

ORIGINAL

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July 9, 2009

**Via Federal Express**

S. Derek Phelps, Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

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JUL 10 2009

CONNECTICUT  
SITING COUNCIL

**Re: Notice of Exempt Modification  
St. Paul's Church Telecommunications Facility  
2577 Main Street, Glastonbury, Connecticut**

Dear Mr. Phelps:

Youghiogheny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket"), intends to install antennas and appurtenant equipment at the existing 130-foot lattice facility owned by St. Paul's Church and located at 2577 Main Street, Glastonbury, Connecticut ("Facility"). Pocket Communications provides prepaid, flat rate wireless voice and data services to more than a quarter of a million subscribers. Pocket is licensed by the Federal Communications Commission (FCC) to provide PCS wireless telecommunications service in the State of Connecticut, which includes the area to be served by the proposed installation. This installation constitutes an exempt modification pursuant to the Public Utility Environmental Standards Act, Connecticut General Statutes Section 16-50g et. seq. (PUESA), and Section 16-50j-72(b)(2) of the Regulations of the Connecticut State Agencies adopted pursuant to PUESA. In accordance with R.C.S.A. Section 16-50j-73, a copy of this notice has been sent to Richard J. Johnson, Town Manager, Town of Glastonbury.

The existing Facility consists of a 130-foot self-supporting lattice tower capable of supporting multiple carriers within a fenced compound. The coordinates for the Facility are **Lat: 41°-42'-52" and Long: 72°-36'-48"**. The tower is located in the northeastern portion of Glastonbury, approximately 600 feet east of Main Street, approximately 550 feet south of Naubuc Avenue and approximately 400 feet north of Welles Street. The Facility is roughly feet 3,200 feet west of Route 2 and 3,800 feet south of Route 3 (see Site Map, attached as Exhibit A). The tower currently supports T-Mobile antennas at the ninety three foot (93') level centerline AGL (above ground level), AT&T antennas at the one hundred eight foot level (108') AGL, Sprint antennas at the one hundred eighteen foot level (118') AGL, and Nextel antennas at the one hundred twenty eight foot level (128') AGL. Pocket proposes to install three RFS APXV18-206517S-C flush mount antennas on the tower at the one hundred foot centerline (100') AGL, and a Nortel CDMA Micro BTS 3231 cabinet, mounted on an "H-Frame," contained within a six

foot by six foot (6'-0" x 6'-0") lease area. A small GPS antenna will be mounted to the H-Frame. An ice bridge will run from the lease area to the tower. Utilities will be run via a proposed underground conduit from an existing utility backboard, within the compound (See Design Drawings and Equipment Specifications, attached as Exhibits B and C respectively). To accommodate Pocket's equipment on a temporary basis, a mobile, EPA approved generator and small microwave dish antenna (approximately 14" by 14") will be used at the site to provide electricity until permanent power can be established by the utility provider. Pocket anticipates that the temporary generator will be in use for a maximum of eight weeks from the time of approval. The specifications on this proposed temporary generator and microwave dish are included in the Equipment Specifications, attached as Exhibit C. Due to the temporary use and low emissions from the generator, no permit is required from the Department of Environmental Protection. Pocket would propose to refuel the generator every 48 hours.

For the following reasons, the proposed modifications to the Main Street Facility meet the exempt modification criteria set forth in R.C.S.A. Section 16-50j-72(b)(2):

1. The proposed modification will not increase the height of the tower as Pocket's antennas will be installed at a center line height of approximately 100 feet.
2. The installation of Pocket's equipment and shelter will not require an extension of the site boundaries.
3. The proposed modifications will not increase the noise levels at the existing Facility by six decibels or more.
4. The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the site boundary, to a level at or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and MPE limits established by the Federal Communications Commission. The worst-case RF power density calculations for the proposed Pocket antennas would be 38.12% of the FCC standard (see general power density calculations table, attached as Exhibit D).

Also attached is Exhibit E, a structural analysis to determine the tower's capability to support the existing and proposed antennas and associated equipment. In its current condition, the tower is in need of structural reinforcement to satisfy the structural strength requirements specified in industry standards. The foundation currently satisfies these conditions. Pocket is committed to make the necessary modifications to the tower in accordance with the structural report to insure the structural integrity and proper capacity for the tower.

Page 3

For the foregoing reasons, Pocket respectfully submits that the proposed antenna installation and equipment at the Glastonbury Facility constitutes an exempt modification under R.C.S.A. Section 16-50j-72(b)(2).

Respectfully Submitted,



Carrie L. Larson

cc: Richard J. Johnson, Town Manager, Town of Glastonbury  
St. Paul's Church, underlying property owner

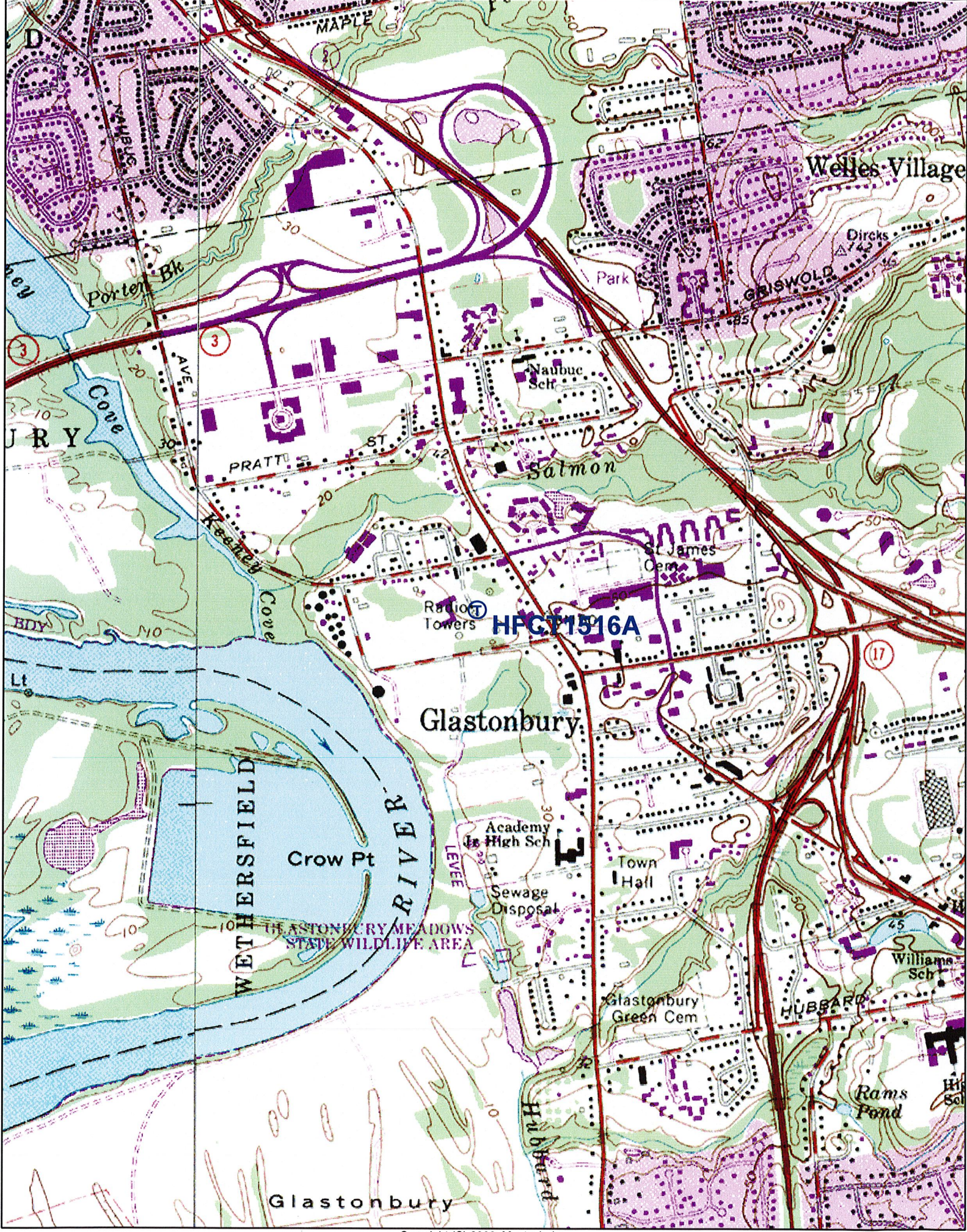
**Exhibit A**

**Site Map**

**Pocket Site HFCT1516A**

**2577 Main Street**

**Glastonbury, Connecticut**



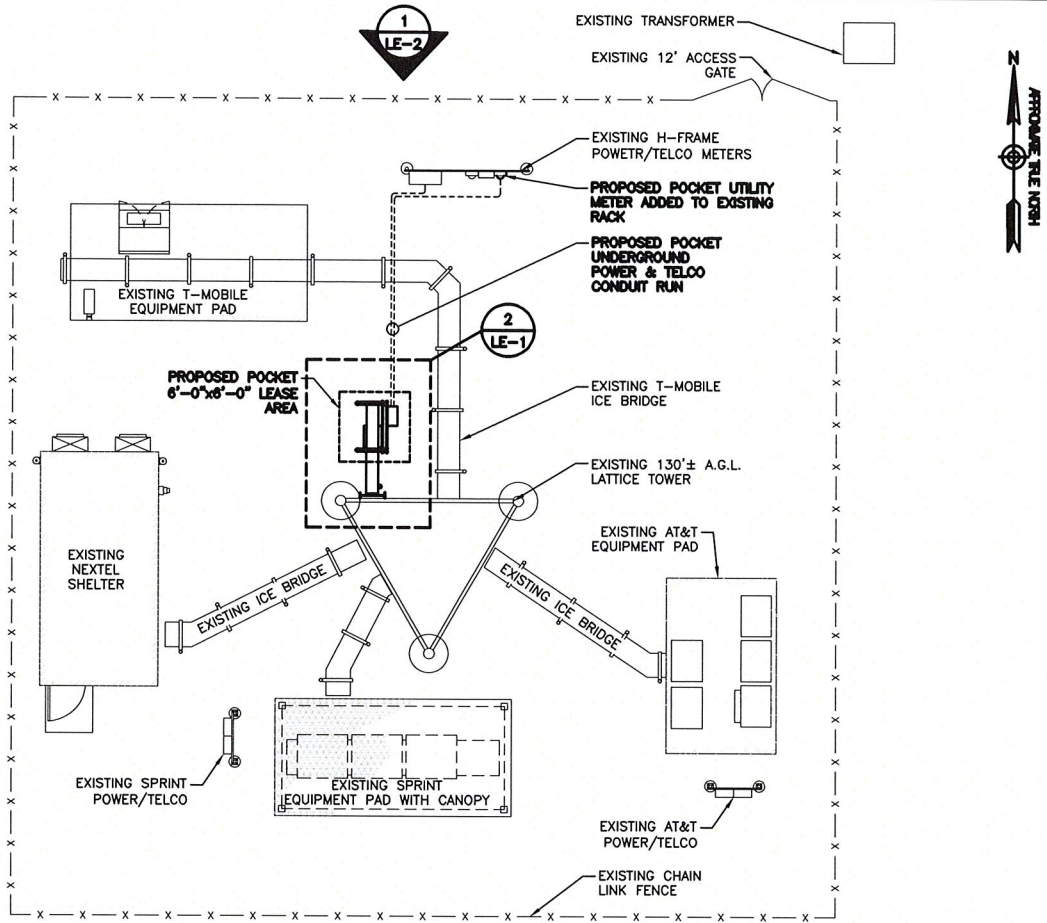
**Exhibit B**

**Design Drawings**

**Pocket Site HFCT1516A**

**2577 Main Street**

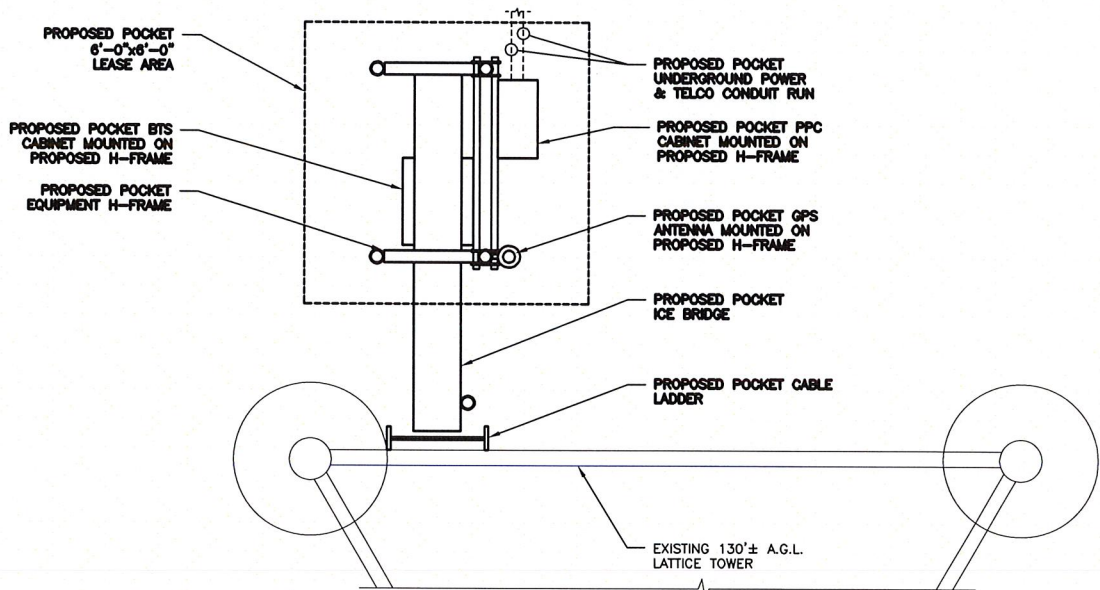
**Glastonbury, Connecticut**



**COMPOUND PLAN**

SCALE: N.T.S.

1



**EQUIPMENT LAYOUT PLAN**

SCALE: N.T.S.

2

APPROX. COAX RUN  
130'

**APPROVALS**

SITE OWNER	DATE
CONSTRUCTION MANAGER	DATE
R.F. ENGINEER	DATE
SITE ACQUISITION	DATE

THE ABOVE PARTIES HEREBY APPROVE AND ACCEPT THESE PROVISIONS AND CONDITIONS AND CONSENT TO PROCEED WITH THE CONSTRUCTION OF THE PROJECT. ALL PROVISIONS AND CONDITIONS SHALL BE SUBJECT TO THE LOCAL, STATE AND FEDERAL REGULATIONS AND ORDINANCES THEY MAY IMPOSE.

**MAXTON**  
50 Eastman St.  
South Easton, MA 02375  
Phone: (508) 836-6363  
Fax: (508) 836-8396

**BAY STATE DESIGN**  
Bay State Design, Inc.  
Architects • Engineers  
241 Boston Post Road West  
Marlborough, MA 01752  
Phone: 508-239-4100  
Fax: 508-485-5321

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PREPARED FOR:

**Pocket Communications**  
P.O. Box 5936  
San Antonio, TX 78201

SITE NUMBER:  
**HFCT1516A**

SITE NAME:  
**GLASTONBURY  
GLASTONBURY, CT**

SITE ADDRESS:  
**2577 MAIN STREET  
GLASTONBURY, CT 06033**

DRAWN BY:  
**MK**

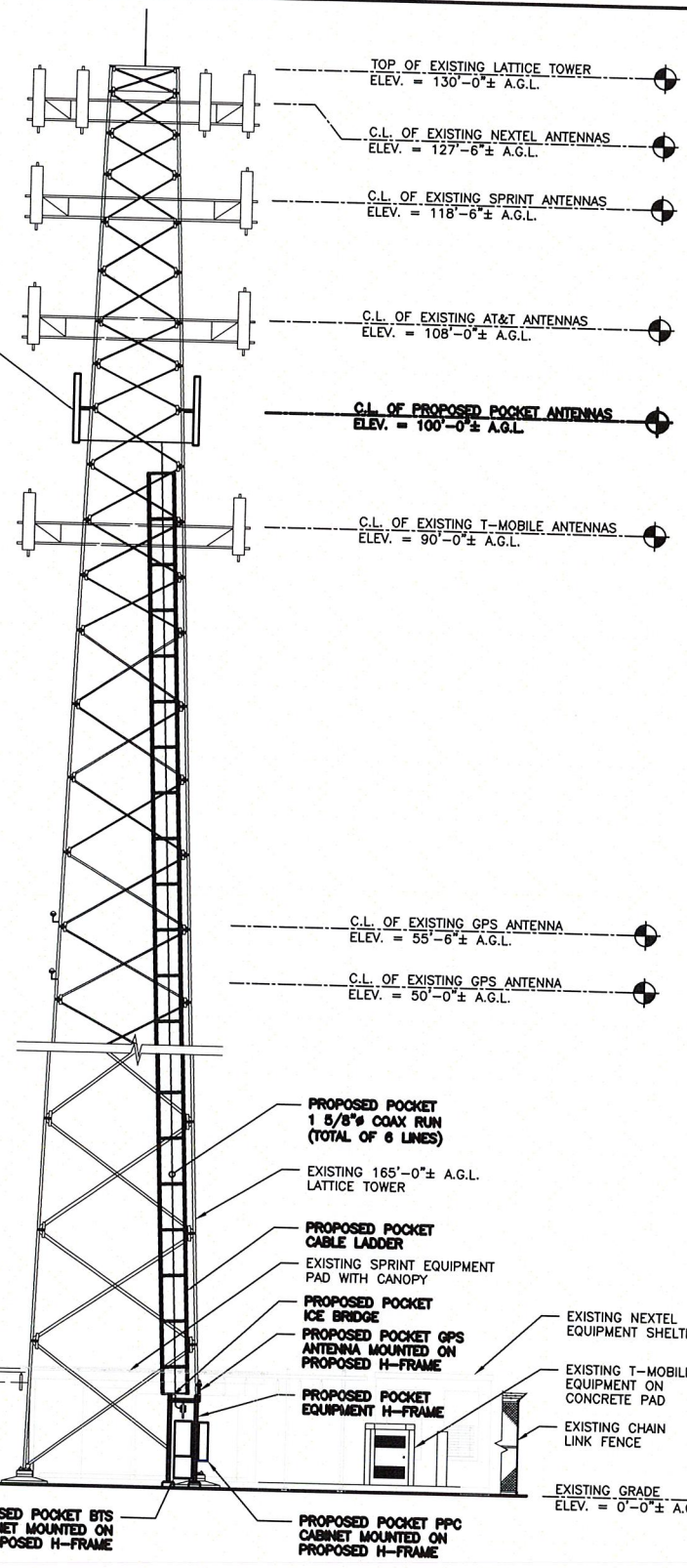
CHECKED BY:  
**JP**

DATE:  
**07/06/09**

PROJECT NUMBER:  
**2882.113**

SHEET:  
**LE-1**

PROPOSED POCKET PANEL ANTENNA  
(TYP. 1 PER SECTOR, TOTAL OF 3)



**APPROVALS**

SITE OWNER	DATE
CONSTRUCTION MANAGER	DATE
R.F. ENGINEER	DATE
SITE ACQUISITION	DATE

THE ABOVE DRAWING HEREBY APPROVES AND AGREES THERE TO FOR THE PROJECT AND AGREES TO PROCEED WITH THE CONSTRUCTION OF THE PROJECT. THIS APPROVAL IS VALID FOR 90 DAYS FROM THE DATE OF ISSUANCE OF THIS DRAWING. ANY CHANGES TO THIS DRAWING MUST BE APPROVED BY THE ENGINEER OF RECORD AND THE CLIENT. THIS APPROVAL IS VOID IF ANY CHANGES OR MODIFICATIONS ARE MADE WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.

**ELEVATION**

SCALE: N.T.S.

1

**MAXTON**  
BAY STATE DESIGN  
50 Eastman St.  
South Easton, MA 02375  
Phone: (508) 938-6393  
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PREPARED FOR:



Pocket Communications  
P.O. Box 5936  
San Antonio, TX 78201

SITE NUMBER: <b>HFCT1516A</b>	DRAWN BY: <b>MK</b>	PROJECT NUMBER: <b>2882.113</b>
SITE NAME: <b>GLASTONBURY GLASTONBURY, CT</b>	CHECKED BY: <b>JP</b>	SHEET: <b>LE-2</b>
SITE ADDRESS: <b>2577 MAIN STREET GLASTONBURY, CT 06033</b>	DATE: <b>07/06/09</b>	



# **Exhibit C**

## **Equipment Specifications**

**Pocket Site HFCT1516A**

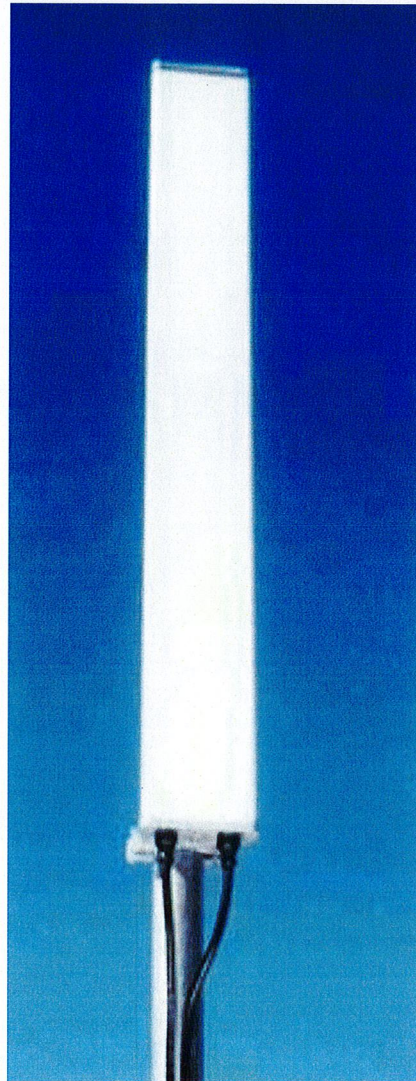
**2577 Main Street**

**Glastonbury, Connecticut**



**Product Description**

This variable tilt antenna provides exceptional suppression of all upper sidelobes at all downtilt angles. It also features null fill and a wide downtilt range with optional remote tilt.



