	-326.88	503.62	0.649 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

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	K	K	
T1	182 - 161.9	L1 3/4x1 3/4x3/16	6.17	2.81	103.7 K=1.06	0.6211	-4.62	11.43	0.404 [1] ✔
T2	161.9 - 141.8	L2x2x1/4	6.23	2.81	94.6 K=1.10	0.9380	-8.30	18.97	0.438 [1] ✔
T3	141.8 - 121.6	L2x2x3/16	7.76	3.66	113.7 K=1.02	0.7148	-4.44	11.73	0.378 [1] ✔
T4	121.6 - 101.4	L2x2x3/16	9.96	4.74	144.3 K=1.00	0.7148	-5.02	7.75	0.648 [1] ✔
T5	101.4 - 81.1	L2 1/2x2 1/2x3/16	12.55	6.09	147.6 K=1.00	0.9023	-5.64	9.36	0.603 [1] ✔
T6	81.1 - 60.9	L2 1/2x2 1/2x3/16	14.27	6.89	167.1 K=1.00	0.9023	-6.37	7.30	0.873 [1] ✔
T7	60.9 - 40.7	L2 1/2x2 1/2x1/4	16.05	7.78	190.2 K=1.00	1.1900	-6.86	7.43	0.923 [1] ✔
T8	40.7 - 20.3	L3x3x1/4	19.37	9.44	191.3 K=1.00	1.4400	-7.84	8.89	0.881 [1] ✔
T9	20.3 - 0	L3 1/2x3 1/2x1/4	21.09	10.29	177.9 K=1.00	1.6900	-8.87	12.07	0.735 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

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	K	K	
T1	182 - 161.9	L1 3/4x1 3/4x3/16	4.65	4.17	145.6 K=1.00	0.6211	-0.22	6.62	0.034 [1] ✔
T3	141.8 - 121.6	L1 3/4x1 3/4x3/16	4.76	4.23	147.8 K=1.00	0.6211	-0.61	6.43	0.096 [1] ✔

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	K	K	

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

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	K	K	
T1	182 - 161.9	ROHN 2.5 STD	20.10	4.02	50.9	1.7040	17.62	76.68	0.230 [1] ✔
T2	161.9 - 141.8	ROHN 3 STD	20.10	4.02	41.5	2.2285	79.57	100.28	0.793 [1] ✔
T3	141.8 - 121.6	ROHN 4 EH	20.24	4.05	32.9	4.4074	128.17	198.34	0.646 [1] ✔
T4	121.6 - 101.4	ROHN 5 EH	20.23	5.06	33.0	6.1120	162.31	275.04	0.590 [1] ✔
T5	101.4 - 81.1	ROHN 5 EH	20.34	6.78	44.2	6.1120	190.65	275.04	0.693 [1] ✔
T6	81.1 - 60.9	ROHN 6 EHS	20.23	6.74	36.4	6.7133	218.81	302.10	0.724 [1] ✔
T7	60.9 - 40.7	ROHN 6 EH	20.23	6.74	36.9	8.4049	246.08	378.22	0.651 [1] ✔
T8	40.7 - 20.3	ROHN 8 EHS	20.44	10.22	42.0	9.7193	268.69	437.37	0.614 [1] ✔
T9	20.3 - 0	ROHN 8 EH	20.33	10.17	42.4	12.7627	292.57	574.32	0.509 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

