

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP	:	SUB-PETITION NO. 1133
D/B/A VERIZON WIRELESS FOR A	:	63 INDUSTRIAL PARK ROAD
DECLARATORY RULING FOR	:	PUTNAM, CT
APPROVAL OF AN ELIGIBLE FACILITY	:	
REQUEST FOR MODIFICATIONS TO AN	:	
EXISTING TELECOMMUNICATIONS	:	
TOWER AT 63 INDUSTRIAL PARK ROAD,	:	
PUTNAM, CONNECTICUT	:	JUNE 17, 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 Towers Inc. (“SBA”) tower at 63 Industrial Park Road in Putnam, Connecticut constitutes an Eligible Facilities Request (“EFR”) under the FCC Order. Cellco has designated this site as its “Putnam South Facility”.

II. Factual Background

SBA maintains a 196-foot self-supporting lattice tower in the northerly portion on a 2.39-acre parcel at 63 Industrial Park Road in Putnam (the “Property”). *See Attachment 1 – Site Vicinity Map and Site Schematic (Aerial Photograph)*. The existing tower is shared by AT&T

with antennas at the 186-foot level. Equipment associated with the AT&T antennas is located within a fenced compound area.

III. Proposed Putnam South Facility

Cellco will install a total of twelve (12) antennas and nine (9) remote radio heads (“RRHs”) on the existing tower at a height of 176 feet above ground level (“AGL”). Equipment associated with Cellco’s antennas will be located inside a 12’ x 26’ shelter within the existing facility compound. Power and telephone service will extend from the existing utility backboard at the tower site.¹ Project Plans for the Putnam South Facility are included in Attachment 2. Specifications for Cellco’s antennas and RRHs are included in Attachment 3. A Structural Analysis confirming that the tower can accommodate Cellco’s proposed small cell antennas and related equipment 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*

¹ In 2007, Cellco received Council approval to install twelve (12) antennas on the tower and an equipment shelter near the base of the tower (EM-VER-116070605). These improvements were never completed and the Council acknowledgement has since expired.

the nearest existing antenna not to exceed twenty (20) feet, whichever is greater. Cellco proposes to install its antennas and RRHs at the 176-foot level on the existing 196-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'-6" from 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 12' x 26' 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 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. Likewise, 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.* Cellco is not aware of any conditions associated with the original SBA tower approval that conflict with Cellco's proposed shared use. Cellco's proposed facility modifications are consistent with other similar small cell facilities.

B. FCC Compliance

Operation of Cellco's small cell facility antennas 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 small cell antennas is included in Attachment 5.

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

On June 17, 2015, a copy of this Sub-Petition was sent to Putnam Mayor Anthony Falzarano and Putnam Financial Associates LLC, 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



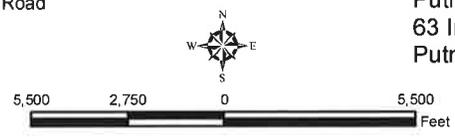
- Legend**
- X Proposed Verizon Wireless Facility
 - X Surrounding Verizon Wireless Facilities
 - Municipal Boundary
 - ~ Watercourse
 - Waterbody
 - Major Road

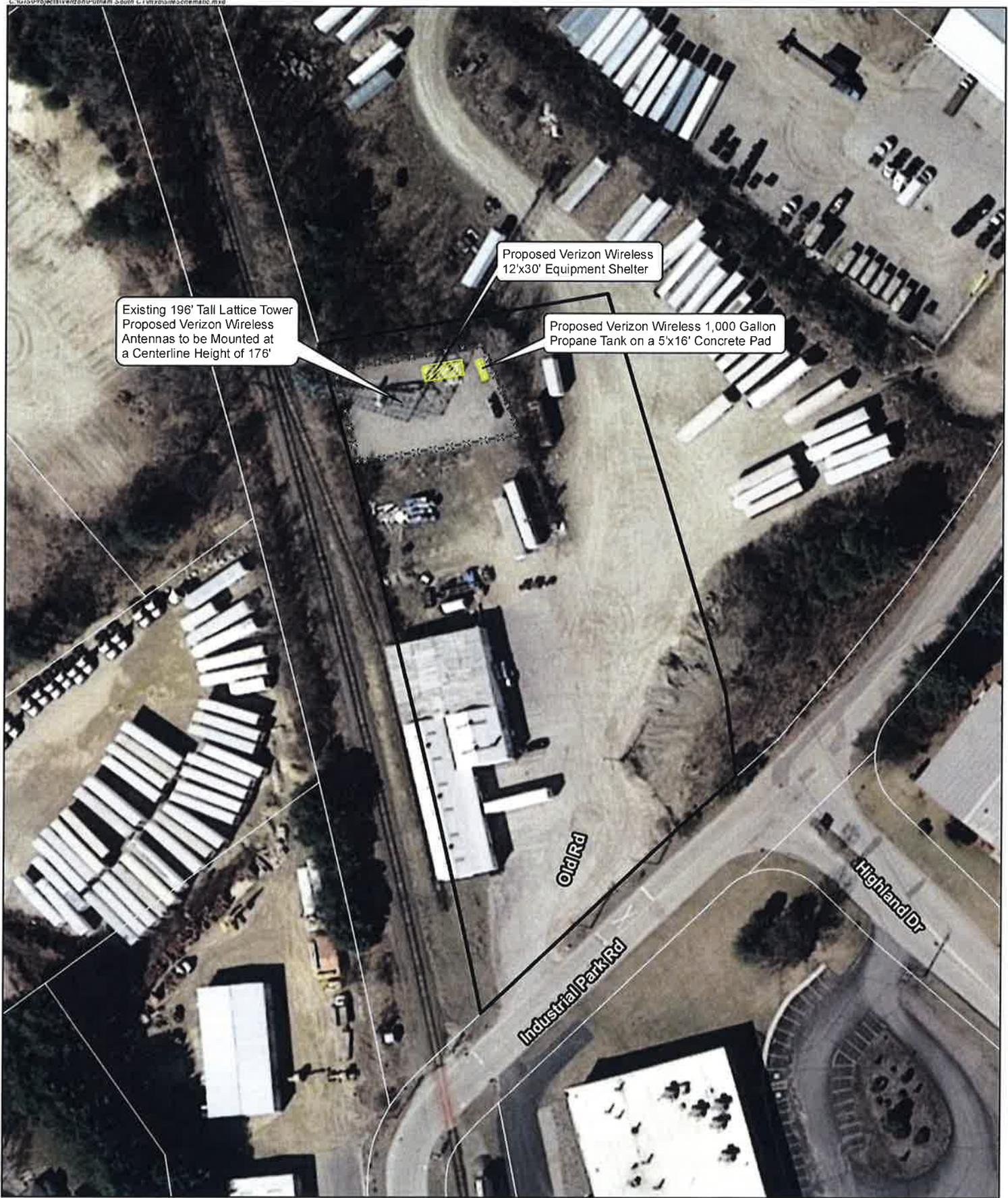
Site Vicinity Map

Proposed Wireless Telecommunications Facility
 Putnam South
 63 Industrial Park Road
 Putnam, Connecticut



Base Map Source: 2012 Aerial Photograph (CTECO)
 Map Scale: 1 inch = 5,500 feet
 Map Date: May 2015