**Features/Benefits**

- Variable electrical downtilt - provides enhanced precision in controlling intercell interference. The tilt is infield adjustable 0-10 deg.
- High Suppression of all Upper Sidelobes (Typically <-20dB).
- Optional remote tilt - can be retrofitted.
- Broadband design.
- Dual polarization.
- Low profile for low visual impact.

**Technical Features**

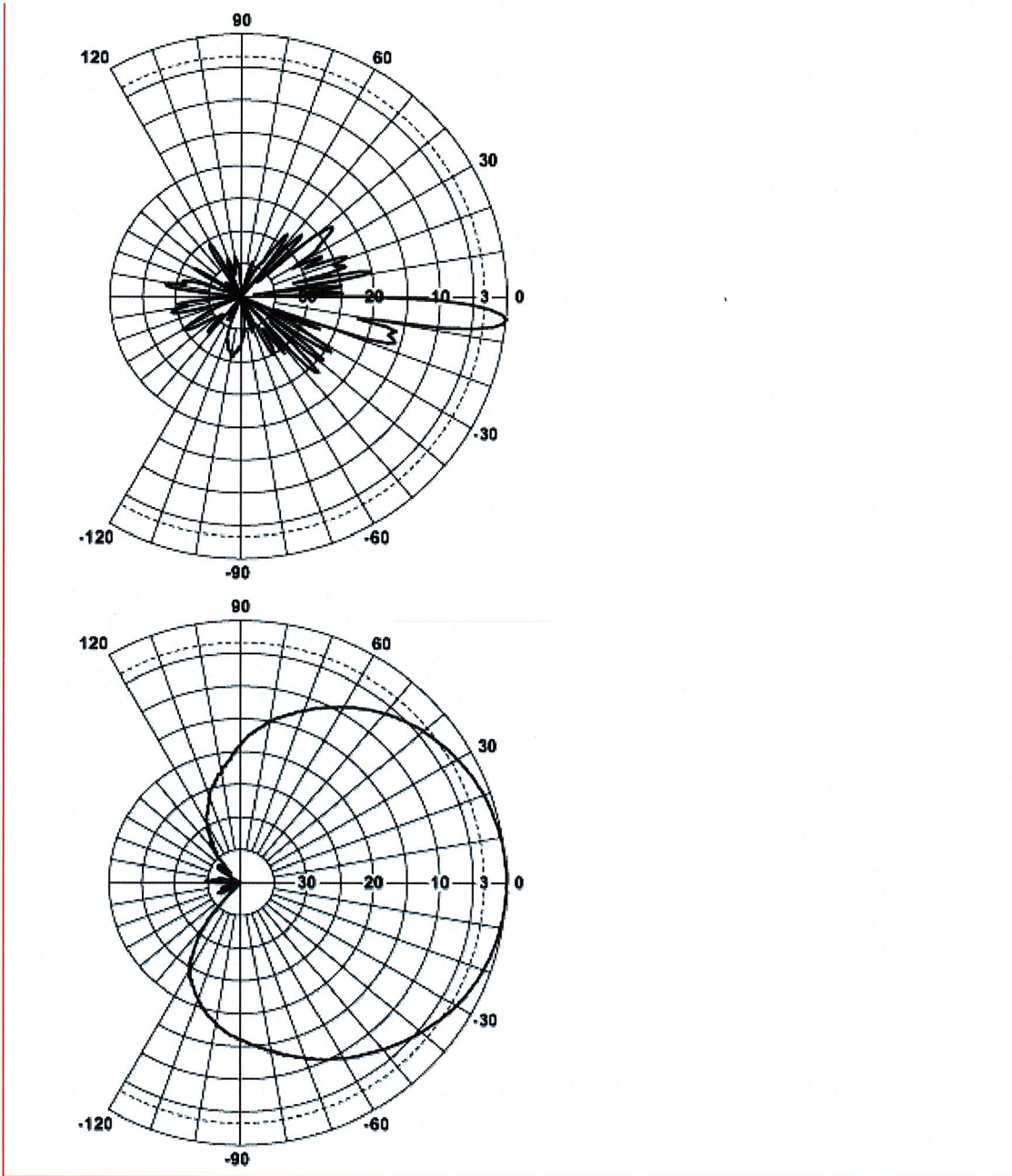
Frequency Band	3G/UMTS (Single, Broad, Dual and Triple-Band)
Horizontal Pattern	Directional
Antenna Type	Panel Dual Polarized
Electrical Down Tilt Option	Variable



Gain, dBi (dBd)	18.8 (16.7) , 19.0 (16.9)
Frequency Range, MHz	1710-1900, 1900-2170
Connector Type	(2) 7-16 DIN Female
Connector Location	Bottom
Mount Type	Downtilt
Electrical Downtilt, deg	0-10
Horizontal Beamwidth, deg	67 , 63
Mounting Hardware	APM40-2
Rated Wind Speed, km/h (mph)	160 (100)
VSWR	< 1.5:1
Vertical Beamwidth, deg	5.0 , 4.6
Upper Sidelobe Suppression, dB	> 17 , > 18 all (Typically > 20)
Polarization	Dual pol +/-45°
Front-To-Back Ratio, dB	> 30
Maximum Power Input, W	300
Isolation between Ports, dB	> 30
Lightning Protection	Direct Ground
3rd Order IMP @ 2 x 43 dBm, dBc	> 150
7th Order IMP @ 2x46 dBm, dBc	> 170
Impedance, Ohms	50
Overall Length, m (ft)	1.85 (6.06)
Mounting Hardware Weight, kg (lb)	3.4 (7.5)
Dimensions - HxWxD, mm (in)	1850 x 175 x 80 (72.0 x 6.8 x 3.15)
Weight w/o Mtg Hardware, kg (lb)	12 (26.4)
Weight w/ Mtg Hardware, kg (lb)	14.8 (32.5)
Radiating Element Material	Brass
Radome Color	Light Grey RAL7035
Radome Material	Fiberglass
Mounting Hardware Material	Diecasted Aluminum
Reflector Material	Aluminum
Max Wind Loading Area, m <sup>2</sup> (ft <sup>2</sup> )	0.31 (3.3)
Survival Wind Speed, km/h (mph)	200 (125)
Maximum Thrust @ Rated Wind, N (lbf)	558 (125)
Front Thrust @ Rated Wind, N (lbf)	558 (125)
Shipping Weight, kg (lb)	18.3 (39.8)
Packing Dimensions, HxWxD, mm (in)	2021 x 260 x 200 (79.5 x 10.2 x 7.8)
Packing Dimensions - HxWxD, m (ft)	2.0 x 0.26 x 0.2 (6.6 x 0.85 x 0.65)

**Notes**

For additional mounting information please click "External Document Link" below.





## CDMA BTS 3231 AWS 1.7/2.1 GHz (Outdoor/Indoor)

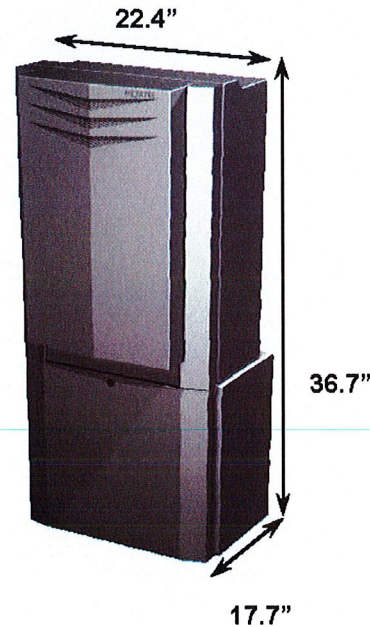
### CDMA BTS 3231

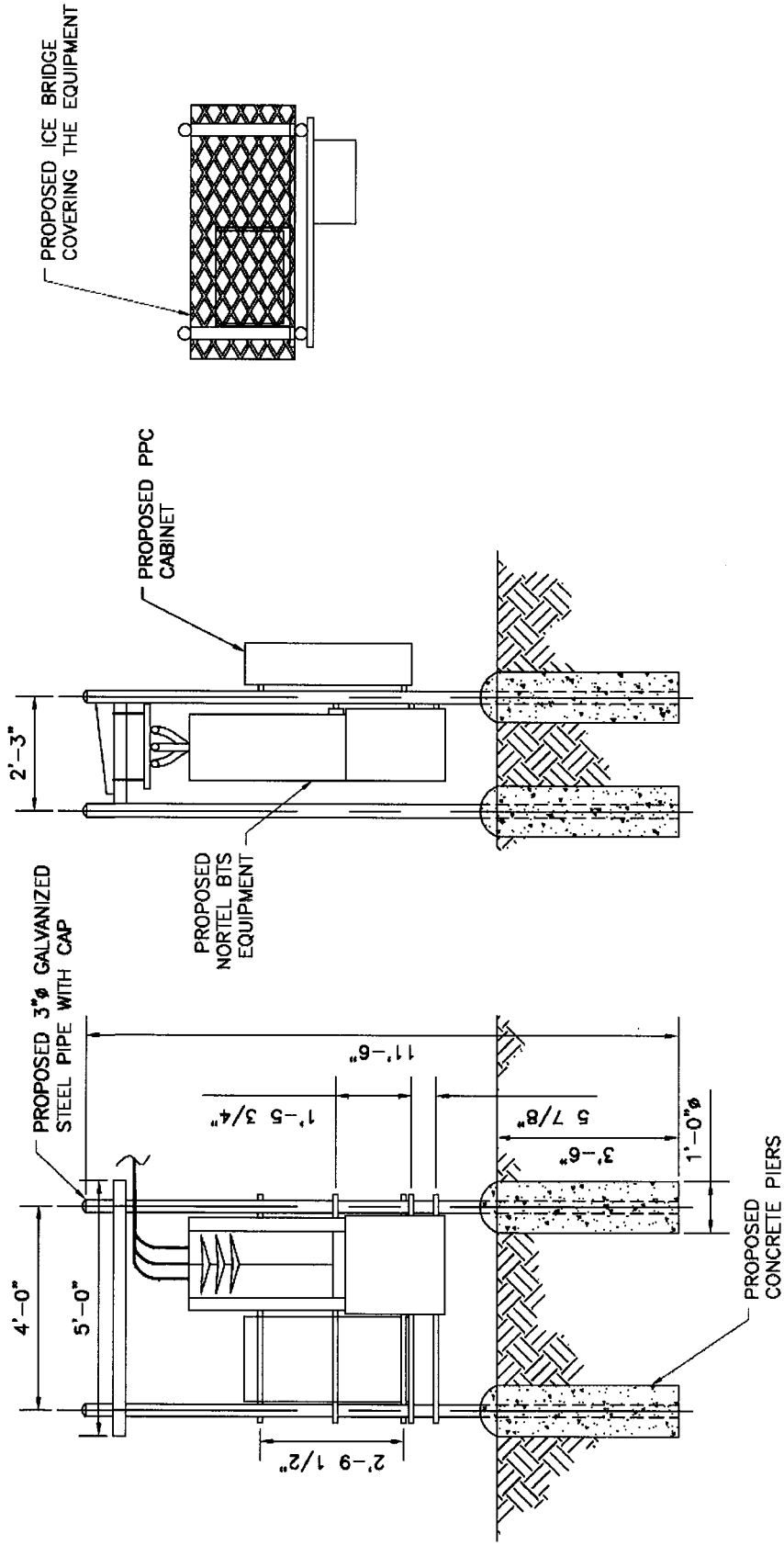
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#### *Industry's Highest Capacity AWS Micro BTS*

The CDMA BTS 3231 is the latest extension to Nortel Networks BTS (Base Transceiver Station) portfolio providing the ideal solution for urban, sub-urban and rural deployments. The CDMA BTS 3231 is a 3-carrier, 3-sector outdoor/indoor BTS operating at the AWS band of 1.7/2.1 GHz supporting IS-95, 1XRTT and 1xEV-DO simultaneously. BTS 3231 provides flexible deployments solutions including floor, rack, and wall mount options. The power consumption of BTS3231 is industry leading consuming only 630W for 3C3S. The BTS 3231 is also very light at 240lbs making it easy

to transport to hard to reach locations such as the top of a high rise building.





Pocket/Youghiogheny Communications – Northeast, LLC  
 Rack Detail



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**Power Zone**

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• **GLOSSARY**

## MLG15 Lite Generator Interim Tier IV EPA Approved Engine

Magnum recognizes environmental responsibility and continues to meet emission regulations with the addition of their Interim Tier IV Generator line. The MLG15 generator is powered by a Mitsubishi diesel engine. Proven power you can trust, while maximizing fuel efficiency and high performance.

**Affordable, Reliable, Mobile**



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**Power**

The MLG15 diesel generator provides just the right combination of output, flexibility, ruggedness, efficiency and affordability for on-the-go, smaller-to-midsize, single phase power needs.

**Features****Tough**

- Full tubular steel frame, with lockable enclosure
- Durable, fade resistant, white baked on powder coat finish
- Stainless steel hinges, exterior hardware and pad lockable door latches

**Reliable**

- Key switch to preheat (glow plug), start & stop
- Automatic low oil level / high temp shutdown alerts
- 70A Start limit main breaker
- 2 year - 2,000 hour warranty
- Marathon voltage regulation within +/- 1%

**Ease for Your Users**

- Self-priming 4 cylinder Mitsubishi engine
- External convenience outlets with individual breaker switches
- External emergency stop switch

**Specifications****Output**

3 Phase - Standby <b>kW (kVA)</b>	N/A
Amps <b>480V (208V)</b>	N/A
3 Phase - Prime <b>kW (kVA)</b>	N/A
Amps <b>480V (208V)</b>	N/A
1 Phase - Standby <b>kW (kVA)</b>	14.0 (14.0)
Amps <b>240V</b>	58
1 Phase - Prime <b>kW (kVA)</b>	13.0 (13.0)
Amps <b>240V</b>	54
AC Voltage 1-phase	120, 240
AC Voltage 3-phase	N/A
Frequency <b>Hz</b>	60
Power Factor	1.0 (1 Phase)
Generator - Brand / Type / Insulation	Marathon / Brushless / F
Sound (dB(A) 23 ft @ prime)	68
<b>Size and Weight</b>	
Skid Mounted - L x W x H <b>in (m)</b>	N/A
Dry Weight <b>lbs (kg)</b>	N/A
Operating Weight <b>lbs (kg)</b>	N/A
Trailer Mounted - L x W x H <b>in (m)</b>	105 x 67 x 56 (2.67 x 1.70 x 1.42)
Dry Weight <b>lbs (kg)</b>	1425 (646)

**updated  
parts  
information  
before  
placing a  
parts  
order.**

**Tech. Specs.**

- [MLG15](#)

**Literature / Sales**

- [Generator Lit.](#)
- [Service Kit Lit.](#)
- [Sales Support](#)



- [Warranty Overview](#)
- [Warranty Claim Policy](#)



Operating Weight <b>lbs (kg)</b>	1823 (827)
<b>Engine</b>	
Type	Interim Tier IV
Brand	Mitsubishi
Aspiration	Natural
Power - Prime @ 1800 rpm <b>hp (kWm)</b>	22.3 (16.6)
Displacement <b>cubic in (L)</b>	107 (1.8)
Cylinders	4
Speed <b>rpm</b>	1800
Fuel Consumption - Prime <b>gph (Lph)</b>	1.30 (4.92)
<b>Capacities</b>	
Fuel Tank <b>gal (L)</b>	56 (212)
Approximate Run Time <b>hrs</b>	43
Coolant <b>qt (L)</b>	11.6 (11.0)
<b>Electrical Distribution</b>	
Battery - 12V	1 - 12V 440 CCA Wet Cell
Main Circuit Breaker Size <b>A</b>	70
Voltage Selection	N/A
Voltage Regulation	+/-1%
120V - 20A GFI Duplex Outlets - qty	2
240V - 30A Twist Lock Outlets - qty	2
240V - 50A Twist Lock Outlets - qty	2
<b>Trailer</b>	
Number of Axles	1
Capacity - Axle Rating <b>lbs (kg)</b>	2200 (998)
Tire Size <b>in</b>	15
Brakes	N/A
Hitch	2" Ball
Maximum Tire Pressure <b>psi</b>	50
<b>Options</b>	
Powertrain (Engine/Gen)	<ul style="list-style-type: none"> <li>• 60/40 Coolant</li> <li>• Heated Fuel Filter</li> <li>• Engine Heater - Lower Radiator Hose</li> <li>• Oil Drain Valve Kit</li> </ul>
Controls	<ul style="list-style-type: none"> <li>• Battery, 720 CCA Gel Cell</li> <li>• Battery, 720 CCA Wet Cell</li> <li>• Battery, 685 CCA Gel Cell</li> <li>• No Battery</li> <li>• Battery Disconnect, Lockable</li> <li>• Battery Charger, 2 Amp</li> <li>• Alternative Outlet Panel Options (Consult factory for details)</li> </ul>

Cabinet/Fuel Tank

- Interior Cabinet Light
- Level Indicator
- 56 Gallon Fuel Tank
- Fuel Tank Cap - Vent w/ Lanyard
- Spare Tire & Carrier
- Lift Structure
- Liquid Containment/Quiet Pack

Trailer

- Tube & Sleeve Jack
- Combo Hitch - 2.5" Ring/2" Ball
- 2.5" Ring
- 3" Ring
- 3" Ring (1.625 TH)
- Plug Adapter, 4 Flat to 6 Round
- Plug Adapter, 4 Flat to 7 Pin
- Plug Adapter, 4 Flat to 7 Round
- Spade
- Outrigger Package

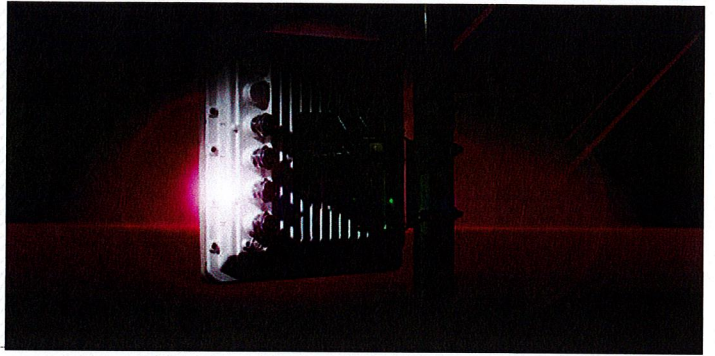
**Product Images (click small image to pop-up larger version)**



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## EX-5r Series



### All-Outdoor, Carrier-Class, Tri-Band 5 GHz TDD Radio System for Low, Medium and High Capacity Ethernet and TDM Applications

The EX-5r series of all-outdoor digital microwave radios is the first family of carrier-class, tri-band TDD radios available in the 5.2 – 5.8 GHz license-exempt bands. Radios in the EX-5r line support capacities ranging from 27 Mbps to an industry-leading 440 Mbps of aggregate user throughput, from zero to four T1/E1s and both 100BaseT and GbE interfaces. Featuring native TDM and native Ethernet transport and full software configurability and upgradeability, the EX-5r series was designed to meet demanding backhaul requirements of enterprise organizations and service providers seeking the performance benefits of an all-outdoor configuration.

**Carrier-class TDD.** The EX-5r series radios combine native TDM and native Ethernet transport with low, fixed latency to deliver guaranteed throughput and service quality. Capacity can be allocated variably between TDM and Ethernet via software, while the selectable throughput symmetry control feature enables radio capacity to efficiently match asymmetric traffic requirements.

**Industry-leading Spectrum Management.** The EX-5r radios include selectable channel bandwidth and 1 MHz tuning resolution,

yielding up to 54 non-overlapping frequency channels and up to 415 center frequencies of operation. These capabilities, combined with selectable modulation and superior system gain, provide unparalleled interference avoidance and transmission resiliency. A built-in spectrum analyzer is even included to accelerate deployment and simplify troubleshooting.

**ExaltSync Synchronization.** The ExaltSync technology embedded in the EX-5r series radios allows multiple radio systems to be collocated in close proximity without self-interference, minimizing antenna separation and ensuring reuse of scarce spectrum across all collocated systems.

**Security, Management and Data Networking.** The EX-5r radios deliver the highest data and management security available with optional 128- and 256-bit AES encryption and secure SNMP v3 management, together with enhanced fault management and diagnostic features. The 802.1Q VLAN option provides built-in network administration and security flexibility.

EX-5r series radios are available in both integrated antenna and external antenna (connectorized) versions.



Primary Specifications		EX-5r Lite / EX-5r-c Lite	EX-5r v3 / EX-5r-c v2	EX-5r GigE / EX-5r-c GigE
Maximum Capacity <sup>1</sup>	TDM		4xT1/E1	
	Ethernet (Aggregate)	100 Mbps	200 Mbps	440 Mbps
Frequency (GHz)		Tri-band: 5.250-5.350, 5.470-5.725, 5.725-5.850		
Range <sup>2</sup>		> 30 miles at 99.999% throughput availability		

<sup>1</sup> Please refer to the Exalt Throughput and Range Specification document for detailed capacity information.

<sup>2</sup> Distance based upon FCC regulations, average climate and terrain, 6' dish antennas, 3 dB transmission system losses at each end. Longer or shorter distances will apply for alternative antennas, country regulations, transmission system losses, path topologies and radio configurations. See Exalt's link budget and path planning tool to model your scenario.

