

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE: :
: :
A PETITION OF CELLCO PARTNERSHIP : SUB-PETITION NO. 1133
D/B/A VERIZON WIRELESS FOR A : 169 CROSS STREET
DECLARATORY RULING FOR : MIDDLETOWN, CT
APPROVAL OF AN ELIGIBLE FACILITY :
REQUEST FOR MODIFICATIONS TO AN :
EXISTING TELECOMMUNICATIONS :
TOWER AT 169 CROSS STREET, :
MIDDLETOWN, CONNECTICUT : MARCH 2, 2018

SUB-PETITION FOR DECLARATORY RULING:
ELIGIBLE FACILITIES REQUEST FOR MODIFICATIONS
THAT WILL NOT SUBSTANTIALLY CHANGE THE
PHYSICAL DIMENSIONS OF AN EXISTING TOWER

I. Introduction

Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, codified at 47 U.S.C. § 1455(a) (“Section 6409(a)”) and the October 21, 2014 Report and Order (FCC-14-153) issued by the Federal Communications Commission (“FCC”) (the “FCC Order”), Cellco Partnership d/b/a Verizon Wireless (“Cellco”) hereby petitions the Connecticut Siting Council (the “Council”) for a declaratory ruling (“Sub-Petition”) that the proposed modifications to an existing City of Middletown (“City”) tower at 169 Cross Street in Middletown, Connecticut constitutes an Eligible Facilities Request (“EFR”) under the FCC Order. Cellco has designated this site as its “Wesleyan University Facility”.

II. Factual Background

The City currently owns and maintains a 180-foot lattice tower on a .81-acre parcel at 169 Cross Street in Middletown, Connecticut (the “Property”). The Property is home to the Middletown Police Dispatch facility and Middletown Fire Department Engine Company No. 2.

The Property is owned by the City. See Attachment 1 – Site Vicinity Map and Site Schematic (Aerial Photograph). The tower currently supports municipal and emergency service antennas at various levels.

III. Cellco’s Proposed Wesleyan University Facility

Cellco intends to install a total of twelve (12) antennas and nine (9) remote radio heads (“RRHs”) at a height of 130 feet above ground level (“AGL”) on the tower. Cellco will also install a 12’ x 17’ equipment shelter and a 25 kW natural gas-fueled back-up generator within a fenced enclosure in the northeast corner of the Property, adjacent to the Wesleyan University Athletic Center field house. Power, telephone and natural gas service to Cellco’s equipment shelter will extend from the existing service along Cross Street. Antenna cables will extend underground from the shelter to the tower. Project Plans for the proposed Wesleyan University Facility are included in Attachment 2. Specifications for Cellco’s antennas, RRHs and back-up generator are included in Attachment 3. A Structural Analysis Report confirming that the tower, with certain modifications, can accommodate Cellco’s antennas and RRHs is included in Attachment 4.

IV. Discussion

A. The Proposed Modification Will Not Cause a Substantial Change to the Physical Dimensions of the Existing Tower or Base Station

Section 6409(a) provides, in relevant part, that “a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station.” Pursuant to the FCC Order, the proposed modification does not substantially change the physical dimensions of the tower or base station if the following criteria are satisfied.

1. *The proposed modified facility will not increase the height of the tower by more than ten (10) percent or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty (20) feet, whichever is greater.* Cellco proposes to install its antennas and RRHs at the 130-foot level on the existing 180-foot tower.

2. *The proposed facility will not protrude from the edge of the structure more than six (6) feet.* The proposed antennas and RRHs will not protrude more than six (6) feet from the edge of the antenna mounting structure.

3. *The proposed facility does not involve installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets.* Cellco intends to install a single 12' x 17' equipment shelter to house its radio equipment.

4. *The proposed facility does not entail any excavation or deployment outside the current site of the base station.* All of Cellco's site improvements will remain within the limits of the Property.

5. *The proposed facility does not defeat the existing concealment elements of the base station.* The existing tower does not maintain any concealment elements.

6. *The proposed facility complies with conditions associated with the prior approval of construction or modification of the base station.* According to municipal records, it does not appear as though this municipal tower received or was required to receive local land use approval. The Middletown Zoning Regulations does, however, encourage the sharing of existing towers.

B. FCC Compliance

Operation of Cellco's Wesleyan University Facility will not increase the radio frequency

("RF") emissions at the Property to a level at or above the FCC safety standard. A General Power Density table for the proposed Cellco facility is included in Attachment 5.

C. Notice to the City, Property Owner and Abutting Landowners

On March 2, 2018, a copy of this Sub-Petition was sent to Middletown's Mayor Daniel T. Drew; and Joseph Samolis, Middletown's Director of Planning, Conservation and Development. Copies of the letters sent to Mayor Drew and Mr. Samolis are included in Attachment 6. The City is the owner of the Property and tower. A copy of this Sub-Petition was also sent to each owner of land that abuts the Property. A sample abutter's cover letter and the list of those abutting landowners who were sent notice and a copy of the Sub-Petition are included in Attachment 7.

V. Conclusion

Based on the information provided above, Cellco respectfully submits that the proposed modification of the existing base station at the Property constitutes an "eligible facilities request" under Section 6409(a) and the FCC Order.

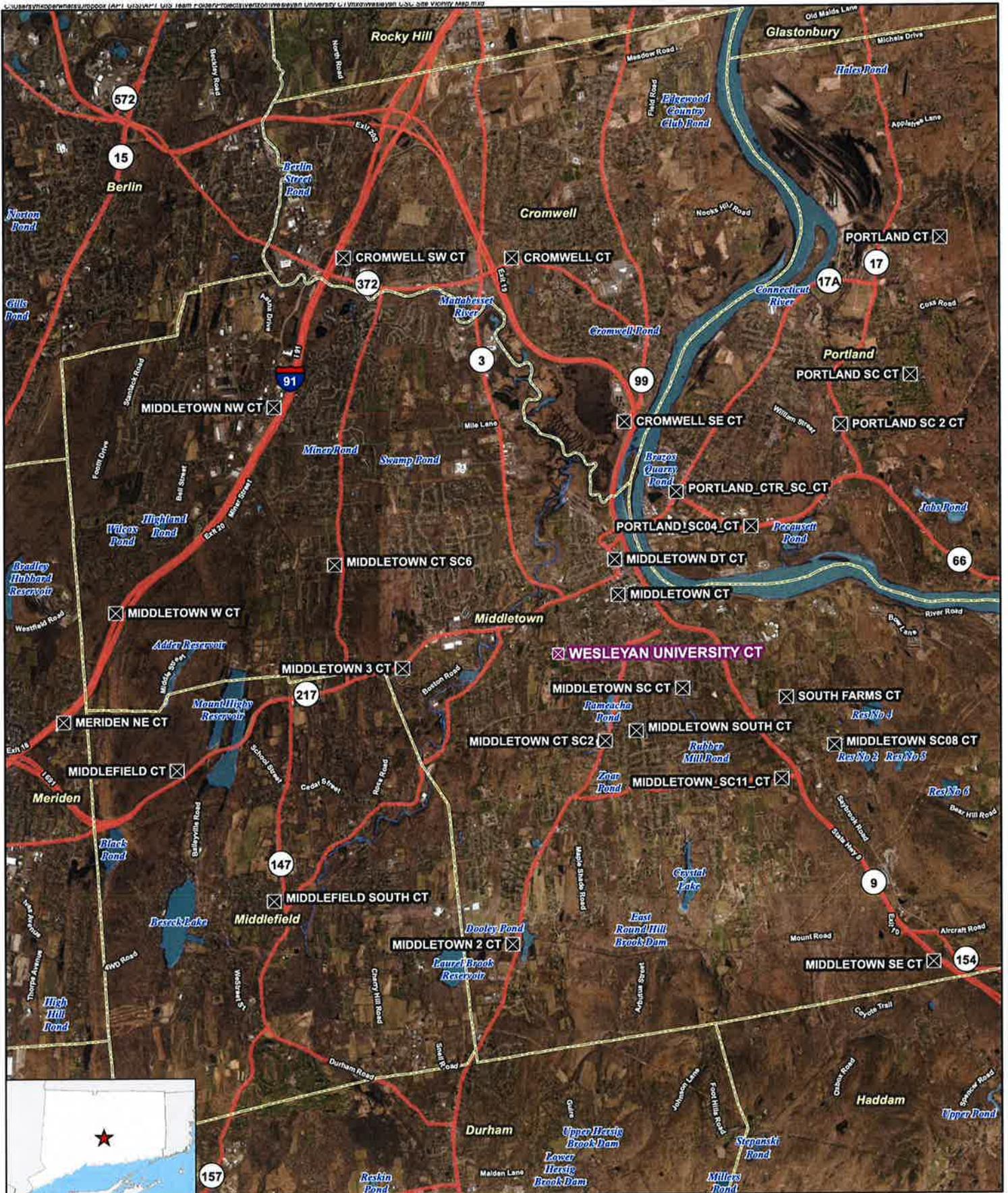
Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON
WIRELESS

By 

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1

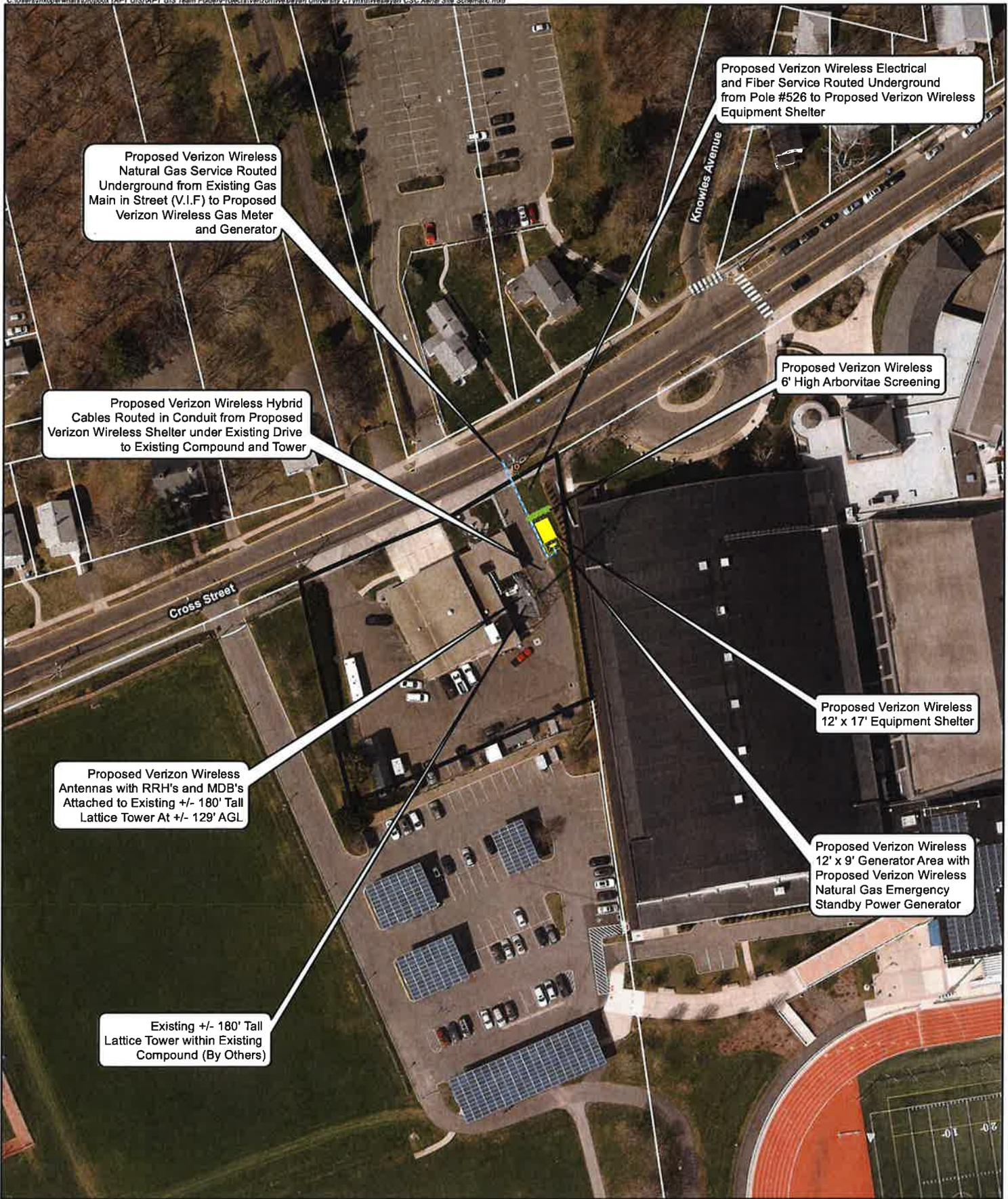


- Legend**
- ✕ Proposed Verizon Wireless Facility
 - ⊠ Surrounding Verizon Wireless Facilities
 - ▭ Municipal Boundary

Site Vicinity Map

Proposed Wireless Telecommunications Facility
 Wesleyan University CT
 169 Cross Street
 Middletown, Connecticut





Legend

- Proposed Verizon Wireless Equipment
- Proposed Verizon Wireless Generator Area
- Proposed Verizon Wireless Telco/Electrical Service
- Proposed Verizon Wireless Natural Gas Line
- Proposed Verizon Wireless Arborvitae Screening
- Existing Utility Pole #526 (By Others)
- Subject Property
- Approximate Parcel Boundary (CTDEEP GIS Parcels Last Updated 2010)

Map Notes:
 Base Map Source: CT ECO 2016 Aerial Imagery
 Map Scale: 1 inch = 100 feet
 Map Date: March 2018



Site Schematic

Proposed Wireless
 Telecommunications Facility
 Wesleyan University CT
 169 Cross Street
 Middletown, Connecticut



ATTACHMENT 2



WIRELESS COMMUNICATIONS FACILITY

WESLEYAN UNIVERSITY CT 169 CROSS STREET MIDDLETOWN, CT 06457

DRAWING INDEX

T-1 TITLE SHEET

C-1 ABUTTERS MAP

C-2 PARTIAL SITE PLAN, ENLARGED EQUIPMENT PLAN & NORTH ELEVATION

C-3 ANTENNA & APPURTENANCE DETAILS

SITE DIRECTIONS

**START: 20 ALEXANDER DRIVE
WALLINGFORD, CONNECTICUT 06492**

**END: 169 CROSS STREET
MIDDLETOWN, CT 06457**

- | | |
|--|--------|
| 1. HEAD NORTH ON ALEXANDER DRIVE | 0.2 MI |
| 2. TURN RIGHT ONTO BARNES INDUSTRIAL ROAD | 0.1 MI |
| 3. TURN RIGHT ONTO CT-68 E | 1.8 MI |
| 4. SHARP LEFT TO MERGE ONTO I-91 N | 4.0 MI |
| 5. TAKE EXIT 18 TO MERGE ONTO CT-66 E | 0.2 MI |
| 6. MERGE ONTO CT-66 E | 5.9 MI |
| 7. TURN RIGHT ONTO BUTTERNUT STREET | 0.4 MI |
| 8. SLIGHT LEFT ONTO CROSS STREET | 0.2 MI |
| 9. TURN LEFT ONTO CROSS STREET, DESTINATION ON RIGHT | 0.1 MI |

SITE INFORMATION

VZ SITE NAME: WESLEYAN UNIVERSITY CT
VZ PROJECT CODE: 20171645711
VZ LOCATION CODE: 470718
LOCATION: 169 CROSS STREET
MIDDLETOWN, CT 06457

PROJECT SCOPE: PROPOSED INSTALLATION CONSISTS OF TWELVE (12) PANEL ANTENNAS, NINE (9) RRH's & TWO (2) MDB's MOUNTED TO THREE (3) PROPOSED SECTOR MOUNT FRAMES ATTACHED TO AN EXISTING 180'± TALL SELF SUPPORTING LATTICE TOWER TOGETHER WITH A 12'-0"x17'-0" (204± SF) CUSTOM EQUIPMENT FACILITY AND A 12'-0"±x9'-0"± (108± SF) NATURAL GAS EMERGENCY STANDBY POWER GENERATOR AREA LOCATED AT GRADE

ASSESSORS TAX I.D.: 25-0100

LATITUDE: 41° 33' 04.9381" N (41.5513717° N)

LONGITUDE: 72° 39' 43.6871" W (72.6621353° W)

GROUND ELEVATION: 157.2'± AMSL

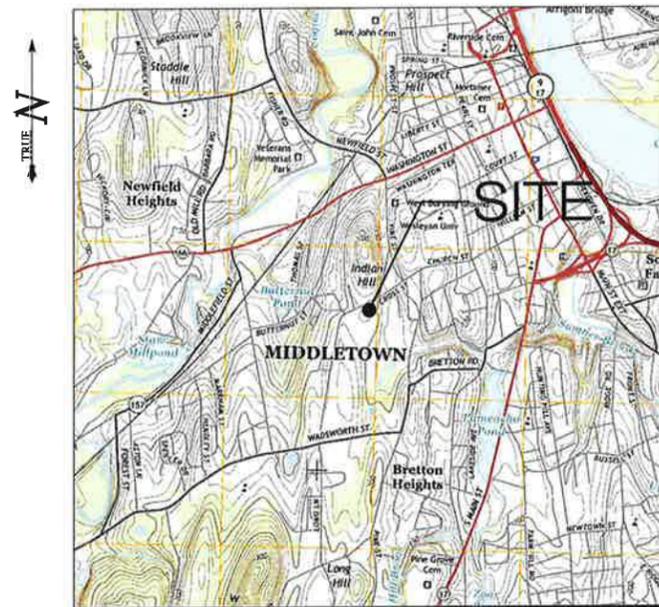
PROPERTY OWNER: CITY OF MIDDLETOWN
PO BOX 1300
MIDDLETOWN, CT 06457

APPLICANT: CELLCO PARTNERSHIP
d/b/a VERIZON WIRELESS
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

LEGAL/REGULATORY COUNSEL: ROBINSON & COLE, LLP
KENNETH C. BALDWIN, ESQ.
280 TRUMBULL STREET
HARTFORD, CT 06103

ENGINEER CONTACT: ALL-POINTS TECHNOLOGY CORP.
3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
(860) 663-1697

COORDINATES & GROUND ELEVATION INDICATED HEREIN WERE ESTABLISHED FROM AN FAA 2-C SURVEY CERTIFICATION, AS PREPARED BY MARTIN SURVEYING ASSOCIATES, LLC., DATED JULY 25, 2017.