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	K	K	
T1	182 - 161.9	L1 3/4x1 3/4x3/16	6.17	2.81	65.5	0.3604	4.62	15.68	0.295 [1] ✔
T2	161.9 - 141.8	L2x2x1/4	6.23	2.81	57.7	0.5629	8.16	24.49	0.333 [1] ✔
T3	141.8 - 121.6	L2x2x3/16	6.73	3.16	63.7	0.4307	4.68	18.73	0.250 [1] ✔
T4	121.6 - 101.4	L2x2x3/16	9.53	4.52	90.3	0.4307	5.04	18.73	0.269 [1] ✔
T5	101.4 - 81.1	L2 1/2x2 1/2x3/16	12.55	6.09	95.7	0.5713	5.60	24.85	0.225 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	81.1 - 60.9	L2 1/2x2 1/2x3/16	14.27	6.89	108.1	0.5713	6.33	24.85	0.255 [1]
T7	60.9 - 40.7	L2 1/2x2 1/2x1/4	16.05	7.78	123.3	0.7519	6.85	32.71	0.209 [1]
T8	40.7 - 20.3	L3x3x1/4	19.37	9.44	123.5	0.9159	7.76	39.84	0.195 [1]
T9	20.3 - 0	L3 1/2x3 1/2x1/4	21.09	10.29	114.7	1.1034	8.67	48.00	0.181 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	182 - 161.9	L1 3/4x1 3/4x3/16	4.65	4.17	98.5	0.3604	0.21	15.68	0.013 [1]
T3	141.8 - 121.6	L1 3/4x1 3/4x3/16	4.76	4.23	99.9	0.3604	0.62	15.68	0.039 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	182 - 161.9	Leg	ROHN 2.5 STD	3	-21.25	63.44	33.5	Pass
		Diagonal	L1 3/4x1 3/4x3/16	9	-4.62	11.43	40.4	Pass
							79.5 (b)	
		Top Girt	L1 3/4x1 3/4x3/16	4	-0.22	6.62	3.4	Pass
							3.6 (b)	
T2	161.9 - 141.8	Leg	ROHN 3 STD	39	-87.25	88.44	98.7	Pass
		Diagonal	L2x2x1/4	44	-8.30	18.97	43.8	Pass
							89.5 (b)	
T3	141.8 - 121.6	Leg	ROHN 4 EH	70	-139.03	183.25	75.9	Pass
		Diagonal	L2x2x3/16	81	-4.44	11.73	37.8	Pass
							68.6 (b)	
		Top Girt	L1 3/4x1 3/4x3/16	73	-0.61	6.43	9.6	Pass
							10.6 (b)	
T4	121.6 - 101.4	Leg	ROHN 5 EH	106	-176.39	253.98	69.5	Pass
							76.5 (b)	
		Diagonal	L2x2x3/16	114	-5.02	7.75	64.8	Pass
							73.7 (b)	
T5	101.4 - 81.1	Leg	ROHN 5 EH	133	-207.98	238.38	87.2	Pass
		Diagonal	L2 1/2x2 1/2x3/16	141	-5.64	9.36	60.3	Pass
							71.5 (b)	
T6	81.1 - 60.9	Leg	ROHN 6 EHS	154	-239.82	274.25	87.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	L2 1/2x2 1/2x3/16	162	-6.37	7.30	87.3	Pass
T7	60.9 - 40.7	Leg	ROHN 6 EH	175	-271.33	342.43	79.2	Pass
		Diagonal	L2 1/2x2 1/2x1/4	182	-6.86	7.43	92.3	Pass
T8	40.7 - 20.3	Leg	ROHN 8 EHS	196	-298.03	384.46	77.5	Pass
		Diagonal	L3x3x1/4	204	-7.84	8.89	88.1	Pass
T9	20.3 - 0	Leg	ROHN 8 EH	211	-326.88	503.62	64.9	Pass
		Diagonal	L3 1/2x3 1/2x1/4	219	-8.87	12.07	73.5	Pass
							Summary	
						Leg (T2)	98.7	Pass
						Diagonal (T7)	92.3	Pass
						Top Girt (T3)	10.6	Pass
						Bolt Checks	89.5	Pass
						RATING =	**98.7**	**Pass**

Program Version 7.0.7.0 - 7/18/2016 File:P:/2017/Structural/17-2586 CT13617-A-02 Troiano Realty Structural Analysis/Tnx/CT13617-A-03_Troiano Realty_Verizon_SA (1).eri