## Specifications

### System

Frequency Bands <sup>1</sup> (GHz)	5.250-5.350, 5.470-5.725, 5.725-5.850			
Tuning Resolution	1 MHz			
Output Power (full power)	+24 dBm QPSK; +21 dBm 16QAM			
5725-5850 MHz band	+13 dBm			
5250-5350 MHz band <sup>2</sup>	+13 dBm			
5470-5725 MHz band <sup>2</sup>	+13 dBm			
Output Power (min power)	Full power minus 20 dB			
Power Control Step Size	0.5 dB			
Receiver Threshold (BER=10 <sup>-4</sup> )	8 MHz	16 MHz	32 MHz	64 MHz
QPSK	-86	-83	-80	-77
16QAM	-78	-75	-72	-69
Non-overlapping Channels				
5.250-5.350 GHz	10	5	2	1
5.470-5.725 GHz	29	14	7	3
5.725-5.850 GHz	15	7	3	1
Maximum RSL	-25 dBm error-free 0 dBm no damage			
Throughput Symmetry Control	5 modes 20/80, 80/20, 35/65, 65/35, 50/50			
Error Floor	10 <sup>-12</sup>			
Latency (T1/E1)	1ms, typical			
Maximum Packet Size	All 1916 bytes except GigE 9728 bytes			

## EX-5r Series

### System (continued)

Link Security	96-bit proprietary encryption 128-bit and 256-bit AES encryption <sup>3</sup>
Spectrum Analyzer	Embedded
VLAN	802.1Q
QoS	802.1p (GigE)
Management	HTTP GUI CLI/Telnet SNMP v1, 2c, v3
Compliance	FCC 15.247, FCC 15.407 EN 301-893, EN 302-502 EN 60-950, EN 301-489 IC RSS-210

### System Components

Complete Link	Two terminals, each with AC adapter & accessory kit
Single Terminal	One terminal with AC adapter & accessory kit
Accessory Kit	DC power connector, rack and grounding hardware (spare)
AC Adapter	AC adapter (spare)
Mounting Kits	Available for each product (spare)
ExaltSync GPS Sync Kit	GPS receiver and mounting bracket (optional)

## Specifications

### EX-5r Lite

### EX-5r-c Lite

### EX-5r v3

### EX-5r-c v2

### EX-5r GigE

### EX-5r-c GigE

### Physical

Physical Configuration	Outdoor Unit (ODU)					
Dimensions (H x W x D)	14 x 14 x 3.8 in 35.6 x 35.6 x 9.7 cm	14 x 14 x 2.5 in 35.6 x 35.6 x 6.4 cm	14 x 14 x 3.8 in 35.6 x 35.6 x 9.7 cm	14 x 14 x 2.5 in 35.6 x 35.6 x 6.4 cm	14 x 14 x 3.8 in 35.6 x 35.6 x 9.7 cm	14 x 14 x 2.5 in 35.6 x 35.6 x 6.4 cm
Antenna	Integrated	2x Type-N (F) Connector	Integrated	2x Type-N (F) Connector	Integrated	2x Type-N (F) Connector
Integrated Antenna						
Gain/3 dB Beamwidth	23 dBi / 9 degrees	-	23 dBi / 9 degrees	-	23 dBi / 9 degrees	-
Operating Temperature	-40 to +65 °C; -40 to +149 °F					
Full Spec Temperature	-40 to +60 °C; -40 to +140 °F					
Weight	14 lbs/6.4 kg	12 lbs/5.5 kg	14 lbs/6.4 kg	12 lbs/5.5 kg	14 lbs/6.4 kg	12 lbs/5.5 kg
Environmental	NEMA 4/IP66					
Altitude	15,000 ft; 4.6 km					
Humidity	100% condensing					

### Interfaces

RF	-	2x N-type (F), 50 ohm	-	2x N-type (F), 50 ohm	-	2x N-type (F), 50 ohm
TDM T1/E1 Interfaces	RJ48C/RJ45 (F) (x4)					
T1 Impedance	100 ohms, balanced					
T1 Line Code	AMI, B8ZS, selectable per channel					
T1 Data Rate	1,544 Mbps					
T1 Compliance	ANSI T1.102-1987; ITU-T; G.823; GR-499-CORE					
E1 Impedance	120 ohms, balanced					
E1 Line Code	HDB3					
E1 Data Rate	2,048 Mbps					
E1 Compliance	CEPT-1; G.703; ITU-T-G.703					
Loopback Modes	Remote Internal; Remote External; Local Line					
Ethernet	RJ45 (F)					
Interface Speed	10/100BaseT (POE)			RJ45 Female (x2)		
Duplex	Half, Full, Auto-MDIX			10/100/1000BaseT (1xPOE)		
Compliance	802.3			Half, Full, Auto-MDIX		
ExaltSync Synchronization	RJ45 (F)			802.3		
DC Power	Input: 1pps (GPS) 48VDC, <50W			RJ45 Female (x2) Input: 1pps (GPS); Output: Sync out 48VDC, <70W		
AC Power Adapter						
Input	100-240VAC, 1.5A					
Output	48VDC, 1.5A, 72W (via power injector)			48VDC, 2.08A, 100W (via power injector)		

<sup>1</sup> Not all frequency bands are authorized or available for use in all countries.

<sup>2</sup> +24 dBm output power available in EX-5r v3 and EX-5r Lite. Consult Exalt for availability in other models.

<sup>3</sup> Software license key upgrade.

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## EX-5i Series



### All-Indoor, Carrier-Class, Tri-Band 5 GHz TDD Radio Systems for Low, Medium and High Capacity Ethernet and TDM Applications

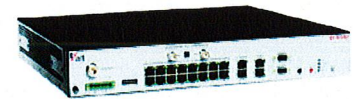
The EX-5i series of all-indoor digital microwave radios is the first family of carrier-class, tri-band TDD radios available in the 5.2 – 5.8 GHz license-exempt bands. The EX-5i line delivers up to 216 Mbps of aggregate user throughput and up to sixteen T1/E1s plus one DS3. Featuring native TDM and native Ethernet transport and full software configurability and upgradeability, the EX-5i series was designed to meet demanding backhaul requirements of enterprise organizations and service providers seeking the accessibility benefits of an all-indoor configuration.

**Carrier-class TDD.** The EX-5i series radios combine native TDM and native Ethernet transport with low, fixed latency to deliver guaranteed throughput and service quality. Capacity can be allocated variably between TDM and Ethernet via software, while the selectable throughput symmetry control feature enables radio capacity to efficiently match asymmetric traffic requirements. Optional 1+1 monitored hot standby (MHS) protection provides full hardware redundancy.

**Industry-leading Spectrum Management.** The EX-5i radios include selectable channel bandwidth and 1 MHz tuning resolution, yielding up to 54 non-overlapping frequency channels and up to 415 center frequencies of operation. These capabilities, combined with selectable modulation and superior system gain, provide unparalleled interference avoidance and transmission resiliency. A built-in spectrum analyzer is even included to accelerate deployment and simplify troubleshooting.

**ExaltSync™ Synchronization.** The ExaltSync technology embedded in the EX-5i series radios allows multiple radio systems to be collocated in close proximity without self-interference, minimizing antenna separation and ensuring reuse of scarce spectrum across all collocated systems.

**Security, Management and Data Networking.** The EX-5i radios deliver the highest data and management security available with optional 128- and 256-bit AES encryption and secure SNMP v3 management, together with enhanced fault management and diagnostic features. The 802.1Q VLAN option provides built-in network administration and security flexibility.



Primary Specifications		EX-5i Lite	EX-5i	EX-5i-16	EX-5i-DS3
Maximum Capacity <sup>1</sup>	TDM	4xT1/E1		16xT1/E1	16xT1/E1; 1xDS3
	Ethernet (Aggregate)	100 Mbps		200 Mbps	
Frequency (GHz)		Tri-band: 5.250-5.350, 5.470-5.725, 5.725-5.850			
Range <sup>2</sup>		> 30 miles at 99.999% throughput availability			

<sup>1</sup> Please refer to the Exalt Throughput and Range Specification document for detailed capacity information.

<sup>2</sup> Distance based upon FCC regulations, average climate and terrain, 6' dish antennas, 3 dB transmission system losses at each end. Longer or shorter distances will apply for alternative antennas, country regulations, transmission system losses, path topologies and radio configurations. See Exalt's path planning tool to model your scenario.

Specifications	EX-5i Series	Specifications	EX-5i Lite	EX-5i	EX-5i-16	EX-5i-DS3
<b>System</b>		<b>Physical</b>				
Frequency Bands <sup>1</sup> (GHz)	5.250-5.350 5.470-5.725 5.725-5.850	Dimensions (H x W x D)	1RU 1.75 x 17 x 14 in 4.5 x 43.2 x 35.6 cm		1.5RU 2.63 x 17 x 14 in 6.7 x 43.2 x 35.6 cm	
Tuning Resolution	1 MHz	Physical Configuration	Single-piece Indoor Unit (IDU)			
Output Power (full power)		Operating Temperature	-40 to +65 °C -40 to +149 °F			
5725-5850 MHz band	+24 dBm QPSK; +21 dBm 16QAM	Full Spec Temperature	-25 to +60 °C -13 to +140 °F			
5250-5350 MHz band <sup>2</sup>	+13 dBm	Weight	9.5 lbs / 4.3 kg		12 lbs / 5.5 kg	
5470-5725 MHz band <sup>2</sup>	+13 dBm	Environmental	GR-1089-CORE intra-building			
Output Power (min power)	Full power minus 20 dB	Altitude	15,000 ft, 4.6 km			
Power Control Step Size	0.5 dB	Humidity	95% non-condensing			
Receiver Threshold (BER=10 <sup>-4</sup> )	8 MHz 16 MHz 32 MHz 64 MHz <sup>3</sup>	<b>Interfaces</b>				
QPSK	-86 -83 -80 -77	RF	N-type(F), impedance 50 ohm			
16QAM	-78 -75 -72 -69	TDM T1/E1 Interfaces	RJ48C/RJ45 (F) (x4)		RJ48C/RJ45 (F) (x16)	
Non-overlapping Channels		T1 Impedance	100 ohms, balanced			
5.250-5.350 GHz	10 5 2 1	T1 Line Code	AMI, B8ZS, selectable per channel			
5.470-5.725 GHz	29 14 7 3	T1 Data Rate	1.544 Mbps			
5.725-5.850 GHz	15 7 3 1	T1 Compliance	ANSI T1.102-1987; ITU-T; G.823; GR-499-CORE			
Maximum RSL (QPSK)	-25 dBm error-free 0 dBm no damage	E1 Impedance	120 ohms, balanced			
Throughput Symmetry Control	5 modes 20/80, 80/20, 35/65, 65/35, 50/50	E1 Line Code	HDB3			
Error Floor	10 <sup>-12</sup>	E1 Data Rate	2.048 Mbps			
Latency (T1/E1)	1ms, typical	E1 Compliance	CEPT-1; G.703; ITU-T-G.703			
Link Security	96-bit proprietary encryption 128-bit and 256-bit AES encryption <sup>3</sup>	DS3 Impedance	- BNC (F) (2x) 75 ohms, unbalanced			
VLAN	802.1Q	DS3 Line Code	- B3ZS			
Management	HTTP GUI CLI/Telnet SNMP v1, 2c, v3	DS3 Data Rate	- 44.736 Mbps			
Compliance	FCC 15.247, FCC 15.407 EN 301-893, EN 302-502 EN 60-950, EN 301-489, IC RSS-210	DS3 Compliance	-ANSI T1.102-1993; GR-499-CORE			
<b>System Components</b>		Loopback Modes	Remote Internal; Remote External; Local Line			
Complete Link <sup>4</sup>	Two terminals, each with AC adapter and accessory kit	Ethernet	RJ45 (F) (x2), auto-MDIX			
Single terminal	One terminal with AC adapter and accessory kit	Interface Speed	10/100BaseT			
Accessory Kit	DC power connector, rack and grounding hardware (spare)	Duplex	Half, Full, Auto			
AC Adapter	AC adapter (spare)	Compliance	802.3			
Exalt Capacity Expansion Kit	For 6 GHz Part 101 links (optional accessory kit)	Console (Serial)	9-pin Sub-D (F)			
		Interface Speed	9600 bps			
		Compliance	EIA-574 (RS-232)			
		Alarm	9-pin Sub-D (F)			
		Inputs (2)	TTL/Closure			
		Outputs (2)	Relay (Form C)			
		ExaltSync	RJ45 (F)			
		Synchronization	Internal Sync 1pps (GPS)			
		DC Power	6-pin barrier strip ±20-60VDC		6-pin barrier strip ±20-60VDC	
		Consumption	<38.5W (48V: <0.8A, 24V: <1.6A)		< 45W (48V: <0.9A, 24V: 1.8A)	
		AC Power Adapter	EIC to NEMA 5-15			
		Input	100-240VAC, 1.5A			
		Output	48VDC, 1.5A, 72W			

<sup>1</sup> Not all frequency bands are authorized or available for use in all countries.

<sup>2</sup> +24 dBm output power. Consult Exalt for availability.

<sup>3</sup> Software license key upgrade.

<sup>4</sup> Two complete links (4 terminals) required for MHS protection along with Exalt MHS kit and protection cabling. Consult your Exalt Sales representatives for MHS availability. (MHS is not available on EX-5i or EX-5i Lite).



# **Exhibit D**

## **Power Density Calculations**

**Pocket Site HFCT1516A**

**2577 Main Street**

**Glastonbury, Connecticut**



C Squared Systems, LLC  
920 Candia Road  
Manchester, NH 03109  
Phone: (603) 657 9702  
E-mail:  
[support@csquaredsystems.com](mailto:support@csquaredsystems.com)

---

## Calculated Radio Frequency Emissions



HFCT1516A

2577 Main Street, Glastonbury, CT 06033

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## 1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed Pocket antennas to be installed on the existing lattice tower at 2577 Main Street, Glastonbury, CT 06033.

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are much more conservative (higher) than the actual signal levels will be from the finished installation.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\text{mW}/\text{cm}^2$ ). The number of  $\text{mW}/\text{cm}^2$  emitted is called the power density. The general population exposure limit for the cellular band is  $0.567\text{-}0.593 \text{ mW}/\text{cm}^2$ , and the general population exposure limit for the PCS/AWS band is  $1.0 \text{ mW}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

The FCC general population / uncontrolled limits set the maximum exposure to which most people may be subjected. General population / uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Higher exposure limits are permitted under the occupational / controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure (through training), and they must be able to exercise control over their exposure. General population / uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals.

The FCC describes exposure to radio frequency (RF) energy in terms of percentage of maximum permissible exposure (MPE) with 100% being the maximum allowed. Rather than the FCC presenting the user specification in terms of complex power density figures over a specified surface area, this MPE measure is particularly useful, and even more so when considering that power density limits actually vary by frequency because of the different absorptive properties of the human body at different frequencies.

MPE limits are specified as time-averaged exposure limits. This means that exposure can be averaged over 30 minutes for general population / uncontrolled exposure (or 6 minutes for occupational / controlled exposure). However, for the case of exposure of the general public, time averaging is usually not applied because of uncertainties over exact exposure conditions and difficulty in controlling time of exposure. Therefore, the typical conservative approach is to assume that any RF exposure to the general public will be continuous.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population / uncontrolled exposure and for occupational / controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

## 2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include limits for Maximum Permissible Exposure (MPE) for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP), the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit. As shown in these excerpts, each frequency band has different exposure limits, requiring power density to be reported as a percent of Maximum Permissible Exposure (MPE) when dealing with carriers transmitting in different frequency bands.

## 3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left( \frac{1.6^2 \times EIRP}{4\pi \times R^2} \right)$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance =  $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna

V = Vertical Distance from bottom of antenna

1.6 = Ground Reflection Factor

## 4. Calculation Results

Table 1 below outlines the power density information for the site. All information for carriers other than Pocket is based on the current CSC database.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	Effective Radiated Power (ERP) Per Transmitter (Watts)	Power Density (mw/cm <sup>2</sup> )	Limit	%MPE
Nextel	128	851	9	100	0.0198	0.5673	3.48%
Sprint	118	1962.5	11	475.39	0.1350	1.0000	13.50%
AT&T GSM	108	1900	2	427	0.0263	1.0000	2.63%
AT&T UMTS	108	880	1	500	0.0154	0.5867	2.63%
Pocket	100	2130-2133.75	3	631	0.0770	1.0000	7.70%
T-Mobile	93	1935	8	246	0.0818	1.0000	8.18%
<b>Total</b>							<b>38.12%</b>

**Table 1: Proposed Carrier Information**


## 5. Conclusion

The above analysis verifies that emissions from the proposed site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 38.12% of the FCC limit.

As noted in the introduction, obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished installation.

## 6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



---

Daniel I. Goulet  
C Squared Systems, LLC

July 7, 2009  
Date

## **Attachment A: References**

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

## Attachment B: FCC Limits For Maximum Permissible Exposure (MPE)

### (A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

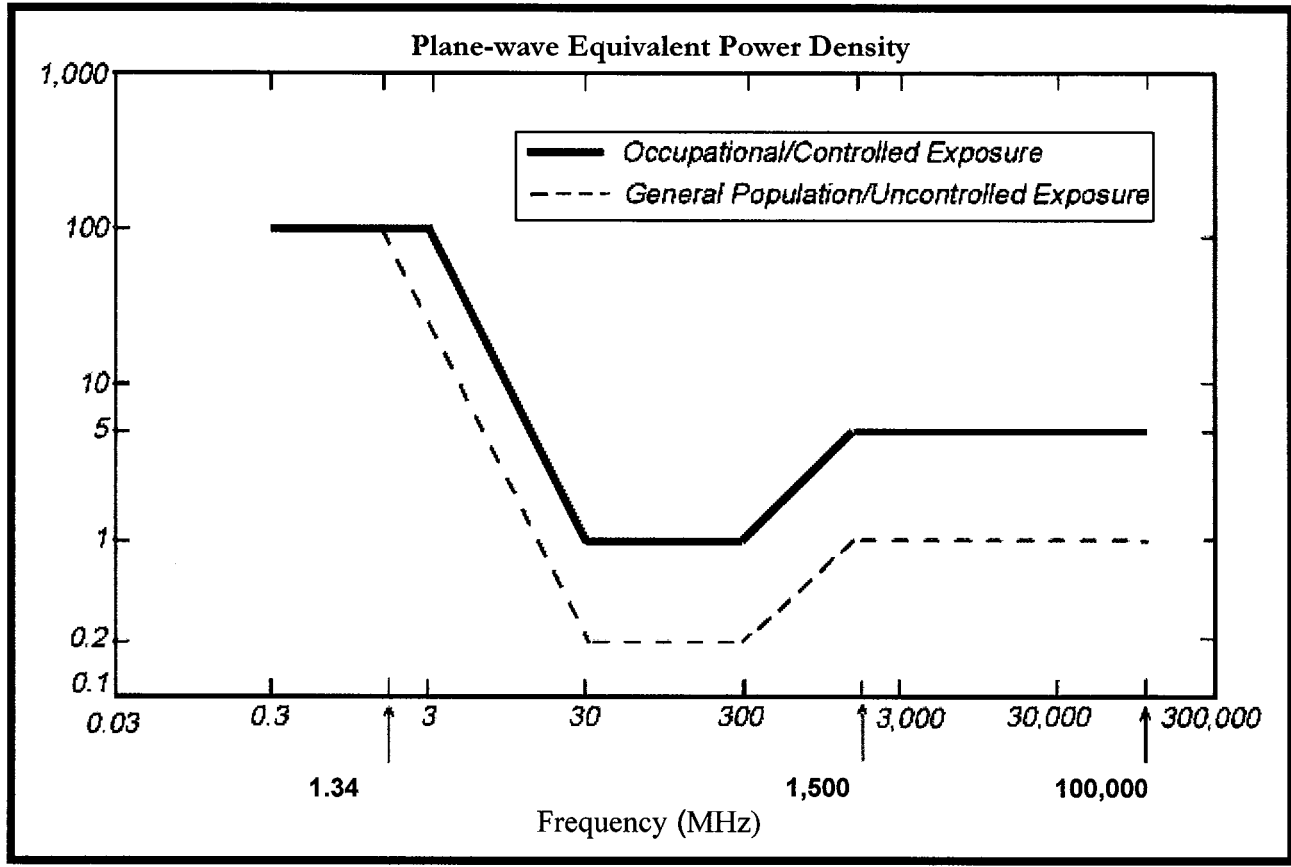
### (B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz \* Plane-wave equivalent power density

**NOTE 1:** Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

**NOTE 2:** General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



• FCC Limits for Maximum Permissible Exposure (MPE)



# **Exhibit E**

## **Structural Analysis**

**Pocket Site HFCT1516A**

**2577 Main Street**

**Glastonbury, Connecticut**



**FAIL**  
(Leg. 60 to 40 ft, 106% capacity)



**July 1, 2009**

**Ms. Catherine Godwin**  
TowerCo, LLC  
5000 Valleystone Drive  
Cary, NC 27519  
(919) 653-5737

Vertical Solutions, Inc.  
PO Box 579  
Holly Springs, NC 27540  
(888) 321-6167  
[operations@verticalsolutions-inc.com](mailto:operations@verticalsolutions-inc.com)

**Subject:** **Rigorous Structural Analysis**

**Carrier Designation** **Pocket Communications, Collocation**  
**Site Number: HFCT1516A**  
**Site Name: TowerCo**

**TowerCo Designation** **Site Number: CT2002**  
**Site Name: Glastonbury-Main St.**

**Engineering Firm Designation** **Vertical Solutions Project: 090403.02 Rev. 0**

**Site Data** **2577 Main St. Glastonbury, Hartford County, CT 06033**  
**Latitude: N41° 42' 52"±; Longitude: W072° 36' 48.3"±**  
**Elevation: 32.8ft±, Topography Category: 1;**  
**130-ft Self Supporting Latticed Structure**

Dear Ms. Godwin,

To your request, we present our structural analysis.

Our work indicates that with the proposed appurtenance configuration, the tower **will not** satisfy the structural strength requirements of TIA/EIA-222-F-1996, *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures* (industry standard) and the *2003 International Building Code* (local code) for:

- 80-mph fastest-mile basic wind speed
- 69-mph fastest-mile basic wind speed and 1/2-in radial ice

However, the foundation will satisfy these requirements.

Improvements to bring the tower into compliance with the standard and code are listed in the attachments.

We trust you find our work satisfactory. Please do not hesitate to call should you have any questions.

Sincerely,

Holly R. Sanford, E.I.  
Structural Engineer in Training



Michael L. Lassiter, S.E., P.E., C.W.I.  
Structural Engineer, Civil Engineer, Certified Weld Inspector  
& President  
CT PE License 25064

JUL 01 2009

**Table 1: Existing, Proposed and Reserved Appurtenance Configuration**

Elevation (AGL, ft)	Carrier	Mount <sup>2</sup>	Equipment	Coax	Location <sup>3</sup>
127.5	Sprint Nextel	(3) Sector Frames	(12) Decibel DB844H90E-M	(12) 1 1/4	Face B
118.5 <sup>1</sup>	Sprint Nextel	(3) Sector Frames	(12) Swedcom ALP 9212	(12) 1 5/8	Face C
108	AT&T	(3) Sector Frames	(6) Kathrein 800-10121 (12) TMA	(12) 1 1/4	Face A
100	<i>Pocket</i>	<i>Flush Mount</i>	<i>(3) RFS APXV18-206517S-C</i>	<i>(6) 7/8</i>	<i>Face B</i>
93	T Mobile	(3) Sector Frames	(6) EMS RR65-19-02DP	(12) 1 5/8	Face C&A
			(3) RFS APX16DWV-16DWV-S-E-ACU (3) Andrew OneBase Twin Dual Duplex TMA	(6) 1 5/8	Face A
55.5	--	Side Arm	(1) GPS Antenna	(1) 1/2	Face C
50.5	--	(2) Side Arms	(2) GPS Antenna	(2) 1/2	Face B

1 - Existing (current) equipment: (6) Andrew 950F40T4E-M with (6) 1-5/8 [EPA(A) 31.0 sq ft]. Reserved (design) equipment listed above and used in analysis [EPA(A) = 64.0 sq ft]

2 - Mount size and type assumed equivalent to mounts used in original tower design

3 - See QP-P drawing for coax location.