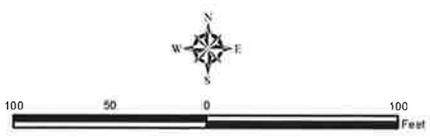




Legend

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

Map Notes:
 Base Map Source: 2012 Aerial Photograph (CT ECO)
 Map Scale: 1 inch = 100 feet
 Map Date: May 2015



Site Schematic

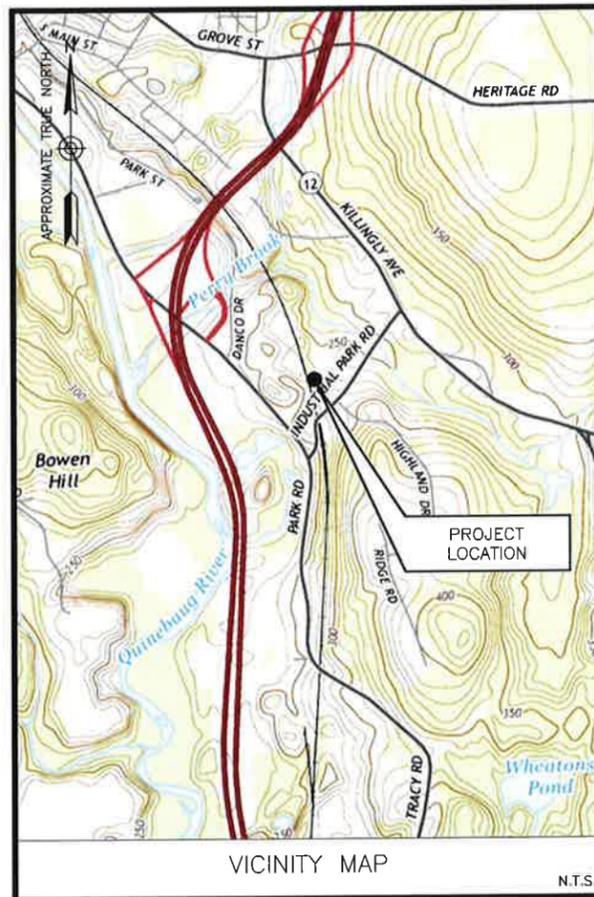
Proposed Wireless Telecommunications Facility
 Putnam South
 63 Industrial Park Road
 Putnam, Connecticut



ATTACHMENT 2

CELLCO PARTNERSHIP d/b/a **verizon**wireless

PROPOSED WIRELESS FACILITY
SITE NAME: PUTNAM SOUTH
63 INDUSTRIAL PARK ROAD
PUTNAM, CT 06260



DIRECTIONS FROM 99 EAST RIVER DRIVE, EAST HARTFORD, CT:

TAKE I-84 E/US-6E TOWARD NORWICH. AT EXIT 69, TAKE RAMP RIGHT FOR CT-74 TOWARD WILLINGTON. TURN RIGHT ONTO CT-74/TOLLAND TPKE. KEEP LEFT TO STAY ON CT-74/TOLLAND TPKE. BEAR LEFT ONTO US-44/POMPEY HOLLOW RD. KEEP LEFT ONTO CT-101/HARFORD PROVIDENCE TPKE/MASHAMQUET RD. TAKE RAMP LEFT FOR I-395 NORTH TOWARD WORCESTER. AT EXIT 95, TAKE RAMP RIGHT AND FOLLOW SIGNS FOR KENNEDY DRIVE. TURN LEFT ONTO KENNEDY DR. ROAD NAME CHANGES TO PARK RD. TURN LEFT ONTO INDUSTRIAL PARK RD. SITE WILL BE ON THE LEFT.

SITE COORDINATES:
 LATITUDE: 41°-53'-49.7" N
 LONGITUDE: 71°-53'-32.1" W
 (BASED ON FCC ASR)

ELEVATION DATA
 GRADE ELEVATION AT LATTICE TOWER = 270'-0"± A.M.S.L.
 (BASED ON FCC ASR)

ELEVATION (TO C.L. OF ANTENNAS)
 ELEVATION = 176'-0"± A.G.L., 446'-0"± A.M.S.L.

SITE INFORMATION

- THE SCOPE OF WORK SHALL INCLUDE:
1. THE INSTALLATION OF A PROPOSED CELLCO PARTNERSHIP EQUIPMENT SHELTER LOCATED IN AN EXISTING COMPOUND.
 2. A TOTAL OF UP TO TWELVE (12) PROPOSED CELLCO PARTNERSHIP ANTENNAS AND ASSOCIATED APPURTENANCES ARE TO BE MOUNTED TO THE EXISTING LATTICE TOWER AT A CENTERLINE ELEVATION OF 176'-0"± A.G.L.
 3. THE INSTALLATION OF A PROPOSED CELLCO PARTNERSHIP PROPANE TANK IN AN EXISTING COMPOUND.
 4. THE INSTALLATION OF A PROPOSED BACKUP GENERATOR INSIDE THE PROPOSED CELLCO PARTNERSHIP EQUIPMENT SHELTER.
 5. THE PROPOSED WIRELESS FACILITY INSTALLATION WILL BE DESIGNED IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.
- SCOPE OF WORK

SITE NAME:
 PUTNAM SOUTH

SITE ADDRESS:
 63 INDUSTRIAL PARK ROAD
 PUTNAM, CT 06260
 WINDHAM COUNTY

PROPERTY OWNER:
 PUTNAM FINANCIAL ASSOCIATES LLC
 29 LAMBS WAY
 STONINGTON, CT 06378

TOWER OWNER:
 SBA TOWERS
 5900 BROKEN SOUND PKWY NW
 BOCA RATON, FL 33487

TOWER OWNER CONTACT:
 MARK LUTHER
 (570) 561-3200

APPLICANT:
 CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS
 99 EAST RIVER DRIVE
 EAST HARTFORD, CT 06108

SITE ACQUISITION CONTACT:
 STEPHEN SCHADLER
 VITALSITE SERVICES, INC.
 (508) 887-0357

LEGAL/REGULATORY CONTACT:
 KENNETH C. BALDWIN, ESQ.
 ROBINSON & COLE
 (860) 275-8345

PROJECT INFORMATION

SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
C-1	ABUTTERS MAP
C-2	PARTIAL SITE PLAN
C-3	ANTENNA MOUNTING CONFIGURATION & SOUTHEAST ELEVATION
SHEET INDEX	

CELLCO PARTNERSHIP
 d/b/a **verizon**wireless

PUTNAM SOUTH

CSC DRAWINGS

REV	DATE	DESCRIPTION
O	06/16/15	FOR SUBMITTAL
A	06/05/15	FOR COMMENT

Dewberry

Dewberry Engineers Inc.
 800 PARSIPPANY ROAD
 SUITE 301
 PARSIPPANY, NJ 07054
 PHONE: 973.739.9400
 FAX: 973.739.9710