MATHCAD CALCULATION PRINTOUT

Existing 182 ft Self Support Tower Foundation Check for MAT

Customer Name: SBA Communications Corp
Customer Site Number: CT13617-A-03
Customer Site Name: Troiano Realty

Carrier Name: Verizon
Carrier Site Name & Number: 118019

Site Location: 157 Chestnut Hill Road
Stafford Springs, CT 06076

Latitude: 41.977417
Longitude:-72.383306

ACGI Job # 17-2586
(Previous Job # 15-4990, dated 11/11/2015)

By:

Allpro Consulting Group, Inc.
9221 Lyndon B. Johnson Freeway, Suite 204
Dallas, TX 75243
Tel: 972-231-8893, Fax: 866-364-8375

June 28, 2017

Foundation check

-Foundation Reactions-

((As per TNX output results from the Tower Structural Analysis by Allpro Consulting Group Inc.,)

Total Shear	$S := 50 \cdot kips$	Compression on Pedestal:	$P_c := 334 \cdot kips$
Moment	$M := 5343 \cdot ft\_K$	Uplift on Pedestal:	$P_{up} := 299 \cdot kips$
Down load, Tower weight	$Pv := 42 \cdot kips$	Shear on Pedestal:	$Sh := 31 \cdot kips$

-Soil Properties- **Soil data is as per Geotechnical Report by Jaworski Geotech, Inc., Project # 01659G, dated 10/19/2001.**

Umtimate End Bearing Capacity $Brg_{ultimate} := 16 \cdot ksf$

Internal angle of friction for soil, $\phi := 30 \cdot deg$

Unit wt. of soil, $\gamma_s := 0.12 \cdot kcf$

Alowable Passive Pressure see next page

Cohesion of soil, $c_u := 0.00 \cdot ksf$

Friction Factor $FF := 0.4$

Depth to be neglected $L_{neg} := 1 \cdot ft$

-Material Parameters-

Conforming to the design requirements as in ACI 318-10

Unit wt. of concrete, $\gamma_c := 0.150 \cdot kcf$

Concrete compressive strength, $f_c := 4000 \cdot psi$

-Factor of Safety for soil strength-

$\phi_{s\_Bear} := 0.75$	as per TIA-222-G code for bearing, 9.4.1
$\phi_{s\_friction} := 0.75$	as per TIA-222-G code for skin friction resistance, 9.4.1
$\phi_{s\_lateral} := 0.75$	as per TIA-222-G code for lateral resistance, 9.4.1
$\phi_{s\_uplift} := 0.75$	as per TIA-222-G code for lateral resistance, 9.4.1

DIMENSIONS

Tower face width $TWFW := 18.9896 \cdot ft$ Tower ht. $Tw_{ht} := 182 \cdot ft$

The tower location is eccentric by $L_{pe} := 0 \cdot ft$ with respect to the mat foundation center towards the base

Type of column, col.t=0 for circular,=1 for rectangular/square $col_t := 0$

Depth of mat, $D_f := 6.5 \cdot ft$

Thickness of mat, $T_f := 3 \cdot ft$

Pedestal size, $Ped_s := 4 \cdot ft$

Extension above the grade, $E_g := 0.5 \cdot ft$

(Existing MAT foundation data is as per original foundation design by Rohn Industries, Inc., Rohn File # 49944AE, Drawing # A012939, dated 12/18/2001).