LOCATION MAP
SCALE: 1" = 2000'-0"

Cellco Partnership d/b/a



20 ALEXANDER DRIVE
WALLINGFORD, CT 06492



3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTS TECH.COM

CSC DRAWINGS

NO	DATE	REVISION
0	03/01/18	FOR REVIEW: JRM
1	03/01/18	FOR FILING: JRM
2		
3		
4		
5		
6		

DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

OWNER: CITY OF MIDDLETOWN
ADDRESS: PO BOX 1300
MIDDLETOWN, CT 06457

WESLEYAN UNIVERSITY CT

SITE 169 CROSS STREET
ADDRESS: MIDDLETOWN, CT 06457

APT FILING NUMBER: CT141NB9290

DRAWN BY: THK
DATE: 03/01/18 CHECKED BY: JRM

SHEET TITLE:

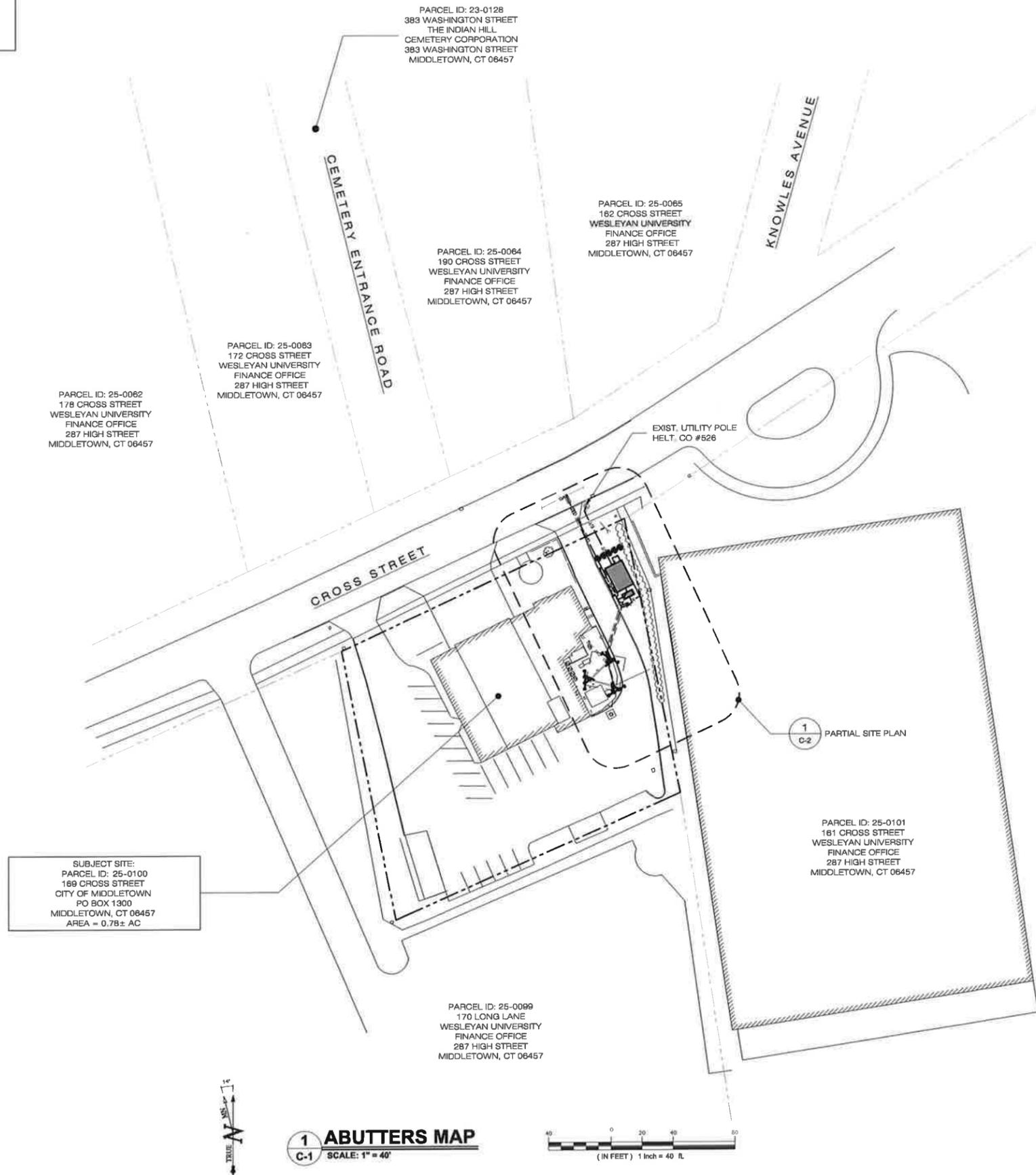
TITLE SHEET

SHEET NUMBER:

T-1

ABUTTERS MAP REFERENCE:

1. "PROPERTY & UTILITY LOCATION SURVEY OVER PORTION OF PROPERTY LOCATED AT 169 CROSS STREET, MIDDLETOWN, CONNECTICUT," PREPARED BY MARTIN SURVEYING ASSOCIATES, LLC, 201 CHIRSTIAN LANE, BERLIN, CT 06037; SACLE: 1"=20'; DATED: FEBRUARY 16, 2018.
2. "MIDDLETOWN TAX ASSESSOR GIS APPLICATION," CITY OF MIDDLETOWN TAX ASSESSOR, 245 DEKOVEN DRIVE, MIDDLETOWN, CT 06457; PARCEL ID: 25-0100.



Cellco Partnership d/b/a



20 ALEXANDER DRIVE
WALLINGFORD, CT 06492



3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

CSC DRAWINGS		
NO	DATE	REVISION
0	03/01/18	FOR REVIEW: JRM
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PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE
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OWNER: CITY OF MIDDLETOWN
ADDRESS: PO BOX 1300
MIDDLETOWN, CT 06457

WESLEYAN UNIVERSITY CT

SITE 169 CROSS STREET
ADDRESS: MIDDLETOWN, CT 06457

APT FILING NUMBER: CT141NB9230

DATE: 03/01/18
DRAWN BY: THK
CHECKED BY: JRM

SHEET TITLE:

ABUTTERS MAP

SHEET NUMBER:

C-1

CSC DRAWINGS

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1	03/01/18	FOR FILING: JRM
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NOTES:

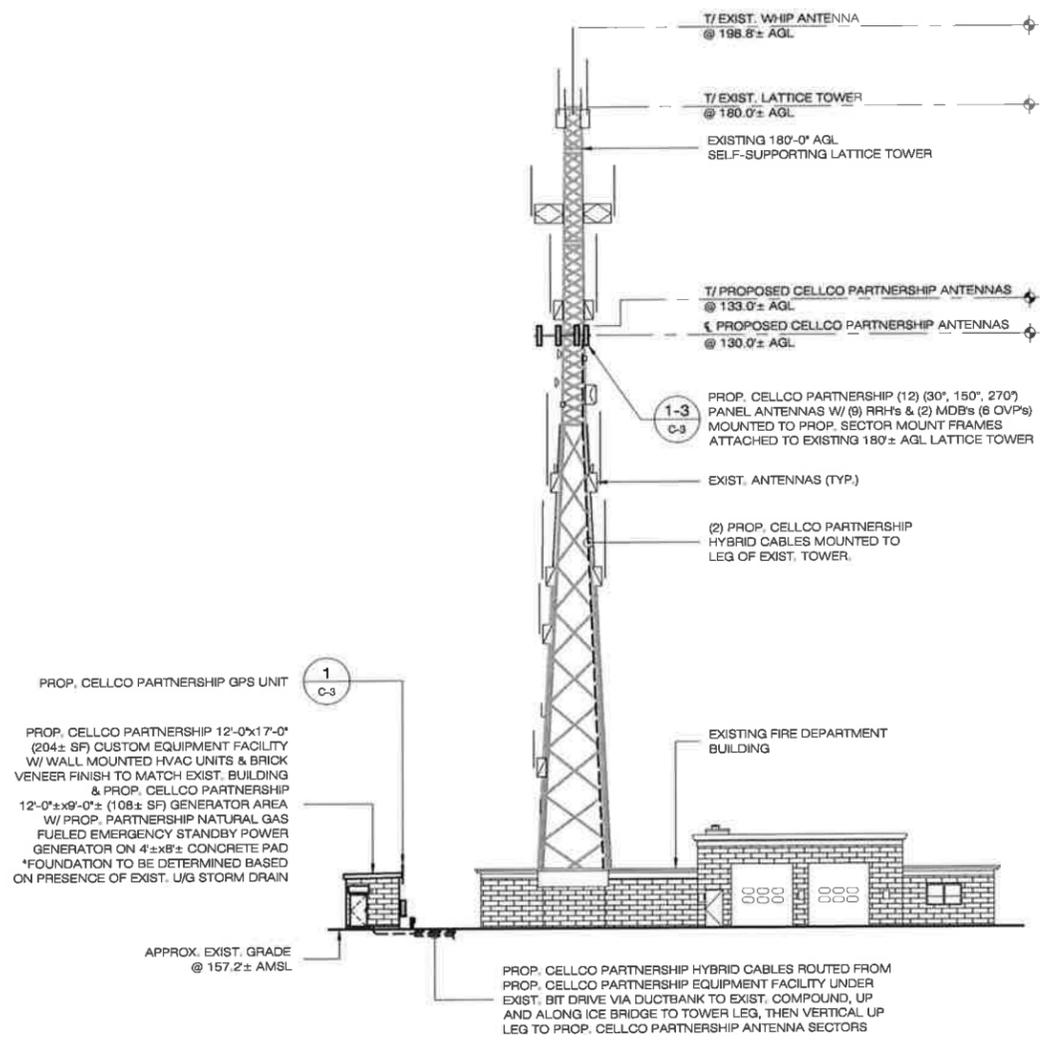
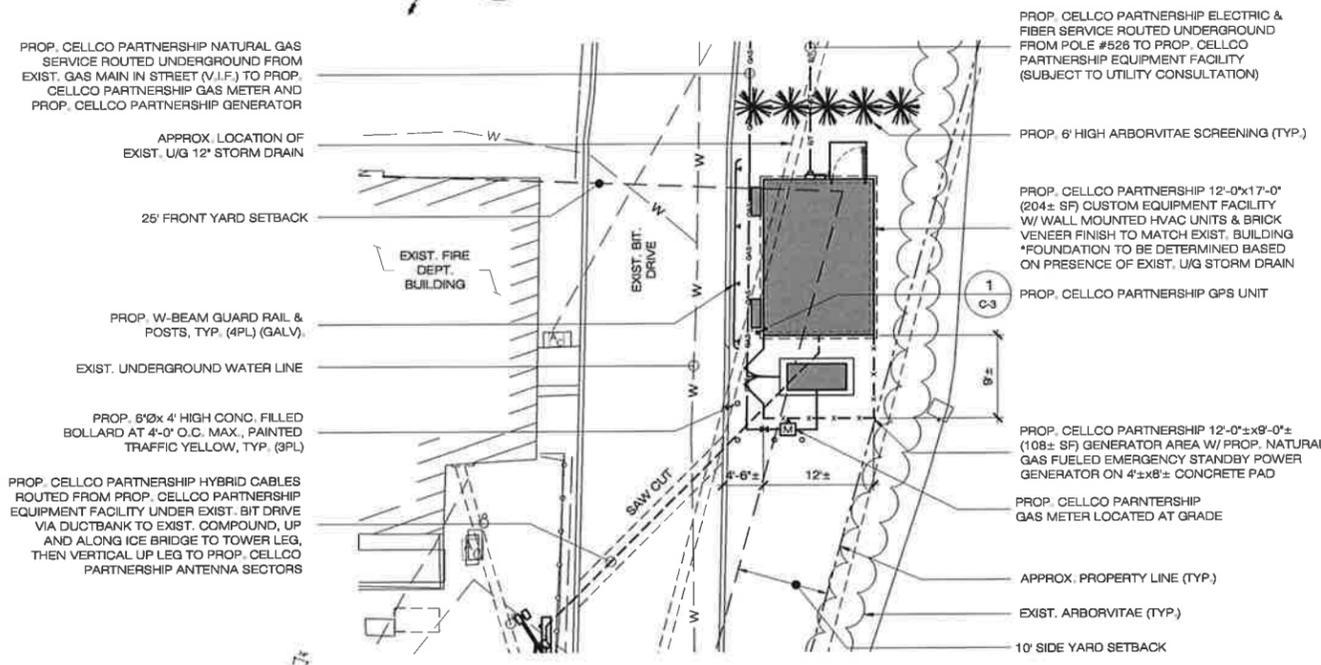
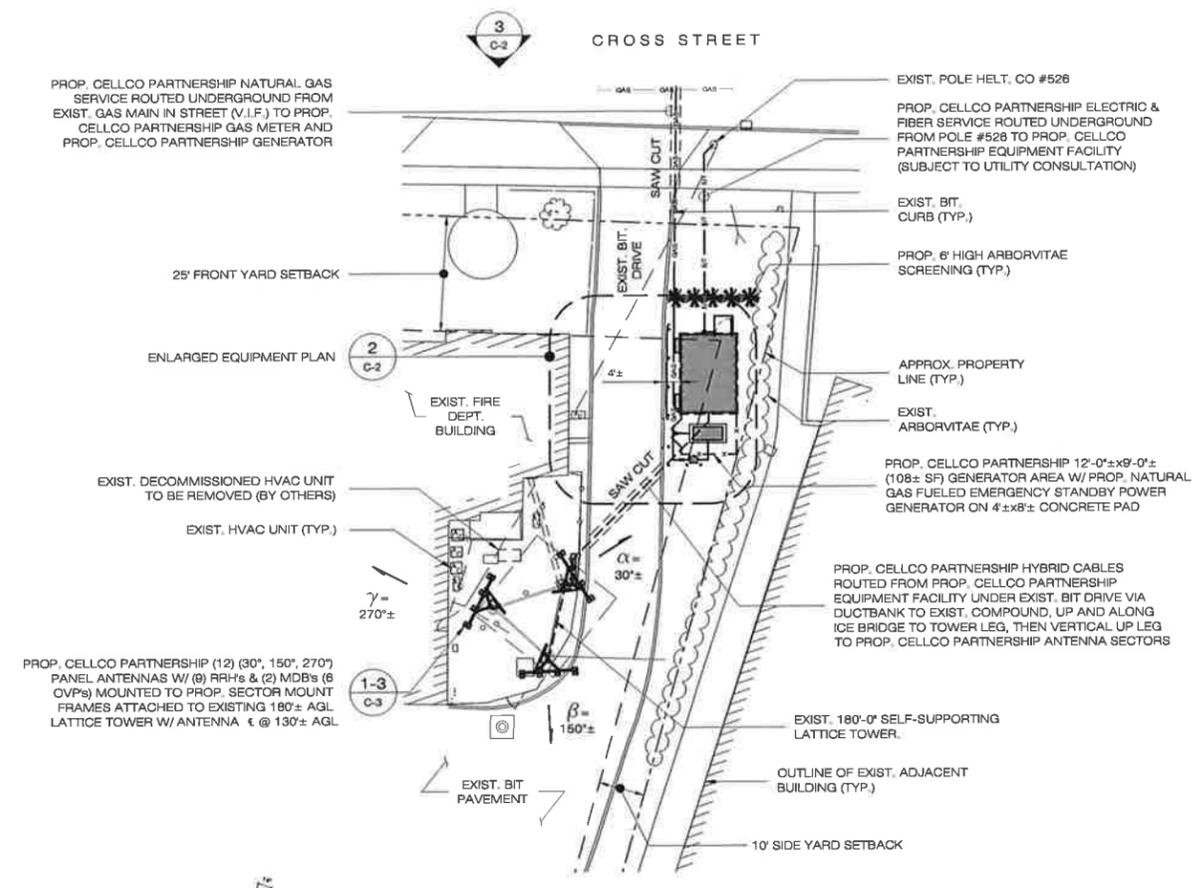
- THE PROPOSED CELCO PARTNERSHIP INSTALLATION CONSISTS OF TWELVE (12) PROPOSED PANEL ANTENNAS, NINE (9) REMOTE RADIO HEADS (RRHs) AND TWO (2) MDBs (6 OVPs) MOUNTED TO THREE (3) NEW 13' SECTOR MOUNT FRAMES ATTACHED TO EXISTING 180' SELF-SUPPORTING LATTICE TOWER. A PROPOSED CELCO PARTNERSHIP CUSTOM EQUIPMENT FACILITY LOCATED AT GRADE AND ONE (1) PROPOSED CELCO PARTNERSHIP NATURAL GAS FUELED EMERGENCY STANDBY POWER GENERATOR MOUNTED ON CONCRETE PAD LOCATED AT GRADE WITHIN NEW GENERATOR AREA.
- POWER, TELCO AND GROUNDING SHALL BE ROUTED FROM EXISTING DEMARCS WITHIN OR ADJACENT TO THE SUBJECT BUILDING. FINAL UTILITY DEMARC LOCATIONS AND ROUTING TO BE DETERMINED DURING CONSTRUCTION DOCUMENT PHASE OF THE PROJECT AND WILL BE COORDINATED WITH BUILDING OWNER AND LOCAL UTILITY COMPANY REQUIREMENTS. CONDUITS TO BE PAINTED TO MATCH EXIST. BUILDING (WHERE APPLICABLE)

STRUCTURAL ANALYSIS NOTE:

REFER TO STRUCTURAL ANALYSIS & REINFORCEMENT DESIGN PREPARED BY ALL-POINTS TECHNOLOGY CORP., P.C. DATED AUGUST 17, 2017 AVAILABLE UNDER SEPARATE COVER.

