

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE: :
: :
A PETITION OF CELLCO PARTNERSHIP : SUB-PETITION NO. 1133
D/B/A VERIZON WIRELESS FOR A : 35 SOUTH BARTLETT ROAD,
DECLARATORY RULING FOR : WATERFORD, CONNECTICUT
APPROVAL OF AN ELIGIBLE FACILITY :
REQUEST FOR MODIFICATIONS TO AN :
EXISTING TELECOMMUNICATIONS :
TOWER AT 35 SOUTH BARTLETT ROAD, :
WATERFORD, CONNECTICUT : AUGUST 4, 2015

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-14-533) 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 SBA Network Services Inc. (“SBA”) tower at 35 South Bartlett Road in Waterford, Connecticut constitutes an Eligible Facilities Request (“EFR”) under the FCC Order. Cellco has designated this site as its “Quaker Hill Facility”.

II. Factual Background

The Town of Waterford (the “Town”) owns a 1.7-acre parcel at 35 South Bartlett Road in Waterford, Connecticut (the “Property”). The Property currently maintains an existing water tank, owned by the Town and a 180-foot self-supporting lattice tower owned and operated by

SBA. See Attachment 1 – Site Vicinity Map and Site Schematic (Aerial Photograph). The SBA tower is currently shared by T-Mobile and the Town. Equipment associated with the existing antennas is located inside fenced compound near the base of the tower.

III. Proposed Quaker Hill Facility

Cellco intends to install a total of nine (9) antennas and nine (9) remote radio heads (“RRHs”) at the 120-foot level on the tower. Equipment associated with Cellco’s antennas and a diesel-fueled back-up generator will be located inside a 12’ x 26’ shelter located within the facility compound. Power and telephone service will extend from the existing utility backboard at the tower site. Project Plans for Cellco’s Quaker Hill Facility are included in Attachment 2. Specifications for Cellco’s antennas and RRHs are included in Attachment 3. A Structural Analysis confirming that the SBA tower can accommodate Cellco’s proposed modifications 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 120-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 protrude approximately 5'-7" from the face of the tower.

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 equipment shelter to house its radio equipment and back-up power supply.

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 occur within the limits of the existing fenced compound area.

5. *The proposed facility does not defeat the existing concealment elements of the base station.* None of the existing antennas on the SBA tower are concealed in any fashion. Cellco's antennas will not be concealed.

6. *The proposed facility complies with conditions associated with the prior approval of construction or modification of the base station.* The existing tower was approved by the Town and constructed by SBA in 2006. Cellco is not aware of any conditions imposed on the Town that would prohibit the shared use of the tower.

B. FCC Compliance

Operation of Cellco's facility will not increase the radio frequency ("RF") emissions at the SBA tower site to a level at or above the FCC Safety standard. A cumulative General Power Density table, including Cellco's proposed antennas is included in Attachment 5.

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

On August 4, 2015, a copy of this Sub-Petition was sent to the Waterford's First Selectman, Daniel M. Steward. The Town is the owner of the Property. See Attachment 6.

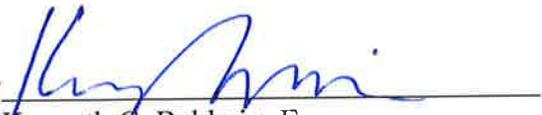
A copy of this Sub-Petition was also sent to each owner of land that abuts the Property. A sample abutter's cover letter and the list of those abutting landowners who were sent notice and a copy of the Sub-Petition is included in Attachment 7.

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

Site Vicinity Map

Proposed Wireless Telecommunications Facility
 Quaker Hill CT
 35 South Barlett Road
 Waterford, Connecticut





Existing 180' Tall Lattice Tower (by others)
 Proposed Verizon Wireless Antennas
 Mounted at a Centerline Height of 120' AGL

Proposed Verizon Wireless
 11'-6"x26'-0" Equipment
 Shelter With Generator

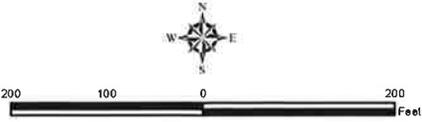
Legend

-  Existing Fenced Equipment Compound (by others)
-  Proposed Verizon Wireless Equipment Shelter
-  Approximate Subject Property Boundary
-  Approximate Parcel Boundary (CTDEEP GIS)

Site Schematic

Proposed Wireless Telecommunications Facility
 Quaker Hill CT
 35 South Barlett Road
 Waterford, Connecticut

Map Notes:
 Base Map Source: ESRI World Imagery; Microsoft, 3/29/2011
 Map Scale: 1 inch = 200 feet
 Map Date: June 2015



ATTACHMENT 2

CELLCO PARTNERSHIP

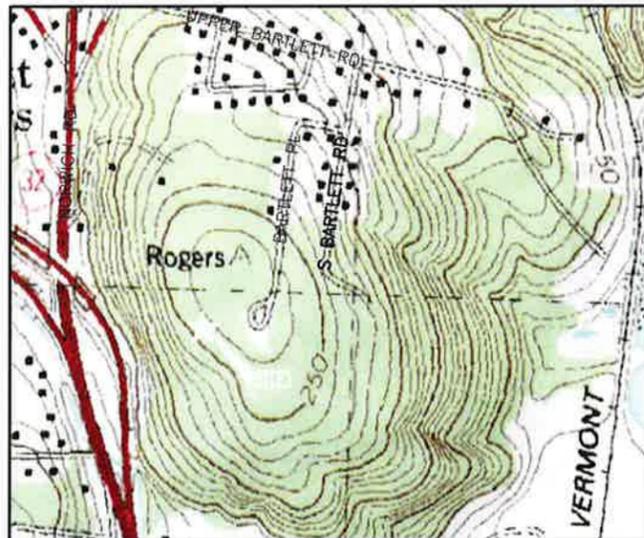


d.b.a. **verizon**wireless

WIRELESS COMMUNICATIONS FACILITY

QUAKER HILL CT

35 SOUTH BARTLETT ROAD
WATERFORD, CT 06375



VICINITY MAP SCALE: 1"=500'