JIANG YU, P.E.
 CONNECTICUT LICENSE NO. 0023222

DRAWN BY: JC

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50067815

JOB NUMBER: 50072602

SITE ADDRESS

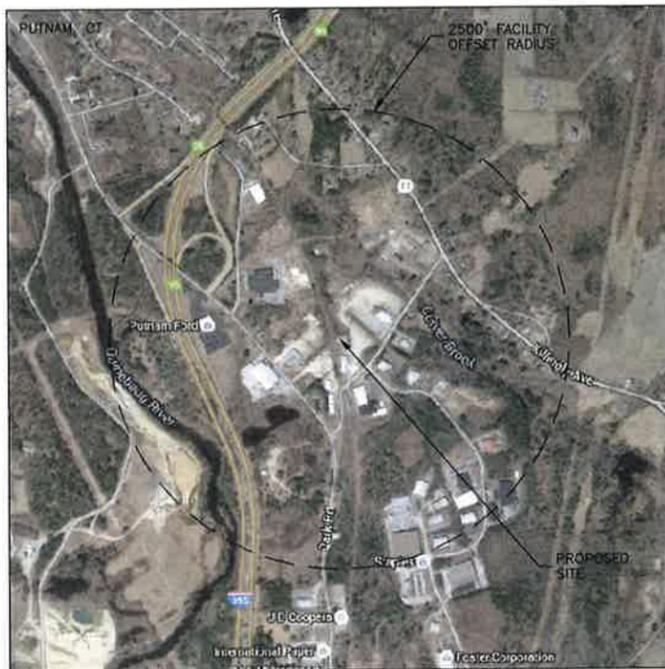
63 INDUSTRIAL
 PARK ROAD
 PUTNAM, CT 06260

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



NOTES:

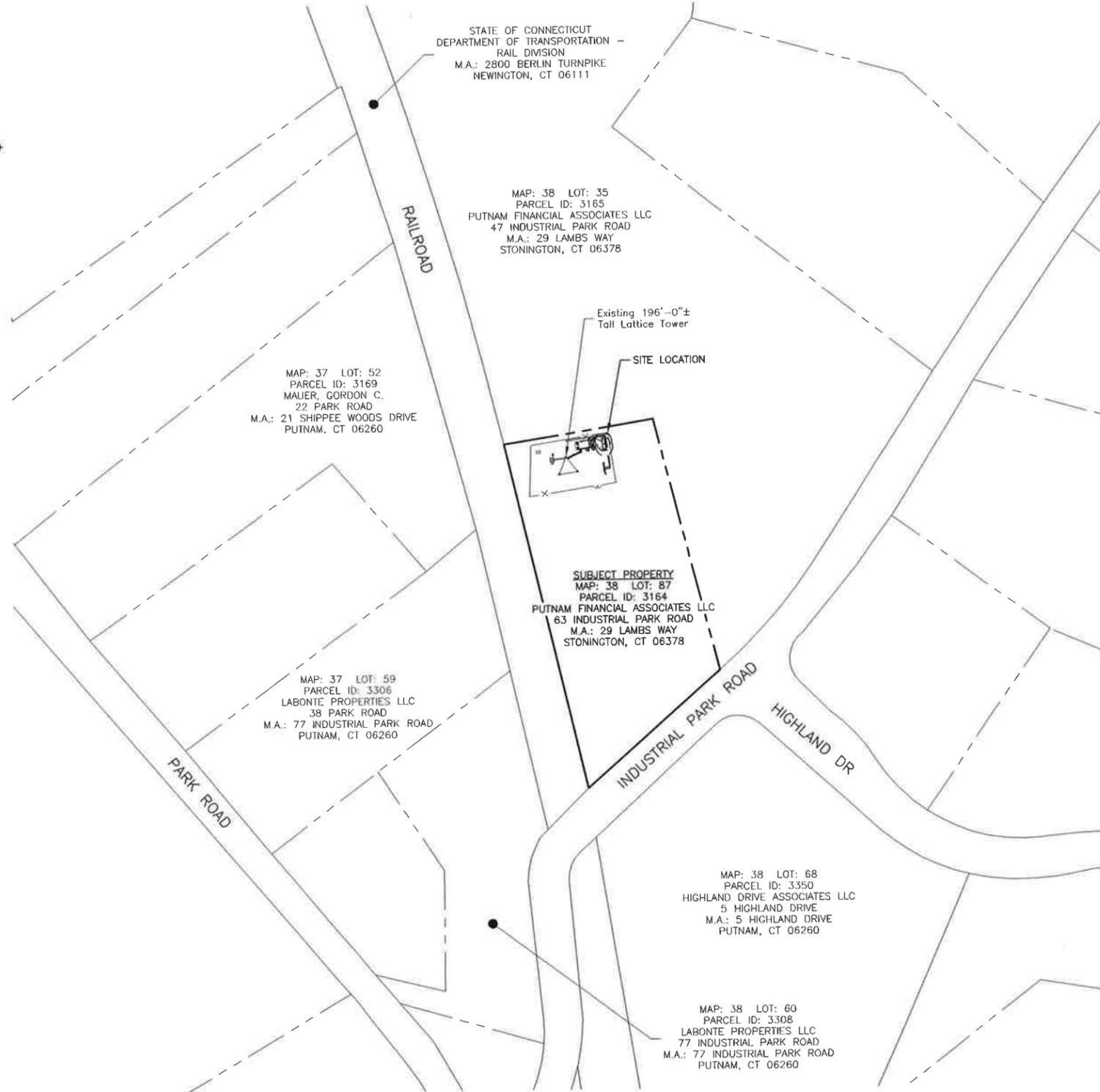
- MUNICIPALITY NOTIFICATION LIMIT MAP OBTAINED FROM GOOGLE MAPS ON 06/04/15.

MUNICIPALITY NOTIFICATION LIMIT MAP

SCALE: 1"=2000' FOR 11"x17"
1"=1000' FOR 22"x34"



1



NOTES:

- ABUTTERS MAP BASED ON INFORMATION OBTAINED FROM THE TOWN OF PUTNAM ASSESSORS MAPS & GEOGRAPHIC INFORMATION SYSTEM.

ABUTTERS MAP

SCALE: 1"=200' FOR 11"x17"
1"=100' FOR 22"x34"



2

CELLCO
PARTNERSHIP
d/b/a **verizon**wireless

PUTNAM SOUTH

CSC DRAWINGS

O	06/16/15	FOR SUBMITTAL
A	06/05/15	FOR COMMENT



Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY: JC

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50067815

JOB NUMBER: 50072602

SITE ADDRESS

63 INDUSTRIAL
PARK ROAD
PUTNAM, CT 06260

SHEET TITLE

ABUTTERS MAP

SHEET NUMBER

PUTNAM SOUTH

CSC DRAWINGS

0	06/16/15	FOR SUBMITTAL
A	06/05/15	FOR COMMENT

Dewberry®
Dewberry Engineers Inc.
800 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973 739 9400
FAX: 973 739 9710