ABBREVIATION LIST:

AGL = ABOVE GROUND LEVEL;
AMSL = ABOVE MEAN SEA LEVEL;
ARL = ABOVE ROOF LEVEL;
AWS = ADVANCED WIRELESS SERVICE;
MDB = MAIN DISTRIBUTION BOX;
OVP = OVER VOLTAGE PROTECTION;
RRH = REMOTE RADIO HEAD;
TMA = TOWER MOUNTED AMPLIFIER;
BCLC = BITUMINOUS CONC. LIP CURB.



DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

OWNER: CITY OF MIDDLETOWN
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MIDDLETOWN, CT 06457

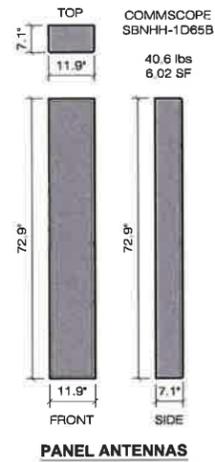
WESLEYAN UNIVERSITY CT

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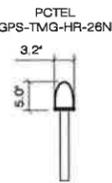
APT FILING NUMBER: CT141NB9290
DRAWN BY: THK
DATE: 03/01/18
CHECKED BY: JRM

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**PARTIAL SITE PLAN,
ENLARGED EQUIPMENT
PLAN & NORTH
ELEVATION**

SHEET NUMBER:
C-2

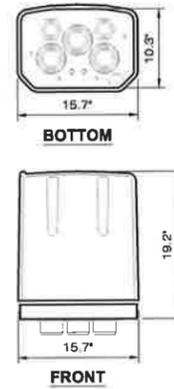


GPS-TMG-HR-26N



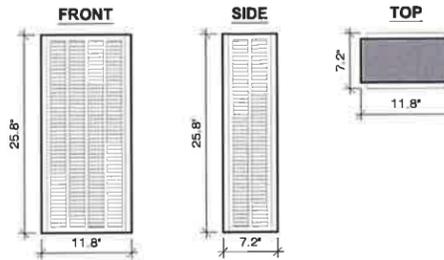
GPS UNITS

1 ANTENNA DETAILS
C-3 SCALE: 1/2" = 1'-0"

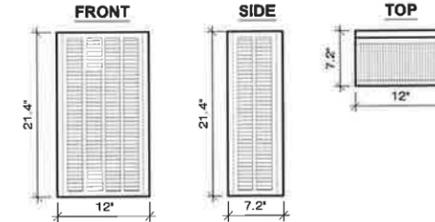


RAYCAP RxxDC-3315-PF-48
MAIN DISTRIBUTION BOX (MDB)
WxDxH = 15.73"x10.25"x19.18" (32.0 Lbs)
(OR EQUAL)

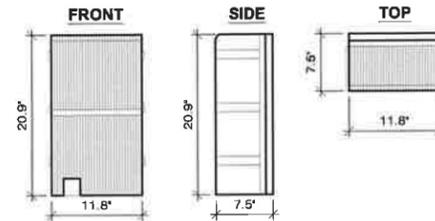
2 MAIN DISTRIBUTION BOX
C-3 SCALE: 1" = 1'-0"



ALCATEL LUCENT B66a RRH (OR EQUAL)
RRH 2x80W (4x45W) AWS
REMOTE RADIO HEAD (RRH)
WxDxH=11.8"x7.2"x25.8" (56.8 Lbs)



ALCATEL LUCENT B25 RRH (OR EQUAL)
RRH 2x60W PCS
REMOTE RADIO HEAD (RRH)
WxDxH=12.0"x7.2"x21.4" (51.0 Lbs)



ALCATEL LUCENT B13 RRH (OR EQUAL)
RRH 2x80W 700 LTE-C
REMOTE RADIO HEAD (RRH)
WxDxH=11.8"x7.5"x20.9" (55.6 Lbs)



3 RRH EQUIPMENT
C-3 SCALE: 1" = 1'-0"

Cellco Partnership d/b/a



20 ALEXANDER DRIVE
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3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
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CSC DRAWINGS

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WESLEYAN UNIVERSITY CT

SITE 169 CROSS STREET
ADDRESS: MIDDLETOWN, CT 06457

APT FILING NUMBER: CT141NB9280

DATE: 03/01/18 DRAWN BY: THK
CHECKED BY: JRM

SHEET TITLE:

ANTENNA & APPURTENANCE DETAILS

SHEET NUMBER:

C-3

ATTACHMENT 3



SBNHH-1D65B

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

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

Electrical Specifications

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

Electrical Specifications, BASTA*

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

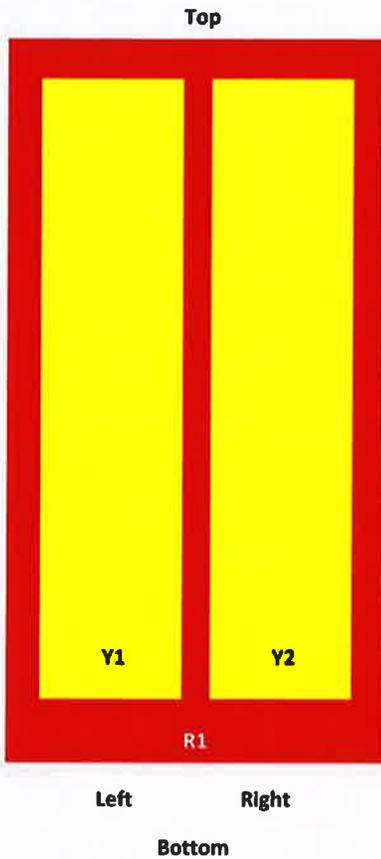
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

Array Layout

SBNHH-1D65B

SBNHH 65

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



View from the front of the antenna
 (Sizes of colored boxes are not true depictions of array sizes)

General Specifications

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

Mechanical Specifications

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

SBNHH-1D65B

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

Dimensions

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

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

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

Regulatory Compliance/Certifications

Agency

RoHS 2011/65/EU
China RoHS SJ/T 11364-2006
ISO 9001:2008

Classification

Compliant by Exemption
Above Maximum Concentration Value (MCV)
Designed, manufactured and/or distributed under this quality management system



SBNHH-1D65B

Included Products

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

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

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

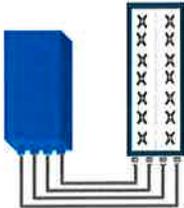


FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R
Can be switched between modes via SW w/o site visit

TECHNICAL SPECIFICATIONS

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

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ALCATEL-LUCENT B25 RRH4X30

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

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

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

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

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

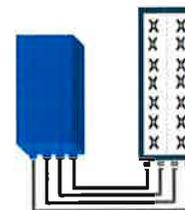


FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2)	2.0 dB typ. (<2.5 dB max)
RX Diversity scheme	2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.)	538 x 304 x 182 (21.2" x 12.0" x 7.2")
Volume (w/ solar shield) in L	30
Weight (w/ solar shield) in kg (lb)	24 (53)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	580W typical @100% RF load
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) IP65
Wind load (@150km/h or 93mph)	Frontal: <200N / Lateral : <150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 4 RF Tx & 4 RF Rx monitor ports 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

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B25 RRH4x30

ALCATEL-LUCENT DATA SHEET REV1.1 – JANUARY 2015

ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

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



The Alcatel-Lucent B66a RRH4x45 is a compact (near zero-footprint) solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

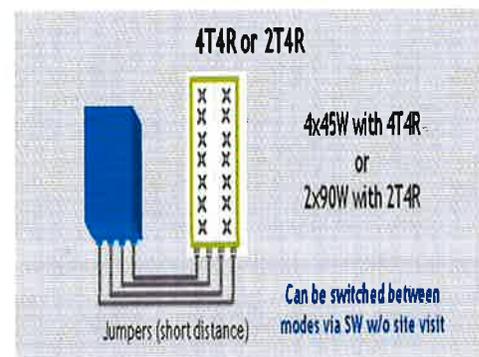
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



TECHNICAL SPECIFICATIONS

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (In 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme Receiver Sensivity (FRC A1-3)	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
Sizes (HxWxD) in mm (in.)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield)
Volume in Liters	35.5 (with solar shield) 29.7 (without solar shield)
Weight in kg (lb) (w/o mounting HW)	25.8kg (56.8lb) (with solar shield)
DC voltage range	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions	-40°C (-40°F) /+55°C (+131°F) UL50E Type 4 Enclosure
Wind load (@150km/h or 93mph)	250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

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

Product Description

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

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

Features/Benefits

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



Figure 1: HYBRIFLEX Series

Technical Specifications

Structure			
Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Mechanical Properties			
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm ² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Optical Properties			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[μm]	50/125
Primary Coating (Acrylate)		[μm]	245
Buffer Diameter, Nominal		[μm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
DC Power Cable Properties			
Size (Power)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHV-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Environment			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

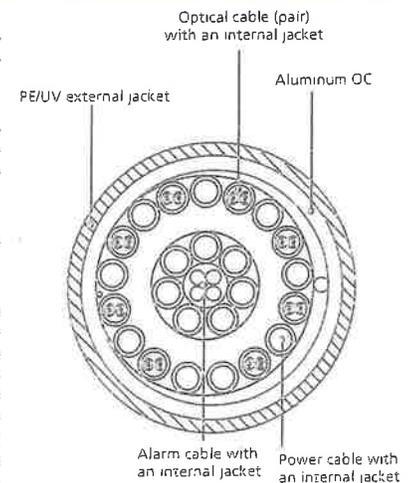


Figure 2: Construction Detail

All information contained in the present datasheet is subject to confirmation at time of ordering.

STANDBY POWER RATING
 25 kW, 31 kVA, 60 Hz

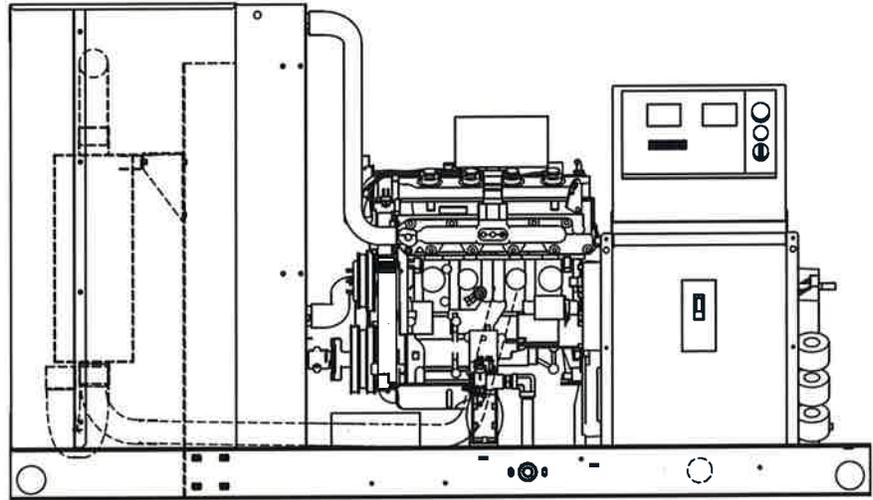
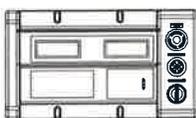
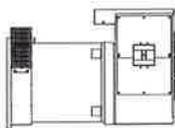
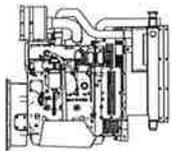
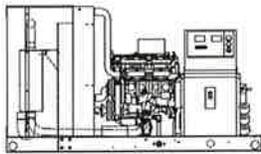


Image used for illustration purposes only



Features

Generator Set

- PROTOTYPE & TORSIONALLY TESTED
- UL2200 TESTED
- RHINOCOAT PAINT SYSTEM

Engine

- EPA COMPLIANT
- INDUSTRIAL TESTED, GENERAC APPROVED
- POWER-MATCHED OUTPUT
- INDUSTRIAL GRADE

Alternator

- TWO-THIRDS PITCH
- LAYER WOUND ROTOR & STATOR
- CLASS H MATERIALS
- DIGITAL 3-PHASE VOLTAGE CONTROL

Controls

- ENCAPSULATED BOARD W/ SEALED HARNESS
- 4-20mA VOLTAGE-TO-CURRENT SENSORS
- SURFACE-MOUNT TECHNOLOGY
- ADVANCED DIAGNOSTICS & COMMUNICATIONS

Benefits

- ▶ PROVIDES A PROVEN UNIT
- ▶ ENSURES A QUALITY PRODUCT
- ▶ IMPROVES RESISTANCE TO ELEMENTS

- ▶ ENVIRONMENTALLY FRIENDLY
- ▶ ENSURES INDUSTRIAL STANDARDS
- ▶ ENGINEERED FOR PERFORMANCE
- ▶ IMPROVES LONGEVITY AND RELIABILITY

- ▶ ELIMINATES HARMFUL 3RD HARMONIC
- ▶ IMPROVES COOLING
- ▶ HEAT TOLERANT DESIGN
- ▶ FAST AND ACCURATE RESPONSE

- ▶ EASY, AFFORDABLE REPLACEMENT
- ▶ NOISE RESISTANT 24/7 MONITORING
- ▶ PROVIDES VIBRATION RESISTANCE
- ▶ HARDENED RELIABILITY

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Generac
EPA Emissions Compliance	Stationary Emergency
EPA Emissions Engine Reference	See Emissions Data Sheet
Cylinder #	4
Type	In-line
Displacement - L (cu In)	2.4
Bore - mm (in)	86.61 (3.41)
Stroke - mm (in)	100.08 (3.94)
Compression Ratio	9.5:1
Intake Air Method	Naturally Aspirated
Number of Main Bearings	5
Connecting Rods	Forged
Cylinder Head	Aluminum
Cylinder Liners	No
Ignition	High Energy
Piston Type	Aluminum Alloy
Crankshaft Type	Cast
Lifter Type	Overhead Cam
Intake Valve Material	Steel Alloy
Exhaust Valve Material	Hardened Steel
Hardened Valve Seats	yes

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	+/- 0.25%

*Fuel pressure must remain within specified range and not drop more than 1 in. w.c from static (no-load) to full load.