**Table 2: Tower Structure Results – Percent Capacity Utilized<sup>1</sup>:**

Elevation (ft)	Legs	Result	Bracing	Result
130 to 120	19	O. K.	67	O. K.
120 to 100	90	O. K.	76	O. K.
100 to 80	105	O. K.	102 (Bolts)	O. K.
80 to 60	102	O. K.	93 (Bolts)	O. K.
60 to 40	<b>106</b>	<b>N. G.</b>	82 (Bolts)	O. K.
40 to 20	84	O. K.	86 (Bolts)	O. K.
20 to 0	94	O. K.	82 (Bolts)	O. K.

1 - Utilization of 105% or less considered acceptable. Analysis considers tower improvements installed as given in SA dated 04/23/09.

**Table 3: Foundation Results, Percent Capacity Utilized**

Component	Design Reactions	Analysis Reactions	Percent Utilized	Result
<b>Moment (kip-ft)</b>	1685	1894	81	O. K.
<b>Leg Shear (kip)</b>	22	15	81	O. K.
<b>Leg Uplift (kip)</b>	253	278	81	O. K.

Attachments:

- Project History
- QP-P, coax configuration
- Program input and output
- Foundation calculations
- Tower improvement engineering (PRELIMINARY) profile



**Project History, 090403.02, Glastonbury-Main St. CT, CT2002**

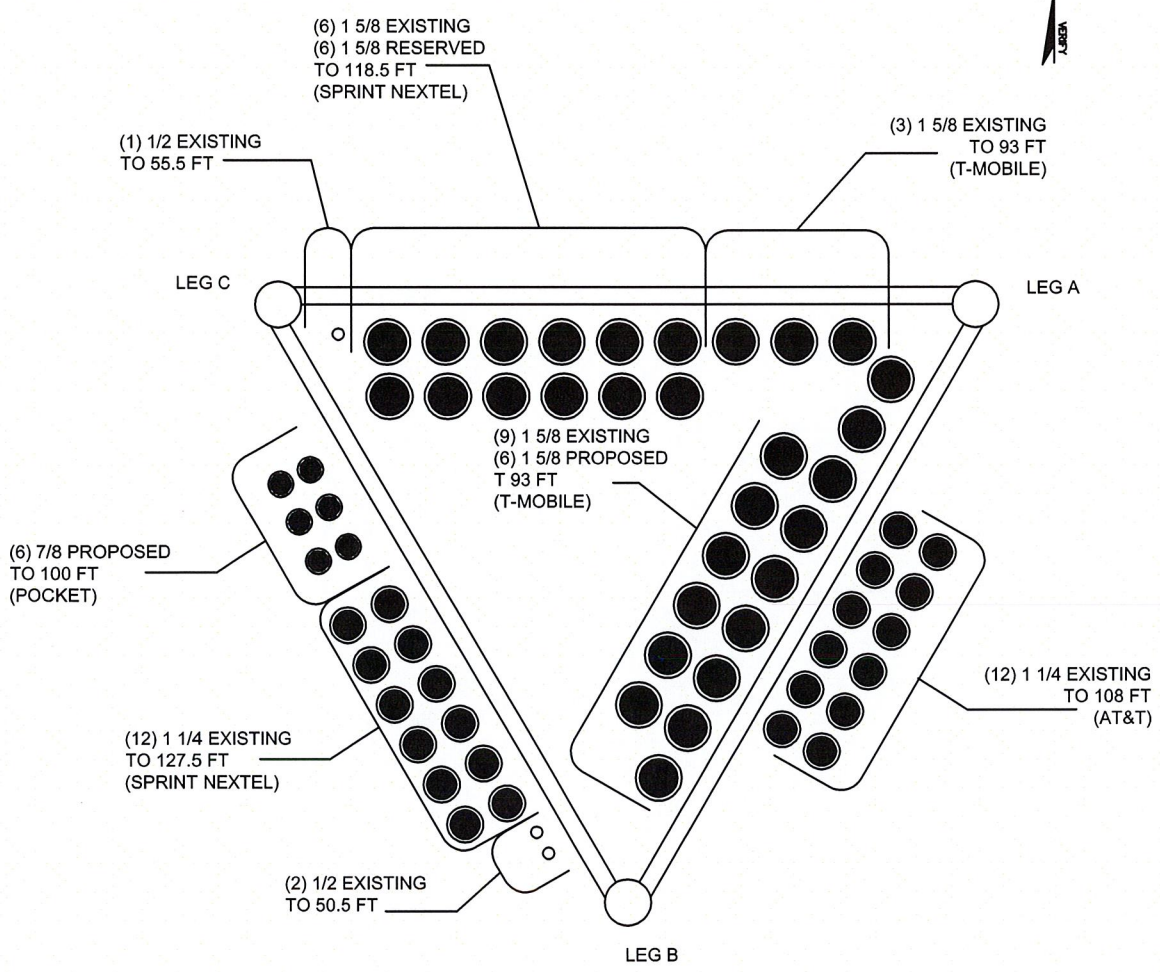
File	By: / For:	Description
199910XX_TDD_CT2002.pdf	Fred A. Nudd / Nextel Communications	Tower Design Drawings
20020730_SAR_CT2002.pdf	Fred A. Nudd / Nextel Communications	Structural Analysis Report
20080129_SAR_CT2002.pdf	Semaan Engineering Solutions / Sprint	Structural Analysis Report
20081029_TED_CT2002.pdf	SiteMaster / TowerCo	Tower Elevation Drawing
20090414_CTA_CT2002.doc	T-Mobile / TowerCO	Reconfig. Application
20090414_COR_CT2002.mht	TowerCO / Vertical Solutions Inc	Correspondence, Email
20090630_CTA_CT2002.doc	Pocket / TowerCO	Collo Application
200906.0_COR_CT2002.mht	TowerCO / Vertical Solutions Inc	Correspondence, Email

**Table Note:**

Files name format YYYYMMDD-XXX-ZZZZZZ.pdf

Where:

- YYYY=year
- MM=month
- DD=day published/issued
- XXX=file descriptor
- ZZZZZ= TowerCo Site ID



**EXISTING & PROPOSED COAX  
CONFIGURATION PLAN**

SCALE: 1-1/2" = 1'

DRAWN BY: JHW	CHECKED BY: MILL
SHEET NUMBER: <b>QP-P</b>	REVISION: 1
VSI #: 090403.02	

REV	DATE
1	07/01/09
0	04/17/09

PREPARED FOR:

5000 Valleystone Dr.  
Cary, NC 27519  
Office: (919) 469-5559  
Fax: (919) 469-5530  
www.towerco.com

**TowerCo**

PROJECT NAME:  
**Glastonbury-Main St.\_CT**

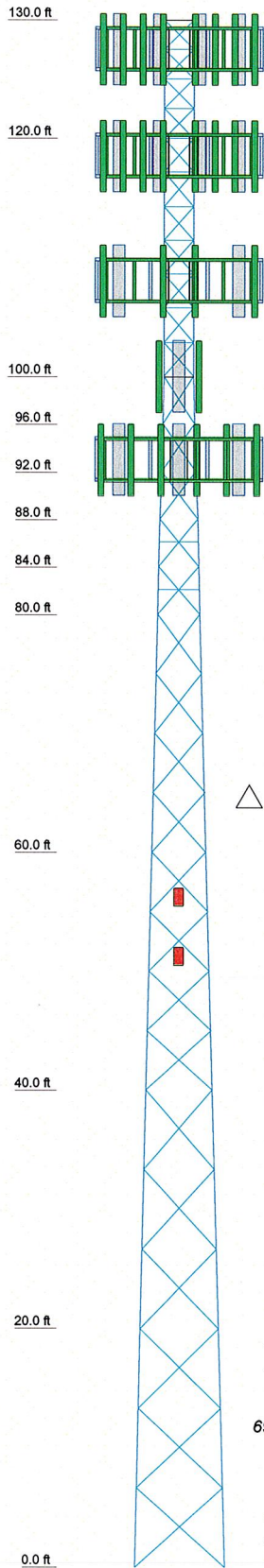
TOWERCO JOB #:  
**CT2002**

PREPARED BY:

2002 Production Drive  
Apex, NC 27539  
Office: (888) 321-6167  
Fax: (919) 321-1768  
www.verticalsolutions-inc.com

**vertical solutions**

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11
Legs	SR 1 1/2" solid	SR 2" solid		P4.5x0.237				Pipe 6.625" x 0.280" (6 STD)	A500M-54	Pipe 6.625" x 0.432" (6 XS)	
Leg Grade	A570-45										
Diagonals	SR 3/4" solid							L1 1/2x1 1/2x3/16		L1 3/4x1 3/4x3/16	L2x2x3/16
Diagonal Grade	SR 1/2							A36			
Top Girts											
Horizontals	L1 1/4x1 1/4x3/16										
Sec. Horizontals											
Face Width (ft)	2.5										
# Panels @ (ft)	4 @ 2.5	7 @ 2.85714									
Weight (K)	0.3	1.0	0.2	0.2	0.2	0.2	0.2	1.4	1.4	2.1	2.1



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) DB844H90E-M (Spint/Nextel)	127.5	(2) Kathrein 800 10121 w Mount Pipe (ATI)	108
(4) DB844H90E-M (Spint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
(4) DB844H90E-M (Spint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
Pirod 12" T-Frame Sector Mount (1) (Spint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
Pirod 12" T-Frame Sector Mount (1) (Spint/Nextel)	127.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirod 12" T-Frame Sector Mount (1) (Spint/Nextel)	127.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirod 15" T-Frame Sector Mount (1) (Spint/Nextel)	118.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirod 15" T-Frame Sector Mount (1) (Spint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
Pirod 15" T-Frame Sector Mount (1) (Spint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Spint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Spint/Nextel)	118.5	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Spint/Nextel)	118.5	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) 14" x 12" x 5" TMA (ATI)	108	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) 14" x 12" x 5" TMA (ATI)	108	Pirod 15" T-Frame Sector Mount (1) (T-Mobile)	93
(4) 14" x 12" x 5" TMA (ATI)	108	Pirod 15" T-Frame Sector Mount (1) (T-Mobile)	93
Pirod 15" T-Frame Sector Mount (1) (ATI)	108	Pirod 15" T-Frame Sector Mount (1) (T-Mobile)	93
Pirod 15" T-Frame Sector Mount (1) (ATI)	108	Pirod 15" T-Frame Sector Mount (1) (T-Mobile)	93
Pirod 15" T-Frame Sector Mount (1) (ATI)	108	GPS_RESERVED	55.5
(2) Kathrein 800 10121 w Mount Pipe (ATI)	108	GPS_RESERVED	50.5
(2) Kathrein 800 10121 w Mount Pipe (ATI)	108	GPS_RESERVED	50.5

### SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/4x1 1/4x3/16		

### MATERIAL STRENGTH

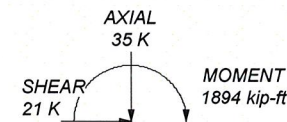
GRADE	Fy	Fu	GRADE	Fy	Fu
A570-45	45 ksi	60 ksi	A500M-54	54 ksi	70 ksi
A36	36 ksi	58 ksi			

### TOWER DESIGN NOTES

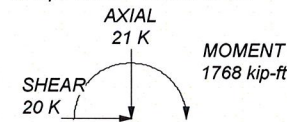
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 105.8%

### MAX. CORNER REACTIONS AT BASE:

DOWN: 303 K  
 UPLIFT: -278 K  
 SHEAR: 15 K



TORQUE 0 kip-ft  
 69 mph WIND - 0.5000 in ICE



TORQUE 0 kip-ft  
 REACTIONS - 80 mph WIND

<b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job: Glastonbury-Main St. CT</b>
	Project: <b>CT2002 - VS# 090403.01</b>
	Client: Tower Co      Drawn by: hsanford      App'd:
	Code: TIA/EIA-222-F      Date: 07/01/09      Scale: NTS
	Path: L:\2009\0403_Glastonbury-Main St. CT\Task 2\Models\090403.eri      Dwg No. E-1

<b>RISATower</b>  <b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b> Glastonbury-Main St._CT	<b>Page</b> 1 of 16
	<b>Project</b> CT2002 - VSI# 090403.01	<b>Date</b> 07:36:20 07/01/09
	<b>Client</b> Tower Co	<b>Designed by</b> hsanford

## Tower Input Data

The main tower is a 3x free standing tower with an overall height of 130.00 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 2.50 ft at the top and 7.50 ft at the base.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 69 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

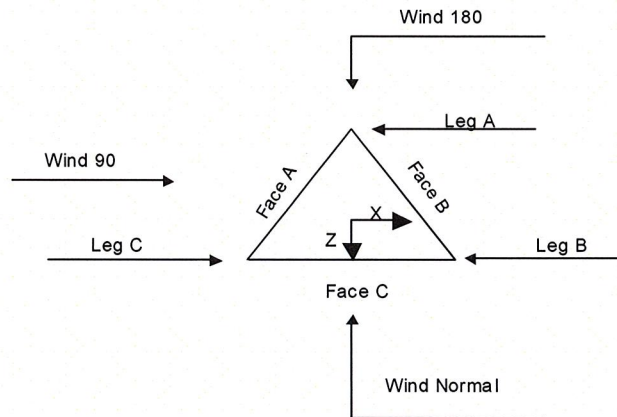
Stress ratio used in tower member design is 1.333.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

## Options

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>√ Use Code Stress Ratios</li> <li>√ Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>√ Include Bolts In Member Capacity</li> <li>√ Leg Bolts Are At Top Of Section</li> <li>√ Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>Add IBC .6D+W Combination</li> </ul> | <ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>√ Use Clear Spans For KL/r</li> <li>Retension Guys To Initial Tension</li> <li>Bypass Mast Stability Checks</li> <li>√ Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>Autocalc Torque Arm Areas</li> <li>SR Members Have Cut Ends</li> <li>Sort Capacity Reports By Component</li> <li>Triangulate Diamond Inner Bracing</li> </ul> | <ul style="list-style-type: none"> <li>Treat Feedline Bundles As Cylinder</li> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>√ Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>SR Leg Bolts Resist Compression</li> <li>√ All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>Consider Feedline Torque</li> <li>Include Angle Block Shear Check</li> <li style="text-align: center;">Poles</li> <li>Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> </ul> |
|--|--|---|

<b>RISATower</b>  <b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b> Glastonbury-Main St._CT	<b>Page</b> 2 of 16
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	<b>Client</b> Tower Co	<b>Designed by</b> hsanford



**Triangular Tower**

**Tower Section Geometry**

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	130.00-120.00			2.50	1	10.00
T2	120.00-100.00			2.50	1	20.00
T3	100.00-96.00			2.50	1	4.00
T4	96.00-92.00			2.70	1	4.00
T5	92.00-88.00			2.90	1	4.00
T6	88.00-84.00			3.10	1	4.00
T7	84.00-80.00			3.30	1	4.00
T8	80.00-60.00			3.50	1	20.00
T9	60.00-40.00			4.50	1	20.00
T10	40.00-20.00			5.50	1	20.00
T11	20.00-0.00			6.50	1	20.00

**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
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	130.00-120.00	2.50	X Brace	No	Yes	0.0000	0.0000
T2	120.00-100.00	2.86	X Brace	No	Yes	0.0000	0.0000
T3	100.00-96.00	4.00	X Brace	No	Yes	0.0000	0.0000
T4	96.00-92.00	4.00	X Brace	No	Yes	0.0000	0.0000



<b>RISATower</b>  <b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b>	Glastonbury-Main St._CT	<b>Page</b>	3 of 16
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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
T5	92.00-88.00	4.00	X Brace	No	Yes	0.0000	0.0000
T6	88.00-84.00	4.00	X Brace	No	Yes	0.0000	0.0000
T7	84.00-80.00	4.00	X Brace	No	Yes	0.0000	0.0000
T8	80.00-60.00	5.00	X Brace	No	No	0.0000	0.0000
T9	60.00-40.00	5.00	X Brace	No	No	0.0000	0.0000
T10	40.00-20.00	6.67	X Brace	No	No	0.0000	0.0000
T11	20.00-0.00	6.67	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 130.00-120.00	Solid Round	1 1/2" solid	A570-45 (45 ksi)	Solid Round	1/2	A36 (36 ksi)
T2 120.00-100.00	Solid Round	2" solid	A570-45 (45 ksi)	Solid Round	3/4" solid	A36 (36 ksi)
T3 100.00-96.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 96.00-92.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 92.00-88.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 88.00-84.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 84.00-80.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 80.00-60.00	Pipe	Pipe 6.625" x 0.280" (6 STD)	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 60.00-40.00	Pipe	Pipe 6.625" x 0.280" (6 STD)	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 40.00-20.00	Pipe	Pipe 6.625" x 0.432" (6 XS)	A500M-54 (54 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T11 20.00-0.00	Pipe	Pipe 6.625" x 0.432" (6 XS)	A500M-54 (54 ksi)	Equal Angle	L2x2x3/16	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 130.00-120.00	Equal Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 100.00-96.00	Equal Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

**Tower Section Geometry (cont'd)**

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Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 130.00-120.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)
T2 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T6 88.00-84.00	Single Angle	L 2 x 2 x 1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T7 84.00-80.00	Single Angle	L 2 x 2 x 1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in
T1 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 100.00-96.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 96.00-92.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 92.00-88.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 88.00-84.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 84.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T11 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

### Tower Section Geometry (cont'd)



<b>RISATower</b>  <b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b>	Glastonbury-Main St._CT	<b>Page</b>	6 of 16
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**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 130.00-120.00	Flange	0.0000 A325N	0	0.5000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 120.00-100.00	Flange	1.0000 A325N	1	0.5000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 100.00-96.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 96.00-92.00	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 92.00-88.00	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 88.00-84.00	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 84.00-80.00	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 80.00-60.00	Flange	1.0000 A325N	8	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 60.00-40.00	Flange	1.0000 A325N	8	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 40.00-20.00	Flange	1.0000 A325N	8	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 20.00-0.00	Flange	1.0000 A325N	8	0.5000 A325X	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
LDF6-50A(1-5/8") (T-Mobile)	C	No	Ar (CfAe)	93.00 - 8.00	3	3	1.5500	1.5500		0.66
LDF4-50A(1/2") (Sprint)	C	No	Ar (CfAe)	55.50 - 8.00	1	1	0.6300	0.6300		0.15
LDF6-50A(1-5/8") (Sprint)	C	No	Ar (CfAe)	118.50 - 8.00	12	6	1.5500	1.5500		0.66
LDF6-50A(1-1/4") (Nextel)	B	No	Ar (CfAe)	127.50 - 8.00	12	6	1.5500	1.5500		0.66
LDF4-50A(1/2") (Nextel)	B	No	Ar (CfAe)	50.50 - 8.00	2	2	0.6300	0.6300		0.15
LDF6-50A(1-5/8") (T-Mobile)	A	No	Ar (CfAe)	93.00 - 8.00	15	9	1.5500	1.5500		0.66
LDF6-50A (1-1/4 FOAM (AT&T)	A	No	Ar (CfAe)	108.00 - 93.00	12	6	1.5500	1.5500		0.66
LDF5-50A(7/8") (Pocket)	B	No	Ar (CfAe)	100.00 - 8.00	6	3	1.0900	1.0900		0.33

**Feed Line/Linear Appurtenances - Entered As Area**

<b>RISATower</b>  <b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b> Glastonbury-Main St._CT	<b>Page</b> 7 of 16
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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>AA</sub>	Weight plf
LDF6-50A(1-1/4") (AT&T)	A	No	CaAa (In Face)	93.00 - 0.00	12	No Ice 1/2" Ice	0.00 0.00

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
T1	130.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	5.813	0.000	0.000	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.00
T2	120.00-100.00	A	6.200	0.000	0.000	0.000	0.06
		B	15.500	0.000	0.000	0.000	0.16
		C	14.338	0.000	0.000	0.000	0.15
T3	100.00-96.00	A	3.100	0.000	0.000	0.000	0.03
		B	4.190	0.000	0.000	0.000	0.04
		C	3.100	0.000	0.000	0.000	0.03
T4	96.00-92.00	A	3.488	0.000	0.000	0.000	0.04
		B	4.190	0.000	0.000	0.000	0.04
		C	3.488	0.000	0.000	0.000	0.03
T5	92.00-88.00	A	4.650	0.000	0.000	0.000	0.07
		B	4.190	0.000	0.000	0.000	0.04
		C	4.650	0.000	0.000	0.000	0.04
T6	88.00-84.00	A	4.650	0.000	0.000	0.000	0.07
		B	4.190	0.000	0.000	0.000	0.04
		C	4.650	0.000	0.000	0.000	0.04
T7	84.00-80.00	A	4.650	0.000	0.000	0.000	0.07
		B	4.190	0.000	0.000	0.000	0.04
		C	4.650	0.000	0.000	0.000	0.04
T8	80.00-60.00	A	23.250	0.000	0.000	0.000	0.36
		B	20.950	0.000	0.000	0.000	0.20
		C	23.250	0.000	0.000	0.000	0.20
T9	60.00-40.00	A	23.250	0.000	0.000	0.000	0.36
		B	22.052	0.000	0.000	0.000	0.20
		C	24.064	0.000	0.000	0.000	0.20
T10	40.00-20.00	A	23.250	0.000	0.000	0.000	0.36
		B	23.050	0.000	0.000	0.000	0.20
		C	24.300	0.000	0.000	0.000	0.20
T11	20.00-0.00	A	13.950	0.000	0.000	0.000	0.28
		B	13.830	0.000	0.000	0.000	0.12
		C	14.580	0.000	0.000	0.000	0.12