No. of pedestals $Nped := 3$

Mat Dimensions, LxB $L := 27 \cdot ft$ x $B := L$ $B = 27\,ft$

-Reinforcement Data-

Typical concrete cover $cc := 3in$

Vertical rebar size $d_{bar} := 7$

Tiebar size $d_{tie} := 4$

MAT CALCULATIONS

Average Passive Pressure at the center of the footing,

$K_p := \tan\left(45 \cdot deg + \frac{\phi}{2}\right)^2 = 3$

$P_{pave} := \frac{\left(D_f - T_f - L_{neg}\right) \cdot K_p \cdot \gamma_s + \left(D_f - L_{neg}\right) \cdot K_p \cdot \gamma_s}{2}$ $P_{pave} = 1440 \cdot psf$

Calculate safety against overturning and location of resultant on the base

Resisting Moments about mid axis parallel to base

$Area_{ped} := if\left(col_t = 1, Ped_s^2, \frac{\pi}{4} \cdot Ped_s^2\right)$ $Area_{ped} = 12.566\,ft^2$

component	value, kips	lever arm, ft	resisting moment, ft-kips
1) Concrete wt.	$C_w := L \cdot B \cdot T_f \cdot (\gamma_c) + Area_{ped} \cdot \gamma_c \cdot (D_f + E_g - T_f) \cdot Nped$	$L_c := \frac{L}{2}$	$R_c := C_w \cdot L_c$
	$C_w = 350.669 \cdot kips$	$L_c = 13.5\,ft$	$R_c = 4734.038 \cdot ft\_K$
2) Soil wt.	$S_w := \left[L \cdot B \cdot (D_f - T_f) - Area_{ped} \cdot (D_f - T_f) \cdot Nped\right] \cdot \gamma_s$	$L_s := \frac{L}{2}$	$R_s := S_w \cdot L_s$
	$S_w = 290.346 \cdot kips$	$L_s = 13.5\,ft$	$R_s = 3919.676 \cdot ft\_K$
3) Wt. of soil wedge	$W_w := (D_f - T_f) \cdot \frac{1}{2} \cdot (D_f \cdot \tan(\phi)) \cdot B \cdot (\gamma_s)$	$L_w := \left[L + \left[(D_f - T_f) \cdot \frac{\tan(\phi)}{3}\right]\right]$	$R_w := W_w \cdot L_w$
	$W_w = 21.278 \cdot kips$	$L_w = 27.674\,ft$	$R_w = 588.845 \cdot ft\_K$
4) Passive pressure	$Pe_p := T_f \cdot B \cdot P_{pave}$	$L_p := \frac{T_f}{3}$	$R_p := Pe_p \cdot L_p$
	$Pe_p = 116.64 \cdot kips$	$L_p = 1\,ft$	$R_p = 116.64 \cdot ft\_K$
5) Vertical	$Pv = 42 \cdot kips$	$L_v := \frac{L}{2}$	$R_v := Pv \cdot L_v$
$S_{w1} := L \cdot B \cdot D_f \cdot \gamma_s$	$S_{w1} = 568.62 \cdot kips$ <--- for net calcs		
Total weight $T_w := C_w + S_w + W_w + Pv$	$T_w = 704.294 \cdot kips$	$L_v = 13.5\,ft$	$R_v = 567 \cdot ft\_K$
Total resisting Moment= $M_r := R_c + R_s + R_w + R_p + R_v$		$M_r = 9926.199 \cdot ft\_K$	

Overturning Moments

component	value, kips	lever arm, ft	Overturning Moment ft-kips
1) Moment on foundation due to eccentric location	$Pv = 42 \cdot kips$	$L_{pe} = 0$	$M_{pe} := L_{pe} \cdot Pv$ $M_{pe} = 0 \cdot ft\_K$

of tower

2) Moment on foundation – – $M = 5343 \cdot ft\_K$

3) Moment due to horizontal shear $S_t := S$ $L_{hs} := D_f + E_g$ $O_{hs} := L_{hs} \cdot S_t$

$L_{hs} = 7\,ft$ $O_{hs} = 350 \cdot ft\_K$

Total Overturning Moment= $M_o := M + O_{hs} + M_{pe}$ $M_o = 5693 \cdot ft\_K$

Check Safety Factor against Overturning about mid axis parallel to base

$SF := \frac{M_r}{M_o}$ $SF = 1.744 > 1.5$ $\frac{1.5}{SF} = 86.03 \cdot \%$ **O.K!**