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full-Flow spring-on Cartridge
Crankcase Capacity - L (qts)	3.8 (4)

Cooling System

Cooling System Type	Pressurized Closed
Water Pump Flow -gal/min	11
Fan Type	Pusher
Fan Speed (rpm)	2150
Fan Diameter mm (in)	457 (18)
Coolant Heater Wattage	1500
Coolant Heater Standard Voltage	120 VAC

Fuel System

Fuel Type	Natural Gas, Propane Vapor
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure (Standard)	5" - 14" H ₂ O*

Engine Electrical System

System Voltage	12 VDC
Battery Charging Alternator (Amps)	30
Battery Size	See Battery Index 0161970SBY
Battery Voltage	12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	390mm
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50

Standard Excitation	Brush Type
Bearings	Sealed Ball
Coupling	Flexible Disc
Load Capacity - Standby	100%
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	3
Regulation Accuracy (Steady State)	±0.25%

CODES AND STANDARDS COMPLIANCE (WHERE APPLICABLE)

NFPA 99	BS5514
NFPA 110	SAE J1349
ISO 8528-5	DIN6271
ISO 1708A.5	IEEE C62.41 TESTING
ISO 3046	NEMA ICS 1
	UL2200

Rating Definitions:
 Standby – Applicable for a varying emergency load for the duration of a utility power outage with no overload capability. (Max. load factor = 70%)

QT025A | 2.4L | 25 kW
INDUSTRIAL SPARK-IGNITED GENERATOR SET
 EPA Certified Stationary Emergency



OPERATING DATA

POWER RATINGS

		Natural Gas	Propane Vapor
Single-Phase 120/240 VAC @1.0pf	25 kW	Amps: 104	Amps: 104
Three-Phase 120/208 VAC @0.8pf	25 kW	Amps: 87	Amps: 87
Three-Phase 120/240 VAC @0.8pf	25 kW	Amps: 75	Amps: 75
Three-Phase 277/480 VAC @0.8pf	25 kW	Amps: 38	Amps: 38

STARTING CAPABILITIES (sKVA)

		sKVA vs. Voltage Dip											
		480 VAC						208/240 VAC					
Alternator	kW	10%	15%	20%	25%	30%	35%	10%	15%	20%	25%	30%	35%
Standard	25	16	25	33	41	49	57	12	19	25	31	37	43

FUEL CONSUMPTION RATES*

Natural Gas				Propane Vapor			
Percent Load		ft ³ /hr	m ³ /hr	Percent Load		ft ³ /hr	m ³ /hr
25%		140	3.9	25%		56	1.6
50%		220	6.2	50%		87	2.5
75%		300	8.5	75%		119	3.4
100%		380	10.8	100%		151	4.3

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Air Flow (inlet air combustion and radiator)	ft ³ /min(m ³ /min)	1500 (42.48)
System Coolant Capacity	gal (Liters)	2.5 (9.46)
Heat Rejection to Coolant	BTU/hr	95,000
Max. Operating Ambient Temperature	°F (°C)	122 (50)
Max. Ambient Temperature	°F (°C)	104 (40)
Maximum Radiator Backpressure	in H ₂ O	0.5

COMBUSTION AIR REQUIREMENT

	Standby
Flow at Rated Power cfm (m ³ /min)	70

ENGINE

		Standby
Rated Engine Speed	rpm	1800
Horsepower at Rated kW**	hp	40
Piston Speed	ft/min	1182
BMEP	psi	120

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m ³ /min)	220 (6.2)
Max. Backpressure (Post Turbo)	inHg (Kpa)	1.5 (5.1)
Exhaust Temp (Rated Output - post silencer)	°F (°C)	975 (524)
Exhaust Outlet Size (Open Set)	mm (in)	63.5 (2.5)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

STANDARD FEATURES AND OPTIONS

GENERATOR SET

- Genset Vibration Isolation Std
- Extended warranty Opt
- Gen-Link™ Communications Software Opt
- Steel Enclosure Opt
- Aluminum Enclosure Opt

ENGINE SYSTEM

General

- Oil Drain Extension Std
- Critical Exhaust Silencer Std
- Air cleaner Std
- Fan guard Std
- Radiator duct adapter Std

Fuel System

- Fuel lockoff solenoid Std
- Secondary Fuel Regulator Std
- Flexible fuel lines Std

Cooling System

- 120VAC Coolant Heater Std
- Closed Coolant Recovery System Std
- UV/Ozone resistant hoses Std
- Factory-Installed Radiator Std
- Radiator Drain Extension Std

Engine Electrical System

- Battery charging alternator Std
- Battery cables Std
- Battery tray Std
- Solenoid activated starter motor Std
- 10A UL float/equalize battery charger Std
- Rubber-booted engine electrical connections Std

ALTERNATOR SYSTEM

- UL2200 GENprotect™ Std
- Main Line Circuit Breaker Std

CONTROL SYSTEM

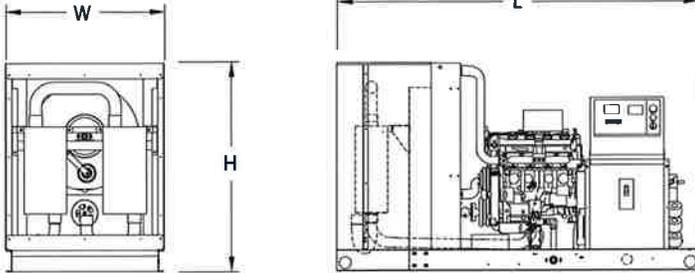
Control Panel

- Digital H Control Panel - Dual 4x20 Display Std
- Programmable Crank Limiter Std
- 21-Light Remote Annunciator Opt
- Remote Relay Panel (8 or 16) Opt
- 7-Day Programmable Exerciser Std
- Special Applications Programmable PLC Std
- RS-232 Communications Std
- RS-485 Communications Std
- All-Phase Sensing DVR Std
- Full System Status Std
- Utility Monitoring (Req. H-Transfer Switch) Std
- 2-Wire Start Compatible Std
- Power Output (kW) Std
- Power Factor Std
- Reactive Power Std
- All phase AC Voltage Std
- All phase Currents Std
- Oil Pressure Std
- Coolant Temperature Std
- Coolant Level Std
- Fuel Pressure Std
- Engine Speed Std
- Battery Voltage Std
- Frequency Std
- Isochronous Governor Control Std
- -40deg C - 70deg C Operation Std
- Waterproof Plug-In Connectors Std
- Audible Alarms and Shutdowns Std
- Not in Auto (Flashing Light) Std
- Auto/Off/Manual Switch Std
- E-Stop (Red Mushroom-Type) Std
- NFPA 110 Level I and II (Programmable) Std
- Remote Communication - RS232 Std

Alarms (Programmable Tolerances, Pre-Alarms and Shutdowns)

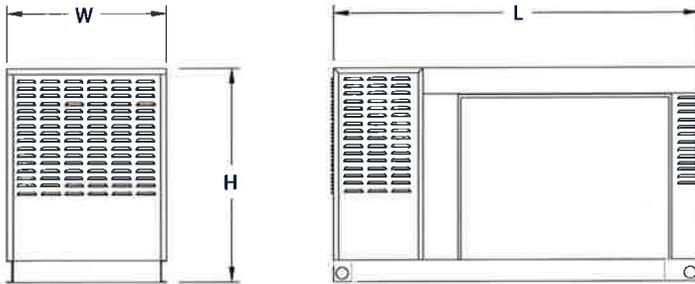
- Low Fuel Pressure Std
- Oil Pressure (Pre-programmed Low Pressure Shutdown) Std
- Coolant Temperature (Pre-programmed High Temp Shutdown) Std
- Coolant Level (Pre-programmed Low Level Shutdown) Std
- Engine Speed (Pre-programmed Overspeed Shutdown) Std
- Voltage (Pre-programmed Overvoltage Shutdown) Std
- Battery Voltage Std

DIMENSIONS AND WEIGHTS*



OPEN SET (Includes Exhaust Flex)

L x W x H in (mm)	77 (1956) x 34 (864) x 43 (1092)
Weight (lbs)	1163
dBA*	83



LEVEL 1 ACOUSTIC ENCLOSURE

L x W x H in (mm)	77 (1956) x 34 (864) x 46 (1168)
Weight (lbs)	1414
dBA*	60

*All measurements are approximate and for estimation purposes only. Sound levels measured at 23ft (7m) under normal operation and do not account for ambient site conditions.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

ATTACHMENT 4



August 17, 2017

Verizon Wireless
 99 East River Drive, 9th Floor
 East Hartford, CT 06108

Attn: Jim Smith
 Re: 180' Self-Supporting Tower, Middletown, Connecticut
 Verizon Site: Wesleyan University

Dear Jim,

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of the 180' self-supporting tower located at 169 Cross Street in Middletown, Connecticut for equipment changes proposed by Verizon Wireless. Our analysis indicated reinforcement was required for the tower to meet the current structural code. Results of our analysis were presented in a report dated May 3, 2017.

Reinforcement design was conducted in accordance with the Connecticut State Building Code and TIA-222, revision G, *Structural Standard for Antenna Supporting Structures and Antennas* using a 3-second gust wind speed of 106-mph with no ice and 40-mph with 3/4" radial ice. The following additional design criteria were used:

Structure Class: III (emergency services facility)
 Topographic Category: 1
 Exposure Category: B

Tower reinforcement was designed for the following (proposed changes shown in **bold** text):

Elev.	Antenna	Mount	Coax.
190'	Lightning rod	10' pipe extension	N.A.
179'	(2) 10' omnidirectional whips	Legs	(2) 7/8"
179'	DB404-B dipole (inverted)	On sidearm below	7/8"
178'	10' & 20' omnidirectional whips	(2) 3' sidearms	(2) 7/8"
177'	BA3010-1 whip, 10' omnidirectional whip	2' standoff	(2) 7/8"
176'	Cambium PTP 50650	Leg	3/8"
163'	SC479-HF1LDF omni w/DS428E83I01T TTA	6' sidearm	1/2", 7/8"
157'	10' omnidirectional whip	6' sidearm	7/8"
154'	DB404-B dipole (inverted)	On 6' sidearm at 157'	7/8"
148'-9"	10' omnidirectional whip	6' sidearm	7/8"
148'-3"	10' omnidirectional whip	6' sidearm	7/8"
147'-8"	20' omnidirectional whip	3' sidearm	7/8"
147'	SC229 omnidirectional whip	6' sidearm	7/8"

135'	3' high performance dish	Leg	EW90
135'	SC479-HFILDF omni	6' sidearm	7/8"
130'	(12) SBNHH-1D65B panels, (3) RRH2x60-700 RRHs, (3) RRH2x60-PCS RRHs, (3) RRH4x45-AWS RRHs, (2) RC2DC-4750-PF-48	(3) 13' sector mounts	(2) 1-5/8" hybrid
124'	PTP 58400 panel	Leg	1/4"
120'	3' high performance dish	Leg	EW90
119'	2' high performance dish	Leg	1/2"
116'	3' high performance dish	Leg	EW90
115.5'	6' high performance dish	4' sidearm	1/2"
114'	1'x1' panel	Leg	1/2"
109'	15' omnidirectional whip	3' sidearm	7/8"
104'	20' omnidirectional whip	3' sidearm	7/8"
100'	(2) 2' dishes	Leg	(2) Cat5e
98'	17' omnidirectional whip	2' standoff	7/8"
97.83'	17' omnidirectional whip	2' standoff	7/8"
97.33'	20' omnidirectional whip	2' standoff	7/8"
87'	20' omnidirectional whip	1' sidearm	7/8"
85'	3' high performance dish	Leg	EW90
78'	(3) 17' omnidirectional whip	(3) 2' standoff	(3) 7/8"
63'	12' omnidirectional whip	6' sidearm	7/8"
55'	3' yagi	Leg	1/2"
54.5'	20' omnidirectional whip	2' standoff	7/8"
51'-8"	.8M satellite dish	1.5' sidearm	1/4"
46'	3' yagi	Leg	1/2"
34'	8' omnidirectional whip	2' standoff	3/8"
30'	MAXRAD MFBW7463	6' sidearm	1/2"
30'	3' yagi	Leg	1/2"

The attached reinforcement drawings depicts required tower modifications to support the proposed antenna changes. Completion of the attached modifications will result in a tower structure suitable for installation of the proposed equipment changes.

Sincerely,
All-Points Technology Corporation, P.C.



Robert E. Adair, P.E.
 Principal



CT141NB9292 Wesleyan University APT reinf ltr 8-17-17.doc

tnxTower All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Job 180' Lattice Tower, Middletown, CT	Page 1 of 1
	Project CT141NB9292 Wesleyan	Date 08:52:49 08/17/17
	Client Verizon Wireless	Designed by Rob Adair

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	180 - 170	Leg	1 1/2	3	-4550.04	37040.00	12.3	Pass
		Diagonal	9/16	11	-873.07	3014.30	29.0	Pass
		Top Girt	3/4	4	-15.22	4365.65	0.3	Pass
		Bottom Girt	3/4	7	-238.34	4365.65	5.5	Pass
T2	170 - 150	Leg	1 1/2	30	17237.00	41804.40	41.2	Pass
		Diagonal	5/8	41	-1421.50	4574.55	31.1	Pass
		Top Girt	3/4	31	-284.44	4338.82	6.6	Pass
		Bottom Girt	3/4	34	-769.95	3329.59	23.1	Pass
T3	150 - 130	Leg	1-1/2" SR with 1" SR	87	-46290.20	85202.30	54.3	Pass
		Diagonal	3/4	97	-2754.78	7670.08	35.9	Pass
		Top Girt	7/8	88	-581.65	6372.94	9.1	Pass
		Bottom Girt	7/8	91	-1442.37	5026.23	28.7	Pass
T4	130 - 110	Leg	1-3/4" SR with 1" SR	144	-109071.00	117549.00	92.8	Pass
		Diagonal	3/4	154	-5552.64	6841.00	81.2	Pass
		Top Girt	1	145	-2466.69	8574.52	28.8	Pass
		Bottom Girt	1	148	-2185.86	6935.24	31.5	Pass
T5	110 - 100	Leg	Pirod 105244	201	-110535.00	142493.00	77.6	Pass
		Diagonal	L2 1/2x2 1/2x3/16	204	-8265.70	12697.80	65.1	Pass
T6	100 - 80	Leg	Pirod 105216 w/ (2) 1-1/4" tie rods	210	-148404.00	252244.00	58.8	Pass
		Diagonal	L2 1/2x2 1/2x3/16	219	-6719.14	11091.80	60.6	Pass
T7	80 - 60	Leg	Pirod 105216 w/ (2) 1-1/4" tie rods	225	-179274.00	252244.00	71.1	Pass
		Diagonal	L2 1/2x2 1/2x3/16	229	-5668.52	8118.15	69.8	Pass
T8	60 - 40	Leg	Pirod 105216 w/ (2) 1-1/4" tie rods	240	-207840.00	252244.00	82.4	Pass
		Diagonal	L2 1/2x2 1/2x3/16	244	-5867.70	6524.21	89.9	Pass
T9	40 - 20	Leg	Pirod 105217 w/ (2) 1-1/4" tie rods	255	-235338.00	324918.00	72.4	Pass
		Diagonal	L3x3x3/16	259	-6075.71	9280.25	65.5	Pass
T10	20 - 0	Leg	Pirod 105217 w/ (2) 1-1/4" tie rods	270	-260654.00	324918.00	80.2	Pass
		Diagonal	L3x3x5/16	274	-8017.47	12157.80	65.9	Pass
Summary								
Leg (T4)							92.8	Pass
Diagonal (T8)							89.9	Pass
Top Girt (T4)							28.8	Pass
Bottom Girt (T4)							31.5	Pass
Bolt Checks							93.1	Pass
RATING =							93.1	Pass

All-Points Technology Corp., P.C.

116 Grandview Road
Conway, NH 03818
(603) 496-5853

Client: **Verizon Wireless**
Job: **Middletown, CT**
Calculated By: **R. Adair**

Site No.: **Wesleyan**
Job No.: **CT141NB9292**
Date: **17-Aug-17**

Program assumes:

Mat is square in plan view.
Water table is below bottom of mat.
Unit weight of concrete = 150 pcf
Unit weight of soil = 100 pcf
Self-supporting tower with 3 piers

Information to be provided:

Pier is round or square in plan dimension ("R" or "S")	Shape =	R
OTM = Overturning Moment to be resisted	OTM =	3576 ft-kips
H = Height from ground surface to top of mat (if buried)	H =	2.5 ft.
P _M = Projection of pier above mat	P _M =	3.0 ft.
y = Thickness of mat	y =	2.50 ft.
x = Width of mat	x =	22.00 ft.
d = Diameter of round pier	d =	2.5 ft.
S = Size of tension bars	S =	8

Mass of tower and appurtenances (below)

Results:

<u>Component</u>	<u>Mass</u>	<u>Moment Arm</u>	<u>Moment Resist.</u>
Pier	2.2 kips	11 ft.	24.3 ft-kips
Overburden	136.7 kips	11 ft.	1503.5 ft-kips
Mat	181.5 kips	11 ft.	1996.5 ft-kips

Overturning Moment Resistance : 3524.29 ft-kips
Factor of Safety = 1.0 SATISFACTORY
Concrete Quantity = 46.5 c.y.