DIRECTIONS TO SITE:

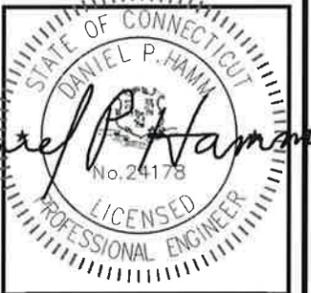
GET ON I-84 E. HEAD EAST ON E RIVER DR
TURN LEFT ONTO THE CT-2 E RAMP TO NORWICH
FOLLOW CT-2 E AND I-395 S TO CT-163 S IN MONTVILLE. TAKE EXIT 79
FROM I-395 S. MERGE ONTO I-84 E
TAKE EXIT 55 FOR CT-2 E TOWARD NORWICH/NEW LONDON/I-84 E
CONTINUE ONTO CT-2 E. KEEP LEFT AT THE FORK TO CONTINUE ON CT-2
E/HWY 2 E. TAKE EXIT 28S FOR I-395 S/CONNECTICUT 2A S TOWARD NEW
HAVEN. MERGE ONTO I-395 S
TAKE EXIT 79 FOR CT-163 TOWARD UNCASVILLE/MONTVILLE
CONTINUE ON CT-163 S. TAKE CT-32 S TO S BARTLETT RD IN WATERFORD.
TURN LEFT ONTO CT-163 S
TURN RIGHT ONTO CT-32 S/NORWICH-NEW LONDON TURNPIKE
CONTINUE TO FOLLOW CT-32 S. TURN LEFT ONTO LATHROP RD
TURN RIGHT ONTO UPPER BARTLETT RD. TURN RIGHT ONTO S BARTLETT RD.
DESTINATION WILL BE ON THE RIGHT
35 S BARTLETT RD, QUAKER HILL, CT 06375

CONSULTANT TEAM	
PROJECT ENGINEER	
HUDSON DESIGN GROUP, LLC 1600 OSGOOD STREET BUILDING 20 NORTH, SUITE 3090 NORTH ANDOVER, MA 01845 TEL: 1-(978)-557-5553 FAX: 1-(978)-336-5586	
MEP ENGINEER	
HUDSON DESIGN GROUP, LLC 1600 OSGOOD STREET BUILDING 20 NORTH, SUITE 3090 NORTH ANDOVER, MA 01845 TEL: 1-(978)-557-5553 FAX: 1-(978)-336-5586	

PROJECT SUMMARY	
SITE NAME:	QUAKER HILL CT
SITE ADDRESS:	35 SOUTH BARTLETT ROAD WATERFORD, CT 06375
PROPERTY OWNER:	TOWN OF WATERFORD 15 ROPE FERRY ROAD WATERFORD, CT 06385
APPLICANT:	CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS 99 EAST RIVER DRIVE EAST HARTFORD, CT 06108
SITE ACQUISITION CONTACT:	ALEKSEY TYURIN VERIZON WIRELESS PHONE: (860) 803-8213
LEGAL/REGULATORY COUNSEL:	KENNETH C. BALDWIN ESQ. ROBINSON + COLE LLP (860)275-8345
LATITUDE:	N41° 25' 04.02"
LONGITUDE:	W72° 06' 24.00"

SCOPE OF WORK INFO.
VERIZON WIRELESS IS PROPOSING TO INSTALL THE FOLLOWING IMPROVEMENTS TO THE EXISTING TELECOMMUNICATION SITE:
<ul style="list-style-type: none"> NEW PANEL ANTENNAS: (3) ANTENNAS PER SECTOR, FOR TOTAL OF (9) ANTENNAS. NEW RRHS: (3) RRHS PER SECTOR, FOR TOTAL OF (9) RRHS. NEW JUNCTION BOXES: (3) JUNCTION BOXES TOTAL. ITEMS LISTED ABOVE TO BE MOUNTED ON EXISTING LATTICE TOWER.
<ul style="list-style-type: none"> NEW 11'-6"x26'-0" EQUIPMENT SHELTER WITH GENERATOR AND GPS ANTENNA. NEW ELECTRICAL METER ON EXISTING H-FRAME. ITEMS LISTED ABOVE TO BE INSTALLED WITHIN EXISTING FENCED COMPOUND.

SHEET INDEX	
SHT. NO.	DESCRIPTION
T-1	TITLE SHEET
C-1	ABUTTERS MAP
A-1	COMPOUND PLAN
A-2	ELEVATION



Daniel P. Hamm

CHECKED BY: DJR

APPROVED BY: DPH

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	07/21/15	REVISED PER COMMENTS	GC
0	06/12/15	ISSUED FOR REVIEW	GC

SITE NAME:
QUAKER HILL CT

SITE ADDRESS:
35 SOUTH BARTLETT ROAD
WATERFORD, CT 06375

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



1400 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090 TEL: (978) 557-5533
N. ANDOVER, MA 01845 FAX: (978) 336-5586



CHECKED BY: DJR

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	07/21/15	REVISED PER COMMENTS	GC
0	06/12/15	ISSUED FOR REVIEW	GC

SITE NAME:

QUAKER HILL CT

SITE ADDRESS:

35 SOUTH BARTLETT ROAD
WATERFORD, CT 06375

SHEET TITLE:

ABUTTERS PLAN

SHEET NUMBER:

C-1

SOURCE:

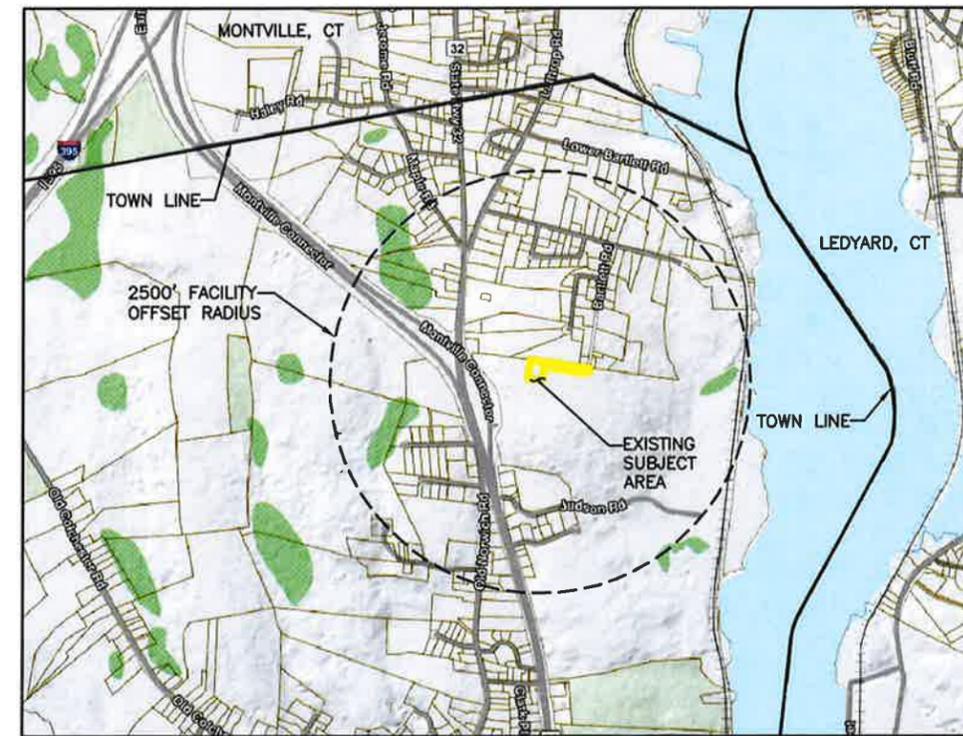
TOWN OF WATERFORD, CT ASSESSORS MAP AND GIS
ONLINE MAP, ACCESS ON 6/12/2015.

SITE SPECIFIC NOTES:

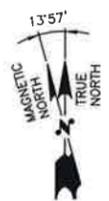
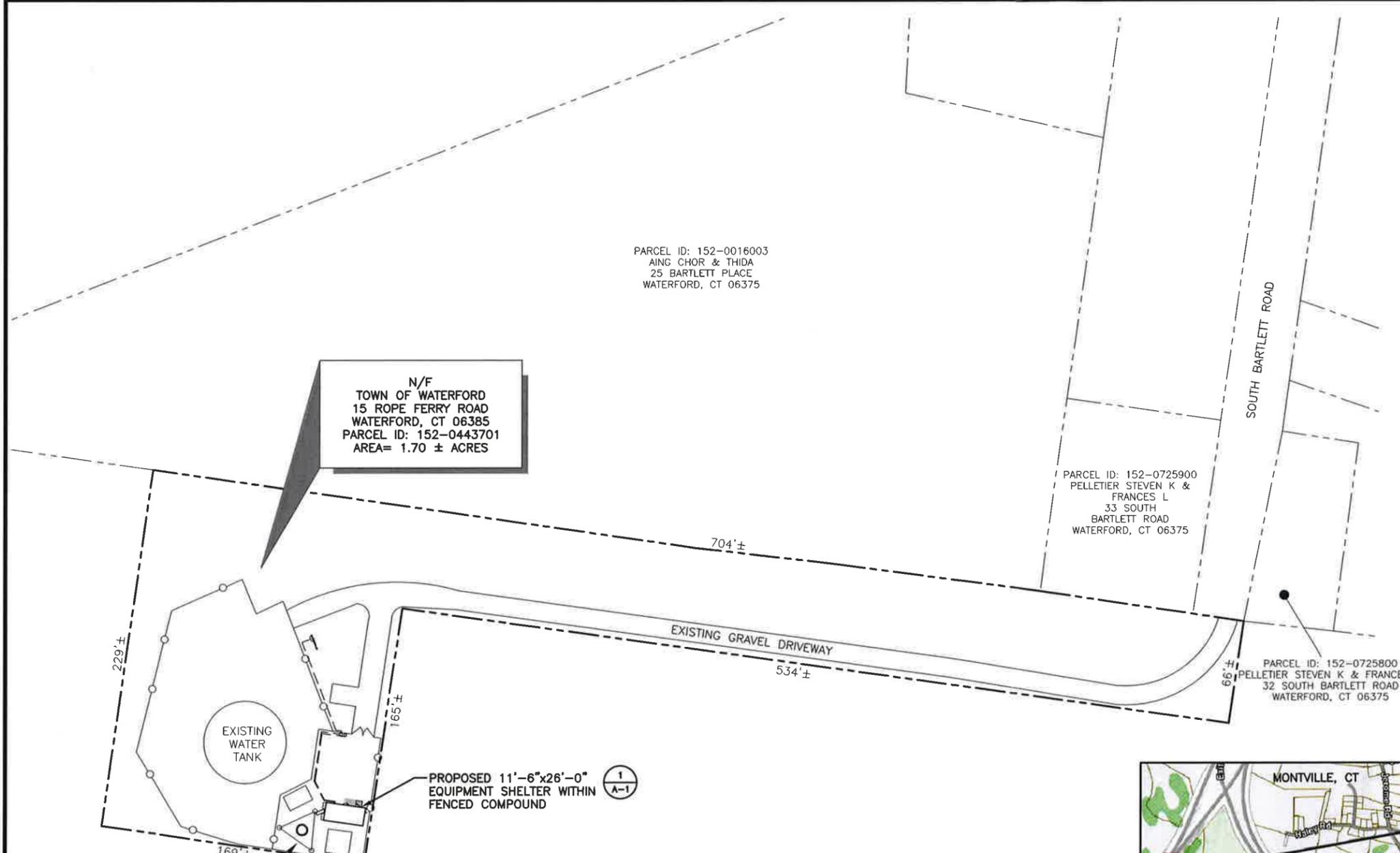
1. SITE SURVEY HAS NOT BEEN CONDUCTED BY HUDSON DESIGN GROUP, LLC FOR THIS PROJECT. ALL SETBACKS SHOWN ON THIS PLAN ARE TAKEN FROM CORNERS OF PROPOSED LEASE AREA TO PROPERTY LINES AND ARE APPROXIMATE.
2. VERIFY AZIMUTHS W/ RF ENGINEER.
3. PROPERTY LINE INFORMATION IS COMPILED FROM ASSESSORS PLAN AND RECORD DOCUMENTS AND IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD BOUNDARY SURVEY, AND IS SUBJECT TO CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE. **A FULL BOUNDARY SURVEY WAS NOT PERFORMED.**