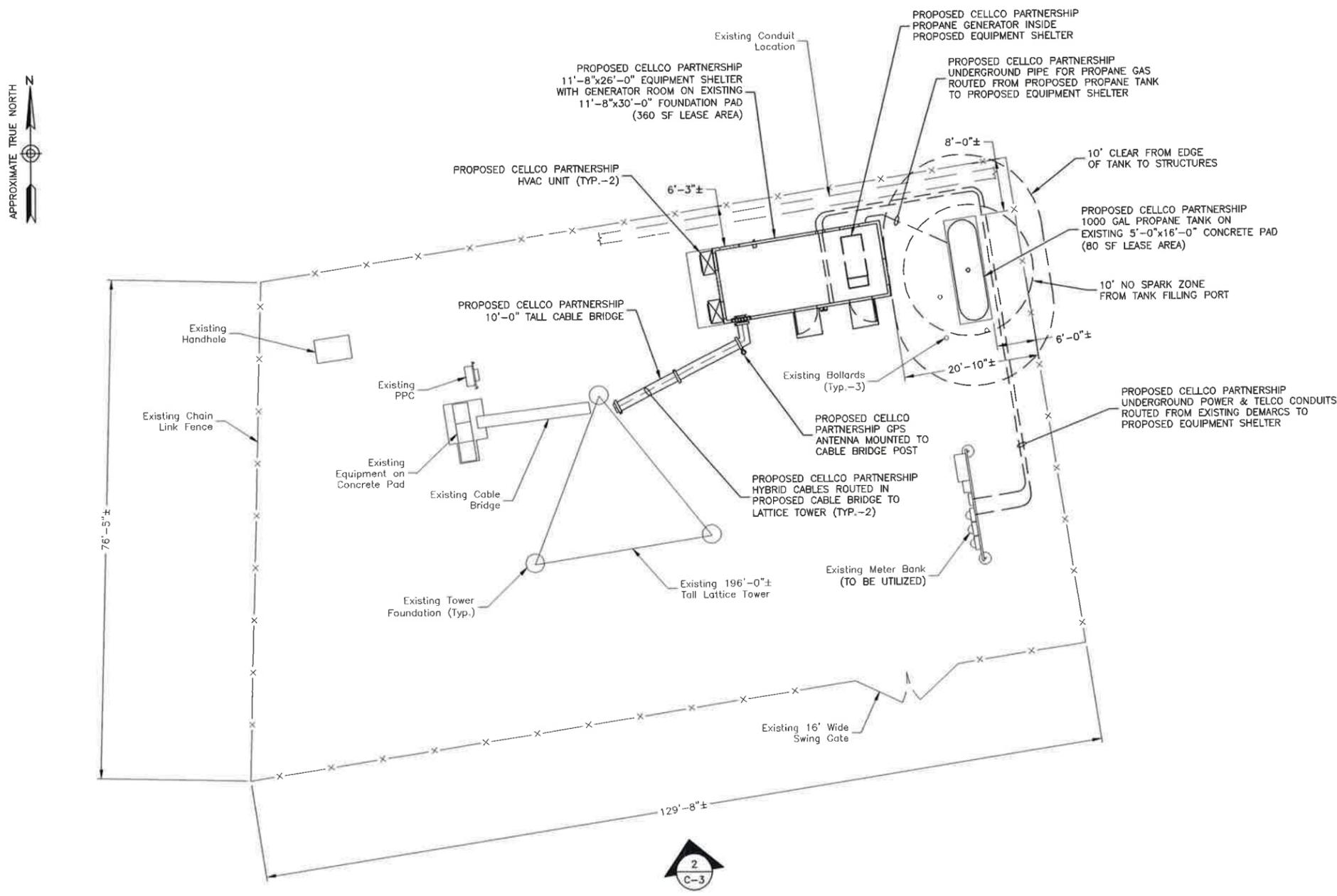
JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50067815
JOB NUMBER:	50072602

SITE ADDRESS
63 INDUSTRIAL
PARK ROAD
PUTNAM, CT 06260

SHEET TITLE
PARTIAL SITE PLAN

SHEET NUMBER



PARTIAL SITE PLAN
SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'

- NOTES:**
- NORTH SHOWN AS APPROXIMATE.
 - SOME EXISTING AND PROPOSED INFORMATION NOT SHOWN FOR CLARITY.
 - THESE DRAWINGS ARE PROVIDED FOR SITING COUNCIL REVIEW. CONSTRUCTION LEVEL DRAWINGS WILL BE DEVELOPED SUBSEQUENT TO THE APPROVAL OF THESE DRAWINGS.
 - LOCATION & ORIENTATION OF ALL ANTENNAS, COAX & EQUIPMENT PENDING A STRUCTURAL ANALYSIS BY OTHERS.
 - EXISTING GROUND RING WILL BE UTILIZED TO GROUND PROPOSED EQUIPMENT.
 - SITE PLAN & ELEVATION BASED ON EXISTING PLANS BY DEWBERRY-GOODKIND, INC. DATED 10/11/07.

ATTACHMENT 3



LNX-6514DS-VTM

Andrew® Antenna, 698–896 MHz, 65° horizontal beamwidth, RET compatible

- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Ideal choice for site collocations and tough zoning restrictions
- Excellent solution for site sharing and maximizing capacity
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- The RF connectors are designed for IP67 rating and the radome for IP56 rating

Electrical Specifications

Frequency Band, MHz	698–806	806–896
Gain, dBi	15.8	15.9
Beamwidth, Horizontal, degrees	65	64
Beamwidth, Vertical, degrees	12.4	11.2
Beam Tilt, degrees	0–10	0–10
USLS, dB	17	18
Front-to-Back Ratio at 180°, dB	32	30
CPR at Boresight, dB	23	23
CPR at Sector, dB	12	10
Isolation, dB	30	30
VSWR Return Loss, dB	1.4 15.6	1.4 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153
Input Power per Port, maximum, watts	400	400
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896
Gain by all Beam Tilts, average, dBi	15.6	15.7
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.5
	0 ° 15.7	0 ° 15.9
Gain by Beam Tilt, average, dBi	5 ° 15.7	5 ° 15.8
	10 ° 15.3	10 ° 15.3
Beamwidth, Horizontal Tolerance, degrees	±0.9	±1.4
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.6
USLS, dB	18	20
Front-to-Back Total Power at 180° ± 30°, dB	25	23
CPR at Boresight, dB	25	24
CPR at Sector, dB	15	12

* 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®
Band	Single band
Brand	DualPol® Teletilt®

Product Specifications

COMMSCOPE®

LNX-6514DS-VTM



Operating Frequency Band 698 – 896 MHz
Performance Note Outdoor usage

Mechanical Specifications

Color Light gray
Lightning Protection dc Ground
Radiator Material Aluminum
Radome Material Fiberglass, UV resistant
RF Connector Interface 7-16 DIN Female
RF Connector Location Bottom
RF Connector Quantity, total 2
Wind Loading, maximum 617.7 N @ 150 km/h
138.9 lbf @ 150 km/h
Wind Speed, maximum 241.0 km/h | 149.8 mph

Dimensions

Depth 180.5 mm | 7.1 in
Length 1851.0 mm | 72.9 in
Width 301.0 mm | 11.9 in
Net Weight 14.2 kg | 31.3 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator LNX-6514DS-A1M
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

DB380 — Pipe Mounting Kit for 2.4"-4.5" (60-115mm) OD round members on wide panel antennas. Includes 2 clamp sets and double nuts.

DB5083 — Downtilt Mounting Kit for 2.4"-4.5" (60 - 115 mm) OD round members. Includes a heavy-duty, galvanized steel downtilt mounting bracket assembly and associated hardware. This kit is compatible with the DB380 pipe mount kit for panel antennas that are equipped with two mounting brackets.