GENERAL NOTES:

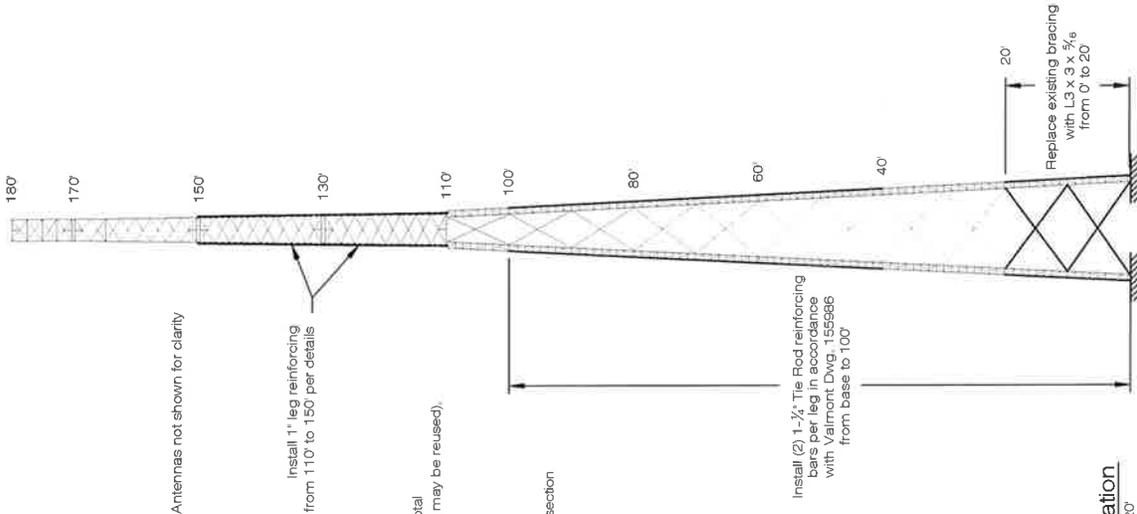
1. Reinforcement based on structural analysis by All-Points Technology dated 3 May 2017, File No. CT141NB9291.
2. Verify all part numbers, dimensions and existing conditions prior to fabrication and ordering. Bring discrepancies to the attention of the Engineer before proceeding with the affected portion of the work.
3. Work is to be accomplished on an existing in-service tower. Coordinate work to minimize disruption of existing facilities.
4. Design assumes competent and qualified personnel will be performing the work.
5. Provide temporary bracing or shoring as required. Work shown is typical for three tower faces.
6. Work will require relocation/reconfiguration of mounts/hangers.

STRUCTURAL STEEL:

1. All structural steel work shall conform to the requirements of the American Institute of Steel Construction and all applicable building codes.
2. Weld in accordance with AWS D1.1 using certified welders and E70XX electrodes.
3. Structural steel to be ASTM A36 steel or better.
4. All bolts shall be ASTM Grade A325 hot-dip galvanized per ASTM D153. Do not re-use existing bolts.
5. U-bolts to be hot-dipped galvanized SAE J429 Gr-2 or approved equal.
6. All bolts shall have galvanized lock washer or pal nut.
7. Bolts shall be tightened using the "turn of the nut" method specified by AISC.
8. Hot-dip galvanize solid rods, angles and weldments per ASTM D123 after fabrication.
9. Cold galvanize any field cut, welded, or drilled surfaces with Zinga brand cold galvanizing.

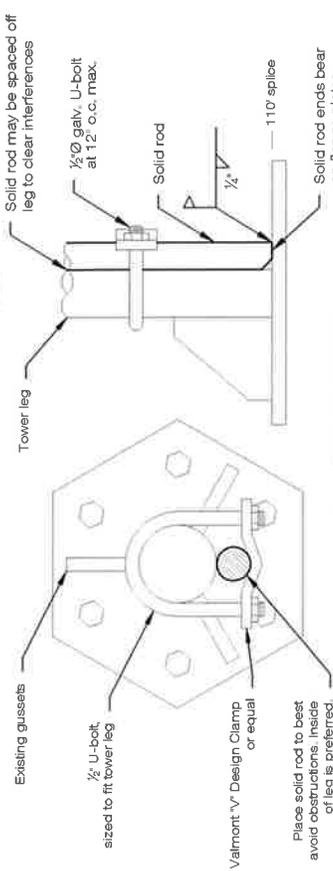
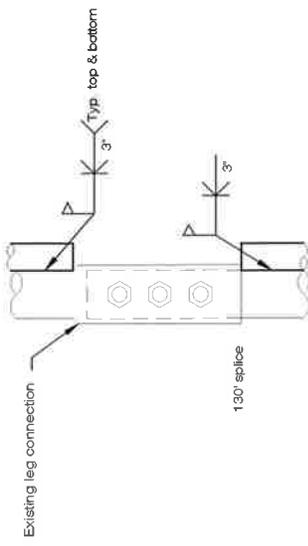
BRACING REPLACEMENT NOTES:

1. Conduct work in light (<15 mph) or no wind conditions. Replace no more than one brace at a time.



Material List:

- (6) L3 x 3 x 3/8 upper braces, P/N 105583
- (6) L3 x 3 x 3/8 lower braces, P/N 105588
- (8) 1"Ø A325 bolts, nuts, washers per leg, (24) total
- (6) 3/2"Ø A325 galv. intersection bolts (existing ring fills may be reused).
- 1-1/2" Valmont Tie Rod assemblies (0 to 100):
- (30) 20" Tie Rods, Valmont Part No. 127396
- (80) Tie Plates, Valmont Part No. 155981
- (240) Leg Clamps, Valmont Part No. 150792
- (160) Tie Rod Clamps, Valmont Part No. 155986
- (400) Flat Clamps, Valmont Part No. 116139
- Bolts, nuts, washers & lock washers for (5) 20" tower section tie rod assemblies.
- 1" Hog Rods (110' to 150):
- (6) 20" long by 1" diameter solid rods
- (114) 3/2" U-bolt assemblies



Leg Reinforcement
Scale: None



All-Points Technology Corp., P.C.
116 GRANDVIEW ROAD
CONWAY, NH 03818
PHONE: (603) 496-5853
FAX: (603) 454-7224
www.allpointstech.com

TOWER REINFORCEMENT
SHEET: 1 OF 1
SCALE: AS NOTED
DATE: 30 JUNE 2017

VERTIZON Wireless
99 EAST RIVER DRIVE
9th FLOOR
E. HARTFORD, CT 06108

VERIZON SITE:
WESLEYAN UNIVERSITY
160' SELF-SUPPORTING TOWER
169 CROSS STREET
MIDDLETOWN, CT

Tower Elevation
Scale: 1" = 20'



**STRUCTURAL ANALYSIS REPORT
180' SELF-SUPPORTING TOWER
MIDDLETOWN, CONNECTICUT**

Prepared for
Verizon Wireless

Verizon Site: Wesleyan University

May 3, 2017



APT Project #CT141NB9291

**STRUCTURAL ANALYSIS REPORT
180' PiROD SELF-SUPPORTING TOWER
MIDDLETOWN, CONNECTICUT
prepared for
Verizon Wireless**

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of this 180-foot self-supporting lattice tower located at Wesleyan University in Middletown, Connecticut. The analysis was performed for Verizon Wireless's proposed installation of twelve panel antennas, nine remote radio heads (RRHs) and two power/fiber distribution boxes, fed by two 1-5/8" hybrid power/fiber lines.

APT's analysis indicates the tower does **not meet** the requirements of the Connecticut State Building Code and TIA-222 Revision G with the proposed equipment. Five 20' leg sections one one bracing section require reinforcement. Additional leg sections will need reinforcement to keep usage below 90 percent. Evaluation of the existing base foundation was performed from original PiROD Inc. design drawings. The foundation was found to be adequately sized for the proposed equipment.

INTRODUCTION:

A structural analysis was performed on the above-mentioned communications tower by APT for Verizon Wireless. The tower is located at Wesleyan University at 169 Cross Street Middletown, Connecticut. APT did not visit the tower site and utilized information provided to us by others.

The structure is a 180-foot galvanized steel guyed tower manufactured by PiROD Inc. The following documents were utilized:

Document	Remarks	Date	Source
PiROD tower & foundation drawings	PiROD Inc. Eng. File #A-110626	8/15/1994	Owner
Structural Analysis Report	CENTEK Project No. 16104.00	7/25/2016	Verizon
Antenna/Coax Verification	HighTower Solutions mapping	3/29/2017	Owner
Middletown proposed additions	Robert Baumeister email	4/6/2017	Verizon

The analysis was performed in accordance with TIA-222 Revision G using the following antenna inventory (Verizon's proposed equipment shown in **bold** text; Motorola's proposed equipment shown in **bold italic** text):

Elev.	Antenna	Mount	Coax.
190'	Lightning rod	10' pipe extension	N.A.
179'	(2) 10' omnidirectional whips	Legs	(2) 7/8"
179'	DB404-B dipole (inverted)	On sidearm below	7/8"
178'	10' & 20' omnidirectional whips	(2) 3' sidearms	(2) 7/8"
177'	BA3010-1 whip, 10' omnidirectional whip	2' standoff	(2) 7/8"
176'	Cambium PTP 50650	Leg	3/8"
148'-9"	10' omnidirectional whip	6' sidearm	7/8"
148'-3"	10' omnidirectional whip	6' sidearm	7/8"
147'-8"	20' omnidirectional whip	3' sidearm	7/8"
140'	SC229 omnidirectional whip	6' sidearm	7/8"
140'	SC479-HF1LDF omni w/DS428E83I01T TTA	6' sidearm	1/2", 7/8"
135'	3' high performance dish	Leg	EW90
129'	(12) SBNHH-1D65B panels, (3) RRH2x60-700 RRHs, (3) RRH2x60-PCS RRHs, (3) RRH4x45-AWS RRHs, (2) RC2DC-4750-PF-48	(3) 13' sector mounts	(2) 1-5/8" hybrid
125'	20' omnidirectional whip	1' sidearm	7/8"
124'	10' omnidirectional whip, PTP 58400 panel	6' sidearm, leg	7/8", 1/4"
123'	15' omnidirectional whip	3' sidearm	7/8"
122'-4"	DB404-B dipole (inverted)	On 6' sidearm at 124'	7/8"
120'	SC479-HF1LDF omni	6' sidearm	7/8"
120'	3' high performance dish	Leg	EW90
119'	2' high performance dish	Leg	1/2"
116'	3' high performance dish	Leg	EW90
115.5'	6' high performance dish	4' sidearm	1/2"
114'	1'x1' panel	Leg	1/2"
100'	(2) 2' dishes	Leg	(2) Cat5e
98'	17' omnidirectional whip	2' standoff	7/8"
97.83'	17' omnidirectional whip	2' standoff	7/8"
97.33'	20' omnidirectional whip	2' standoff	7/8"
85'	3' high performance dish	Leg	EW90
78'	(3) 17' omnidirectional whip	(3) 2' standoff	(3) 7/8"
63'	12' omnidirectional whip	6' sidearm	7/8"
55'	3' yagi	Leg	1/2"
54.5'	20' omnidirectional whip	2' standoff	7/8"
51'-8"	.8M satellite dish	1.5' sidearm	1/4"
46'	3' yagi	Leg	1/2"
34'	8' omnidirectional whip	2' standoff	3/8"
30'	MAXRAD MFBW7463	6' sidearm	1/2"
30'	3' yagi	Leg	1/2"

All-Points Technology Corporation

116 Grandview Road
 Conway, NH 03818
 (603) 496-5853

3 Saddlebrook Drive
 Killingworth, CT 06419
 (860) 663-1697

STRUCTURAL ANALYSIS:

Methodology:

The structural analysis was done in accordance with the Connecticut State Building Code and TIA-222, Revision G (TIA), Structural Standard for Antenna Supporting Structures and Antennas.

The analysis was conducted using a 3-second gust wind speed of 106 miles per hour with no ice and 40-mph with 3/4" radial ice in accordance with the TIA-222-G standard for this area of Middlesex County, Connecticut. The following additional design criteria were used:

Structure Class:	III (emergency services facility)
Topographic Category:	1
Exposure Category:	B

Analysis Results:

Analysis of the tower was conducted in accordance with the criteria outlined herein with antenna changes as previously described. The following table summarizes the results of the analysis based on stresses of individual leg and bracing members:

Elevation	Leg Capacity	Bracing Capacity
170'-180'	12%	29%
150'-170'	39%	27%
130'-150'	75%	32%
110'-130'	126%	85%
100'-110'	72%	60%
80'-100'	98%	59%
60'-80'	119%	71%
40'-60'	138%	92%
20'-40'	104%	66%
0'-20'	116%	102%

Bracing, Splice and Anchor Bolts:

Connection bolts were evaluated under the proposed loading. All bolts were found to be adequately sized to support the proposed loads.

Base Foundation and Guy Anchors:

Evaluation of the existing base foundation was performed from original design drawings. The foundation was determined to be adequately sized for the proposed equipment. Factored base reactions imposed with the additional antennas were calculated as follows:

Compression:	256.1 kips
Uplift:	-235.5 kips
Shear:	24.8 kips
Overturning Moment:	3426 ft-kips

CONCLUSIONS AND RECOMMENDATIONS:

APT's structural analysis indicates that the 180-foot self-supporting tower located at Wesleyan University at 169 Cross Street Middletown, Connecticut does **not** meet the requirements of the Connecticut State Building Code and TIA-222 Revision G with Verizon Wireless's and Motorola's proposed equipment. Leg members in five 20' sections of tower and bracing members in one 20' tower section require reinforcement, and additional leg and bracing reinforcement will be needed to keep usage below 90 percent.

LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in an undeteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corporation, P.C. (APT) is not responsible for modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or strengthening bracing members.
2. Reinforcing vertical members in any manner.
3. Adding or relocating torque arms or guys.
4. Installing antenna mounting gates or side arms.

All-Points Technology Corporation

116 Grandview Road
Conway, NH 03818
(603) 496-5853

3 Saddlebrook Drive
Killingworth, CT 06419
(860) 663-1697

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

All-Points Technology Corporation

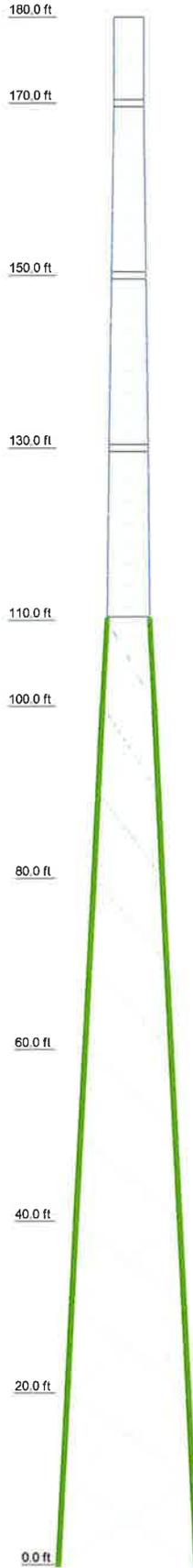
116 Grandview Road
Conway, NH 03818
(603) 496-5853

3 Saddlebrook Drive
Killingworth, CT 06419
(860) 663-1697

Appendix A

Tower Schematic

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs		SR 1 1/2		SR 1 3/4	Pirod 105244	Pirod 105216	Pirod 105217			
Leg Grade					A572-50					
Diagonals		SR 5/8		SR 3/4		L2 1/2x2 1/2x3/16	L3x3x3/16			
Diagonal Grade					A36					
Top Girts								N.A.		
Bottom Girts		SR 3/4		SR 7/8				N.A.		
Face Width (ft)	3.5		4	4.5	5	6	8	10	12	14
# Panels @ (ft)	3 @ 3.19444		24 @ 2.39583					11 @ 10		
Weight (lb) 14648.4		617.7	765.1	961.2	1086.3	1882.4	1940.5	1995.1	2530.0	2606.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Generic Lightning Rod 4' copper	180	(4) SBNHH-1D65B	129
10'x2 3/8" Pipe Mount	180	ALU RRH2x60-700 w/bracket	129
DB404	179 - 175	1' sidearm	125
10' x 2" omni whip	179	PTP 58400	124
10' x 2" omni whip	179	6' sidearm	124
20' x 2.5" omni whip	178	3' sidearm	123
10' x 1.5" omni whip	178	DB404	122.33 - 118.33
3' sidearm	177	6' sidearm	120
3' sidearm	177	SC479-HF1LDF	120
PTP 50650	176	3' HP dish	120
20' x 3" omni whip	167.67 - 147.67	2' HP dish	119
10' x 1.5" omni whip	158.75 - 148.75	20' x 2.5" omni whip	117.33 - 97.33
10' x 1.5" omni whip	158.25 - 148.25	3' HP dish	116
6' sidearm	148.75	6' HP dish	115.5
6' sidearm	148.25	4' sidearm	115.5
3' sidearm	147.67	PTP 58400	114.33
20' x 2.5" omni whip	145 - 125	17' x 2" omni whip	98
20' x 2.5" omni whip	142.33 - 122.33	2' standoff	98
SC229 omni	140	17' x 2" omni whip	97.83
6' sidearm	140	2' standoff	97.83
6' sidearm	140	2' standoff	97.33
SC479-HF1LDF	140	17' x 2" omni whip	95 - 78
DS428E83101T TTA	140	17' x 2" omni whip	95 - 78
15' x 2.5" omni whip	138 - 123	17' x 2" omni whip	95 - 78
3' HP dish	135	3' HP dish	85
10' x 1.5" omni whip	134 - 124	2' standoff	78
ALU RRH2x60-700 w/bracket	129	2' standoff	77.5
ALU RRH2x60-PCS w/bracket	129	12' x 1.5" omni whip	75 - 63
ALU RRH2x60-PCS w/bracket	129	20' x 2.5" omni whip	74.5 - 54.5
ALU RRH4x45-AWS w/bracket	129	6' sidearm	63
ALU RRH4x45-AWS w/bracket	129	3' Yagi	55
ALU RRH4x45-AWS w/bracket	129	2' standoff	54.5
Raycap RC2DC-4750-PF-48	129	.8M satellite dish	51.67
Raycap RC2DC-4750-PF-48	129	3' Yagi	46
Valmont VFA12-RRU	129	8' x 1" omni whip	42 - 34
Valmont VFA12-RRU	129	2' standoff	34
Valmont VFA12-RRU	129	6' sidearm	30
(4) SBNHH-1D65B	129	3' Yagi	30
ALU RRH2x60-700 w/bracket	129	MFBW7463 omni	30
(4) SBNHH-1D65B	129		