LEGEND

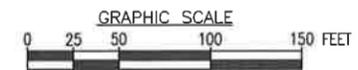
- PROPERTY LINE-SUBJECT PARCEL
- PROPERTY LINE-ABUTTERS
- TOWN BOUNDARY LINE
- CONTOUR LINE
- DELINEATED WETLAND LINE
- [Hatched Box] (E) BUILDING
- XXX-XX ASSESSORS MAP-BLOCK-LOT NO.
- [Wavy Line] (E) TREE LINE



MUNICIPALITY NOTIFICATION LIMIT MAP



ABUTTER PLAN
22x34 SCALE: 1"=50'-0"
11x17 SCALE: 1"=100'-0"



1
C-1



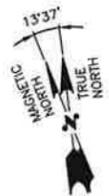
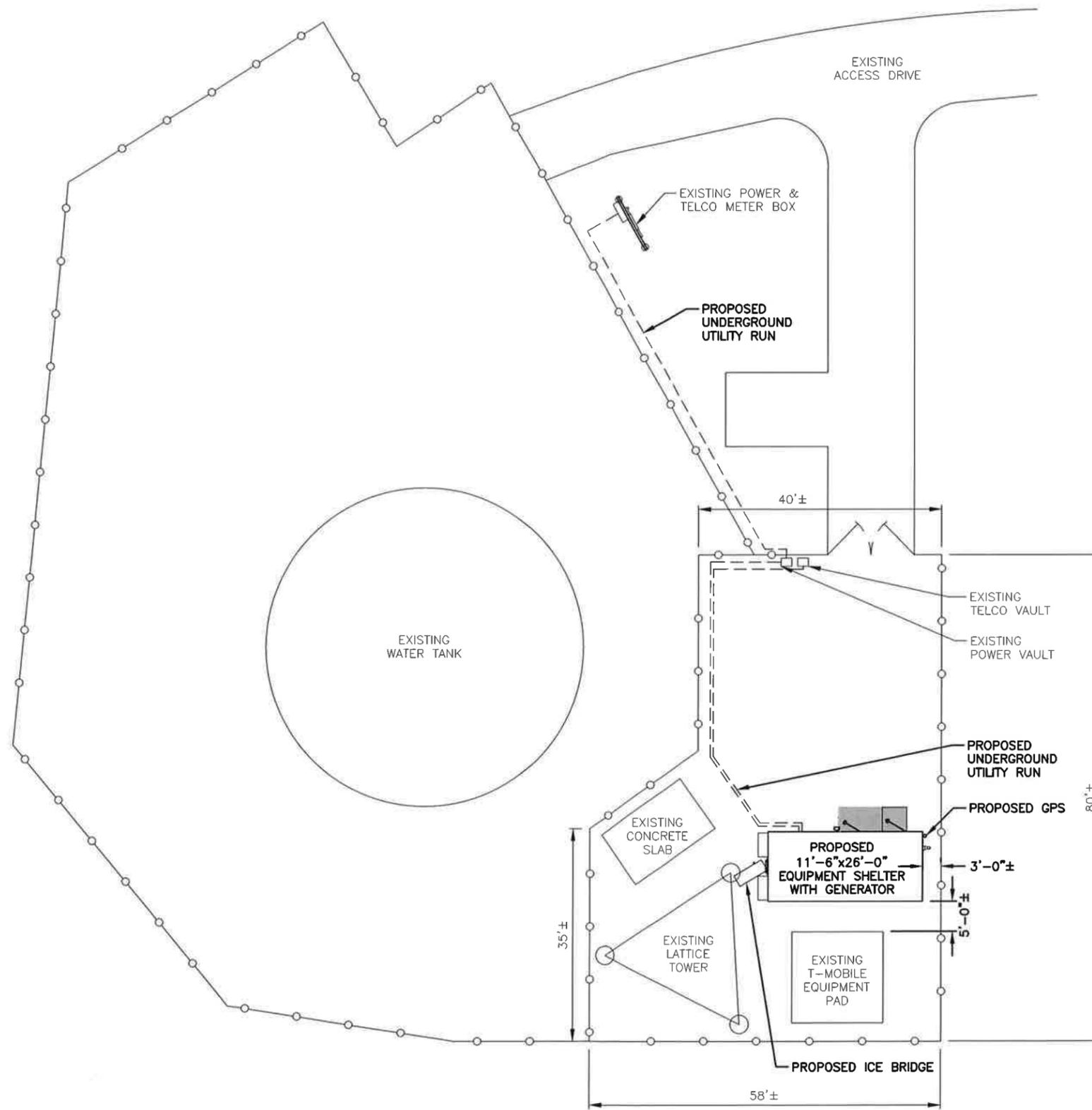
VICINITY MAP
SCALE: N.T.S

NOTE:

AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS NOT BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC. DRAWINGS ARE SUBJECT TO CHANGE PENDING OUTCOME OF A STRUCTURAL ANALYSIS.