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
T1	130.00-120.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		9.563	0.000	0.000	0.000	0.17
		C		0.000	0.000	0.000	0.000	0.00
T2	120.00-100.00	A	0.500	10.200	0.000	0.000	0.000	0.18
		B		25.500	0.000	0.000	0.000	0.46
		C		23.587	0.000	0.000	0.000	0.42
T3	100.00-96.00	A	0.500	5.100	0.000	0.000	0.000	0.09
		B		7.190	0.000	0.000	0.000	0.12

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
T4	96.00-92.00	C	0.500	5.100	0.000	0.000	0.000	0.09
		A		5.737	0.000	0.000	0.000	0.12
		B		7.190	0.000	0.000	0.000	0.12
T5	92.00-88.00	C	0.500	5.737	0.000	0.000	0.000	0.10
		A		7.650	0.000	0.000	0.000	0.21
		B		7.190	0.000	0.000	0.000	0.12
T6	88.00-84.00	C	0.500	7.650	0.000	0.000	0.000	0.11
		A		7.650	0.000	0.000	0.000	0.21
		B		7.190	0.000	0.000	0.000	0.12
T7	84.00-80.00	C	0.500	7.650	0.000	0.000	0.000	0.11
		A		7.650	0.000	0.000	0.000	0.21
		B		7.190	0.000	0.000	0.000	0.12
T8	80.00-60.00	C	0.500	7.650	0.000	0.000	0.000	0.11
		A		38.250	0.000	0.000	0.000	1.03
		B		35.950	0.000	0.000	0.000	0.62
T9	60.00-40.00	C	0.500	38.250	0.000	0.000	0.000	0.57
		A		38.250	0.000	0.000	0.000	1.03
		B		37.376	1.103	0.000	0.000	0.63
T10	40.00-20.00	C	0.500	40.355	0.000	0.000	0.000	0.59
		A		38.250	0.000	0.000	0.000	1.03
		B		38.667	2.100	0.000	0.000	0.65
T11	20.00-0.00	C	0.500	40.967	0.000	0.000	0.000	0.59
		A		22.950	0.000	0.000	0.000	0.80
		B		23.200	1.260	0.000	0.000	0.39
		C		24.580	0.000	0.000	0.000	0.35

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
(4) DB844H90E-M (Spint/Nextel)	A	From Leg	3.00	0.0000	127.50	No Ice	2.87	3.73	0.01
			0.00			1/2" Ice	3.18	4.10	0.04
			0.00						
(4) DB844H90E-M (Spint/Nextel)	B	From Leg	3.00	0.0000	127.50	No Ice	2.87	3.73	0.01
			0.00			1/2" Ice	3.18	4.10	0.04
			0.00						
(4) DB844H90E-M (Spint/Nextel)	C	From Leg	3.00	0.0000	127.50	No Ice	2.87	3.73	0.01
			0.00			1/2" Ice	3.18	4.10	0.04
			0.00						
Pirod 12' T-Frame Sector Mount (1) (Spint/Nextel)	A	From Leg	1.50	0.0000	127.50	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00						
Pirod 12' T-Frame Sector Mount (1) (Spint/Nextel)	B	From Leg	1.50	0.0000	127.50	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00						
Pirod 12' T-Frame Sector Mount (1) (Spint/Nextel)	C	From Leg	1.50	0.0000	127.50	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00						
Pirod 15' T-Frame Sector Mount (1) (Sprint/Nextel)	A	From Leg	1.50	0.0000	118.50	No Ice	15.00	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
			0.00						
Pirod 15' T-Frame Sector	B	From Leg	1.50	0.0000	118.50	No Ice	15.00	15.00	0.50

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>1</sub> Front	C <sub>A</sub> A <sub>1</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
Mount (1)			0.00			1/2" Ice	20.60	20.60	0.65
(Sprint/Nextel)			0.00						
Pirod 15' T-Frame Sector Mount (1)	C	From Leg	1.50		0.0000	118.50	No Ice	15.00	0.50
(Sprint/Nextel)			0.00			1/2" Ice	20.60	20.60	0.65
(2) Kathrein 800 10121 w Mount Pipe (AT&T)	A	From Leg	3.00		0.0000	108.00	No Ice	5.80	0.07
			0.00			1/2" Ice	6.34	5.56	0.11
(2) Kathrein 800 10121 w Mount Pipe (AT&T)	B	From Leg	3.00		0.0000	108.00	No Ice	5.80	0.07
			0.00			1/2" Ice	6.34	5.56	0.11
(2) Kathrein 800 10121 w Mount Pipe (AT&T)	C	From Leg	3.00		0.0000	108.00	No Ice	5.80	0.07
			0.00			1/2" Ice	6.34	5.56	0.11
(4) 14" x 12" x 5" TMA (AT&T)	A	From Leg	2.50		0.0000	108.00	No Ice	1.63	0.01
			0.00			1/2" Ice	1.81	0.81	0.02
(4) 14" x 12" x 5" TMA (AT&T)	B	From Leg	2.50		0.0000	108.00	No Ice	1.63	0.01
			0.00			1/2" Ice	1.81	0.81	0.02
(4) 14" x 12" x 5" TMA (AT&T)	C	From Leg	2.50		0.0000	108.00	No Ice	1.63	0.01
			0.00			1/2" Ice	1.81	0.81	0.02
Pirod 15' T-Frame Sector Mount (1) (AT&T)	A	From Leg	1.50		0.0000	108.00	No Ice	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
Pirod 15' T-Frame Sector Mount (1) (AT&T)	B	From Leg	1.50		0.0000	108.00	No Ice	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
Pirod 15' T-Frame Sector Mount (1) (AT&T)	C	From Leg	1.50		0.0000	108.00	No Ice	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	A	From Leg	3.00		0.0000	93.00	No Ice	5.87	0.02
			0.00			1/2" Ice	6.32	3.23	0.05
(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	B	From Leg	3.00		0.0000	93.00	No Ice	5.87	0.02
			0.00			1/2" Ice	6.32	3.23	0.05
(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	C	From Leg	3.00		0.0000	93.00	No Ice	5.87	0.02
			0.00			1/2" Ice	6.32	3.23	0.05
Pirod 15' T-Frame Sector Mount (1) (T-Mobile)	A	From Leg	1.50		0.0000	93.00	No Ice	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
Pirod 15' T-Frame Sector Mount (1) (T-Mobile)	B	From Leg	1.50		0.0000	93.00	No Ice	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
Pirod 15' T-Frame Sector Mount (1) (T-Mobile)	C	From Leg	1.50		0.0000	93.00	No Ice	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
APX16DWV-16DWV-S-E-A CU w/ MP (T-Mobile)	A	From Leg	3.00		0.0000	93.00	No Ice	7.13	0.07
			0.00			1/2" Ice	7.62	4.14	0.12
APX16DWV-16DWV-S-E-A CU w/ MP (T-Mobile)	B	From Leg	3.00		0.0000	93.00	No Ice	7.13	0.07
			0.00			1/2" Ice	7.62	4.14	0.12
APX16DWV-16DWV-S-E-A	C	From Leg	3.00		0.0000	93.00	No Ice	7.13	0.07

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
CU w/ MP (T-Mobile)			0.00		1/2" Ice	7.62	4.14	0.12
OneBase PCS Twin Dual Duplex TMA (T-Mobile)	A	From Leg	2.50	0.0000	93.00	No Ice	0.66	0.37
			0.00		1/2" Ice	0.78	0.46	0.02
OneBase PCS Twin Dual Duplex TMA (T-Mobile)	B	From Leg	2.50	0.0000	93.00	No Ice	0.66	0.37
			0.00		1/2" Ice	0.78	0.46	0.02
OneBase PCS Twin Dual Duplex TMA (T-Mobile)	C	From Leg	2.50	0.0000	93.00	No Ice	0.66	0.37
			0.00		1/2" Ice	0.78	0.46	0.02
GPS_RESERVED	C	None		0.0000	55.50	No Ice	0.30	0.30
					1/2" Ice	0.37	0.37	0.00
GPS_RESERVED	B	None		0.0000	50.50	No Ice	0.30	0.30
					1/2" Ice	0.37	0.37	0.00
GPS_RESERVED	C	None		0.0000	50.50	No Ice	0.30	0.30
					1/2" Ice	0.37	0.37	0.00
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	A	From Leg	3.00	0.0000	118.50	No Ice	6.42	7.45
			0.00		1/2" Ice	7.11	8.59	0.10
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	B	From Leg	3.00	0.0000	118.50	No Ice	6.42	7.45
			0.00		1/2" Ice	7.11	8.59	0.10
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	C	From Leg	3.00	0.0000	118.50	No Ice	6.42	7.45
			0.00		1/2" Ice	7.11	8.59	0.10
RFS	A	From Leg	0.50	0.0000	100.00	No Ice	5.17	4.22
APXV18-206517S-C-A20 w/MP			0.00		1/2" Ice	5.62	4.96	0.08
RFS	B	From Leg	0.50	0.0000	100.00	No Ice	5.17	4.22
APXV18-206517S-C-A20 w/MP			0.00		1/2" Ice	5.62	4.96	0.08
RFS	C	From Leg	0.50	0.0000	100.00	No Ice	5.17	4.22
APXV18-206517S-C-A20 w/MP			0.00		1/2" Ice	5.62	4.96	0.08

### 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	
T2	120	Leg	A325N	1.0000	1	10.62	34.53	0.308	✓	1.333	Bolt Tension
T3	100	Leg	A325N	0.7500	4	19.75	19.44	1.016	✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4.32	4.12	1.049	✓	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	1.91	4.12	0.464	✓	1.333	Bolt Shear
T4	96	Diagonal	A325N	0.5000	1	4.60	4.12	1.115	✓	1.333	Bolt Shear
T5	92	Diagonal	A325N	0.5000	1	5.24	4.12	1.271	✓	1.333	Bolt Shear



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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
T6	88	Diagonal	A325N	0.5000	1	5.62	4.12	1.362 X	1.333	Bolt Shear
T7	84	Diagonal	A325N	0.5000	1	5.38	4.12	1.305 ✓	1.333	Bolt Shear
T8	80	Leg	A325N	1.0000	8	17.56	34.56	0.508 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	5.11	4.12	1.240 ✓	1.333	Bolt Shear
T9	60	Leg	A325N	1.0000	8	23.44	34.56	0.678 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4.52	4.12	1.096 ✓	1.333	Bolt Shear
T10	40	Leg	A325N	1.0000	8	28.24	34.56	0.817 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4.71	4.12	1.142 ✓	1.333	Bolt Shear
T11	20	Leg	A325N	1.0000	8	31.97	34.56	0.925 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	5.21	4.76	1.095 ✓	1.333	Member Bearing

**Compression Checks**

**Leg Design Data (Compression)**

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
T1	130 - 120	1 1/2" solid	10.00	2.50	80.0 K=1.00	17.839	1.7672	-7.91	31.52	0.251 ✓
T2	120 - 100	2" solid	20.00	2.86	68.6 K=1.00	19.653	3.1416	-73.73	61.74	1.194 ✓
T3	100 - 96	P4.5x0.237	4.00	4.00	31.8 K=1.00	28.908	3.1741	-85.75	91.75	0.935 ✓
T4	96 - 92	P4.5x0.237	4.00	4.00	31.8 K=1.00	28.908	3.1741	-100.52	91.75	1.096 ✓
T5	92 - 88	P4.5x0.237	4.00	4.00	31.8 K=1.00	28.908	3.1741	-113.13	91.75	1.233 ✓
T6	88 - 84	P4.5x0.237	4.00	2.06	16.4 K=1.00	30.891	3.1741	-125.23	98.05	1.277 ✓
T7	84 - 80	P4.5x0.237	4.00	2.06	16.4 K=1.00	30.894	3.1741	-137.50	98.06	1.402 X
T8	80 - 60	H1-3 (1.40 CR) - 150 Pipe 6.625" x 0.280" (6 STD)	20.01	5.00	26.7 K=1.00	29.617	5.5813	-190.50	165.30	1.152 ✓
T9	60 - 40	Pipe 6.625" x 0.280" (6 STD)	20.01	5.00	26.7 K=1.00	29.617	5.5813	-233.07	165.30	1.410 X
T10	40 - 20	H1-3 (1.41 CR) - 189 Pipe 6.625" x 0.432" (6 XS)	20.01	6.67	36.5 K=1.00	28.214	8.4049	-266.85	237.14	1.125 ✓
T11	20 - 0	Pipe 6.625" x 0.432" (6 XS)	20.01	6.67	36.5 K=1.00	28.214	8.4049	-297.56	237.14	1.255 ✓

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### Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
T1	130 - 120	1/2	3.54	1.68	145.1 K=0.90	7.093	0.1963	-1.25	1.39	0.895
T2	120 - 100	3/4" solid	3.80	1.77	105.8 K=0.93	12.230	0.4418	-5.44	5.40	1.006
T3	100 - 96	L1 1/2x1 1/2x3/16	4.77	2.03	92.2 K=1.11	13.945	0.5273	-4.32	7.35	0.588
T4	96 - 92	L1 1/2x1 1/2x3/16	4.88	2.09	94.0 K=1.10	13.719	0.5273	-4.60	7.23	0.635
T5	92 - 88	L1 1/2x1 1/2x3/16	5.00	2.16	96.2 K=1.09	13.458	0.5273	-5.24	7.10	0.739
T6	88 - 84	L1 1/2x1 1/2x3/16	5.12	2.23	98.3 K=1.08	13.190	0.5273	-5.62	6.96	0.808
T7	84 - 80	L1 1/2x1 1/2x3/16	5.25	2.30	100.5 K=1.07	12.913	0.5273	-5.38	6.81	0.790
T8	80 - 60	L1 1/2x1 1/2x3/16	6.33	2.73	113.8 K=1.02	11.154	0.5273	-5.11	5.88	0.869
T9	60 - 40	L1 1/2x1 1/2x3/16	7.34	3.26	133.5 K=1.00	8.374	0.5273	-4.20	4.42	0.952
T10	40 - 20	L1 3/4x1 3/4x3/16	9.20	4.20	146.9 K=1.00	6.923	0.6211	-4.47	4.30	1.040
T11	20 - 0	L2x2x3/16	9.91	4.58	139.5 K=1.00	7.673	0.7150	-4.70	5.49	0.857

### Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
T1	130 - 120	L1 1/4x1 1/4x3/16	2.50	2.38	117.0 K=1.00	10.712	0.4336	-0.35	4.64	0.076
T2	120 - 100	L1 1/4x1 1/4x3/16	2.50	2.38	117.0 K=1.00	10.712	0.4336	-2.02	4.64	0.435

### Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
T6	88 - 84	L 2 x 2 x 1/4	3.20	2.82	87.8 K=1.58	14.464	0.9380	-2.77	13.57	0.204
T7	84 - 80	L 2 x 2 x 1/4	3.40	3.02	89.8 K=1.51	14.232	0.9380	-3.04	13.35	0.227

<b>RISATower</b>  <b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b> Glastonbury-Main St._CT	<b>Page</b> 13 of 16
	<b>Project</b> CT2002 - VSI# 090403.01	<b>Date</b> 07:36:20 07/01/09
	<b>Client</b> Tower Co	<b>Designed by</b> hsanford

**Top Girt Design Data (Compression)**

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
T1	130 - 120	L1 1/4x1 1/4x3/16	2.50	2.38	117.0 K=1.00	10.712	0.4336	-0.02	4.64	0.003
T3	100 - 96	L1 1/4x1 1/4x3/16	2.50	2.10	111.8 K=1.08	11.426	0.4336	-1.68	4.95	0.339

**Tension Checks**

**Leg Design Data (Tension)**

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
T1	130 - 120	1 1/2" solid	10.00	2.50	80.0	27.000	1.7672	6.59	47.71	0.138
T2	120 - 100	2" solid	20.00	2.86	68.6	27.000	3.1416	67.67	84.82	0.798
T3	100 - 96	P4.5x0.237	4.00	4.00	31.8	32.400	3.1741	79.01	102.84	0.768
T4	96 - 92	P4.5x0.237	4.00	4.00	31.8	32.400	3.1741	91.99	102.84	0.894
T5	92 - 88	P4.5x0.237	4.00	4.00	31.8	32.400	3.1741	103.49	102.84	1.006
T6	88 - 84	P4.5x0.237	4.00	2.06	16.4	32.400	3.1741	115.07	102.84	1.119
T7	84 - 80	P4.5x0.237	4.00	2.06	16.4	32.400	3.1741	126.86	102.84	1.234
T8	80 - 60	H1-3 (1.40 CR) - 150 Pipe 6.625" x 0.280" (6 STD)	20.01	5.00	26.7	32.400	5.5813	176.80	180.84	0.978
T9	60 - 40	Pipe 6.625" x 0.280" (6 STD)	20.01	5.00	26.7	32.400	5.5813	216.13	180.84	1.195
T10	40 - 20	H1-3 (1.41 CR) - 189 Pipe 6.625" x 0.432" (6 XS)	20.01	6.67	36.5	32.400	8.4049	246.69	272.32	0.906
T11	20 - 0	Pipe 6.625" x 0.432" (6 XS)	20.01	6.67	36.5	32.400	8.4049	271.51	272.32	0.997

**Diagonal Design Data (Tension)**

<b>RISATower</b>  <b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b> Glastonbury-Main St._CT	<b>Page</b> 14 of 16
	<b>Project</b> CT2002 - VSI# 090403.01	<b>Date</b> 07:36:20 07/01/09
	<b>Client</b> Tower Co	<b>Designed by</b> hsanford

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P/P <sub>a</sub>
T1	130 - 120	1/2	3.54	1.68	161.2	21.600	0.1963	1.20	4.24	0.284
T2	120 - 100	3/4" solid	3.80	1.77	113.4	21.600	0.4418	5.03	9.54	0.527
T3	100 - 96	L1 1/2x1 1/2x3/16	4.77	2.03	56.3	29.000	0.3076	3.98	8.92	0.446
T4	96 - 92	L1 1/2x1 1/2x3/16	4.88	2.09	57.9	29.000	0.3076	4.26	8.92	0.477
T5	92 - 88	L1 1/2x1 1/2x3/16	5.00	2.16	59.7	29.000	0.3076	4.77	8.92	0.534
T6	88 - 84	L1 1/2x1 1/2x3/16	5.12	2.23	61.5	29.000	0.3076	5.19	8.92	0.581
T7	84 - 80	L1 1/2x1 1/2x3/16	5.25	2.30	63.4	29.000	0.3076	4.93	8.92	0.553
T8	80 - 60	L1 1/2x1 1/2x3/16	6.33	2.73	74.8	29.000	0.3076	4.58	8.92	0.514
T9	60 - 40	L1 1/2x1 1/2x3/16	6.81	3.01	82.0	29.000	0.3076	3.94	8.92	0.441
T10	40 - 20	L1 3/4x1 3/4x3/16	8.75	3.99	91.7	29.000	0.3779	4.08	10.96	0.372
T11	20 - 0	L2x2x3/16	9.91	4.58	91.3	29.000	0.4484	5.21	13.00	0.401



### Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P/P <sub>a</sub>
T1	130 - 120	L1 1/4x1 1/4x3/16	2.50	2.38	75.7	21.600	0.4336	0.38	9.37	0.041
T2	120 - 100	L1 1/4x1 1/4x3/16	2.50	2.38	75.7	21.600	0.4336	2.42	9.37	0.259



### Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P/P <sub>a</sub>
T6	88 - 84	L 2 x 2 x 1/4	3.20	2.82	55.6	21.600	0.9380	3.18	20.26	0.157
T7	84 - 80	L 2 x 2 x 1/4	3.40	3.02	59.5	21.600	0.9380	3.49	20.26	0.172



### Top Girt Design Data (Tension)

<b>RISA Tower</b>  <b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b> Glastonbury-Main St._CT	<b>Page</b> 15 of 16
	<b>Project</b> CT2002 - VSI# 090403.01	<b>Date</b> 07:36:20 07/01/09
	<b>Client</b> Tower Co	<b>Designed by</b> hsanford

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
T1	130 - 120	L1 1/4x1 1/4x3/16	2.50	2.38	75.7	21.600	0.4336	0.01	9.37	0.002
T3	100 - 96	L1 1/4x1 1/4x3/16	2.50	2.10	74.4	29.000	0.2373	1.91	6.88	0.278



### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail	
T1	130 - 120	Leg	1 1/2" solid	3	-7.91	42.02	18.8	Pass	
		Diagonal	1/2	17	-1.25	1.86	67.2	Pass	
		Horizontal	L1 1/4x1 1/4x3/16	31	-0.35	6.19	5.7	Pass	
T2	120 - 100	Top Girt	L1 1/4x1 1/4x3/16	4	-0.02	6.19	0.3	Pass	
		Leg	2" solid	42	-73.73	82.30	89.6	Pass	
		Diagonal	3/4" solid	49	-5.44	7.20	75.5	Pass	
T3	100 - 96	Horizontal	L1 1/4x1 1/4x3/16	52	-2.02	6.19	32.6	Pass	
		Leg	P4.5x0.237	108	-85.75	122.31	70.1	Pass	
		Diagonal	L1 1/2x1 1/2x3/16	115	-4.32	9.80	76.2 (b) 44.1	Pass	
T4	96 - 92	Top Girt	L1 1/4x1 1/4x3/16	109	-1.68	6.60	25.5	Pass	
		Leg	P4.5x0.237	120	-100.52	122.31	82.2	Pass	
		Diagonal	L1 1/2x1 1/2x3/16	122	-4.60	9.64	47.7	Pass	
T5	92 - 88	Diagonal	L1 1/2x1 1/2x3/16	131	-5.24	9.46	83.6 (b) 55.4	Pass	
		Leg	P4.5x0.237	129	-113.13	122.31	92.5	Pass	
		Diagonal	L1 1/2x1 1/2x3/16	131	-5.24	9.46	55.4	Pass	
T6	88 - 84	Leg	P4.5x0.237	138	-125.23	130.70	95.8	Pass	
		Diagonal	L1 1/2x1 1/2x3/16	143	-5.62	9.27	60.6	Fail X	
		Secondary Horizontal	L 2 x 2 x 1/4	145	-2.77	18.09	15.3	Pass	
T7	84 - 80	Leg	P4.5x0.237	150	-137.50	130.71	105.2	Fail X	
		Diagonal	L1 1/2x1 1/2x3/16	154	-5.38	9.08	59.3	Pass	
		Secondary Horizontal	L 2 x 2 x 1/4	157	-3.04	17.79	17.1	Pass	
T8	80 - 60	Leg	Pipe 6.625" x 0.280" (6 STD)	162	-190.50	220.35	86.5	Pass	
		Diagonal	L1 1/2x1 1/2x3/16	176	-5.11	7.84	65.2	Pass	
		Secondary Horizontal	L 2 x 2 x 1/4	177	-3.11	17.79	17.1	Pass	
T9	60 - 40	Leg	Pipe 6.625" x 0.280" (6 STD)	189	-233.07	220.35	105.8	Fail X	
		Diagonal	L1 1/2x1 1/2x3/16	191	-4.20	5.89	71.4	Pass	
		Secondary Horizontal	L 2 x 2 x 1/4	192	-3.22	17.79	17.1	Pass	
T10	40 - 20	Leg	Pipe 6.625" x 0.432" (6 XS)	216	-266.85	316.10	84.4	Pass	
		Diagonal	L1 3/4x1 3/4x3/16	218	-4.47	5.73	78.0	Pass	
		Secondary Horizontal	L 2 x 2 x 1/4	219	-3.33	17.79	17.1	Pass	
T11	20 - 0	Leg	Pipe 6.625" x 0.432" (6 XS)	237	-297.56	316.10	94.1	Pass	
		Diagonal	L2x2x3/16	241	-4.70	7.31	64.3	Pass	
		Secondary Horizontal	L 2 x 2 x 1/4	242	-3.44	17.79	17.1	Pass	
							Summary		
							Leg (T9)	105.8	Fail X
							Diagonal (T6)	102.2	Fail X
							Horizontal (T2)	32.6	Pass