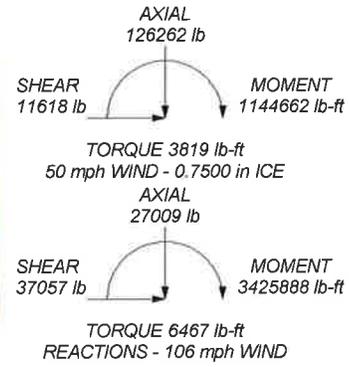
MATERIAL STRENGTH

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

ALL REACTION:
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 256111 lb
SHEAR: 24800 lb

UPLIFT: -235534 lb
SHEAR: 23082 lb



All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Job: 180' Lattice Tower, Middletown, CT Project: CT141NB9291 Wesleyan
	Client: Verizon Wireless Code: TIA-222-G Path:

Appendix B

Calculations

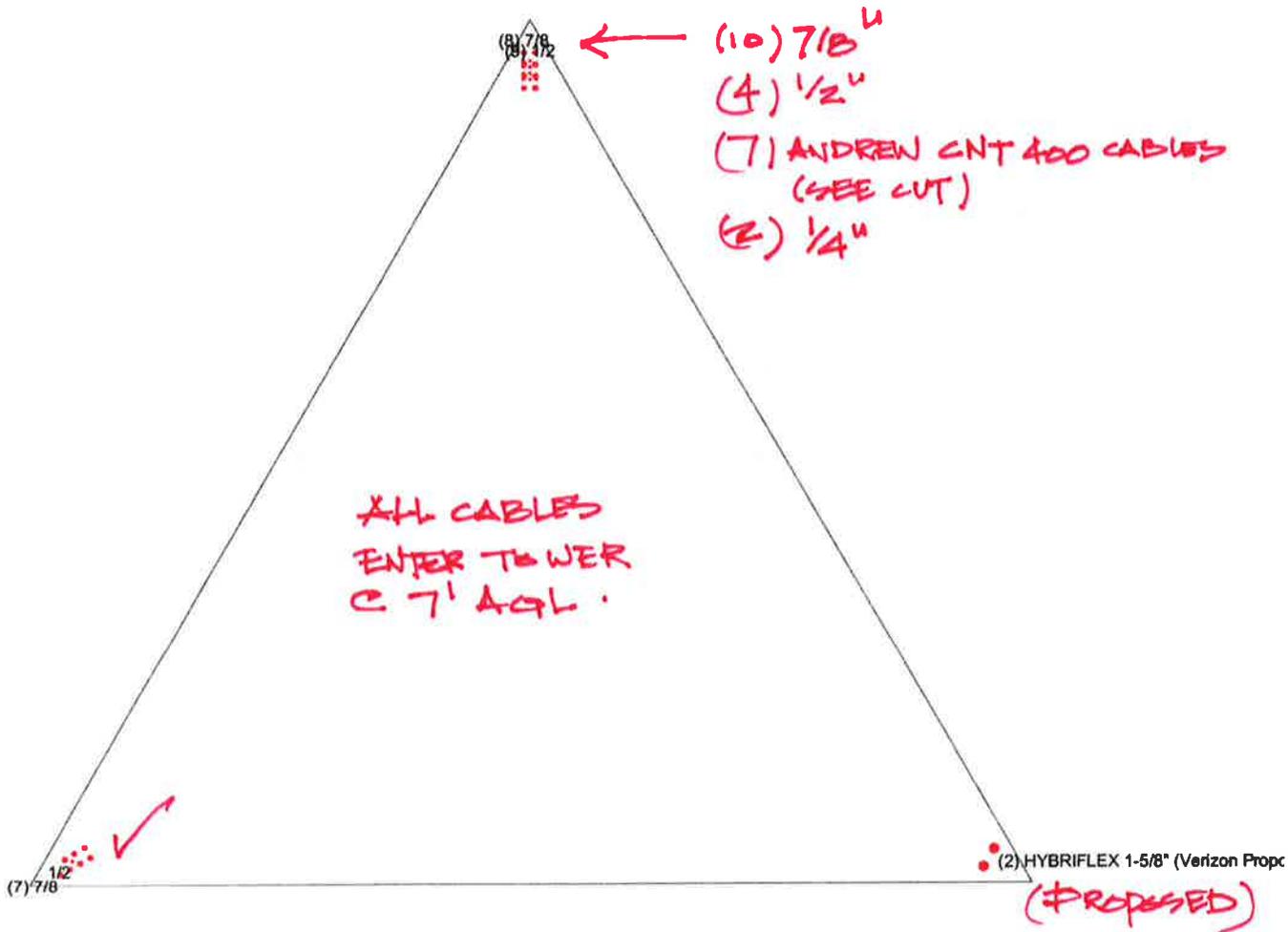
Feed Line Plan

Round Flat App In Face App Out Face Truss-Leg



NORTH LEG

CROSS STREET



Centek Engineering Inc.		Job: 16104.00 - Wesleyan Univ.	
63-2 North Branford Rd. Branford, CT 06405		Project: 180-ft Lattice Tower - 169 Cross St., Middletown, C	
Phone: (203) 488-0580	Code: TIA/EIA-222-F	Drawn by: T.JL	App'd:
FAX: (203) 488-8587	Date: 07/25/16	Scale: NTS	Dwg No. E-7



[ASCE 7 Windspeed](#)
[ASCE 7 Ground Snow Load](#)
[Related Resources](#)
[Sponsors](#)
[About ATC](#)
[Contact](#)

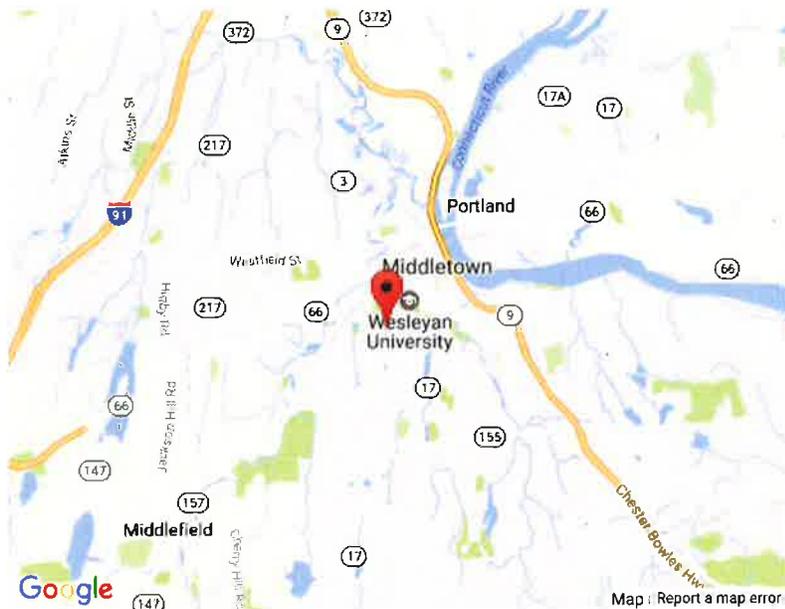
Search Results

Query Date: Wed Dec 14 2016
Latitude: 41.5514
Longitude: -72.6623

**ASCE 7-10 Windspeeds
 (3-sec peak gust in mph*):**

Risk Category I: 115
Risk Category II: 125
Risk Category III-IV: 135
MRI 10-Year:** 77
MRI 25-Year:** 87
MRI 50-Year:** 94
MRI 100-Year:** 101

ASCE 7-05 Windspeed:
 106 (3-sec peak gust in mph)
ASCE 7-93 Windspeed:
 82 (fastest mile in mph)



*Miles per hour
 **Mean Recurrence Interval

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.

 [Print your results](#)

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tnxTower All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Job	180' Lattice Tower, Middletown, CT	Page	1 of 9
	Project	CT141NB9291 Wesleyan	Date	11:05:41 05/03/17
	Client	Verizon Wireless	Designed by	Rob Adair

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.

The face width of the tower is 3.50 ft at the top and 16.00 ft at the base.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Basic wind speed of 106 mph.

Structure Class III.

Exposure Category B.

Topographic Category 1.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Deflections calculated using a wind speed of 60 mph.

Antennas not shown.

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

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

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

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Cat 5e	A	No	Ar (CaAa)	122.33 - 8.00	-6.0000	0.5	1	1	0.3125	0.3125		0.02
Cat 5e	A	No	Ar (CaAa)	124.00 - 8.00	-5.0000	0.5	1	1	0.3125	0.3125		0.02
7/8	B	No	Ar (CaAa)	179.00 - 8.00	-4.0000	0.5	3	2	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	178.00 - 8.00	-3.0000	0.5	2	1	1.1100	1.1100		0.54
7/8	A	No	Ar (CaAa)	148.00 - 8.00	-4.0000	0.5	3	2	1.1100	1.1100		0.54
7/8	A	No	Ar (CaAa)	122.00 - 8.00	-3.0000	0.5	2	1	1.1100	1.1100		0.54
3/8	A	No	Ar (CaAa)	34.00 - 8.00	-4.0000	0.5	1	1	0.4400	0.4400		0.08
3/8	A	No	Ar (CaAa)	45.00 - 8.00	-5.0000	0.5	1	1	0.4400	0.4400		0.08
7/8	B	No	Ar (CaAa)	78.00 - 8.00	-6.0000	0.5	3	2	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	98.00 - 8.00	-5.0000	0.5	2	2	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	124.00 - 8.00	-4.0000	0.5	2	2	1.1100	1.1100		0.54
3/8	A	No	Ar (CaAa)	115.50 - 8.00	-8.0000	0.5	2	2	0.4400	0.4400		0.08
3/8	A	No	Ar (CaAa)	119.00 - 8.00	-7.0000	0.5	2	2	0.4400	0.4400		0.08
3/8	A	No	Ar (CaAa)	179.00 - 8.00	0.0000	0.5	1	1	0.4400	0.4400		0.08
1/4	A	No	Ar (CaAa)	52.00 - 8.00	0.0000	0.5	1	1	0.2500	0.2500		0.05
5/8	A	No	Ar (CaAa)	55.00 - 8.00	-2.0000	0.5	1	1	0.6250	0.6250		0.40
5/8	A	No	Ar (CaAa)	30.00 - 8.00	-1.0000	0.5	1	1	0.6250	0.6250		0.40
5/8	A	No	Ar (CaAa)	61.00 - 8.00	-1.0000	0.5	1	1	0.6250	0.6250		0.40
5/8	B	No	Ar (CaAa)	97.00 - 8.00	-1.0000	0.5	1	1	0.6250	0.6250		0.40
5/8	A	No	Ar (CaAa)	125.00 - 8.00	-1.0000	0.5	1	1	0.6250	0.6250		0.40
7/8	C	No	Ar (CaAa)	140.00 - 8.00	-6.0000	0.5	2	2	1.1100	1.1100		0.54
1/2	C	No	Ar (CaAa)	140.00 - 8.00	-5.0000	0.5	1	1	0.5800	0.5800		0.25
7/8	C	No	Ar (CaAa)	120.00 - 8.00	-5.0000	0.5	1	1	1.1100	1.1100		0.54
1/2	C	No	Ar (CaAa)	30.00 - 8.00	-4.0000	0.5	1	1	0.5800	0.5800		0.25
EW90	C	No	Ar (CaAa)	85.00 - 8.00	-4.0000	0.5	4	2	0.9869	0.9869		0.32
EW90	C	No	Ar (CaAa)	116.00 - 85.00	-4.0000	0.5	3	3	0.9869	0.9869		0.32
EW90	C	No	Ar (CaAa)	120.00 - 116.00	-4.0000	0.5	2	2	0.9869	0.9869		0.32
EW90	C	No	Ar (CaAa)	135.00 - 120.00	-4.0000	0.5	1	1	0.9869	0.9869		0.32
1.57" Hybrid fiber-power cable	C	No	Ar (CaAa)	129.00 - 8.00	-6.0000	0.5	2	2	0.5000	1.5700		0.66

tnxTower All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Job	180' Lattice Tower, Middletown, CT	Page	2 of 9
	Project	CT141NB9291 Wesleyan	Date	11:05:41 05/03/17
	Client	Verizon Wireless	Designed by	Rob Adair

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
3/8" safety cable	A	No	Ar (CaAa)	180.00 - 0.00	4.0000	0.5	1	1	0.3750	0.3750		0.22

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
			Horz Lateral	Vert					
Generic Lightning Rod 4' copper	B	From Leg	0.00	0.0000	180.00	No Ice	0.50	0.50	0.00
			0.00	0.0000		1/2" Ice	1.00	1.00	0.00
			12.00	0.0000		1" Ice	1.50	1.50	0.00
10'x2 3/8" Pipe Mount	B	From Leg	0.00	0.0000	180.00	No Ice	2.38	2.38	36.50
			0.00	0.0000		1/2" Ice	3.40	3.40	54.35
			5.00	0.0000		1" Ice	4.45	4.45	78.71
DB404	C	From Leg	3.00	0.0000	175.00 - 179.00	No Ice	1.14	1.14	14.00
			0.00	0.0000		1/2" Ice	2.05	2.05	18.20
			0.00	0.0000		1" Ice	2.96	2.96	22.40
10' x 2" omni whip	A	From Leg	0.00	0.0000	179.00	No Ice	2.00	2.00	60.00
			0.00	0.0000		1/2" Ice	3.02	3.02	75.50
			5.00	0.0000		1" Ice	4.07	4.07	97.47
10' x 2" omni whip	B	From Leg	0.00	0.0000	179.00	No Ice	2.00	2.00	60.00
			0.00	0.0000		1/2" Ice	3.02	3.02	75.50
			5.00	0.0000		1" Ice	4.07	4.07	97.47
20' x 2.5" omni whip	C	From Leg	3.00	0.0000	178.00	No Ice	5.00	5.00	50.00
			0.00	0.0000		1/2" Ice	7.03	7.03	86.96
			10.00	0.0000		1" Ice	9.07	9.07	136.55
3' sidearm	C	None	0.00	0.0000	177.00	No Ice	1.43	0.72	30.00
			0.00	0.0000		1/2" Ice	2.18	1.09	65.00
			5.00	0.0000		1" Ice	2.93	1.47	105.00
10' x 1.5" omni whip	C	From Leg	3.00	0.0000	178.00	No Ice	1.50	1.50	60.00
			0.00	0.0000		1/2" Ice	2.52	2.52	72.38
			5.00	0.0000		1" Ice	3.56	3.56	91.17
3' sidearm	A	None	0.00	0.0000	177.00	No Ice	1.43	0.72	30.00
			0.00	0.0000		1/2" Ice	2.18	1.09	65.00
			5.00	0.0000		1" Ice	2.93	1.47	105.00
PTP 50650	C	None	0.00	0.0000	176.00	No Ice	0.80	0.27	20.00
			0.00	0.0000		1/2" Ice	0.91	0.35	25.49
			10.00	0.0000		1" Ice	1.04	0.44	32.64
10' x 1.5" omni whip	A	From Leg	6.00	0.0000	158.75 - 148.75	No Ice	1.50	1.50	60.00
			0.00	0.0000		1/2" Ice	2.52	2.52	72.38
			0.00	0.0000		1" Ice	3.56	3.56	91.17
6' sidearm	A	From Leg	6.00	0.0000	148.75	No Ice	4.17	2.09	75.00
			0.00	0.0000		1/2" Ice	6.17	3.09	125.00
			10.00	0.0000		1" Ice	8.17	4.09	200.00
10' x 1.5" omni whip	A	From Leg	6.00	0.0000	158.25 - 148.25	No Ice	1.50	1.50	60.00
			0.00	0.0000		1/2" Ice	2.52	2.52	72.38
			0.00	0.0000		1" Ice	3.56	3.56	91.17
6' sidearm	A	None	0.00	0.0000	148.25	No Ice	4.17	2.09	75.00
			0.00	0.0000		1/2" Ice	6.17	3.09	125.00
			10.00	0.0000		1" Ice	8.17	4.09	200.00
20' x 3" omni whip	B	From Leg	3.00	0.0000	167.67 - 147.67	No Ice	6.00	6.00	50.00
			0.00	0.0000		1/2" Ice	8.03	8.03	93.17
			0.00	0.0000		1" Ice	10.08	10.08	149.01
3' sidearm	B	None	0.00	0.0000	147.67	No Ice	1.43	0.72	30.00
			0.00	0.0000		1/2" Ice	2.18	1.09	65.00
			5.00	0.0000		1" Ice	2.93	1.47	105.00
SC479-HF1LDF	A	From Leg	6.00	0.0000	140.00	No Ice	4.68	4.68	35.00

tnxTower All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Job	180' Lattice Tower, Middletown, CT	Page	3 of 9
	Project	CT141NB9291 Wesleyan	Date	11:05:41 05/03/17
	Client	Verizon Wireless	Designed by	Rob Adair