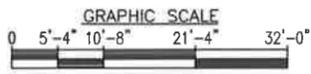
NOTE:

1. VERIFY AZIMUTHS W/ RF ENGINEER.
2. EQUIPMENT SHELTER DESIGN PROVIDED BY OTHERS.



COMPOUND PLAN
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

1
A-1



PREPARED FOR: CELCO PARTNERSHIP D.B.A.



1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586



Daniel P. Haman

CHECKED BY: DJR

APPROVED BY: DPH

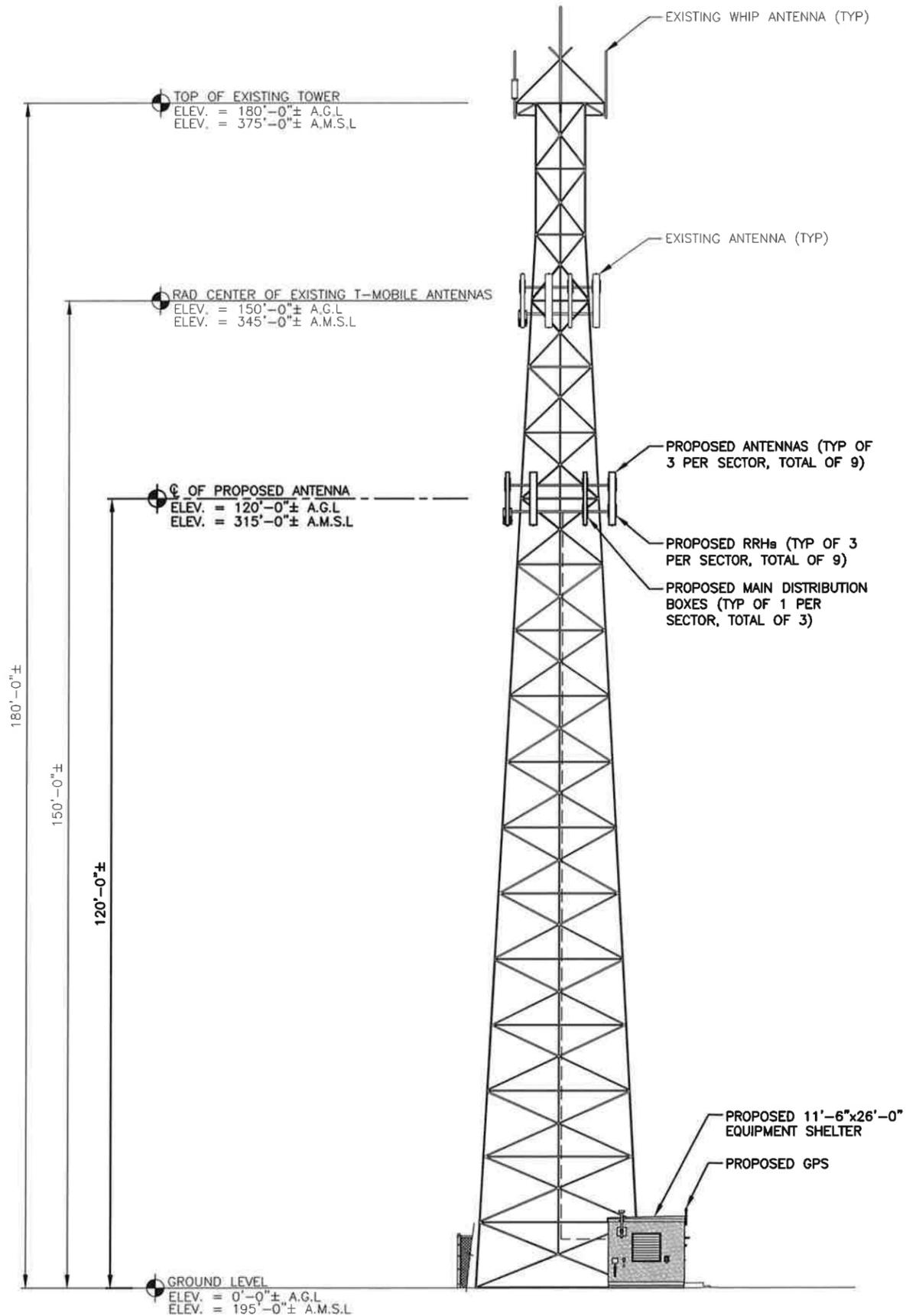
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	07/21/15	REVISED PER COMMENTS	GC
0	06/12/15	ISSUED FOR REVIEW	GC

SITE NAME:
QUAKER HILL CT

SITE ADDRESS:
35 SOUTH BARTLETT ROAD
WATERFORD, CT 06375

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



NOTE:
 AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS NOT BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC. DRAWINGS ARE SUBJECT TO CHANGE PENDING OUTCOME OF A STRUCTURAL ANALYSIS.

NOTE:
 1. VERIFY AZIMUTHS W/ RF ENGINEER.
 2. EQUIPMENT SHELTER DESIGN PROVIDED BY OTHERS.

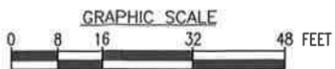
PROPOSED ANTENNA INFORMATION

SECTOR	STATUS	AZIMUTH	CABLE LENGTH
ALPHA	PROPOSED	0°	155'
BETA	PROPOSED	90°	155'
GAMMA	PROPOSED	210°	155'

NOTE: CABLE LENGTH = EXACT LENGTH PLUS 25'

EAST ELEVATION
 22x34 SCALE: 1/16"=1'-0"
 11x17 SCALE: 1/32"=1'-0"

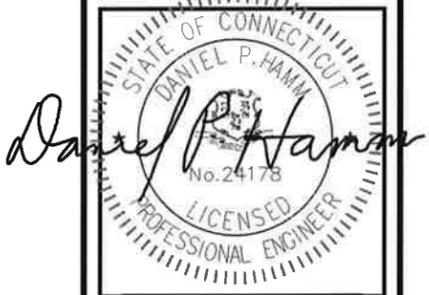
1
A-2



PREPARED FOR: CELCO PARTNERSHIP D.B.A.