<b><i>RISATower</i></b>  <b><i>Vertical Solutions, Inc.</i></b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job</b> Glastonbury-Main St._CT	<b>Page</b> 16 of 16
	<b>Project</b> CT2002 - VSI# 090403.01	<b>Date</b> 07:36:20 07/01/09
	<b>Client</b> Tower Co	<b>Designed by</b> hsanford

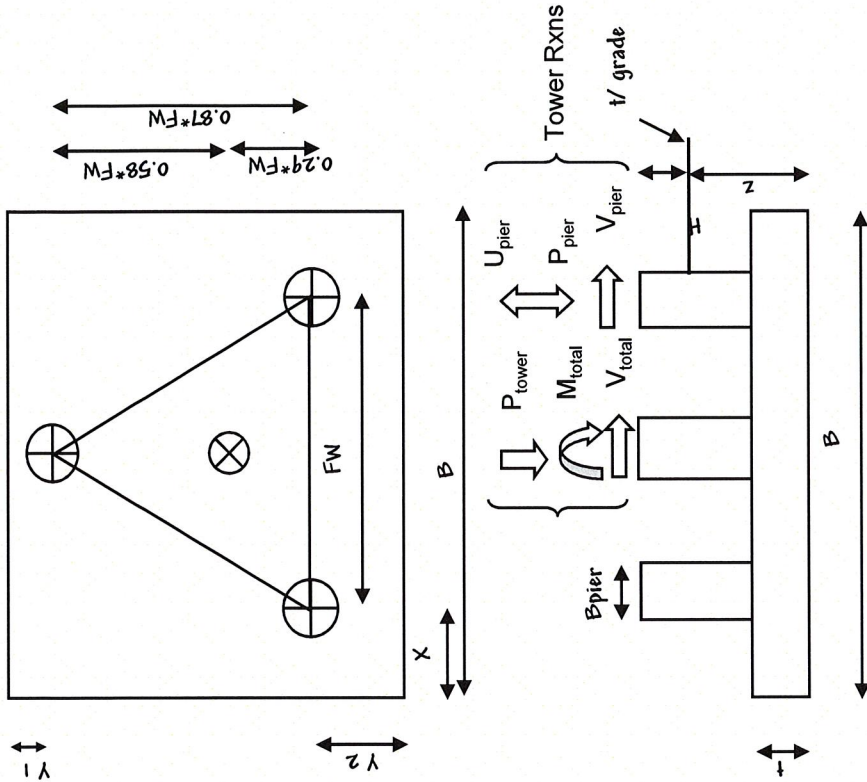
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail
						Secondary Horizontal (T7)	17.1	Pass
						Top Girt (T3)	34.8	Pass
						Bolt Checks	102.2	Fail <b>X</b>
						<b>RATING =</b>	<b>105.8</b>	<b>Fail X</b>



Project #: 090403.02  
 Date: 7/1/09  
 Engineer: JHW

Inputs-T&F

Page 1 of 3



NOTE:  
 $Y_1 = B/2 - 0.58*FW$       8.7 ft  
 $Y_2 = B/2 - 0.29*FW$       10.8 ft  
 $X = 1/2*(B - FW)$       9.3 ft

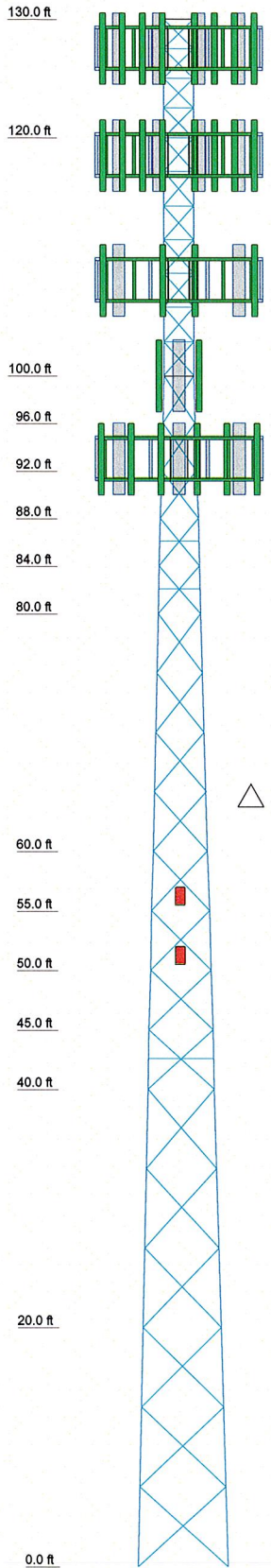
Inputs: Tower		Inputs: Foundation	
FW	7.50 ft	B <sub>pier</sub>	3.0 ft
P <sub>tower</sub>	34.0 kip	H	0.50 ft
M <sub>total</sub>	1,894.0 kip-ft	B	26.00 ft
V <sub>total</sub>	21 kip	t	3.00 ft
U <sub>pier</sub>	278.0 kip	z	4.00 ft
P <sub>pier</sub>	303.0 kip		
V <sub>pier</sub>	15 kip		

Inputs: Soil		Inputs: Concrete	
q <sub>all</sub>	3,000 psf	γ	150 pcf
Ψ	0.35	f <sub>c</sub>	3,000 psi
γ	120 pcf	f <sub>y</sub>	60,000 psi
		cover	3 in

Inputs: Pier		Inputs: Mat	
vert size	#8	horiz size	#8
vert qty	11	horiz qty	17
tie size	#4		
φM <sub>n</sub>	819 kip-ft		

Design Summary	
Soil	54%
Pier	81%
Pad	46%
Anchorage	72%
Design	81%
Concrete	76.3 cy

Section	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pipe 6.625" x 0.432" (6 XS)	Pipe 6.625" x 0.280" (6 STD)	A570-45											
Leg Grade	L2x2x3/16	L1 3/4x1 3/4x3/16	A570-45											
Diagonals	L2x2x3/16	L1 3/4x1 3/4x3/16	A570-45											
Diagonal Grade	L2x2x3/16	L1 3/4x1 3/4x3/16	A570-45											
Top Girts	N.A.	N.A.	A											
Horizontals	N.A.	N.A.	N.A.											
Sec. Horizontals	N.A.	N.A.	N.A.											
Face Width (ft)	7.5	6.5	5.5	5.25	5	4.75	4.5	3.3	3.1	2.9	2.7	2.7	2.7	2.5
# Panels @ (ft)	6 @ 6.66667	6 @ 6.66667	8 @ 5	8 @ 5	5 @ 4	5 @ 4	5 @ 4	5 @ 4	5 @ 4	5 @ 4	5 @ 4	5 @ 4	7 @ 2.85714	4 @ 2.5
Weight (K)	9.4	2.1	0.5	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	1.0	0.3



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) DB844H90E-M (Sprint/Nextel)	127.5	(2) Kathrein 800 10121 w Mount Pipe (ATI)	108
(4) DB844H90E-M (Sprint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
(4) DB844H90E-M (Sprint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
Pirot 12' T-Frame Sector Mount (1) (Sprint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
Pirot 12' T-Frame Sector Mount (1) (Sprint/Nextel)	127.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirot 12' T-Frame Sector Mount (1) (Sprint/Nextel)	127.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (Sprint/Nextel)	118.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (Sprint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (Sprint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	118.5	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	118.5	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) 14" x 12" x 5" TMA (ATI)	108	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) 14" x 12" x 5" TMA (ATI)	108	Pirot 15' T-Frame Sector Mount (1) (T-Mobile)	93
(4) 14" x 12" x 5" TMA (ATI)	108	Pirot 15' T-Frame Sector Mount (1) (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (ATI)	108	Pirot 15' T-Frame Sector Mount (1) (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (ATI)	108	Pirot 15' T-Frame Sector Mount (1) (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (ATI)	108	GPS_RESERVED	55.5
Pirot 15' T-Frame Sector Mount (1) (ATI)	108	GPS_RESERVED	50.5
(2) Kathrein 800 10121 w Mount Pipe (ATI)	108	GPS_RESERVED	50.5
(2) Kathrein 800 10121 w Mount Pipe (ATI)	108		

### SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/4x1 1/4x3/16	B	L3x3x5/16

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A570-45	45 ksi	60 ksi	A500M-54	54 ksi	70 ksi
A36	36 ksi	58 ksi			

### TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.

<b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	<b>Job: Glastonbury-Main St. CT</b>		
	<b>Project: CT2002 - VS# 090403.01</b>		
	Client: Tower Co	Drawn by: hsanford	App'd:
	Code: TIA/EIA-222-F	Date: 07/01/09	Scale: NTS
	Path: L:\2009\0403 Glastonbury-Main St. CT\Task 2\Modal\MOD\090403.dwg	Dwg No. E-1	



**PULLMAN  
& COMLEY**  
ATTORNEYS

**CARRIE L. LARSON**  
90 State House Square  
Hartford, CT 06103-3702  
p (860) 424-4312  
f (860) 424-4370  
clarson@pullcom.com  
www.pullcom.com

October 22, 2010

**VIA FACSIMILE (860-827-2950) and ELECTRONIC MAIL**

Linda Roberts, Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

**RECEIVED**  
OCT 22 2010  
CONNECTICUT  
SITING COUNCIL

**Re: Exempt Modifications, Pocket Wireless**

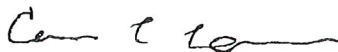
Dear Ms. Roberts:

Please be advised that this office represents Youghioghny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket"). As you may be aware, Pocket has filed numerous exempt modifications with the Siting Council over the course of the last two years. As part of those exempt modification filings, Pocket had indicated that they may temporarily use microwave dishes and/or generators. The approval letters related to these exempt modifications requested additional information or follow up concerning the use of microwave dishes and/or generators. Please be advised that Pocket is no longer utilizing any microwave dishes or generators at any of the sites listed below and therefore Pocket believes that this additional information is unnecessary. This is applicable to list of sites below:

2577 Main Street, Glastonbury – EM 054-090710  
605 Willard Avenue, Newington – EM 094-090727  
99 Cedarwood Lane, Newington – EM 094-080922  
Turnpike Road, Willington – EM 160-090804  
1055 Wintergreen Avenue, Hamden – EM 062-090512  
310 Prestige Park, East Hartford – EM 043-090723  
371 Terryville Avenue, Bristol – EM 017-091112  
Bright Meadow Blvd, Enfield – EM 049-090728  
111 Trask Road, Willington – EM 160-090727

Please let me know if you have any questions.

Respectfully Submitted,



Carrie L. Larson

ACTIVE/72572.371/CLARSON/2278047v1

**CARRIE L. LARSON**  
90 State House Square  
Hartford, CT 06103-3702  
p (860) 424-4312  
f (860) 424-4370  
clarson@pullcom.com  
www.pullcom.com

October 22, 2010

**VIA FEDERAL EXPRESS**

Linda Roberts, Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051



**Re: Pocket Wireless 2577 Main Street, Glastonbury – EM 054-090710**

Dear Ms. Roberts:

Please be advised that this office represents Youghioghny Communications-Northeast, LLC, doing business as Pocket Communications (“Pocket”). Pocket received an exempt modification approval on or about August 17, 2009. The approval requested a revised structural report. Please find attached the revised structural report. In addition, the approval referenced issues concerning a temporary microwave dish and generator. Please be advise that Pocket is no utilizing either a temporary microwave dish or generator at this site. Therefore, Pocket believes it is in full compliance with this approval. Please let me know if you have any questions.

Respectfully Submitted,

A handwritten signature in blue ink that appears to read "Carrie L. Larson".

Carrie L. Larson

Enc.

ACTIVE/72572.371/CLARSON/2278069v1



**PASS**  
 (Foundation, Overturning, 84% capacity)  
Complete Improvements within (6) weeks



September 4, 2009

Ms. Catherine Godwin  
 TowerCo, LLC  
 5000 Valleystone Drive  
 Cary, NC 27519  
 (919) 653-5737

Vertical Solutions, Inc.  
 PO Box 579  
 Holly Springs, NC 27540  
 (888) 321-6167  
[operations@verticalsolutions-inc.com](mailto:operations@verticalsolutions-inc.com)

**Subject:** Non-Operational Load Analysis

**Carrier Designation:** Pocket Communications, Collocation  
**Site Number:** HFCT1516A  
**Site Name:** TowerCo

**TowerCo Designation:** Site Number: CT2002  
 Site Name: Glastonbury-Main St.

**Engineering Firm Designation:** Vertical Solutions Project: 090403.07 Rev. 0

**Site Data:** 2577 Main St. Glastonbury, Hartford County, CT 06033  
 Latitude: N41° 42' 52"±; Longitude: W072° 36' 48.3"±  
 Elevation: 32.8ft±, Topography Category: 1;  
 130-ft Self Supporting Latticed Structure

Dear Ms. Godwin,

To your request, we present our non-operational load analysis.

Our work indicates that with the proposed appurtenance configuration, the tower and foundation will satisfy the structural strength requirements of TIA/EIA-222-F-1996, *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures* (industry standard) and the 2003 *International Building Code* (local code) for a construction duration factor of 0.75 per TIA-1019, *Structural Standards for Installation, Alteration and Maintenance of Communications Towers, Antennas and Antenna Supporting Structures*, for:

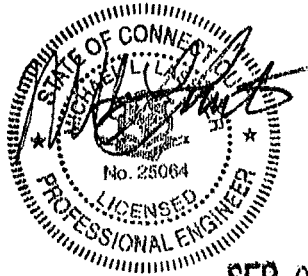
- 80-mph fastest-mile basic wind speed
- 69-mph fastest-mile basic wind speed and 1/2-in radial ice

Improvements detailed in our Modification Design Drawings dated August 27, 2009 shall be completed with (6) weeks of this letter.

We trust you find our work satisfactory. Please do not hesitate to call should you have any questions.

Sincerely,

Holly R. Sanford, E.I.  
 Structural Engineer in Training



Michael L. Lassiter, S.E., P.E., C.W.I.  
 Structural Engineer, Civil Engineer, Certified Weld Inspector  
 & President  
 CT PE License 25064

**SEP 04 2009**



**PASS**  
(Foundation, Overturning, 84% capacity)  
**Complete Improvements within (6) weeks**



September 4, 2009

Ms. Catherine Godwin  
TowerCo, LLC  
5000 Valleystone Drive  
Cary, NC 27519  
(919) 653-5737

Vertical Solutions, Inc.  
PO Box 579  
Holly Springs, NC 27540  
(888) 321-6167  
[operations@verticalsolutions-inc.com](mailto:operations@verticalsolutions-inc.com)

**Subject:**

**Non-Operational Load Analysis**

**Carrier Designation**

**Pocket Communications, Collocation**  
**Site Number: HFCT1516A**  
**Site Name: TowerCo**

**TowerCo Designation**

**Site Number: CT2002**  
**Site Name: Glastonbury-Main St.**

**Engineering Firm Designation**

**Vertical Solutions Project: 090403.07 Rev. 0**

**Site Data**

**2577 Main St. Glastonbury, Hartford County, CT 06033**  
**Latitude: N41° 42' 52"±; Longitude: W072° 36' 48.3"±**  
**Elevation: 32.8ft±, Topography Category: 1;**  
**130-ft Self Supporting Latticed Structure**

Dear Ms. Godwin,

To your request, we present our non-operational load analysis.

Our work indicates that with the proposed appurtenance configuration, the tower and foundation **will** satisfy the structural strength requirements of TIA/EIA-222-F-1996, *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures* (industry standard) and the 2003 *International Building Code* (local code) for a construction duration factor of 0.75 per TIA-1019, *Structural Standards for Installation, Alteration and Maintenance of Communications Towers, Antennas and Antenna Supporting Structures*, for:

- 80-mph fastest-mile basic wind speed
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Improvements detailed in our Modification Design Drawings dated August 27, 2009 shall be completed with (6) weeks of this letter.

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Holly R. Sanford, E.I.  
Structural Engineer in Training

Michael L. Lassiter, S.E., P.E., C.W.I.  
Structural Engineer, Civil Engineer, Certified Weld Inspector  
& President  
CT PE License 25064

**Table 1: Existing, Proposed and Reserved Appurtenance Configuration**

Elevation (AGL, ft)	Carrier	Mount <sup>2</sup>	Equipment	Coax	Location <sup>3</sup>
127.5	Sprint Nextel	(3) Sector Frames	(12) Decibel DB844H90E-M	(12) 1 1/4	Face B
118.5 <sup>1</sup>	Sprint Nextel	(3) Sector Frames	(12) Swedcom ALP 9212	(12) 1 5/8	Face C
108	AT&T	(3) Sector Frames	(6) Kathrein 800-10121 (12) TMA	(12) 1 1/4	Face A
100	<i>Pocket</i>	<i>Flush Mount</i>	<i>(3) RFS APXV18-206517S-C</i>	<i>(6) 1 5/8</i>	<i>Face B</i>
93	T Mobile	(3) Sector Frames	(6) EMS RR65-19-02DP	(12) 1 5/8	Face C&A
			(3) RFS APX16DWV-16DWV-S-E-ACU (3) Andrew OneBase Twin Dual Duplex TMA	(6) 1 5/8	Face A
55.5	--	Side Arm	(1) GPS Antenna	(1) 1/2	Face C
50.5	--	(2) Side Arms	(2) GPS Antenna	(2) 1/2	Face B

1 - Existing (current) equipment: (6) Andrew 950F40T4E-M with (6) 1-5/8 [EPA(A) 31.0 sq ft]. Reserved (design) equipment listed above and used in analysis [EPA(A) = 64.0 sq ft]

2 - Mount size and type assumed equivalent to mounts used in original tower design

3 - See QP-P drawing for coax location.

**Table 2: Tower Structure Results – Percent Capacity Utilized<sup>1</sup>:**

Elevation (ft)	Legs	Result	Bracing	Result
130 to 120	15	O. K.	51	O. K.
120 to 100	68	O. K.	57	O. K.
100 to 80	87	O. K.	71	O. K.
80 to 60	66	O. K.	67	O. K.
60 to 40	80	O. K.	60	O. K.
40 to 20	64	O. K.	63	O. K.
20 to 0	71	O. K.	65	O. K.

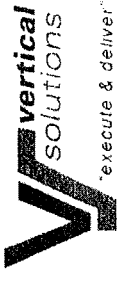
<sup>1</sup> - Utilization of 105% or less considered acceptable. Analysis considers tower improvements installed as given in SA dated 04/23/09.

**Table 3: Foundation Results, Percent Capacity Utilized**

Component	Design Reactions	Analysis Reactions	Percent Utilized	Result
Moment (kip-ft)	1685	1414	84	O. K.
Leg Shear (kip)	22	16	72	O. K.
Leg Uplift (kip)	253	205	81	O. K.