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
			0.00			1/2" Ice	6.54	6.54	70.82	
			7.00			1" Ice	8.04	8.04	115.98	
DS428E8310IT TTA	A	From Leg	6.00		0.0000	140.00	No Ice	0.40	0.46	10.00
			0.00				1/2" Ice	0.48	0.55	15.02
			7.00				1" Ice	0.57	0.65	21.56
SC229 omni	B	From Leg	6.00		0.0000	140.00	No Ice	6.67	6.67	35.00
			0.00				1/2" Ice	9.02	9.02	83.22
			7.00				1" Ice	11.39	11.39	146.03
6' sidearm	A	None			0.0000	140.00	No Ice	4.17	2.09	75.00
							1/2" Ice	6.17	3.09	125.00
							1" Ice	8.17	4.09	200.00
6' sidearm	B	None			0.0000	140.00	No Ice	4.17	2.09	75.00
							1/2" Ice	6.17	3.09	125.00
							1" Ice	8.17	4.09	200.00
(4) SBNHH-1D65B	A	From Leg	3.00		0.0000	129.00	No Ice	8.08	5.34	50.00
			0.00				1/2" Ice	8.53	5.79	100.05
			0.00				1" Ice	9.00	6.26	156.20
(4) SBNHH-1D65B	B	From Leg	3.00		0.0000	129.00	No Ice	8.08	5.34	50.00
			0.00				1/2" Ice	8.53	5.79	100.05
			0.00				1" Ice	9.00	6.26	156.20
(4) SBNHH-1D65B	C	From Leg	3.00		0.0000	129.00	No Ice	8.08	5.34	50.00
			0.00				1/2" Ice	8.53	5.79	100.05
			0.00				1" Ice	9.00	6.26	156.20
ALU RRH2x60-700 w/bracket	A	From Leg	2.50		0.0000	129.00	No Ice	3.35	2.02	60.00
			0.00				1/2" Ice	3.60	2.25	83.19
			0.00				1" Ice	3.87	2.49	110.02
ALU RRH2x60-700 w/bracket	B	From Leg	2.50		0.0000	129.00	No Ice	3.35	2.02	60.00
			0.00				1/2" Ice	3.60	2.25	83.19
			0.00				1" Ice	3.87	2.49	110.02
ALU RRH2x60-700 w/bracket	C	From Leg	2.50		0.0000	129.00	No Ice	3.35	2.02	60.00
			0.00				1/2" Ice	3.60	2.25	83.19
			0.00				1" Ice	3.87	2.49	110.02
ALU RRH2x60-PCS w/bracket	A	From Leg	2.50		0.0000	129.00	No Ice	2.14	1.36	60.00
			0.00				1/2" Ice	2.33	1.51	77.80
			0.00				1" Ice	2.53	1.68	98.44
ALU RRH2x60-PCS w/bracket	B	From Leg	2.50		0.0000	129.00	No Ice	2.14	1.36	60.00
			0.00				1/2" Ice	2.33	1.51	77.80
			0.00				1" Ice	2.53	1.68	98.44
ALU RRH2x60-PCS w/bracket	C	From Leg	2.50		0.0000	129.00	No Ice	2.14	1.36	60.00
			0.00				1/2" Ice	2.33	1.51	77.80
			0.00				1" Ice	2.53	1.68	98.44
ALU RRH4x45-AWS w/bracket	A	From Leg	2.50		0.0000	129.00	No Ice	2.58	1.63	80.00
			0.00				1/2" Ice	2.79	1.81	100.47
			0.00				1" Ice	3.01	2.00	124.06
ALU RRH4x45-AWS w/bracket	B	From Leg	2.50		0.0000	129.00	No Ice	2.58	1.63	80.00
			0.00				1/2" Ice	2.79	1.81	100.47
			0.00				1" Ice	3.01	2.00	124.06
ALU RRH4x45-AWS w/bracket	C	From Leg	2.50		0.0000	129.00	No Ice	2.58	1.63	80.00
			0.00				1/2" Ice	2.79	1.81	100.47
			0.00				1" Ice	3.01	2.00	124.06
Raycap RC2DC-4750-PF-48	A	From Leg	2.50		0.0000	129.00	No Ice	5.73	2.21	34.00
			0.00				1/2" Ice	6.03	2.41	75.97
			0.00				1" Ice	6.33	2.63	122.21
Raycap RC2DC-4750-PF-48	B	From Leg	2.50		0.0000	129.00	No Ice	5.73	2.21	34.00
			0.00				1/2" Ice	6.03	2.41	75.97
			0.00				1" Ice	6.33	2.63	122.21
Valmont VFA12-RRU	A	None			0.0000	129.00	No Ice	12.13	8.42	500.00
							1/2" Ice	15.16	10.53	575.00
							1" Ice	19.20	12.63	650.00

tnxTower All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Job	180' Lattice Tower, Middletown, CT	Page	4 of 9
	Project	CT141NB9291 Wesleyan	Date	11:05:41 05/03/17
	Client	Verizon Wireless	Designed by	Rob Adair

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	lb	
Valmont VFA12-RRU	B	None			0.0000	129.00	No Ice	12.13	8.42	500.00
							1/2" Ice	15.16	10.53	575.00
							1" Ice	19.20	12.63	650.00
Valmont VFA12-RRU	C	None			0.0000	129.00	No Ice	12.13	8.42	500.00
							1/2" Ice	15.16	10.53	575.00
							1" Ice	19.20	12.63	650.00
20' x 2.5" omni whip	B	From Leg	1.00	0.0000	145.00 - 125.00		No Ice	5.00	5.00	50.00
			0.00				1/2" Ice	7.03	7.03	86.96
			0.00				1" Ice	9.07	9.07	136.55
1' sidearm	B	From Leg	1.00	0.0000	125.00		No Ice	0.51	0.26	15.00
			0.00				1/2" Ice	0.95	0.48	25.00
			0.00				1" Ice	1.45	0.73	40.00
PTP 58400	A	None		0.0000	124.00		No Ice	1.75	0.48	12.00
							1/2" Ice	1.92	0.58	23.43
							1" Ice	2.09	0.69	37.18
10' x 1.5" omni whip	C	From Leg	6.00	0.0000	134.00 - 124.00		No Ice	1.50	1.50	60.00
			0.00				1/2" Ice	2.52	2.52	72.38
			0.00				1" Ice	3.56	3.56	91.17
6' sidearm	C	None		0.0000	124.00		No Ice	4.17	2.09	75.00
							1/2" Ice	6.17	3.09	125.00
							1" Ice	8.17	4.09	200.00
DB404	C	From Leg	3.00	0.0000	118.33 - 122.33		No Ice	1.14	1.14	14.00
			0.00				1/2" Ice	2.05	2.05	18.20
			0.00				1" Ice	2.96	2.96	22.40
20' x 2.5" omni whip	A	From Leg	3.00	0.0000	142.33 - 122.33		No Ice	5.00	5.00	50.00
			0.00				1/2" Ice	7.03	7.03	86.96
			0.00				1" Ice	9.07	9.07	136.55
15' x 2.5" omni whip	A	From Leg	3.00	0.0000	138.00 - 123.00		No Ice	3.75	3.75	50.00
			0.00				1/2" Ice	5.28	5.28	77.80
			0.00				1" Ice	6.83	6.83	115.17
3' sidearm	A	None		0.0000	123.00		No Ice	1.43	0.72	30.00
							1/2" Ice	2.18	1.09	65.00
							1" Ice	2.93	1.47	105.00
SC479-HF1LDF	A	From Leg	6.00	0.0000	120.00		No Ice	4.78	4.78	35.00
			0.00				1/2" Ice	6.54	6.54	70.82
			7.00				1" Ice	8.04	8.04	115.98
6' sidearm	A	None		0.0000	120.00		No Ice	4.17	2.09	75.00
							1/2" Ice	6.17	3.09	125.00
							1" Ice	8.17	4.09	200.00
4' sidearm	A	None		0.0000	115.50		No Ice	2.43	1.22	50.00
							1/2" Ice	3.50	1.75	100.00
							1" Ice	4.50	2.25	175.00
PTP 58400	A	None		0.0000	114.33		No Ice	1.75	0.48	12.00
							1/2" Ice	1.92	0.58	23.43
							1" Ice	2.09	0.69	37.18
17' x 2" omni whip	A	From Leg	2.00	0.0000	98.00		No Ice	3.20	3.20	75.00
			0.00				1/2" Ice	4.83	4.83	99.66
			8.50				1" Ice	6.47	6.47	134.46
2' standoff	A	None		0.0000	98.00		No Ice	0.60	0.07	30.00
							1/2" Ice	0.75	0.11	35.96
							1" Ice	0.91	0.16	44.06
2' standoff	C	None		0.0000	97.83		No Ice	0.60	0.07	30.00
							1/2" Ice	0.75	0.11	35.96
							1" Ice	0.91	0.16	44.06
17' x 2" omni whip	C	From Leg	2.00	0.0000	97.83		No Ice	3.20	3.20	75.00
			0.00				1/2" Ice	4.83	4.83	99.66
			8.50				1" Ice	6.47	6.47	134.46
2' standoff	A	None		0.0000	97.33		No Ice	0.60	0.07	30.00
							1/2" Ice	0.75	0.11	35.96
							1" Ice	0.91	0.16	44.06

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	lb	
20' x 2.5" omni whip	A	From Leg	2.00		0.0000	117.33 - 97.33	1" Ice	0.91	0.16	44.06
			0.00				No Ice	5.00	5.00	50.00
			0.00				1/2" Ice	7.03	7.03	86.96
			0.00				1" Ice	9.07	9.07	136.55
2' standoff	A	None			0.0000	77.50	No Ice	0.60	0.07	30.00
							1/2" Ice	0.75	0.11	35.96
							1" Ice	0.91	0.16	44.06
2' standoff	B	None			0.0000	78.00	No Ice	0.60	0.07	30.00
							1/2" Ice	0.75	0.11	35.96
							1" Ice	0.91	0.16	44.06
2' standoff	C	None			0.0000	78.00	No Ice	0.60	0.07	30.00
							1/2" Ice	0.75	0.11	35.96
							1" Ice	0.91	0.16	44.06
17' x 2" omni whip	A	From Leg	2.00		0.0000	95.00 - 78.00	No Ice	3.20	3.20	75.00
			0.00				1/2" Ice	4.83	4.83	99.66
			0.00				1" Ice	6.47	6.47	134.46
17' x 2" omni whip	B	From Leg	2.00		0.0000	95.00 - 78.00	No Ice	3.20	3.20	75.00
			0.00				1/2" Ice	4.83	4.83	99.66
			0.00				1" Ice	6.47	6.47	134.46
17' x 2" omni whip	C	From Leg	2.00		0.0000	95.00 - 78.00	No Ice	3.20	3.20	75.00
			0.00				1/2" Ice	4.83	4.83	99.66
			0.00				1" Ice	6.47	6.47	134.46
12' x 1.5" omni whip	A	From Leg	2.00		0.0000	75.00 - 63.00	No Ice	1.80	1.80	60.00
			0.00				1/2" Ice	3.02	3.02	74.82
			0.00				1" Ice	4.26	4.26	97.28
			0.00				1" Ice	6.47	6.47	134.46
6' sidearm	A	None			0.0000	63.00	No Ice	4.17	2.09	75.00
							1/2" Ice	6.17	3.09	125.00
							1" Ice	8.17	4.09	200.00
3' Yagi	A	None			0.0000	55.00	No Ice	2.08	2.08	30.95
							1/2" Ice	3.79	3.79	52.87
							1" Ice	5.52	5.52	85.27
20' x 2.5" omni whip	A	From Leg	2.00		0.0000	74.50 - 54.50	No Ice	5.00	5.00	50.00
			0.00				1/2" Ice	7.03	7.03	86.96
			0.00				1" Ice	9.07	9.07	136.55
			0.00				1" Ice	9.07	9.07	136.55
2' standoff	A	None			0.0000	54.50	No Ice	0.60	0.07	30.00
							1/2" Ice	0.75	0.11	35.96
							1" Ice	0.91	0.16	44.06
3' Yagi	A	None			0.0000	46.00	No Ice	2.08	2.08	30.95
							1/2" Ice	3.79	3.79	52.87
							1" Ice	5.52	5.52	85.27
8' x 1" omni whip	A	From Leg	2.00		0.0000	42.00 - 34.00	No Ice	0.80	0.80	30.00
			0.00				1/2" Ice	1.62	1.62	37.43
			0.00				1" Ice	2.45	2.45	50.01
2' standoff	A	None			0.0000	34.00	No Ice	0.60	0.07	30.00
							1/2" Ice	0.75	0.11	35.96
							1" Ice	0.91	0.16	44.06
3' Yagi	A	None			0.0000	30.00	No Ice	2.08	2.08	30.95
							1/2" Ice	3.79	3.79	52.87
							1" Ice	5.52	5.52	85.27
MFBW7463 omni	A	From Leg	6.00		0.0000	30.00	No Ice	0.23	0.23	10.00
			0.00				1/2" Ice	0.37	0.37	12.16
			0.00				1" Ice	0.52	0.52	15.96
6' sidearm	A	None			0.0000	30.00	No Ice	4.17	2.09	75.00
							1/2" Ice	6.17	3.09	125.00
							1" Ice	8.17	4.09	200.00

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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz Lateral	Vert						
				ft	°	°	ft	ft	ft ²	lb	
.8M satellite dish	A	Paraboloid w/o Radome	From Leg	1.50	0.0000	51.67	2.60	No Ice	5.31	50.00	
				0.00	0.00			1/2" Ice	5.66	79.00	
				0.00	0.00			1" Ice	6.00	108.00	
6' HP dish	B	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000	115.50	6.00	No Ice	28.27	250.00	
				0.00	0.00			1/2" Ice	29.07	400.00	
				0.00	0.00			1" Ice	29.86	550.00	
2' HP dish	B	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000	119.00	2.00	No Ice	3.14	50.00	
				0.00	0.00			1/2" Ice	3.41	67.50	
				0.00	0.00			1" Ice	3.68	85.00	
3' HP dish	A	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000	135.00	3.00	No Ice	7.07	75.00	
				0.00	0.00			1/2" Ice	7.47	113.33	
				0.00	0.00			1" Ice	7.86	153.33	
3' HP dish	B	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000	120.00	3.00	No Ice	7.07	75.00	
				0.00	0.00			1/2" Ice	7.47	113.33	
				0.00	0.00			1" Ice	7.86	153.33	
3' HP dish	C	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000	116.00	3.00	No Ice	7.07	75.00	
				0.00	0.00			1/2" Ice	7.47	113.33	
				0.00	0.00			1" Ice	7.86	153.33	
3' HP dish	B	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000	85.00	3.00	No Ice	7.07	75.00	
				0.00	0.00			1/2" Ice	7.47	113.33	
				0.00	0.00			1" Ice	7.86	153.33	

Solution Summary

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
		in		°	°
		ft			
T1	180 - 170	8.196	18	0.3976	0.0342
T2	170 - 150	7.359	18	0.3957	0.0423
T3	150 - 130	5.713	18	0.3804	0.0496
T4	130 - 110	4.175	18	0.3383	0.0393
T5	110 - 100	2.841	18	0.2692	0.0210
T6	100 - 80	2.296	18	0.2395	0.0138
T7	80 - 60	1.401	18	0.1810	0.0075
T8	60 - 40	0.746	18	0.1248	0.0042
T9	40 - 20	0.322	18	0.0708	0.0021
T10	20 - 0	0.086	18	0.0347	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
180.00	Generic Lightning Rod 4' copper	18	8.196	0.3976	0.0342	293844
179.00	DB404	18	8.113	0.3975	0.0350	293844
178.00	20' x 2.5" omni whip	18	8.029	0.3973	0.0359	293844
177.00	DB404	18	7.945	0.3972	0.0367	293844
176.00	PTP 50650	18	7.861	0.3970	0.0375	293844