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance



HBXX-6517DS-VTM

Andrew® Quad Port Antenna, 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Superior azimuth tracking and pattern symmetry with excellent passive intermodulation suppression

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain, dBi	19.0	19.1	19.2
Beamwidth, Horizontal, degrees	67	66	65
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	18	18	18
Front-to-Back Ratio at 180°, dB	30	30	30
CPR at Boresight, dB	21	22	21
CPR at Sector, dB	10	11	9
Isolation, dB	30	30	30
VSWR Return Loss, dB	1.4 15.6	1.4 15.6	1.4 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain by all Beam Tilts, average, dBi	18.5	18.6	18.8
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.3	±0.4
Gain by Beam Tilt, average, dBi	0° 18.4	0° 18.4	0° 18.7
	3° 18.7	3° 18.7	3° 18.9
	6° 18.4	6° 18.5	6° 18.6
Beamwidth, Horizontal Tolerance, degrees	±2.4	±1.7	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.3	±0.3	±0.3
USLS, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	25	26	26
CPR at Boresight, dB	22	23	22
CPR at Sector, dB	10	10	9

* 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® quad
Band	Single band
Brand	DualPol® Teletilt®
Operating Frequency Band	1710 – 2180 MHz

HBXX-6517DS-VTM

POWERED BY



Performance Note

Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Low loss circuit board
Radome Material	PVC, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	4
Wind Loading, maximum	668.0 N @ 150 km/h 150.2 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h 149.8 mph

Dimensions

Depth	166.0 mm 6.5 in
Length	1903.0 mm 74.9 in
Width	305.0 mm 12.0 in
Net Weight	19.5 kg 43.0 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator	HBXX-6517DS-A2M
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

600899A-2 — 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
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Alcatel-Lucent RRH2x40-07-U

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-07-U is a high-power, small form-factor Remote Radio Head (RRH) operating in the North American Digital Dividend / 700MHz frequency band (3GPP Band 13). The Alcatel-Lucent RRH2x40-07-U is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.



A distributed eNodeB expands 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 an eNodeB to be installed separately, within the same site or several kilometres apart.

The Alcatel-Lucent RRH2x40-07-U 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 RRH2x40-07-U has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to two-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 10 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-07-U is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low

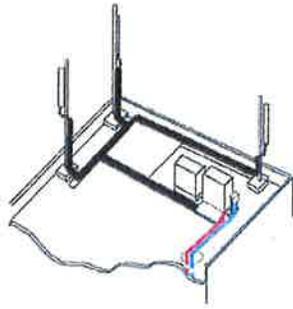
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-07-U installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-07-U is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-07-U is compact and weighs less than 23 kg (50 lb), 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 — a fraction of the time required for a traditional BTS.

Excellent RF performance

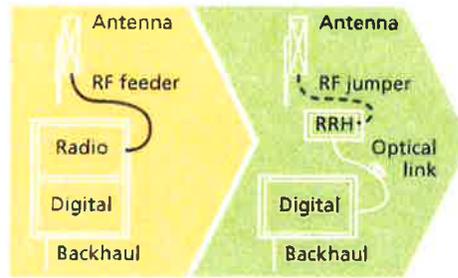
Because of its small size and weight, the Alcatel-Lucent RRH2x40-07-U can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-07-U where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2x40-07-U provides more RF power while at the same time consuming less electricity.



Macro

Features

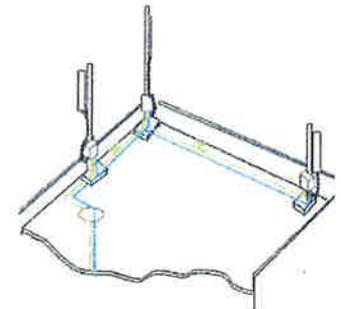
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless), noise-free, and heaterless unit
- Best-in-class power efficiency, with significantly reduced energy consumption



RRH for space-constrained cell sites

Benefits

- Leverages existing real estate with lower site costs
- Reduces installation costs, with fewer installation materials and simplified logistics
- Decreases power costs and minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility to network planning



Distributed

Technical specifications

Physical dimensions

- Height: 390 mm (15.4 in.)
- Width: 380 mm (15 in.)
- Depth: 210 mm (8.2 in.)
- Weight (without mounting kit): less than 23 kg (50 lb)

Power

- Power supply: -48V

Operating environment

- Outdoor temperature range:
 - With solar load: -40°C to +50°C (-40°F to +122°F)
 - Without solar load: -40°C to +55°C (-40°F to +131°F)
- Passive convection cooling (no fans)

- Enclosure protection
 - IP65 (International Protection rating)

RF characteristics

- Frequency band: 700 MHz; 3GPP Band 13
- Bandwidth: up to 10 MHz
- RF output power at antenna port:
 - 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way
- Noise figure: below 2.5 dB typical
- ALD features
 - TMA
 - Remote electrical tilt (RET) support (AISG v2.0)

Optical characteristics

Type/number of fibers

- Up to 3.12 Gb/s line bit rate
- Single-mode variant
 - One SM fiber (9/125 μm) per RRH2x, carrying UL and DL using CWDM (at 1550/1310 nm)
- Multi-mode variant
 - Two MM fibers (50/125 μm) per RRH2x: one carrying UL, the other carrying DL (at 850 nm)

Optical fiber length

- Up to 500 m (0.31 mi), using MM fiber
- Up to 20 km (12.43 mi), using SM fiber

Alarms and ports

- Six external alarms
- Two optical ports to support daisy-chaining

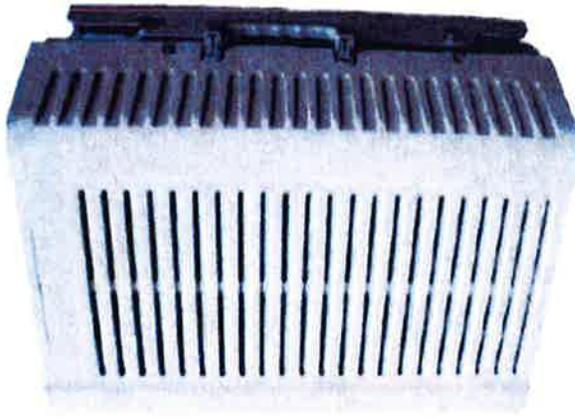
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PCS RF MODULES

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)



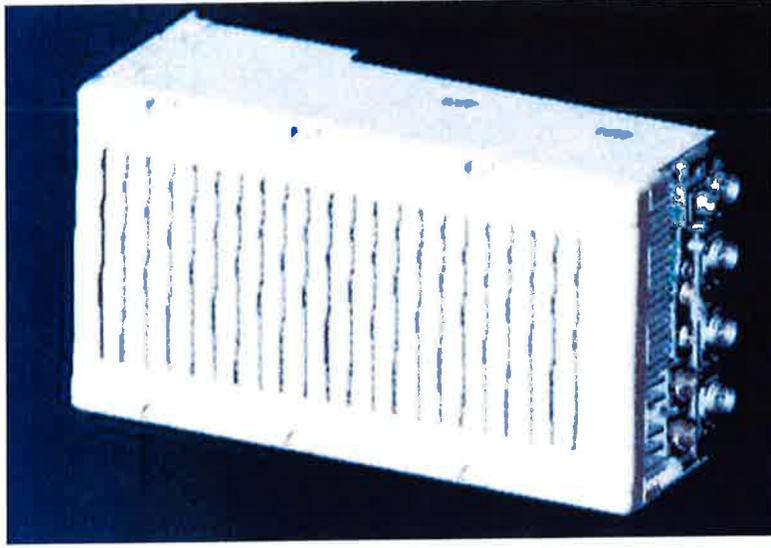
** Not a Verizon Wireless deployed product