1600 OSGOOD STREET
 BUILDING 20 NORTH, SUITE 3090 TEL: (978) 557-5533
 N. ANDOVER, MA 01845 FAX: (978) 336-5586



CHECKED BY: DJR

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	07/21/15	REVISED PER COMMENTS	GC
0	06/12/15	ISSUED FOR REVIEW	GC

SITE NAME:
QUAKER HILL CT

SITE ADDRESS:
 35 SOUTH BARTLETT ROAD
 WATERFORD, CT 06375

SHEET TITLE
ELEVATION

SHEET NUMBER
A-2

ATTACHMENT 3



SBNHH-1D65B

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal 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	1920–2180	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, dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
CPR at Boresight, dB	20	23	20	20	17	21
CPR at Sector, dB	14	10	12	10	9	1
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	1920–2180	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, 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.](#)

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol® Teletilt®
Operating Frequency Band	1695 – 2360 MHz 698 – 896 MHz
Performance Note	Outdoor usage

SBNHH-1D65B

POWERED BY



Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h 150.0 mph

Dimensions

Depth	181.0 mm 7.1 in
Length	1851.0 mm 72.9 in
Width	301.0 mm 11.9 in
Net Weight	18.4 kg 40.6 lb

Remote Electrical Tilt (RET) Information

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

Regulatory Compliance/Certifications

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



Included Products

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

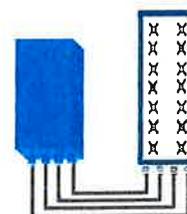


FEATURES

- 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 scheme	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) IP65
Wind load (@150km/h or 93mph)	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

www.alcatel-lucent.com Alcatel, Lucent, Alcatel-Lucent and the Alcatel-Lucent logo are trademarks of Alcatel-Lucent. All other trademarks are the property of their respective owners. The information presented is subject to change without notice. Alcatel-Lucent assumes no responsibility for inaccuracies contained herein. Copyright © 2014 Alcatel-Lucent. All Rights Reserved

PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3



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

** Not a Verizon Wireless deployed product

ALCATEL-LUCENT – CONFIDENTIAL – SOLELY FOR AUTHORIZED PERSONS HAVING A NEED TO KNOW – PROPRIETARY – USE PURSUANT TO COMPANY INSTRUCTION

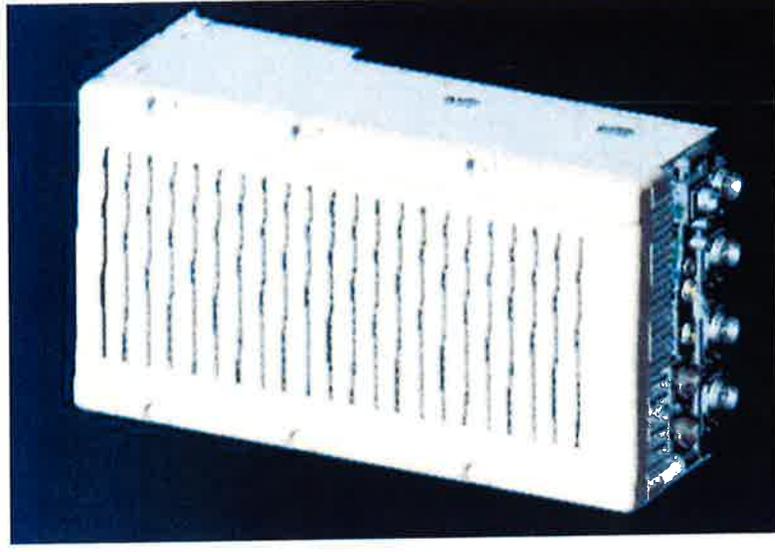
COPYRIGHT © 2014 ALCATEL-LUCENT. ALL RIGHTS RESERVED.

NEW PCS RF MODULES FOR VZW

RRH2X60 - HW CHARACTERISTICS

LR14.3

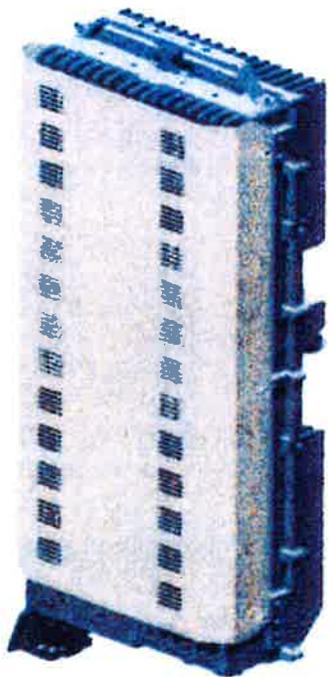
	RRH2x60
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental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



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

ALCATEL-LUCENT WIRELESS PRODUCT DATA SHEET RRH2x60-AWS

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



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

The Alcatel-Lucent RRH2x60-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals

along with operations, administration and maintenance (OA&M) information.

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

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

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

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

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

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

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

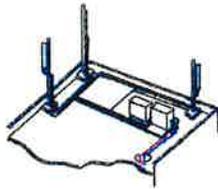
The Alcatel-Lucent RRH2x60-AWS is a very cost-effective solution to deploy LTE MIMO.