Attachments:

- Project History
- QP-P, coax configuration
- Program input and output



**Project History, 090403.07, Glastonbury-Main St. CT, CT2002**

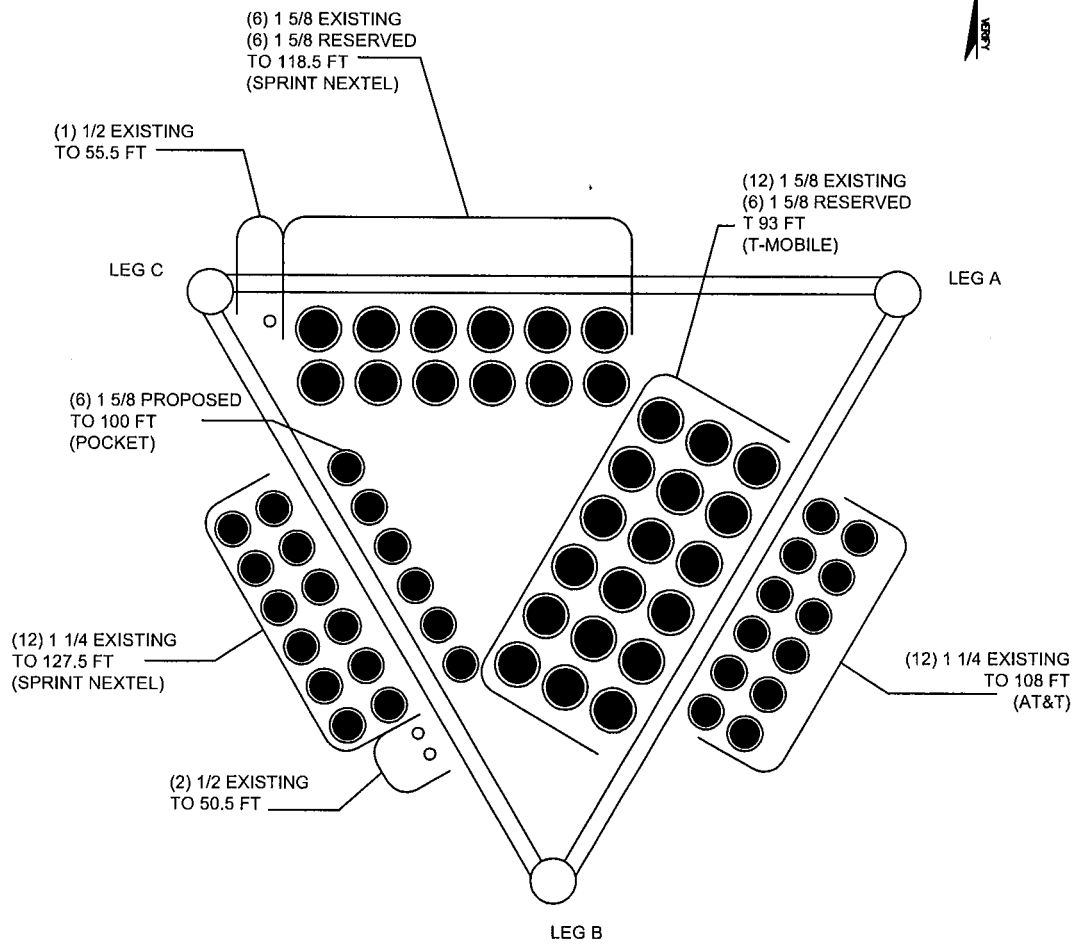
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199910XX_TDD_CT2002.pdf	Fred A. Nudd / Nextel Communications	Tower Design Drawings
20020730_SAR_CT2002.pdf	Fred A. Nudd / Nextel Communications	Structural Analysis Report
20080129_SAR_CT2002.pdf	Semaan Engineering Solutions / Sprint	Structural Analysis Report
20081029_TED_CT2002.pdf	SiteMaster / TowerCo	Tower Elevation Drawing
20090414_CTA_CT2002.doc	T-Mobile / TowerCO	Reconfig. Application
20090414_COR_CT2002.mht	TowerCO / Vertical Solutions Inc	Correspondence, Email
20090423_SAR_CT2002.pdf	Vertical Solutions Inc/TowerCo	Structural Analysis
20090630_CTA_CT2002.doc	Pocket / TowerCO	Collo Application
20090630_COR_CT2002.mht	TowerCO / Vertical Solutions Inc	Correspondence, Email
20090701_SAR_CT2002.pdf	Vertical Solutions Inc/TowerCo	Structural Analysis
20090812_TID_CT2002.pdf	Vertical Solutions Inc/TowerCo	Tower Improvement Drawings with Passing Structural Analysis Report
20090827_TID_CT2002.pdf	Vertical Solutions Inc/TowerCo	Tower Improvement Drawings with Passing Structural Analysis Report (revision 1)

**Table Note:**

Files name format YYYYMMDD-XXX-ZZZZZZ.pdf

Where:

- YYYY=year
- MM=month
- DD=day published/issued
- XXX=file descriptor
- ZZZZZ=TowerCo Site ID



**EXISTING & PROPOSED COAX  
CONFIGURATION PLAN**

SCALE: 1-1/2" = 1'

DRAWN BY: JHW	CHECKED BY: MLL
SHEET NUMBER: <b>QP-P</b>	REVISION: <b>2</b>
VSI #: 090403.03	

REV	DATE
2	07/09/09
1	07/01/09
0	04/17/09

PREPARED FOR:

**TowerCo**

5000 Valleystone Dr.  
Cary, NC 27519  
Office: (919) 469-5559  
Fax: (919) 469-5530  
www.towerco.com

PROJECT NAME:  
**Glastonbury-Main St.\_CT**

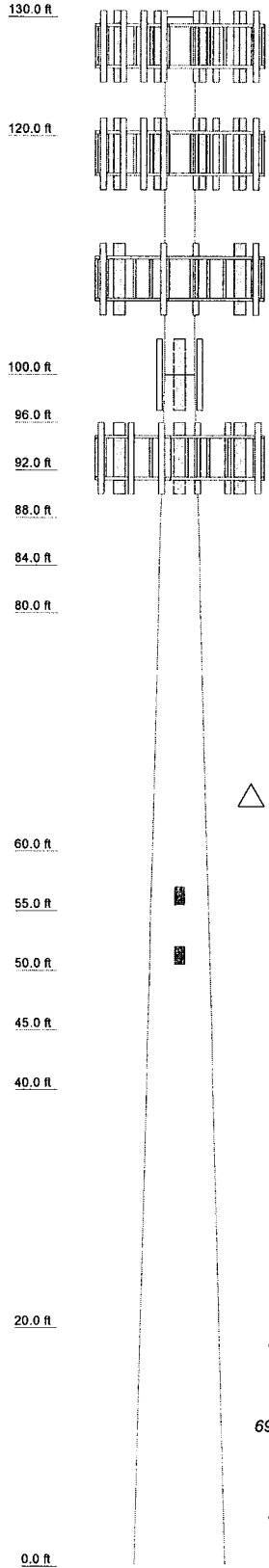
TOWERCO JOB #:  
**CT2002**

PREPARED BY:

**vertical**  
SOLUTIONS

2002 Production Drive  
Apex, NC 27539  
Office: (888) 321-6167  
Fax: (919) 321-1768  
www.verticalsolutions-inc.com

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14
Legs	SR 1 1/2" solid	SR 2" solid			P4.5x0.237	Pipe 6.625" x 0.280" (6 STD)								Pipe 6.625" x 0.432" (6 XS)
Leg Grade	A570-45					A500M-54								L2x2x3/16
Diagonals	SR 3/4" solid													L1 3/4x1 3/4x3/16
Diagonal Grade						A36								
Top Chords														
Horizontals	L1 1/4x1 1/4x3/16													
Face Width (ft)	2.5				2.7		3.5	3.3	3.1	2.9	2.7	2.5	2.3	2.1
# Panels @ (ft)	4 @ 2.5				5 @ 4		8 @ 5	8 @ 5	8 @ 5	8 @ 5	8 @ 5	8 @ 5	8 @ 5	6 @ 5.66667
Weight (K)	0.3	1.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.1



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) DB844H90E-M (Spint/Nextel)	127.5	(2) Kathrein 800 10121 w Mount Pipe (ATI)	108
(4) DB844H90E-M (Spint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
(4) DB844H90E-M (Spint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
Pirot 12' T-Frame Sector Mount (1) (Spint/Nextel)	127.5	RFS APXV18-206517S-C-A20 w/MP	100
Pirot 12' T-Frame Sector Mount (1) (Spint/Nextel)	127.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirot 12' T-Frame Sector Mount (1) (Spint/Nextel)	127.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (Sprint/Nextel)	118.5	APX16DWW-16DWW-S-E-ACU w/ MP (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (Sprint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (Sprint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	118.5	OneBase PCS Twin Dual Duplex TMA (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	118.5	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) ALP 9212-N w/Mount Pipe (Sprint/Nextel)	118.5	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) 14" x 12" x 5" TMA (ATI)	108	(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	93
(4) 14" x 12" x 5" TMA (ATI)	108	Pirot 15' T-Frame Sector Mount (1) (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (ATI)	108	Pirot 15' T-Frame Sector Mount (1) (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (ATI)	108	Pirot 15' T-Frame Sector Mount (1) (T-Mobile)	93
Pirot 15' T-Frame Sector Mount (1) (ATI)	108	GPS_RESERVED	55.5
Pirot 15' T-Frame Sector Mount (1) (ATI)	108	GPS_RESERVED	50.5
(2) Kathrein 800 10121 w Mount Pipe (ATI)	108	GPS_RESERVED	50.5
(2) Kathrein 800 10121 w Mount Pipe (ATI)	108		

### SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/4x1 1/4x3/16		

### MATERIAL STRENGTH

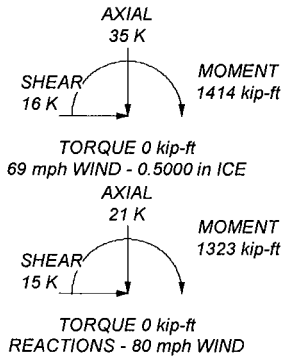
GRADE	Fy	Fu	GRADE	Fy	Fu
A570-45	45 ksi	60 ksi	A500M-54	54 ksi	70 ksi
A36	36 ksi	58 ksi			

### TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.

### MAX. CORNER REACTIONS AT BASE:

DOWN: 229 K  
 UPLIFT: -205 K  
 SHEAR: 11 K



TORQUE 0 kip-ft  
 REACTIONS - 80 mph WIND

 Execute and Deliver	<b>Vertical Solutions, Inc.</b> 2002 Production Drive Apex, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	Job: <b>Glastonbury-Main St. CT</b> Project: <b>CT2002 - VSI# 090403.01</b> Client: Tower Co Code: TIA/EIA-222-F Path: L:\2009\0403 Glastonbury-Main St. CT\Task 7090403.07.gri	Drawn by: Michael Lassiter Date: 09/03/09 Scale: NTS Dwg No: E-1
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<b>RISATower</b> Vertical Solutions, Inc. 2002 Production Drive Alpine, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	Job Glastonbury-Main St._CT	Page 1 of 17
Project CT2002 - VSI# 090403.01	Date 14.48.31 09/03/09	
Client Tower Co	Designed by Michael Lassiter	

### Tower Input Data

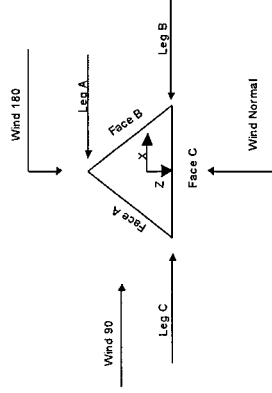
The main tower is a 3x free standing tower with an overall height of 130.00 ft above the ground line.  
The base of the tower is set at an elevation of 0.00 ft above the ground line.  
The face width of the tower is 2.50 ft at the top and 7.50 ft at the base.  
This tower is designed using the TIA/EIA-222-F standard.  
The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Basic wind speed of 80 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 69 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- TOWER RATING: 105.0%.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.333.
- Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

### Options

- Consider Moments - Legs
- Consider Moments - Horizontals
- Consider Moments - Diagonals
- Use Moment Magnification
- Use Code Stress Ratios
- Use Code Safety Factors - Guys
- Exclude Ice
- Always Use Max Kz
- Use Wind Profile
- Include Bolts in Member Capacity
- Leg Bolts Are At Top Of Section
- Secondary Horizontal Braces Leg
- Use Diamond Inner Bracing (4 Sided)
- Add IBC 6DA-W Combination
- Distribute Leg Loads As Uniform
- Assume Legs Pinned
- Assume Rigid Inlet Plate
- Use Clear Spans For Wind Area
- Use Clear Spans For KLP
- Retention Guys In Initial Tension
- Bypass Main Entry Hooks
- Use Wind Deck Supports
- Protect Wind Area of Support
- Autoscale Torque Arm Areas
- SR Members Have Cur Ends
- Sort Capacity Reports By Component
- Triangulate Diamond Inner Bracing
- Treat Feedline Bundles As Cylinder
- Use ASCE 10 X-Brace LY Rules
- Calculate Redundant Bracing Forces
- Ignore Redundant Members in FEA
- RR Leg Bolts Resist Compression
- RR Leg Bolts Are Allowable
- Offsets At Feedline
- Consider Feedline Torque
- Include Angle Block Shear Check
- Include Shear-Torsion Interaction
- Always Use Sub-Critical Flow
- Use Top Mounted Sockets

<b>RISATower</b> Vertical Solutions, Inc. 2002 Production Drive Alpine, NC 27539 Phone: 888-321-6167 FAX: 919-321-1768	Job Glastonbury-Main St._CT	Page 2 of 17
Project CT2002 - VSI# 090403.01	Date 14.48.31 09/03/09	
Client Tower Co	Designed by Michael Lassiter	



Triangular Tower

### Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	130.00-120.00			2.50	1	10.00
T2	120.00-100.00			2.50	1	20.00
T3	100.00-95.00			2.50	1	4.00
T4	95.00-92.00			2.70	1	4.00
T5	92.00-88.00			2.90	1	4.00
T6	88.00-84.00			3.10	1	4.00
T7	84.00-80.00			3.30	1	4.00
T8	80.00-60.00			3.50	1	20.00
T9	60.00-55.00			4.00	1	5.00
T10	55.00-50.00			4.25	1	5.00
T11	50.00-45.00			5.00	1	5.00
T12	45.00-40.00			5.25	1	5.00
T13	40.00-30.00			5.50	1	20.00
T14	30.00-20.00			6.50	1	20.00

### Tower Section Geometry (cont'd)

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontal Members	Top Girt Offset in	Bottom Girt Offset in
T1	130.00-120.00	2.50	X-Brace	No	Yes	0.0000	0.0000

<b>RISATower</b>		Glastonbury-Main St_CT		Page	3 of 17
Vertical Solutions, Inc. 2002 Production Drive Apex, NC 27539 Phone: 919-321-1667 FAX: 919-321-1768		Project CT2002 - VSI# 090403.01		Date	14:48:31 09/03/09
Client Tower Co		Designed by Michael Lassiter			

Tower Section	Elevation	Diagonal Spacing	Bracing Type	Has K Brace	Has Horizontals	Top Girt Offset	Bottom Girt Offset
T2	120.00-100.00	2.86	X Brace	No	Yes	0.0000	0.0000
T3	100.00-96.00	4.00	X Brace	No	Yes	0.0000	0.0000
T4	96.00-92.00	4.00	X Brace	No	Yes	0.0000	0.0000
T5	92.00-88.00	4.00	X Brace	No	Yes	0.0000	0.0000
T6	88.00-84.00	4.00	X Brace	No	Yes	0.0000	0.0000
T7	84.00-80.00	4.00	X Brace	No	Yes	0.0000	0.0000
T8	80.00-60.00	5.00	X Brace	No	No	0.0000	0.0000
T9	60.00-55.00	5.00	X Brace	No	No	0.0000	0.0000
T10	55.00-50.00	5.00	X Brace	No	No	0.0000	0.0000
T11	50.00-45.00	5.00	X Brace	No	Yes	0.0000	0.0000
T12	45.00-40.00	5.00	X Brace	No	No	0.0000	0.0000
T13	40.00-20.00	6.67	X Brace	No	No	0.0000	0.0000
T14	20.00-10.00	6.67	X Brace	No	No	0.0000	0.0000

### Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 130.00-120.00	Solid Round	1 1/2" solid	A370M-45 (45 ksi)	Solid Round	1/2"	A36 (36 ksi)
T2 120.00-100.00	Solid Round	2" solid	A370M-45 (45 ksi)	Solid Round	3/4" solid	A36 (36 ksi)
T3 100.00-96.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 96.00-92.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 92.00-88.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 88.00-84.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 84.00-80.00	Pipe	P4.5x0.237	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 80.00-60.00	Pipe	Pipe 6.625" x 0.280" (6 STD)	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 60.00-55.00	Pipe	Pipe 6.625" x 0.280" (6 STD)	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 55.00-50.00	Pipe	Pipe 6.625" x 0.280" (6 STD)	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T11 50.00-45.00	Pipe	Pipe 6.625" x 0.280" (6 STD)	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T12 45.00-40.00	Pipe	Pipe 6.625" x 0.280" (6 STD)	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T13 40.00-20.00	Pipe	Pipe 6.625" x 0.432" (6 XS)	A500M-54 (54 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T14 20.00-0.00	Pipe	Pipe 6.625" x 0.432" (6 XS)	A500M-54 (54 ksi)	Equal Angle	1.2x2x3/16	A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>1</sub>	Weight/Multi.	Double Angle Spacing Diagonals	Double Angle Spacing Horizontals
T1 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T2 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T3 100.00-96.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T4 96.00-92.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T5 92.00-88.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T6 88.00-84.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T7 84.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T8 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T9 60.00-55.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T10 55.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T11 50.00-45.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T12 45.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T13 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000
T14 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	36.0000	36.0000

<b>RISATower</b>		Glastonbury-Main St_CT		Page	4 of 17
Vertical Solutions, Inc. 2002 Production Drive Apex, NC 27539 Phone: 919-321-1667 FAX: 919-321-1768		Project CT2002 - VSI# 090403.01		Date	14:48:31 09/03/09
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Tower Elevation	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 130.00-120.00	Equal Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)	Solid Round	A36 (36 ksi)	A36 (36 ksi)
T3 100.00-96.00	Equal Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)	Solid Round	A36 (36 ksi)	A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 130.00-120.00	None	Flat Bar	A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)	
T2 120.00-100.00	None	Flat Bar	A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)	

### Tower Section Geometry (cont'd)

Tower Elevation	f <sub>1</sub>	f <sub>2</sub>	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>1</sub>	Weight/Multi.	Double Angle Spacing Diagonals	Double Angle Spacing Horizontals
T1 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T2 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T3 100.00-96.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T4 96.00-92.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T5 92.00-88.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T6 88.00-84.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T7 84.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T8 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T9 60.00-55.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T10 55.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T11 50.00-45.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T12 45.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T13 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000
T14 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	1	36.0000	36.0000

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### Tower Section Geometry (cont'd)

Tower Elevation ft	Calc Single Angles	Calc K Solid Rounds	Legs				K-Factors							
			Brace Diags	X Diags	Brace Diags	K Diags	Single Diags	Brace Diags	Sec. Horz.	Inner Brace				
T1	No	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T2	No	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T3	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T4	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T5	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T6	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T7	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T8	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T9	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T10	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T11	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T12	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T13	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T14	Yes	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
T15	No	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

\*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.

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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
T6 88.00-84.00	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 84.00-80.00	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 80.00-60.00	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 60.00-55.00	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14	1	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	Diagonal	Top Girt	Bottom Girt	Mid Girt	Long Horizontal		Short Horizontal	
						Bolt Size No.	in	Bolt Size No.	in
T1	Flange	0.0000	0	0.5000	0	0.6250	0	0.6250	0
T2	Flange	1.0000	1	0.5000	0	0.6250	0	0.6250	0
T3	Flange	0.7500	4	0.5000	1	0.6250	0	0.6250	0
T4	Flange	0.7500	0	0.5000	1	0.6250	0	0.6250	0
T5	Flange	0.7500	0	0.5000	1	0.6250	0	0.6250	0
T6	Flange	0.7500	0	0.5000	1	0.6250	0	0.6250	0
T7	Flange	0.7500	0	0.5000	1	0.6250	0	0.6250	0
T8	Flange	1.0000	8	0.5000	1	0.6250	0	0.6250	0
T9	Flange	1.0000	8	0.5000	1	0.6250	0	0.6250	0
T10	Flange	1.0000	0	0.5000	1	0.6250	0	0.6250	0
T11	Flange	1.0000	0	0.5000	1	0.6250	0	0.6250	0
T12	Flange	1.0000	0	0.5000	1	0.6250	0	0.6250	0
T13	Flange	1.0000	8	0.5000	1	0.6250	0	0.6250	0
T14	Flange	1.0000	8	0.5000	1	0.6250	0	0.6250	0

### 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
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	



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				Designed by	
				Michael Lassiter	

Tower Section	Tower Elevation	Face or Leg	Ice Thickness in	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	A <sub>5</sub>	In Face	Out Face	C <sub>A</sub>	C <sub>S</sub>	Height
				ft	ft	ft	ft	ft	ft	ft	ft	ft	K
T11	50.00-45.00	A	0.500	9.563	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.26	0.26
T12	45.00-40.00	B		9.667	0.525	0.000	0.000	0.000	0.000	0.000	0.000	0.16	0.16
		C		10.242	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.15	0.15
		A		9.563	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.26	0.26
T13	40.00-20.00	B		9.667	0.525	0.000	0.000	0.000	0.000	0.000	0.000	0.16	0.16
		C		10.242	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.15	0.15
		A		9.563	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.26	0.26
T14	20.00-10.00	B		38.250	2.100	0.000	0.000	0.000	0.000	0.000	0.000	1.03	1.03
		C		40.967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.59	0.59
		A		22.950	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.80	0.80
		B		23.200	1.260	0.000	0.000	0.000	0.000	0.000	0.39	0.39	
		C		24.580	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.35	0.35

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets	Placement	Height
			Horz Lateral Vert		
			ft ft ft		
(4) DB844190E-M (Spint/Nextel)	A	From Leg	3.00 0.00 0.00	No Ice 127.50	3.73 0.01
				1/2" Ice	2.87 3.18 4.10 0.04
(4) DB844190E-M (Spint/Nextel)	B	From Leg	3.00 0.00 0.00	No Ice 127.50	3.73 0.01
				1/2" Ice	2.87 3.18 4.10 0.04
(4) DB844190E-M (Spint/Nextel)	C	From Leg	3.00 0.00 0.00	No Ice 127.50	3.73 0.01
				1/2" Ice	2.87 3.18 4.10 0.04
Prind 12' T-Frame Sector Mount (1)	A	From Leg	1.50 0.00 0.00	No Ice 127.50	13.60 0.47
				1/2" Ice	18.40 18.40 0.60
Prind 12' T-Frame Sector Mount (1)	B	From Leg	1.50 0.00 0.00	No Ice 127.50	13.60 0.47
				1/2" Ice	18.40 18.40 0.60
Prind 12' T-Frame Sector Mount (1)	C	From Leg	1.50 0.00 0.00	No Ice 127.50	13.60 0.47
				1/2" Ice	18.40 18.40 0.60
Prind 15' T-Frame Sector Mount (1)	A	From Leg	1.50 0.00 0.00	No Ice 118.50	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
Prind 15' T-Frame Sector Mount (1)	B	From Leg	1.50 0.00 0.00	No Ice 118.50	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
Prind 15' T-Frame Sector Mount (1)	C	From Leg	1.50 0.00 0.00	No Ice 118.50	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
(2) Kaubren 800 10121 w Mount Pipe (AT&T)	A	From Leg	3.00 0.00 0.00	No Ice 108.00	5.80 4.71 0.07
				1/2" Ice	6.34 5.36 0.11
(2) Kaubren 800 10121 w Mount Pipe (AT&T)	B	From Leg	3.00 0.00 0.00	No Ice 108.00	5.80 4.71 0.07
				1/2" Ice	6.34 5.56 0.11
(2) Kaubren 800 10121 w Mount Pipe (AT&T)	C	From Leg	3.00 0.00 0.00	No Ice 108.00	5.80 4.71 0.07
				1/2" Ice	6.34 5.56 0.11