Calculate eccentricity, e

$e := \frac{M_o}{T_w}$ $e = 8.083\,ft$

Check location of eccentricity and determine pressure distribution under the mat

$L_{loc} := \frac{L}{6}$ $L_{loc} = 4.5\,ft$ For net bearing calcs $T_{w1} := S_{w1} + W_w$ $T_{w1} = 589.898 \cdot kips$

$P_{max1} := if\left[e \le L_{loc}, \frac{T_w}{L \cdot B} \cdot \left[1 + \left(6 \cdot \frac{e}{L}\right)\right], 4 \cdot \frac{T_w}{3 \cdot B \cdot (L - 2 \cdot e)}\right]$ $P_{max1} = 3.21 \cdot ksf$

$P_{max2} := \left(\frac{T_{w1}}{L \cdot B}\right)$ $P_{max2} = 0.809 \cdot ksf$ $P_{net} := P_{max1} - P_{max2}$ $P_{max} := P_{net}$

Net soil pressure, $P_{net} = 2.401 \cdot ksf < \phi_{s\_Bear} \cdot Brg_{ultimate} = 12 \cdot ksf$ $\frac{P_{net}}{(\phi_{s\_Bear} \cdot Brg_{ultimate})} = 20.01 \cdot \%$ **O.K.!**

$P_{min} := if\left[e \le L_{loc}, \frac{T_w}{L \cdot B} \cdot \left[1 - \left(6 \cdot \frac{e}{L}\right)\right], 0 \cdot ksf\right]$ $P_{min} = 0 \cdot ksf$

Check for horizontal shear $P_{hor} := \phi_{s\_friction} \cdot (Pe_p + Pv \cdot FF)$

$P_{hor} = 100.08 \cdot kips > S = 50 \cdot kips$ Since P.hor > S it is safe! $\frac{S}{P_{hor}} = 49.96 \cdot \%$ **O.K.!**

Summary

-Foundation Reactions-

Shear $S = 50 \cdot kips$

Down load $Pv = 42 \cdot kips$ (Weight)