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NEW PCS RF MODULES FOR VZW RRH2X60 - HW CHARACTERISTICS

LR14.3

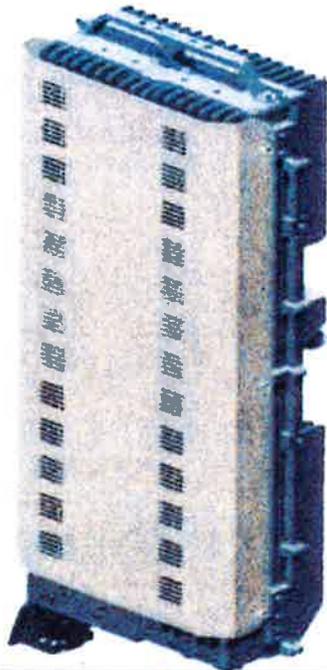
RRH2x60	
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	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 DATASHEET RRH2x60-AWS FOR BAND 4 APPLICATIONS

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



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

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

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

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.

Key Features

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.

Key Benefits

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

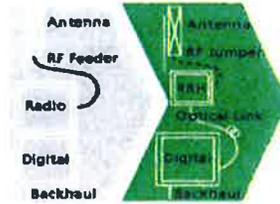
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation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

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

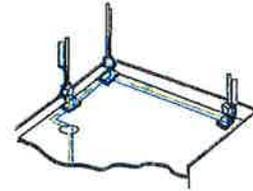
Installation can easily be done by a single person as the Alcatel-Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

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

BENEFITS

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

silent solutions, with minimum impact on the neighborhood, which ease the deployment

- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

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

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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 bundling 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

Outer Conductor Armor	Corrugated Aluminum	(mm (in))	46.5 (1.83)
Jacket	Polyethylene, PE	(mm (in))	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Weight, Approximate		(kg/m (lb/ft))	1.9 (1.30)
Minimum Bending Radius, Single Bending		(mm (in))	200 (8)
Minimum Bending Radius, Repeated Bending		(mm (in))	500 (20)
Recommended/Maximum Clamp Spacing		(m (ft))	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		(Ω/km (Ω/1000ft))	0.68 (0.205)
DC-Resistance Power Cable, 8.4mm ² (8AWG)		(Ω/km (Ω/1000ft))	2.1 (0.307)
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		(μm)	50/125
Primary Coating (Acrylate)		(μm)	245
Buffer Diameter, Nominal		(μm)	900
Secondary Protection, Jacket, Nominal		(mm (in))	2.0 (0.08)
Minimum Bending Radius		(mm (in))	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL34-V0, UL1666 RoHS Compliant
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 XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		(°C (°F))	-40 to +65 (-40 to 149)
Operation Temperature		(°C (°F))	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

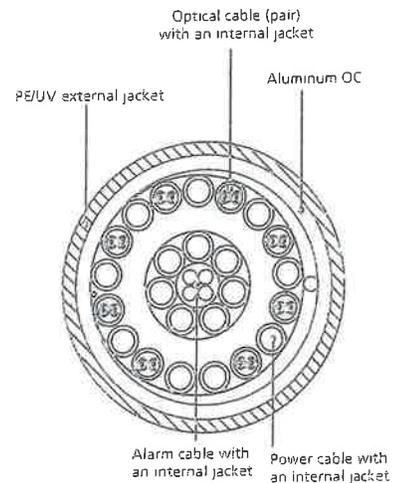


Figure 3: Construction Detail

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

ATTACHMENT 4



FDH Engineering, Inc., 6521 Meridien Dr. Raleigh, NC 27616, Ph. 919.755.1012, Fax 919.755.1031

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

196' Self-Support Tower

**SBA Site Name: Putnam Freight
SBA Site ID: CT00802-S-03
Verizon Site Name: Putnam South**

FDH Project Number 146CVZ1400

Analysis Results

Tower Components	75.7%	Sufficient
Foundation	81.7%	Sufficient

Prepared By:

Jonathan C. Holmes, EI
Project Engineer II

Reviewed By:

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

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



September 24, 2014

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 CT State Building Code

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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the existing self-supported tower located in Putnam, 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 *2005 CT State Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, the member sizes, and foundation dimensions was obtained from:

- Sabre Communications Corporation (Job No. 99-04060) Structural Design Report dated April 19, 1999
- Jaworski Geotech, Inc. (Project No. C98364G) Geotechnical Evaluation dated December 18, 1998
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CT State Building Code* is 85 mph without ice and 38 mph with 1" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from Verizon in place at 176 ft., the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 CT State Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundations were designed and constructed to support the original design reactions (see Sabre Job No. 99-04060), the foundations 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 Engineering, Inc. 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 *2005 CT State Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. Coax lines must be installed as shown in **Figure 1**.
2. The proposed RRUs should be installed directly behind the proposed panel antennas.

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 Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
186	(6) Powerwave 7770.00 (6) Powerwave LGP21401 TMAs (6) Powerwave LGP21903 Diplexers (3) KMW AM-X-CD-17-65-00T	(12) 1-5/8" (2) 3/4" DC (1) 7/16" Fiber (1) 1/2" RET	New Cingular	186	(3) T-Frames
185	(6) Ericsson RRUS-11 RRUs			185	(1) Universal Ring Mount (Valmont P/N LWRM)
	(1) Raycap DC6-48-60-18-8F Surge Arrestor				(1) 5' x 2.375" Pipe Mount
176	(6) Antel LPA-185080/12CF (6) Antel LPA-80080/6CF	(12) 1-5/8"	Verizon	176	(3) T-Frames

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
176	(6) Andrew HBXX-6517DS (6) Andrew LNX-6514DS (3) Alcatel Lucent RRH-2x60-AWS (3) Alcatel Lucent RRH-2x60-PCS (3) Alcatel Lucent RRH-2x40-700U (2) RFS DB-T1-6Z-8AB-0Z	(10) 1-5/8" (2) 1-5/8" Hybriflex	Verizon	176	(3) T-Frames