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				Michael Lassiter	

Description	Face or Leg	Offset Type	Offsets	Placement	Height
			Horz Lateral Vert		
			ft ft ft		
(4) 14" x 12" x 5" TMA (AT&T)	A	From Leg	2.50 0.00 0.00	No Ice 108.00	1.63 0.68 0.01
				1/2" Ice	1.81 0.81 0.02
(4) 14" x 12" x 5" TMA (AT&T)	B	From Leg	2.50 0.00 0.00	No Ice 108.00	1.63 0.68 0.01
				1/2" Ice	1.81 0.81 0.02
(4) 14" x 12" x 5" TMA (AT&T)	C	From Leg	2.50 0.00 0.00	No Ice 108.00	1.63 0.68 0.01
				1/2" Ice	1.81 0.81 0.02
Prind 15' T-Frame Sector Mount (1) (AT&T)	A	From Leg	1.50 0.00 0.00	No Ice 108.00	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
Prind 15' T-Frame Sector Mount (1) (AT&T)	B	From Leg	1.50 0.00 0.00	No Ice 108.00	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
Prind 15' T-Frame Sector Mount (1) (AT&T)	C	From Leg	1.50 0.00 0.00	No Ice 108.00	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	A	From Leg	3.00 0.00 0.00	No Ice 93.00	5.87 2.75 0.02
				1/2" Ice	6.32 3.23 0.05
(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	B	From Leg	3.00 0.00 0.00	No Ice 93.00	5.87 2.75 0.02
				1/2" Ice	6.32 3.23 0.05
(2) RR65-19-02DP5 w/Mount Pipe (T-Mobile)	C	From Leg	3.00 0.00 0.00	No Ice 93.00	5.87 2.75 0.02
				1/2" Ice	6.32 3.23 0.05
Prind 15' T-Frame Sector Mount (1) (T-Mobile)	A	From Leg	1.50 0.00 0.00	No Ice 93.00	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
Prind 15' T-Frame Sector Mount (1) (T-Mobile)	B	From Leg	1.50 0.00 0.00	No Ice 93.00	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
Prind 15' T-Frame Sector Mount (1) (T-Mobile)	C	From Leg	1.50 0.00 0.00	No Ice 93.00	15.00 0.50
				1/2" Ice	20.60 20.60 0.65
APX16D WV-16D WV-S-E-A CU w/MP (T-Mobile)	A	From Leg	3.00 0.00 0.00	No Ice 93.00	7.13 3.49 0.07
				1/2" Ice	7.62 4.14 0.12
APX16D WV-16D WV-S-E-A CU w/MP (T-Mobile)	B	From Leg	3.00 0.00 0.00	No Ice 93.00	7.13 3.49 0.07
				1/2" Ice	7.62 4.14 0.12
APX16D WV-16D WV-S-E-A CU w/MP (T-Mobile)	C	From Leg	3.00 0.00 0.00	No Ice 93.00	7.13 3.49 0.07
				1/2" Ice	7.62 4.14 0.12
OneBase PCS Twin Dual Mount TMA (T-Mobile)	A	From Leg	2.50 0.00 0.00	No Ice 93.00	0.66 0.37 0.01
				1/2" Ice	0.78 0.46 0.02
OneBase PCS Twin Dual Mount TMA (T-Mobile)	B	From Leg	2.50 0.00 0.00	No Ice 93.00	0.66 0.37 0.01
				1/2" Ice	0.78 0.46 0.02
OneBase PCS Twin Dual Mount TMA (T-Mobile)	C	From Leg	2.50 0.00 0.00	No Ice 93.00	0.66 0.37 0.01
				1/2" Ice	0.78 0.46 0.02
GPS_RESERVED	C	None	0.00	No Ice 55.50	0.30 0.30 0.00
				1/2" Ice	0.37 0.37 0.00

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				Michael Lassiter	

Description	Face or Leg	Offset Type	Offsets: Horiz Lateral	Adjustment	Placement	C <sub>1</sub> A <sub>1</sub> Front	C <sub>1</sub> A <sub>1</sub> Side	Height	Criteria
			1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup>	ft	ft	ft	ft	K	
GPS_RESERVED	B	None		0.0000	50.50	No loc	0.30	0.00	Bolt Tension
						1/2" loc	0.37	0.00	
GPS_RESERVED	C	None		0.0000	50.50	No loc	0.30	0.00	Bolt Tension
						1/2" loc	0.37	0.00	
(4) ALP 9212-N w/Mount	A	From Leg	3.00	0.0000	118.50	No loc	6.42	0.04	Bolt Tension
			0.00			1/2" loc	7.11	0.10	
(Sprand/Nextel)			0.00			No loc	6.42	0.04	
(4) ALP 9212-N w/Mount	B	From Leg	3.00	0.0000	118.50	No loc	6.42	0.04	
			0.00			1/2" loc	7.11	0.10	
(Sprand/Nextel)			0.00			No loc	6.42	0.04	
(4) ALP 9212-N w/Mount	C	From Leg	3.00	0.0000	118.50	No loc	6.42	0.04	
			0.00			1/2" loc	7.11	0.10	
(Sprand/Nextel)			0.00			No loc	6.42	0.04	
APXV18-206517S-C-A20	A	From Leg	0.50	0.0000	100.00	No loc	5.17	0.04	
			0.00			1/2" loc	5.62	0.08	
(Sprand/Nextel)			0.00			No loc	5.17	0.04	
APXV18-206517S-C-A20	B	From Leg	0.50	0.0000	100.00	No loc	5.17	0.04	
			0.00			1/2" loc	5.62	0.08	
(Sprand/Nextel)			0.00			No loc	5.17	0.04	
APXV18-206517S-C-A20	C	From Leg	0.50	0.0000	100.00	No loc	5.17	0.04	
			0.00			1/2" loc	5.62	0.08	
(Sprand/Nextel)			0.00			No loc	5.17	0.04	

### Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt	Allowable Load	Ratio	Criteria
	ft			in		K	K		
T2	120	Leg	A325N	1.0000	1	7.82	34.54	1.333	Bolt Tension
T3	100	Leg	A325N	0.7500	4	14.68	19.44	0.755	Bolt Tension
		Diagonal	A325N	0.5000	1	3.18	4.12	0.772	Bolt Shear
		Top Girt	A325N	0.5000	1	1.43	4.12	0.347	Bolt Shear
T4	96	Diagonal	A325N	0.5000	1	3.44	4.12	0.834	Bolt Shear
T5	92	Diagonal	A325N	0.5000	1	3.90	4.12	0.946	Bolt Shear
T6	88	Diagonal	A325N	0.5000	1	3.69	4.12	0.885	Bolt Shear
T7	84	Diagonal	A325N	0.5000	1	3.47	4.12	0.841	Bolt Shear
T8	80	Leg	A325N	1.0000	8	12.98	34.56	0.376	Bolt Tension
		Diagonal	A325N	0.5000	1	3.69	4.12	0.896	Bolt Shear
T9	60	Leg	A325N	1.0000	8	17.38	34.56	0.500	Bolt Tension
		Diagonal	A325N	0.5000	1	3.31	4.12	0.803	Bolt Shear
T10	55	Diagonal	A325N	0.5000	1	3.22	4.12	0.781	Bolt Shear
T11	50	Diagonal	A325N	0.5000	1	3.15	4.12	0.765	Bolt Shear

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				Designed by	
				Michael Lassiter	

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt	Allowable Load	Ratio	Criteria
	ft			in		K	K		
T12	45	Diagonal	A325N	0.5000	1	3.08	4.12	0.747	Bolt Shear
T13	40	Leg	A325N	1.0000	8	20.81	34.56	0.602	Bolt Tension
		Diagonal	A325N	0.5000	1	3.46	4.12	0.839	Bolt Shear
T14	20	Leg	A325N	1.0000	8	23.53	34.56	0.681	Bolt Tension
		Diagonal	A325X	0.5000	1	4.11	4.76	0.865	Member Bearing

### Compression Checks

### Leg Design Data (Compression)

Section No.	Elevation	Size	L	L <sub>c</sub>	K <sub>tr</sub>	F <sub>a</sub>	A	Actual P	Allow. P	Ratio
	ft		ft	ft	K <sub>tr</sub>	ksi	in <sup>2</sup>	K	K	P <sub>c</sub> /P <sub>a</sub>
T1	130-120	1 1/2" solid	10.00	2.50	80.0	17.839	1.7672	-6.16	31.52	0.196
					K=1.00					
T2	120-100	2" solid	20.00	2.86	68.6	19.653	3.1416	-56.20	61.74	0.910
					K=1.00					
T3	100-96	P4.5x0.237	4.00	4.00	31.8	28.908	3.1741	-65.42	91.75	0.713
					K=1.00					
T4	96-92	P4.5x0.237	4.00	4.00	31.8	28.908	3.1741	-76.64	91.75	0.835
					K=1.00					
T5	92-88	P4.5x0.237	4.00	4.00	31.8	28.908	3.1741	-86.28	91.75	0.940
					K=1.00					
T6	88-84	P4.5x0.237	4.00	4.00	31.8	28.908	3.1741	-96.79	91.75	1.055
					K=1.00					
T7	84-80	P4.5x0.237	4.00	4.00	31.8	28.908	3.1741	-106.07	91.75	1.156
					K=1.00					
T8	80-60	Pipe 6.625" x 0.280" (6 STD)	20.01	5.00	26.7	29.617	5.5813	-144.38	165.30	0.873
					K=1.00					
T9	60-55	Pipe 6.625" x 0.280" (6 STD)	5.00	5.00	26.7	29.617	5.5813	-152.89	165.30	0.925
					K=1.00					
T10	55-50	Pipe 6.625" x 0.280" (6 STD)	5.00	5.00	26.7	29.617	5.5813	-161.06	165.30	0.974
					K=1.00					
T11	50-45	Pipe 6.625" x 0.280" (6 STD)	5.00	5.00	26.7	29.617	5.5813	-168.80	165.30	1.021
					K=1.00					
T12	45-40	Pipe 6.625" x 0.280" (6 STD)	5.00	5.00	26.7	29.617	5.5813	-176.31	165.30	1.067
					K=1.00					
T13	40-20	Pipe 6.625" x 0.432" (6 XS)	20.01	6.67	36.5	28.214	8.4049	-201.84	237.14	0.851
					K=1.00					
T14	20-0	Pipe 6.625" x 0.432" (6 XS)	20.01	6.67	36.5	28.214	8.4049	-225.34	237.14	0.950
					K=1.00					

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### Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	K/Ur	F <sub>e</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio
								P	K	P	K	
T1	130-120	1/2	3.54	1.68	1451	7.093	0.1963	-0.94	1.39	0.679	✓	
T2	120-100	3/4" solid	3.80	1.77	1058	12.250	0.4418	-4.13	5.40	0.765	✓	
T3	100-96	L1 1/2x1 1/2x3/16	4.77	2.03	922	13.945	0.5273	-3.18	7.35	0.433	✓	
T4	96-92	L1 1/2x1 1/2x3/16	4.88	2.09	94.0	13.719	0.5273	-3.44	7.23	0.475	✓	
T5	92-88	L1 1/2x1 1/2x3/16	5.00	2.16	96.2	13.458	0.5273	-3.90	7.10	0.549	✓	
T6	88-84	L1 1/2x1 1/2x3/16	5.12	2.23	98.3	13.190	0.5273	-3.69	6.96	0.531	✓	
T7	84-80	L1 1/2x1 1/2x3/16	5.25	2.30	100.5	12.913	0.5273	-3.47	6.81	0.509	✓	
T8	80-60	L1 1/2x1 1/2x3/16	6.33	2.73	113.8	11.154	0.5273	-3.69	5.88	0.628	✓	
T9	60-55	L1 1/2x1 1/2x3/16	6.81	2.98	121.8	10.028	0.5273	-3.31	5.29	0.626	✓	
T10	55-50	L1 1/2x1 1/2x3/16	6.98	3.07	125.6	9.460	0.5273	-3.22	4.99	0.646	✓	
T11	50-45	L1 1/2x1 1/2x3/16	7.16	3.17	129.6	8.896	0.5273	-3.15	4.69	0.672	✓	
T12	45-40	L1 1/2x1 1/2x3/16	7.34	3.26	133.5	8.374	0.5273	-3.08	4.42	0.698	✓	
T13	40-20	L1 3/4x1 3/4x3/16	9.20	4.20	146.9	6.923	0.6211	-3.30	4.30	0.767	✓	
T14	20-0	L2x3x3/16	9.91	4.58	159.5	7.673	0.7150	-3.50	5.49	0.659	✓	

### Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	K/Ur	F <sub>e</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio
								P	K	P	K	
T1	130-120	L1 1/4x1 1/4x3/16	2.50	2.38	117.0	10.712	0.4336	-0.26	4.64	0.656	✓	
T2	120-100	L1 1/4x1 1/4x3/16	2.50	2.38	117.0	10.712	0.4336	-1.48	4.64	0.318	✓	

### Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	K/Ur	F <sub>e</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio
								P	K	P	K	
T1	130-120	L1 1/4x1 1/4x3/16	2.50	2.38	117.0	10.712	0.4336	-0.01	4.64	0.003	✓	

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Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	K/Ur	F <sub>e</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio
								P	K	P	K	
T3	100-96	L1 1/4x1 1/4x3/16	2.50	2.10	111.8	11.426	0.4336	-1.21	4.95	0.245	✓	

### Tension Checks

### Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	K/Ur	F <sub>e</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio
								P	K	P	K	
T1	130-120	1 1/2" solid	10.00	2.50	80.0	27.000	1.7672	4.80	47.71	0.101	✓	
T2	120-100	2" solid	20.00	2.86	68.6	27.000	3.1416	50.21	84.82	0.592	✓	
T3	100-96	P4 5x0.237	4.00	4.00	31.8	32.469	3.1741	58.71	102.84	0.571	✓	
T4	96-92	P4 5x0.237	4.00	4.00	31.8	32.400	3.1741	67.99	102.84	0.661	✓	
T5	92-88	P4 5x0.237	4.00	4.00	31.8	32.400	3.1741	76.40	102.84	0.743	✓	
T6	88-84	P4 5x0.237	4.00	4.00	31.8	32.400	3.1741	86.23	102.84	0.839	✓	
T7	84-80	P4 5x0.237	4.00	4.00	31.8	32.400	3.1741	95.10	102.84	0.925	✓	
T8	80-60	Pipe 6.625" x 0.280" (6 STD)	20.01	5.00	36.7	32.400	5.5813	130.39	180.84	0.721	✓	
T9	60-55	Pipe 6.625" x 0.280" (6 STD)	5.00	5.00	26.7	32.400	5.5813	138.24	180.84	0.764	✓	
T10	55-50	Pipe 6.625" x 0.280" (6 STD)	5.00	5.00	26.7	32.400	5.5813	145.62	180.84	0.805	✓	
T11	50-45	Pipe 6.625" x 0.280" (6 STD)	5.00	5.00	26.7	32.400	5.5813	152.59	180.84	0.844	✓	
T12	45-40	Pipe 6.625" x 0.280" (6 STD)	5.00	5.00	26.7	32.400	5.5813	159.31	180.84	0.881	✓	
T13	40-20	Pipe 6.625" x 0.437" (6 XS)	20.01	6.67	36.5	32.400	8.4049	181.71	272.32	0.667	✓	
T14	20-0	Pipe 6.625" x 0.437" (6 XS)	20.01	6.67	36.5	32.400	8.4049	199.60	272.32	0.733	✓	

### Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	K/Ur	F <sub>e</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio
								P	K	P	K	
T1	130-120	L1 1/4x1 1/4x3/16	2.50	2.38	117.0	10.712	0.4336	-1.48	4.64	0.318	✓	

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				Michael Lassiter	

Section No.	Elevation ft	L ft	L <sub>w</sub> ft	K/ir	F <sub>c</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio P/P <sub>allow</sub>
							P	K	P	K	
T1	130-120	3.54	1.68	161.2	21.600	0.1963	0.90	4.24	0.212	✓	
T2	120-100	3.80	1.77	113.4	21.600	0.4418	3.74	9.54	0.391	✓	
T3	100-96	4.77	2.05	56.3	29.000	0.3076	2.90	8.92	0.325	✓	
T4	96-92	4.88	2.09	57.9	29.000	0.3076	3.29	8.92	0.368	✓	
T5	92-88	5.00	2.16	59.7	29.000	0.3076	3.58	8.92	0.401	✓	
T6	88-84	5.12	2.23	61.5	29.000	0.3076	3.42	8.92	0.394	✓	
T7	84-80	5.25	2.30	63.4	29.000	0.3076	3.12	8.92	0.349	✓	
T8	80-60	6.33	2.73	74.8	29.000	0.3076	3.39	8.92	0.380	✓	
T9	60-55	6.81	2.98	81.2	29.000	0.3076	2.98	8.92	0.334	✓	
T10	55-50	6.98	3.07	83.7	29.000	0.3076	2.89	8.92	0.324	✓	
T11	50-45	7.16	3.17	86.2	29.000	0.3076	2.81	8.92	0.315	✓	
T12	45-40	7.34	3.26	88.8	29.000	0.3076	2.74	8.92	0.307	✓	
T13	40-20	8.75	3.99	91.7	29.000	0.3779	3.09	10.96	0.282	✓	
T14	20-0	9.91	4.58	91.3	29.000	0.4484	4.11	13.00	0.316	✓	

Horizontal Design Data (Tension)											
Section No.	Elevation ft	L ft	L <sub>w</sub> ft	K/ir	F <sub>c</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio P/P <sub>allow</sub>
							P	K	P	K	
T1	130-120	2.50	2.38	75.7	21.600	0.4336	0.29	9.37	0.031	✓	
T2	120-100	2.50	2.38	75.7	21.600	0.4336	1.87	9.37	0.200	✓	

Top Girt Design Data (Tension)											
Section No.	Elevation ft	L ft	L <sub>w</sub> ft	K/ir	F <sub>c</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio P/P <sub>allow</sub>
							P	K	P	K	
T1	130-120	2.50	2.38	75.7	21.600	0.4336	0.01	9.37	0.001	✓	
T3	100-96	2.50	2.10	74.4	29.000	0.2373	1.43	6.88	0.208	✓	

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Section No.	Elevation ft	L ft	L <sub>w</sub> ft	K/ir	F <sub>c</sub> ksi	A in <sup>2</sup>	Actual		Allow.		Ratio P/P <sub>allow</sub>
							P	K	P	K	
T1	130-120	3	-6.16	42.02	14.7	1.86	50.9	18.4	26.0	0.67	Pass
T2	120-100	31	-0.94	6.19	4.2	1.86	50.9	18.4	26.0	0.67	Pass
T3	100-96	42	-56.20	82.30	68.3	1.86	50.9	18.4	26.0	0.67	Pass
T4	96-92	50	-4.13	7.20	57.4	1.86	50.9	18.4	26.0	0.67	Pass
T5	92-88	52	-1.48	6.19	23.9	1.86	50.9	18.4	26.0	0.67	Pass
T6	88-84	108	-65.42	122.31	53.5	1.86	50.9	18.4	26.0	0.67	Pass
T7	84-80	116	-3.18	9.80	32.5	1.86	50.9	18.4	26.0	0.67	Pass
T8	80-60	109	-1.21	6.60	18.4	1.86	50.9	18.4	26.0	0.67	Pass
T9	60-55	120	-76.64	122.31	62.7	1.86	50.9	18.4	26.0	0.67	Pass
T10	55-50	122	-3.44	9.64	55.7	1.86	50.9	18.4	26.0	0.67	Pass
T11	50-45	129	-86.28	122.31	70.5	1.86	50.9	18.4	26.0	0.67	Pass
T12	45-40	131	-3.90	9.46	41.2	1.86	50.9	18.4	26.0	0.67	Pass
T13	40-20	138	-96.79	122.31	79.1	1.86	50.9	18.4	26.0	0.67	Pass
T14	20-0	140	-5.69	9.27	39.8	1.86	50.9	18.4	26.0	0.67	Pass
T15	20-0	147	-106.07	122.31	86.7	1.86	50.9	18.4	26.0	0.67	Pass
T16	20-0	156	-144.28	220.35	65.3	1.86	50.9	18.4	26.0	0.67	Pass
T17	20-0	170	-3.69	7.84	47.1	1.86	50.9	18.4	26.0	0.67	Pass
T18	20-0	183	-152.89	220.35	69.4	1.86	50.9	18.4	26.0	0.67	Pass
T19	20-0	185	-3.31	7.05	47.0	1.86	50.9	18.4	26.0	0.67	Pass
T20	20-0	192	-161.06	220.35	74.1	1.86	50.9	18.4	26.0	0.67	Pass
T21	20-0	194	-5.22	6.65	48.5	1.86	50.9	18.4	26.0	0.67	Pass
T22	20-0	201	-168.80	220.35	76.6	1.86	50.9	18.4	26.0	0.67	Pass
T23	20-0	203	-3.15	6.25	50.4	1.86	50.9	18.4	26.0	0.67	Pass
T24	20-0	210	-176.31	220.35	80.0	1.86	50.9	18.4	26.0	0.67	Pass
T25	20-0	212	-5.08	5.89	52.3	1.86	50.9	18.4	26.0	0.67	Pass
T26	20-0	219	-201.84	316.10	63.9	1.86	50.9	18.4	26.0	0.67	Pass
T27	20-0	221	-3.30	5.73	57.6	1.86	50.9	18.4	26.0	0.67	Pass
T28	20-0	240	-225.34	316.10	71.3	1.86	50.9	18.4	26.0	0.67	Pass
T29	20-0	244	-3.50	7.31	47.9	1.86	50.9	18.4	26.0	0.67	Pass

Summary  
Diagonal  
(15)  
70.9



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		Client	Tower Co	Designed by	Michael Lassiter

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SFP <sub>ave</sub> K	% Capacity	Pass Fail
						Horizontal	23.9	Pass
						(T2)		
						Top Girt	26.0	Pass
						(T3)		
						Both Checks	70.9	Pass
						<b>RATING =</b>	<b>86.7</b>	<b>Pass</b>