Uplift load $P_{up} = 299 \cdot kips$

Moment; $M = 5343 \cdot ft \cdot kip$

Size of Mat

$L = 27\,ft$ $B = 27\,ft$

Depth of base of mat $D_f = 6.5\,ft$ Thickness of Mat $T_f = 3\,ft$

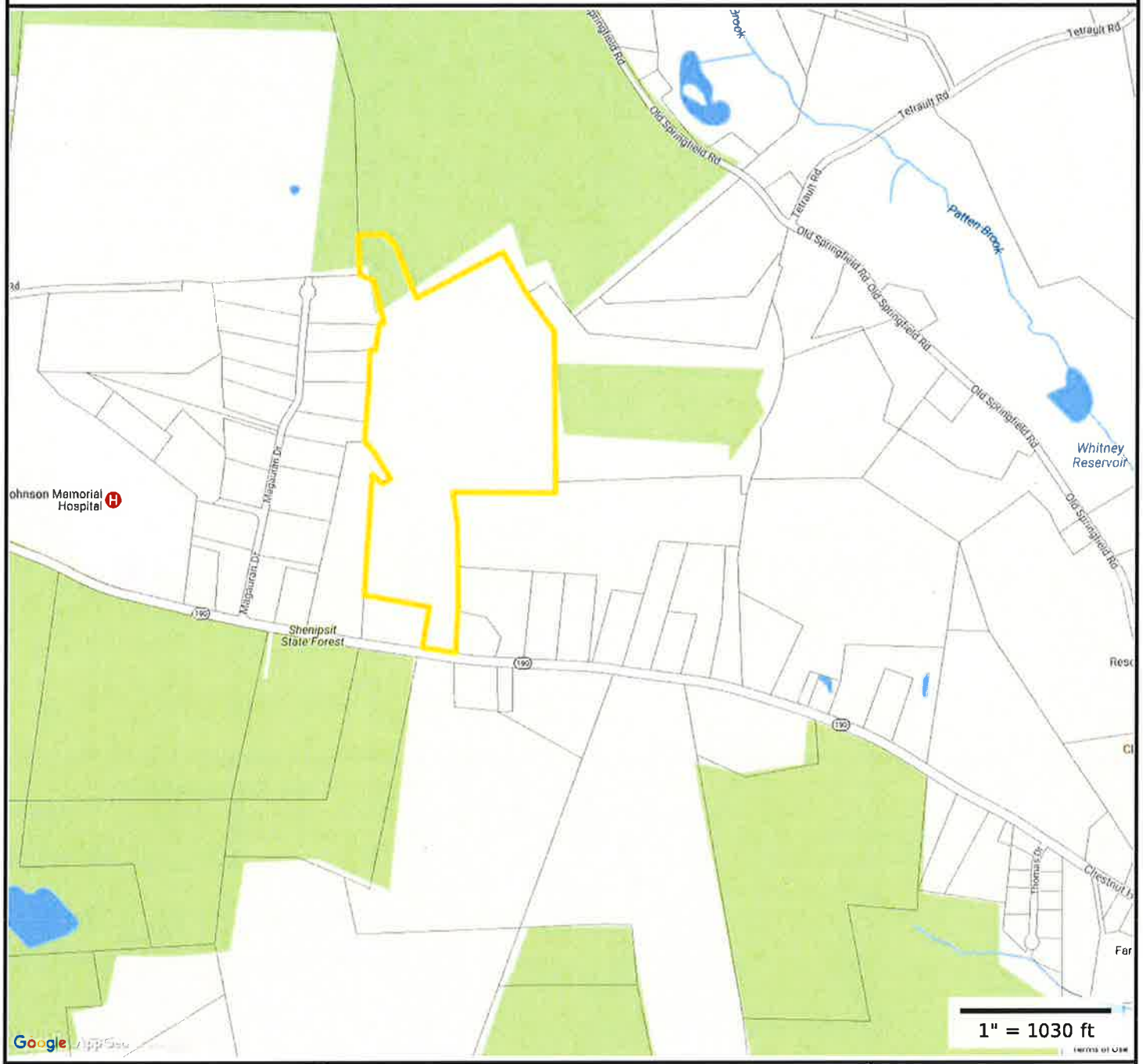
Pedestal size $Ped_s = 4\,ft$

The tower location is eccentric by $L_{pe} = 0$ with respect to the mat foundation center towards the base

Stability Calculations

Safety Factor against Overturning	$SF = 1.744$	>	1.5	$\frac{1.5}{SF} = 86.03 \cdot \%$	O.K!
Net soil pressure,	$P_{net} = 2.401 \cdot ksf$	<	$\phi_{s\_Bear} \cdot Brg_{ultimate} = 12 \cdot ksf$		O.K.!
				$\frac{P_{net}}{(\phi_{s\_Bear} \cdot Brg_{ultimate})} = 20.01 \cdot \%$	O.K.!
Check for horizontal shear	$P_{hor} = 100.08 \cdot kips$	>	$S = 50 \cdot kips$	$\frac{S}{P_{hor}} = 49.96 \cdot \%$	O.K.!