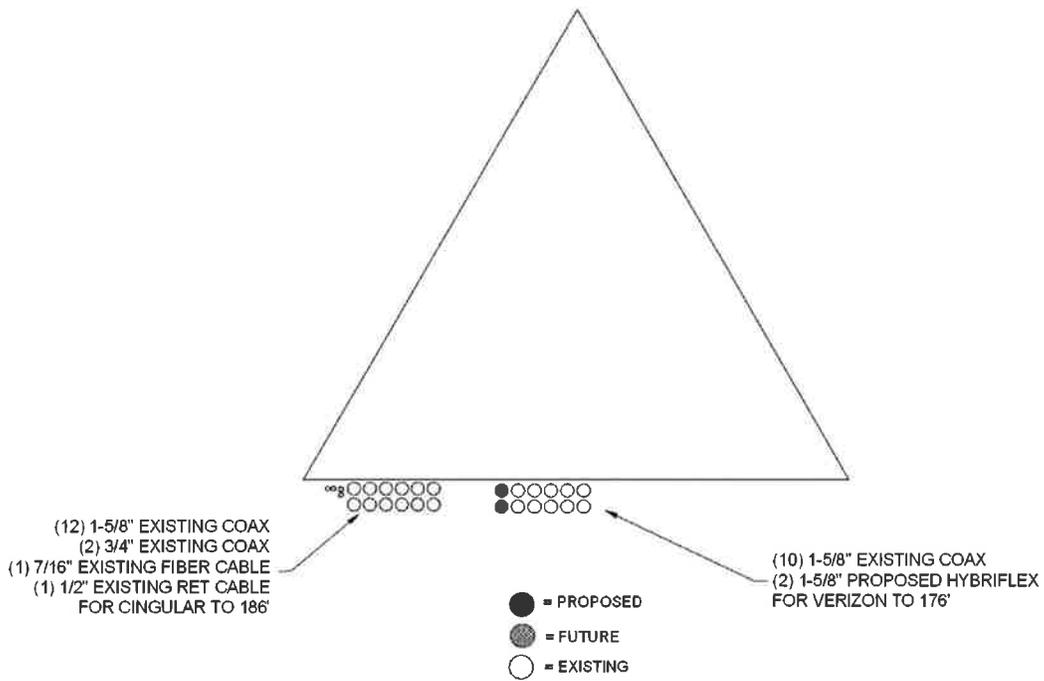


Figure 1 – Feedline Layout

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 100% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. 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	196 - 180	Leg	P3.5x.318 (4.00 OD)	3.4	Pass
		Diagonal	L2x2x3/16	31.1	Pass
		Top Girt	L2x2x3/16	3.0	Pass
T2	180 - 160	Leg	P4x.438 (4.50 OD)	15.9	Pass
		Diagonal	L2 1/2x2 1/2x3/16	56.7	Pass
T3	160 - 140	Leg	P5x.375 (5.563 OD)	26.2	Pass
		Diagonal	L2 1/2x2 1/2x1/4	64.2	Pass
T4	140 - 120	Leg	P6x.432 (6.625 OD)	27.4	Pass
		Diagonal	L3 1/2x3 1/2x1/4	32.7 50.3 (b)	Pass
T5	120 - 100	Leg	P6x.432 (6.625 OD)	39.9	Pass
		Diagonal	L3 1/2x3 1/2x1/4	58.8 60.7 (b)	Pass
T6	100 - 80	Leg	P8x.322 (8.625 OD)	45.9	Pass
		Diagonal	L3 1/2x3 1/2x1/4	75.7	Pass
T7	80 - 60	Leg	P8x.5 (8.625 OD)	36.7	Pass
		Diagonal	L3 1/2x3 1/2x3/8	68.2	Pass
T8	60 - 40	Leg	P8x.5 (8.625 OD)	43.0	Pass
		Diagonal	L4x4x3/8	57.7	Pass
T9	40 - 20	Leg	P8x.5 (8.625 OD)	43.2	Pass
		Diagonal	L3 1/2x3 1/2x3/8	58.8	Pass
		Horizontal	L4x4x3/8	42.7	Pass
		Redund Horz 1 Bracing	L3x3x3/16	23.3	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	38.2	Pass
		Inner Bracing	L4x4x1/4	0.6	Pass
T10	20 - 0	Leg	P10x.365 (10.75 OD)	51.5	Pass

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
		Diagonal	L3 1/2x3 1/2x3/8	66.2	Pass
		Horizontal	L4x4x3/8	54.2	Pass
		Redund Horz 1 Bracing	L3x3x3/16	28.1	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	45.3	Pass
		Inner Bracing	L4x4x1/4	0.6	Pass

*Capacities include 1/3 allowable increase for wind.

Table 4 - Maximum Base Reactions

Load Type	Direction	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Individual Foundation	Horizontal	29 k	35 k
	Uplift	201 k	246 k
	Compression	249 k	308 k
Overturning Moment	---	5,409 k-ft	6,667 k

GENERAL COMMENTS

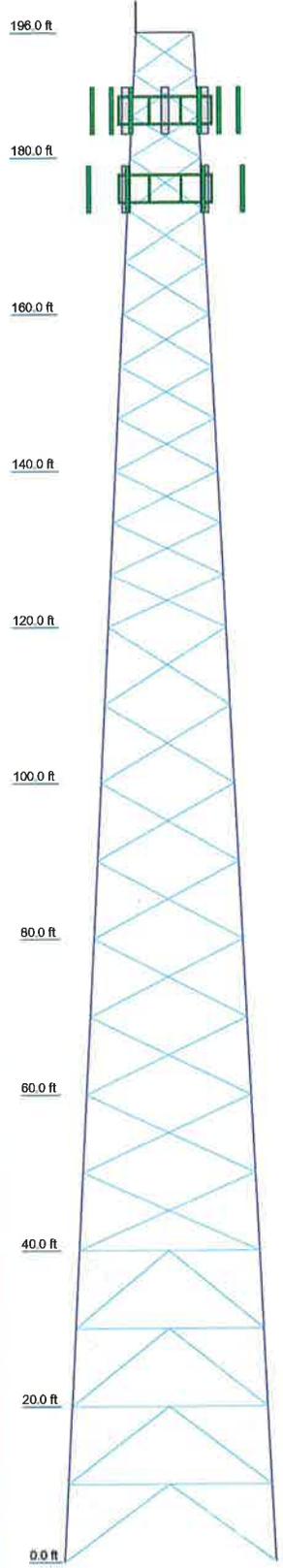
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading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