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<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection</i>	<i>Tilt</i>	<i>Twist</i>	<i>Radius of Curvature</i>
<i>ft</i>			<i>in</i>	<i>°</i>	<i>°</i>	<i>ft</i>
175.00	DB404	18	7.778	0.3969	0.0384	293844
167.67	20' x 3" omni whip	18	7.165	0.3949	0.0439	117496
162.67	20' x 3" omni whip	18	6.749	0.3924	0.0468	82307
158.75	10' x 1.5" omni whip	18	6.425	0.3896	0.0484	66635
158.25	10' x 1.5" omni whip	18	6.384	0.3892	0.0485	64478
157.67	20' x 3" omni whip	18	6.336	0.3887	0.0487	62067
153.75	10' x 1.5" omni whip	18	6.016	0.3849	0.0495	49559
153.25	10' x 1.5" omni whip	18	5.975	0.3843	0.0496	48336
152.67	20' x 3" omni whip	18	5.928	0.3837	0.0496	47010
148.75	10' x 1.5" omni whip	18	5.613	0.3787	0.0494	40399
148.25	10' x 1.5" omni whip	18	5.573	0.3780	0.0493	39800
147.67	20' x 3" omni whip	18	5.526	0.3771	0.0492	39151
145.00	20' x 2.5" omni whip	18	5.315	0.3729	0.0485	36596
142.33	20' x 2.5" omni whip	18	5.106	0.3682	0.0474	34412
140.00	SC479-HF1LDF	18	4.926	0.3636	0.0463	32708
138.00	15' x 2.5" omni whip	18	4.772	0.3593	0.0451	31375
137.33	20' x 2.5" omni whip	18	4.721	0.3577	0.0447	30953
135.00	3' HP dish	18	4.545	0.3521	0.0431	29568
134.00	10' x 1.5" omni whip	18	4.471	0.3495	0.0424	29002
133.00	15' x 2.5" omni whip	18	4.396	0.3469	0.0417	28407
132.33	20' x 2.5" omni whip	18	4.346	0.3450	0.0411	27970
130.00	20' x 2.5" omni whip	18	4.175	0.3383	0.0393	26066
129.00	(4) SBNHH-1D65B	18	4.103	0.3352	0.0384	25040
128.00	15' x 2.5" omni whip	18	4.030	0.3320	0.0375	23948
127.33	20' x 2.5" omni whip	18	3.982	0.3298	0.0370	23209
125.00	20' x 2.5" omni whip	18	3.817	0.3220	0.0349	20793
124.00	PTP 58400	18	3.747	0.3185	0.0339	19882
123.00	15' x 2.5" omni whip	18	3.677	0.3150	0.0330	19047
122.33	DB404	18	3.631	0.3126	0.0324	18526
120.33	DB404	18	3.495	0.3055	0.0305	17127
120.00	3' HP dish	18	3.473	0.3043	0.0302	16916
119.00	2' HP dish	18	3.406	0.3007	0.0292	16308
118.33	DB404	18	3.361	0.2982	0.0286	15924
117.33	20' x 2.5" omni whip	18	3.296	0.2946	0.0277	15384
116.00	3' HP dish	18	3.210	0.2898	0.0264	14720
115.50	6' HP dish	18	3.178	0.2881	0.0260	14485
114.33	PTP 58400	18	3.104	0.2839	0.0249	13965
112.33	20' x 2.5" omni whip	18	2.980	0.2770	0.0231	13269
107.33	20' x 2.5" omni whip	18	2.687	0.2609	0.0188	13758
102.33	20' x 2.5" omni whip	18	2.416	0.2462	0.0152	17110
98.00	17' x 2" omni whip	18	2.196	0.2337	0.0127	19438
97.83	2' standoff	18	2.187	0.2332	0.0126	19475
97.33	2' standoff	18	2.162	0.2318	0.0124	19563
95.00	17' x 2" omni whip	18	2.050	0.2249	0.0114	19722
89.33	17' x 2" omni whip	18	1.789	0.2082	0.0095	19878
85.00	3' HP dish	18	1.602	0.1955	0.0085	19999
83.67	17' x 2" omni whip	18	1.547	0.1916	0.0082	20036
78.00	2' standoff	18	1.325	0.1753	0.0071	20108
77.50	2' standoff	18	1.306	0.1738	0.0070	20104
75.00	12' x 1.5" omni whip	18	1.215	0.1668	0.0066	20076
74.50	20' x 2.5" omni whip	18	1.197	0.1654	0.0065	20070
69.50	20' x 2.5" omni whip	18	1.027	0.1515	0.0056	20006
69.00	12' x 1.5" omni whip	18	1.011	0.1501	0.0056	20000
64.50	20' x 2.5" omni whip	18	0.872	0.1375	0.0048	19943
63.00	12' x 1.5" omni whip	18	0.829	0.1333	0.0046	19938
59.50	20' x 2.5" omni whip	18	0.733	0.1234	0.0041	20181
55.00	3' Yagi	18	0.620	0.1105	0.0036	21255
54.50	20' x 2.5" omni whip	18	0.608	0.1090	0.0035	21403
51.67	.8M satellite dish	18	0.543	0.1010	0.0033	22277
46.00	3' Yagi	18	0.427	0.0855	0.0027	24263
42.00	8' x 1" omni whip	18	0.355	0.0755	0.0023	25815

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Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
38.00	8' x 1" omni whip	18	0.290	0.0664	0.0020	26724
34.00	8' x 1" omni whip	18	0.232	0.0585	0.0017	26836
30.00	3' Yagi	18	0.182	0.0513	0.0015	26866

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
T2	170	Leg	A325N	0.6250	5	2900.66	24850.50	0.117 ✓	1	Bolt DS
T3	150	Leg	A325N	0.7500	5	7117.47	35784.70	0.199 ✓	1	Bolt DS
T4	130	Leg	A325N	1.0000	6	15576.70	53014.40	0.294 ✓	1	Bolt Tension
T5	110	Leg	A325N	1.0000	6	16202.70	53014.40	0.306 ✓	1	Bolt Tension
T6	100	Diagonal	A325N	1.0000	1	7197.40	12723.80	0.566 ✓	1	Member Bearing
		Leg	A325N	1.0000	6	21890.50	53014.40	0.413 ✓	1	Bolt Tension
T7	80	Diagonal	A325N	1.0000	1	6138.94	12723.80	0.482 ✓	1	Member Bearing
		Leg	A325N	1.0000	6	26458.70	53014.40	0.499 ✓	1	Bolt Tension
T8	60	Diagonal	A325N	1.0000	1	5358.58	12723.80	0.421 ✓	1	Member Bearing
		Leg	A325N	1.0000	6	30617.10	53014.40	0.578 ✓	1	Bolt Tension
T9	40	Diagonal	A325N	1.0000	1	5450.49	12723.80	0.428 ✓	1	Member Bearing
		Leg	A325N	1.0000	6	34573.20	53014.40	0.652 ✓	1	Bolt Tension
T10	20	Diagonal	A325N	1.0000	1	5633.73	12723.80	0.443 ✓	1	Member Bearing
		Leg	A325N	1.0000	6	38157.50	53014.40	0.720 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	7038.37	12723.80	0.553 ✓	1	Member Bearing

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	180 - 170	Leg	1 1/2	3	-4561.59	37040.00	12.3	Pass
		Diagonal	9/16	11	-878.49	3014.30	29.1	Pass
		Top Girt	3/4	4	-16.48	4365.65	0.4	Pass
		Bottom Girt	3/4	7	-238.43	4365.65	5.5	Pass
T2	170 - 150	Leg	1 1/2	30	14503.30	37695.20	38.5	Pass
		Diagonal	5/8	38	-1229.71	4574.55	26.9	Pass
		Top Girt	3/4	31	-294.50	4338.82	6.8	Pass
		Bottom Girt	3/4	34	-569.89	3329.59	17.1	Pass
T3	150 - 130	Leg	1 1/2	87	-38580.40	51736.90	74.6	Pass
		Diagonal	3/4	97	-2422.69	7484.26	32.4	Pass
		Top Girt	7/8	88	-498.99	6102.51	8.2	Pass
		Bottom Girt	7/8	91	-1082.67	4836.13	22.4	Pass
T4	130 - 110	Leg	1 3/4	144	-99459.10	78926.50	126.0	Fail X
		Diagonal	3/4	154	-5677.54	6664.93	85.2	Pass
		Top Girt	1	145	-1650.21	8250.22	20.0	Pass
		Bottom Girt	1	148	-1639.71	6698.66	24.5	Pass
T5	110 - 100	Leg	Pirod 105244	201	-102680.00	142493.00	72.1	Pass
		Diagonal	L2 1/2x2 1/2x3/16	205	-7650.95	12697.80	60.3	Pass
T6	100 - 80	Leg	Pirod 105216	210	-139291.00	142493.00	97.8	Pass

tnxTower All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Job	180' Lattice Tower, Middletown, CT	Page	9 of 9
	Project	CT141NB9291 Wesleyan	Date	11:05:41 05/03/17
	Client	Verizon Wireless	Designed by	Rob Adair

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	θP_{allow} lb	% Capacity	Pass Fail	
T7	80 - 60	Diagonal	L2 1/2x2 1/2x3/16	219	-6558.08	11091.80	59.1	Pass	
		Leg	Pirod 105216	225	-169376.00	142493.00	118.9	Fail X	
T8	60 - 40	Diagonal	L2 1/2x2 1/2x3/16	229	-5729.60	8118.15	70.6	Pass	
		Leg	Pirod 105216	240	-197044.00	142493.00	138.3	Fail X	
T9	40 - 20	Diagonal	L2 1/2x2 1/2x3/16	244	-6011.40	6524.21	92.1	Pass	
		Leg	Pirod 105217	255	-223886.00	214859.00	104.2	Fail X	
T10	20 - 0	Diagonal	L3x3x3/16	259	-6136.73	9280.25	66.1	Pass	
		Leg	Pirod 105217	270	-248278.00	214859.00	115.6	Fail X	
		Diagonal	L3x3x3/16	274	-7774.70	7622.94	102.0	Fail X	
							Summary		
							Leg (T8)	138.3	Fail X
							Diagonal (T10)	102.0	Fail X
							Top Girt (T4)	20.0	Pass
							Bottom Girt (T4)	24.5	Pass
							Bolt Checks	72.0	Pass
							RATING =	138.3	Fail X

All-Points Technology Corp., P.C.

116 Grandview Road
Conway, NH 03818
(603) 496-5853

Client: **Verizon Wireless**
Job: **Middletown, CT**
Calculated By: **R. Adair**

Site No.: **Wesleyan**
Job No.: **CT141NB92**
Date: **03-May-17**

Program assumes:

Mat is square in plan view.
Water table is below bottom of mat.
Unit weight of concrete = 150 pcf
Unit weight of soil = 110 pcf
Self-supporting tower with 3 piers

Information to be provided:

Pier is round or square in plan dimension ("R" or "S")	Shape =	R
OTM = Overturning Moment to be resisted	OTM =	2868 ft-kips
H = Height from ground surface to top of mat (if buried)	H =	2.5 ft.
P _M = Projection of pier above mat	P _M =	3.0 ft.
y = Thickness of mat	y =	2.50 ft.
x = Width of mat	x =	22.00 ft.
d = Diameter of round pier	d =	2.5 ft.
S = Size of tension bars	S =	8

Mass of tower and appurtenances (below)

Results:

<u>Component</u>	<u>Mass</u>	<u>Moment Arm</u>	<u>Moment Resist.</u>
Pier	2.2 kips	11 ft.	24.3 ft-kips
Overburden	150.3 kips	11 ft.	1653.8 ft-kips
Mat	181.5 kips	11 ft.	1996.5 ft-kips

Overturning Moment Resistance : 3674.63 ft-kips
Factor of Safety = 1.28 SATISFACTORY
Concrete Quantity = 46.5 c.y.

ATTACHMENT 5

Site Name: Wesleyan, CT
 Cumulative Power Density

Operator	Operating Frequency (MHz)	Number of Trans.	ERP Per Trans. (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm ²)	Maximum Permissible Exposure* (mW/cm ²)	Fraction of MPE (%)
VZW PCS	1970	1	5000	5000	130	0.1064	1.0	10.64%
VZW Cellular LTE	869	1	3050	3050	130	0.0649	0.5793333333	11.20%
VZW AWS	2145	1	7400	7400	130	0.1575	1.0	15.75%
VZW 700	746	1	2200	2200	130	0.0468	0.4973333333	9.41%

Total Percentage of Maximum Permissible Exposure

47.00%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
 mW/cm² = milliwatts per square centimeter
 ERP = Effective Radiated Power

Absolute worst case maximum values used, including the following assumptions:

1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

ATTACHMENT 6

March 2, 2018

Via Certificate of Mailing

Daniel T. Drew, Mayor
City of Middletown
245 deKoven Drive
Middletown, CT 06457

Re: **Proposed Shared Use of an Existing Telecommunications Facility at 169 Cross Street, Middletown, Connecticut**

Dear Mayor Drew:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Sub-Petition for Declaratory Ruling (“Sub-Petition”) with the Connecticut Siting Council (“Council”) seeking approval to share the City-owned telecommunications tower at 169 Cross Street in Middletown (the “Property”). Cellco intends to install twelve (12) antennas and nine (9) remote radio heads at the 130-foot level on the existing 180-foot lattice tower. Cellco will also install a 12’ x 17’ equipment shelter and a back-up generator in the northeast portion of the Property.

As presented in the Sub-Petition, the proposed facility modifications at the Property constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-533). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

17729322-v1

Robinson + Cole

Daniel T. Drew, Mayor
March 2, 2018
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ken Baldwin', written in a cursive style.

Kenneth C. Baldwin

Attachment

March 2, 2018

Via Certificate of Mailing

Joseph Samolis, Director of Planning,
Conservation and Development
City of Middletown
245 deKoven Drive
Middletown, CT 06457

Re: **Proposed Shared Use of an Existing Telecommunications Facility at 169 Cross Street, Middletown, Connecticut**

Dear Mr. Samolis:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Sub-Petition for Declaratory Ruling (“Sub-Petition”) with the Connecticut Siting Council (“Council”) seeking approval to share the City-owned telecommunications tower at 169 Cross Street in Middletown (the “Property”). Cellco intends to install twelve (12) antennas and nine (9) remote radio heads at the 130-foot level on the existing 180-foot lattice tower. Cellco will also install a 12’ x 17’ equipment shelter and a back-up generator in the northeast portion of the Property.

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Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

17729363-v1

Robinson + Cole

Joseph Samolis, Director of Planning,
Conservation and Development
March 2, 2018
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Baldwin', with a long horizontal flourish extending to the right.

Kenneth C. Baldwin

Attachment

ATTACHMENT 7

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

March 2, 2018

Via Certificate of Mailing

«Name_and_Address»

Re: Sub-Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Proposed Shared Use of an Existing Telecommunications Facility at 169 Cross Street, Middletown, Connecticut

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Sub-Petition for Declaratory Ruling (“Sub-Petition”) with the Connecticut Siting Council (“Council”) seeking approval to share the City-owned telecommunications tower at 169 Cross Street in Middletown (the “Property”). Cellco intends to install twelve (12) antennas and nine (9) remote radio heads at the 130-foot level on the existing 180-foot lattice tower. Cellco will also install a 12’ x 17’ equipment shelter and a back-up generator in the northeast portion of the Property.

As presented in the Sub-Petition, the proposed facility modifications at the Property constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-533). A copy of the full Sub-Petition is attached for your review.

March 2, 2018

Page 2

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the Sub-Petition.

This notice is being sent to you because you are listed as an owner of land that abuts the Property. If you have any questions regarding the Sub-Petition, the Council's process for reviewing the Sub-Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth C. Baldwin". The signature is fluid and cursive, with a long horizontal stroke at the end.

Kenneth C. Baldwin

Attachment

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTERS LIST

**169 CROSS STREET
MIDDLETOWN, CONNECTICUT**

	<u>Property Address</u>	<u>Owner and Mailing Address</u>
1.	161 Cross Street	Wesleyan University Finance Office 287 High Street Middletown, CT 06457
2.	170 Long Lane	Wesleyan University Finance Office 287 High Street Middletown, CT 06457
3.	178 Cross Street	Wesleyan University Finance Office 287 High Street Middletown, CT 06457
4.	172 Cross Street	Wesleyan University Finance Office 287 High Street Middletown, CT 06457
5.	383 Washington Street	The Indian Hill Cemetery Corporation 383 Washington Street Middletown, CT 06457
6.	190 Cross Street	Wesleyan University Finance Office 287 High Street Middletown, CT 06457
7.	162 Cross Street	Wesleyan University Finance Office 287 High Street Middletown, CT 06457