ATTACHMENT 4



Property Information

Property ID	09013134-34/32
Location	157 CHESTNUT HILL
Owner	TROIANO REALTY CORP

CRCOG CAPITOL REGION COUNCIL OF GOVERNMENTS

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

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

157 CHESTNUT HILL

Location	157 CHESTNUT HILL	**Mblu**	34/ / 32/ /
Acct#	34/032	**Owner**	TROIANO REALTY CORP
Assessment	$331,380	**Appraisal**	$473,400
PID	1896	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$47,400	$426,000	$473,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$33,180	$298,200	$331,380

Owner of Record

Owner	TROIANO REALTY CORP
Co-Owner	%ANTONIO TROIANO
Address	777 ENFIELD ST ENFIELD, CT 06082

Sale Price	$0
Certificate	1
Book & Page	110/ 503
Sale Date	01/27/1961

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
TROIANO REALTY CORP	$0	1	110/ 503	01/27/1961

Building Information

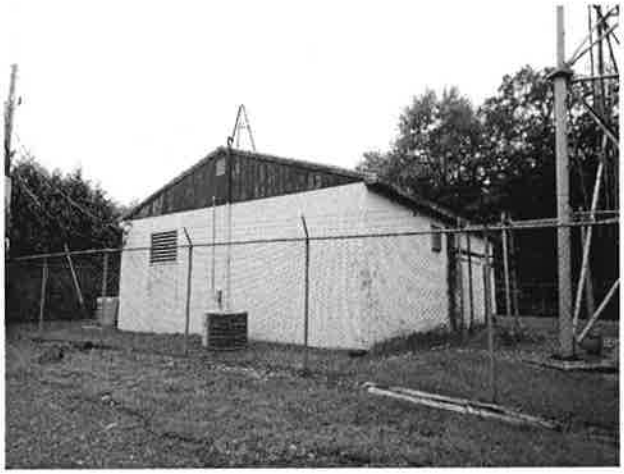
Building 1 : Section 1

Year Built:	1985
Living Area:	1,008
Replacement Cost:	$50,460
Building Percent Good:	81
Replacement Cost Less Depreciation:	$40,900

Building Attributes	
Field	**Description**

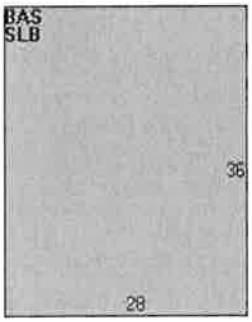
STYLE	Warehouse
MODEL	Ind/Comm
Grade	C
Stories:	1
Occupancy	1
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Forced Hot Air
AC Type	Central
Bldg Use	Industrial
Total Bedrooms	
Total Baths	
1st Floor Use:	
Heat/AC	Heat/AC Pkg.
Frame Type	Masonary
Baths/Plumbing	Average
Ceiling/Wall	None
Rooms/Prtns	Average
Wall Height	12
Num Fixtures	

Building Photo



(http://images.vgsi.com/photos2/StaffordCTPhotos//\00\01\13/

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,008	1,008
SLB	Slab	1,008	0
		2,016	1,008

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	301
Description	Industrial
Zone	AAA

Land Line Valuation

Size (Acres)	50
Frontage	
Depth	

Neighborhood	502	**Assessed Value**	$298,200
Alt Land Appr	No	**Appraised Value**	$426,000
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN3	FENCE-6' CHAIN			300 L.F.	$1,400	1
FN4	FENCE-8' CHAIN			360 L.F.	$2,000	1
SHD1	Shed	MS	Masonry	160 S.F.	$1,300	1
SHD1	Shed	MS	Masonry	220 S.F.	$1,800	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$47,400	$426,000	$473,400
2014	$49,400	$246,000	$295,400
2013	$49,400	$246,000	$295,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$33,180	$298,200	$331,380
2014	$34,580	$172,200	$206,780
2013	$34,580	$172,200	$206,780

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			
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Anthony Frassinelli, First Selectman Town of Stafford Warren Memorial Town Hall 1 Main Street Stafford Springs, CT 06076				
2.	David Perkins, Zoning Enforcement Officer Town of Stafford Warren Memorial Town Hall 1 Main Street Stafford Springs, CT 06076				
3.	Troiano Realty Corp Attn.: Antonio Troiano 777 Enfield Street Enfield, CT 06082				
4.					
5.					
6.					