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

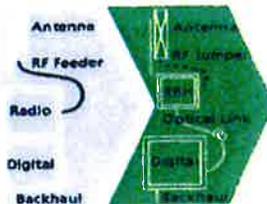
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation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

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

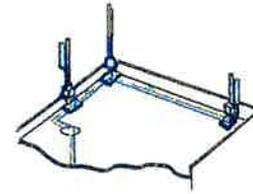
Installation can easily be done by a single person as the Alcatel-Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

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

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and

- silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

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

Dimensions and weights

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

Electrical Data

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

RF Characteristics

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

Connectivity

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

Environmental specifications

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

Safety and Regulatory Data

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

www.alcatel-lucent.com Alcatel, Lucent, Alcatel-Lucent and the Alcatel-Lucent logo are trademarks of Alcatel-Lucent. All other trademarks are the property of their respective owners. The information presented is subject to change without notice. Alcatel-Lucent assumes no responsibility for inaccuracies contained herein.

Copyright © 2012 Alcatel-Lucent. All rights reserved. M2012XXXXXX (March)

AT THE SPEED OF IDEAS™

Alcatel-Lucent 

ATTACHMENT 4

**Structural Analysis for
SBA Network Services, Inc.**

180' Self-Support Tower

**SBA Site Name: Rogers Hill
SBA Site ID: CT09680-S-04
Verizon Site Name: Quaker Hill**

FDH Project Number 15BKBR1400 (R1)

Analysis Results

Tower Components	76.3%	Sufficient
Foundation	64.4%	Sufficient

Prepared By:



Tyler Ferguson
Project Engineer I

Reviewed By:



Dennis D. Abel
Director of Structural Engineering
CT PE License No. 23247

Velocitel, Inc., d.b.a. FDH Velocitel
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com



April 21, 2015

04-21-2015

TABLE OF CONTENTS

EXECUTIVE SUMMARY 3

 Conclusions..... 3

 Recommendations 3

APPURTENANCE LISTING 4

RESULTS 5

GENERAL COMMENTS 7

LIMITATIONS 7

APPENDIX 8

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Velocitel performed a structural analysis of the existing self-supported tower located in Quaker Hill, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F* and the *2005 Connecticut Building Code (CBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, the member sizes, geotechnical data, and foundation dimensions was obtained from:

- World Tower Company, Inc. (Drawing No. Q071062) original design drawings dated December 5, 2007
- Clarence Welti Associates, Inc. (Site Name: Rogers Hill) Geotechnical Study for Proposed Communications Tower dated December 17, 2007
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and the *2005 CBC* is 85 mph without ice and 38 mph with 3/4" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from Verizon in place at 120 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 CBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see World Tower Company, Inc. Drawing No. Q071062), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Velocitel is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards and the *2005 CBC* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed feed lines should be installed as shown in **Figure 1**.
2. RRU/RRH Stipulation: The equipment may be installed in any arrangement as determined by the client.

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Velocitel should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
185	(2) Sinclair SC488-HF2LNF (1) Telewave ANT150F2 (1) 9" x 13.25" x 21.25" TMA	(3) 1-5/8"	Town of Waterford	180	(3) Standoffs
150	(3) Ericsson AIR 21 B2A/B4P (3) Ericsson AIR 21 B4A/B2P (3) Ericsson KRY 112 144/1	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile	150	(3) T-Frames

Proposed Carrier – Final Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
120	(12) Commscope SBNHH-1D65B (3) Alcatel Lucent RRH 2x60W-1900MHz (3) Alcatel Lucent RRH 2x60 AWS (3) Alcatel Lucent RRH 2x60 LTE (2) RFS DB-T1-6Z-8AB-0Z	(10) 1-5/8" (2) 1-5/8" Fiber	Verizon	120	(3) Sector Frames (Commscope P/N SF-QV12-B)

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Legs	50 ksi
Bracing	36 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 105% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Velocitel should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation (ft)	Component Type	Size	% Capacity	Pass Fail
T1	180 - 160	Leg	1 1/2	23.0	Pass
		Diagonal	1	28.7	Pass
		Horizontal	1	2.9	Pass
		Top Girt	1	1.9	Pass
		Bottom Girt	1	7.1	Pass
T2	160 - 140	Leg	2	37.2	Pass
		Diagonal	1 1/4	37.1	Pass
		Horizontal	1	9.7	Pass
		Top Girt	1	9.2	Pass
		Bottom Girt	1	17.0	Pass
T3	140 - 120	Leg	2 3/4	37.2	Pass
		Diagonal	L2x2x3/16	25.0 40.0 (b)	Pass
		Top Girt	L2x2x1/8	10.1 14.4 (b)	Pass
T4	120 - 100	Leg	3	50.1	Pass
		Diagonal	L2x2x1/4	37.6 55.1 (b)	Pass
T5	100 - 80	Leg	3 1/2	45.6	Pass
		Diagonal	L2x2x1/4	49.3 53.0 (b)	Pass
T6	80 - 60	Leg	3 1/2	56.9	Pass
		Diagonal	L3x3x3/16	55.4 65.7 (b)	Pass
		Secondary Horizontal	L2x2x1/8	53.6 56.9 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	% Capacity	Pass Fail
T7	60 - 40	Leg	3 3/4	56.7	Pass
		Diagonal	L3x3x3/16	64.7 66.1 (b)	Pass
		Secondary Horizontal	L2x2x3/16	59.4	Pass
T8	40 - 20	Leg	4	55.6	Pass
		Diagonal	L3x3x3/16	76.3	Pass
		Secondary Horizontal	L2 1/2x2 1/2x3/16	44.6	Pass
T9	20 - 0	Leg	4	62.8	Pass
		Diagonal	L3x3x1/4	70.8	Pass
		Secondary Horizontal	L2 1/2x2 1/2x3/16	63.5	Pass

Table 4 - Maximum Base Reactions

Load Type	Direction	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Individual Foundation	Horizontal	19 k	43 k
	Uplift	212 k	333 k
	Compression	243 k	386 k
Overturning Moment	---	2,912 k-ft	4,527 k-ft

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Velocitel should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Velocitel.

APPENDIX

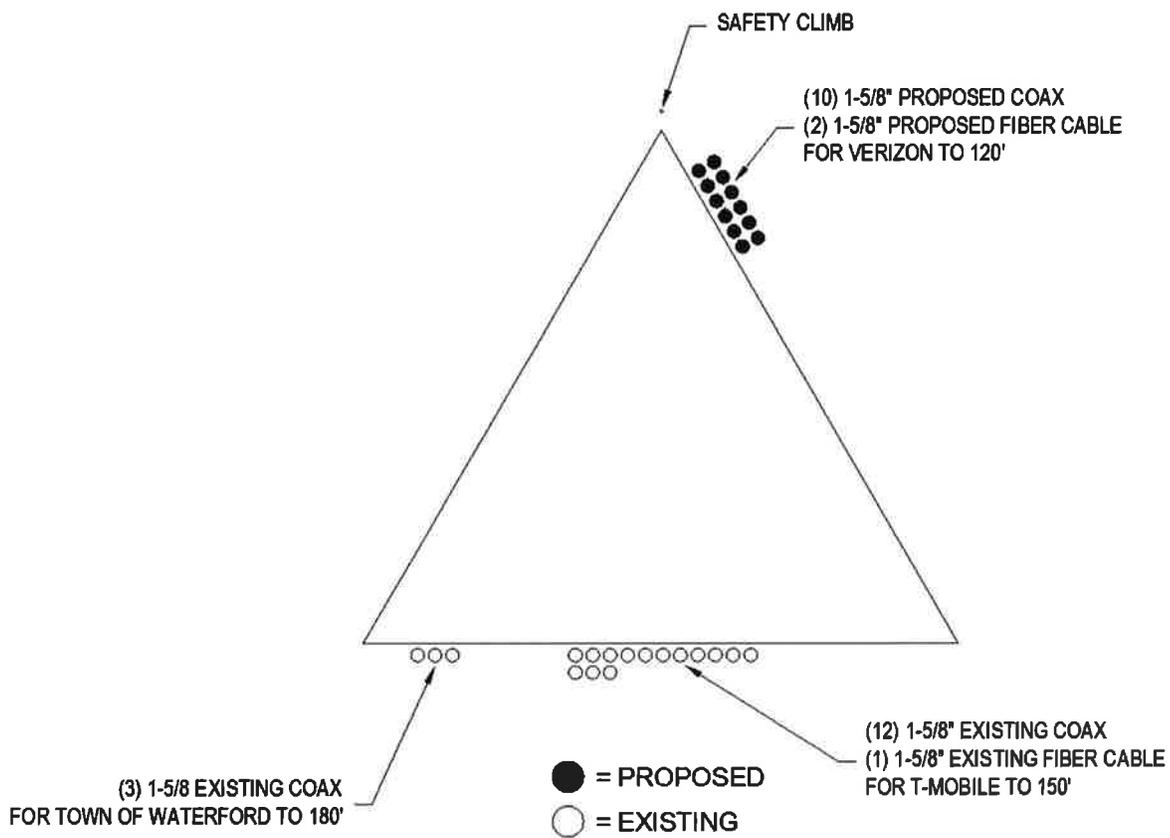


Figure 1 – Assumed Coax Layout

ATTACHMENT 5

ATTACHMENT 6

August 4, 2015

Via Certificate of Mailing

Daniel M. Steward, First Selectman
Town of Waterford
15 Rope Ferry Road
Waterford, CT 06385

Re: **Proposed Modifications to Telecommunications Facility at 35 South Bartlett Road,
Waterford, Connecticut**

Dear Mr. Steward:

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 wireless telecommunications facility at 35 South Bartlett Road in Waterford, Connecticut (the “Property”). Cellco plans to install nine (9) antennas and nine (9) remote radio heads at the 120-foot level on the 180-foot tower at the Property. Equipment associated with Cellco’s antennas and a back-up generator will be located inside a 12’ x 26’ shelter within the existing tower compound.

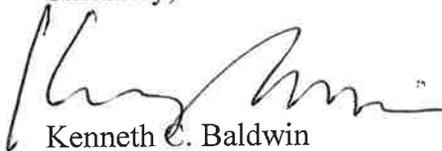
As presented in the Sub-Petition, the proposed modifications to the existing tower at the Property constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal 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 a copy of this Sub-Petition.

Daniel M. Steward
August 4, 2015
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 attached Sub-Petition.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth C. Baldwin". The signature is fluid and cursive, with a prominent initial "K".

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

August 4, 2015

Via Certificate of Mailing

«Name_and_Address»

Re: Sub-Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to a Telecommunications Facility at 35 South Bartlett Road, Waterford, 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 wireless telecommunications facility at 35 South Bartlett Road in Waterford, Connecticut (the “Property”). Cellco plans to install nine (9) antennas and nine (9) remote radio heads at the 120-foot level on the 180-foot tower at the Property. Equipment associated with Cellco’s antennas and a back-up generator will be located inside a 12’ x 26’ shelter within the existing tower compound.

The facility improvements constitute a 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.

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.

August 4, 2015
Page 2

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

35 SOUTH BARTLETT ROAD, WATERFORD, CONNECTICUT

	<u>Property Address</u>	<u>Name and Address</u>
1.	607 Mohegan Avenue Parkway	Mashantucket Pequot Tribe PO Box 3008 Mashantucket, CT 06338
2.	32 South Bartlett Road	Steven K & Frances L. Pelletier PO Box 70 Canterbury, CT 06331
3.	33 South Bartlett Road	Steven K & Frances L. Pelletier PO Box 70 Canterbury, CT 06331
4.	25 Bartlett Place	Chor & Thida Aing 25 Bartlett Place Quaker Hill, CT 06375