APPENDIX

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	P10x365 (10.75 OD)	P6x.5 (8.625 OD)	P6x.5 (8.625 OD)	P8x.322 (8.625 OD)	P6x.432 (6.625 OD)	P5x.375 (5.563 OD)	P4x.438 (4.50 OD)	P4x.438 (4.50 OD)	P4x.438 (4.50 OD)	A
Leg Grade	L3 1/2x3 1/2x3/8	L4x4x3/8	L4x4x3/8	L3 1/2x3 1/2x3/8	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x3/16	L2x2x3/16
Diagonals	L3 1/2x3 1/2x3/8	L4x4x3/8	L4x4x3/8	L3 1/2x3 1/2x3/8	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x3/16	L2x2x3/16
Diagonal Grade	A36	A36	A36	A36	A36	A36	A36	A36	A36	A36
Top Girts	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Horizontals	L4x4x3/8	L4x4x3/8	L4x4x3/8	L4x4x3/8	L4x4x3/8	L4x4x3/8	L4x4x3/8	L4x4x3/8	L4x4x3/8	L4x4x3/8
Red. Horizontals	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16
Red. Diagonals	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16
Inner Bracing	L4x4x1/4	L4x4x1/4	L4x4x1/4	L4x4x1/4	L4x4x1/4	L4x4x1/4	L4x4x1/4	L4x4x1/4	L4x4x1/4	L4x4x1/4
Face Width (ft)	27	25	23	21	19	18	17	15	13	11
# Panels @ (ft)	27	12 @ 10	12 @ 10	12 @ 10	12 @ 10	12 @ 10	12 @ 10	12 @ 10	12 @ 10	12 @ 10
Weight (K)	36.2	6.7	6.6	5.4	4.9	3.1	3.0	2.3	1.6	1.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	196	(2) HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	176
(2) 7770.00 w/Mount Pipe (Cingular)	186	(2) HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	176
(2) 7770.00 w/Mount Pipe (Cingular)	186	(2) HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	176
(2) 7770.00 w/Mount Pipe (Cingular)	186	(2) HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	176
(2) LGP21401 TMA (Cingular)	186	(2) LNX-6514DS-A1M w/ Mount Pipe (Verizon)	176
(2) LGP21401 TMA (Cingular)	186	(2) LNX-6514DS-A1M w/ Mount Pipe (Verizon)	176
(2) LGP21401 TMA (Cingular)	186	(2) LNX-6514DS-A1M w/ Mount Pipe (Verizon)	176
(2) LGP21903 Diplexer (Cingular)	186	(2) LNX-6514DS-A1M w/ Mount Pipe (Verizon)	176
(2) LGP21903 Diplexer (Cingular)	186	(2) LNX-6514DS-A1M w/ Mount Pipe (Verizon)	176
(2) LGP21903 Diplexer (Cingular)	186	(2) LNX-6514DS-A1M w/ Mount Pipe (Verizon)	176
(2) LGP21903 Diplexer (Cingular)	186	(2) LNX-6514DS-A1M w/ Mount Pipe (Verizon)	176
AM-X-CD-17-65-00T w/ Mount Pipe (Cingular)	186	RRH 2x60-AWS (Verizon)	176
AM-X-CD-17-65-00T w/ Mount Pipe (Cingular)	186	RRH 2x60-AWS (Verizon)	176
AM-X-CD-17-65-00T w/ Mount Pipe (Cingular)	186	RRH 2x60-AWS (Verizon)	176
AM-X-CD-17-65-00T w/ Mount Pipe (Cingular)	186	RRH2X60-PCS (Verizon)	176
DC6-48-60-18-6F Surge Arrestor (Cingular)	186	RRH2X60-PCS (Verizon)	176
(3) T-Frames MNT (Cingular)	186	RRH2X40-700U (Verizon)	176
(2) RRUS-11 (Cingular)	185	RRH2X40-700U (Verizon)	176
(2) RRUS-11 (Cingular)	185	RRH2X40-700U (Verizon)	176
LWRM Ring Mount MNT (Cingular)	185	DB-T1-6Z-8AB-0Z (Verizon)	176
5' x 2.375" Pipe Mount MNT (Cingular)	185	DB-T1-6Z-8AB-0Z (Verizon)	176
(2) RRUS-11 (Cingular)	185	(3) T-Frames MNT (Verizon)	176

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P3.5x.318 (4.00 OD)		

MATERIAL STRENGTH

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

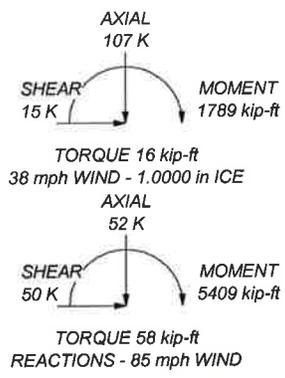
TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 75.7%

MAX. CORNER REACTIONS AT BASE:

DOWN: 249 K
SHEAR: 30 K

UPLIFT: -201 K
SHEAR: 25 K



REACTIONS - 85 mph WIND

	FDH Engineering, Inc.		Putnam Freight, CT00802-S-03		
	6521 Meridien Dri Raleigh, NC 27604		Project: 146CVZ1400		
	Phone: (919) 755-1012		Client: SBA Network Services, Inc.	Drawn by: JHolmes	App'd:
	FAX:		Code: TIA/EIA-222-F	Date: 09/24/14	Scale: NTS
			Path:		Dwg No. E-1

ATTACHMENT 5

Site Name: Putnam S Tower Height: 196ft		General	Power	Density																
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total												
*AT&T UMTS	2	565	186	0.0117	880	0.5867	2.00%													
*AT&T UMTS	2	875	186	0.0182	1900	1.0000	1.82%													
*AT&T GSM	1	283	186	0.0029	880	0.5867	0.50%													
*AT&T GSM	4	525	186	0.0218	1900	1.0000	2.18%													
*AT&T LTE	1	1771	186	0.0184	734	0.4893	3.76%													
Verizon PCS	1	1522	176	0.0177	1970	1.0000	1.77%													
Verizon Cellular	9	335	176	0.0350	869	0.5793	6.04%													
Verizon AWS	1	2806	176	0.0326	2145	1.0000	3.26%													
Verizon 700	1	671	176	0.0078	746	0.4973	1.57%													22.90%
* Source: Siting Council																				

ATTACHMENT 6

June 17, 2015

Via Certificate of Mailing

Anthony Falzarano, Mayor
Town of Putnam
Town Hall
126 Church Street
Putnam, CT 06260

Re: Proposed Modification of a Telecommunications Facility at 63 Industrial Park Road, Putnam, Connecticut

Dear Mr. Falzarano:

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 modify a wireless telecommunications facility at 63 Industrial Park Road in Putnam (the “Property”). The facility will consist of two (2) antennas and four (4) remote radio heads attached at the 60-foot level of the existing 180-foot tower at the Property. Equipment associated with Cellco’s antennas will be housed in a small cabinet located on a concrete pad within the existing tower compound.

As presented in the Sub-Petition, the proposed “small cell” facility improvements 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.

Anthony Falzarano
June 17, 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 long horizontal stroke at the end.

Kenneth C. Baldwin

Attachment
Copy to:
Tim Parks

June 17, 2015

Via Certificate of Mailing

Putnam Financial Associates LLC
29 Lambs Way
Stonington, CT 06378

Re: **Proposed Modification of a Telecommunications Facility at 63 Industrial Park Road, Putnam, Connecticut**

Dear Sir or Madam:

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 modify a wireless telecommunications facility at 63 Industrial Park Road in Putnam (the “Property”). The facility will consist of two (2) antennas and four (4) remote radio heads attached at the 60-foot level of the existing 180-foot tower at the Property. Equipment associated with Cellco’s antennas will be housed in a small cabinet located on a concrete pad within the existing tower compound.

As presented in the Sub-Petition, the proposed “small cell” facility improvements 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.

13867239-v1

Robinson + Cole

Putnam Financial Associates LLC

June 17, 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 long horizontal stroke at the end.

Kenneth C. Baldwin

Attachment

Copy to:

Tim Parks

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

June 17, 2015

Via Certificate of Mailing

«Name_and_Address»

Re: Sub-Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Modification of a Telecommunications Facility at 63 Industrial Park Road, Putnam, 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 modify a wireless telecommunications facility at 63 Industrial Park Road in Putnam (the “Property”). The facility will consist of two (2) antennas and four (4) remote radio heads attached at the 60-foot level on the existing 180-foot tower at the Property. Equipment associated with Cellco’s antennas will be housed in a small cabinet on a concrete pad with 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.

June 17, 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

Copy to:

Tim Parks

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

**ABUTTERS LIST
MAP 38/LOT 87**

**63 INDUSTRIAL PARK ROAD
PUTNAM, CONNECTICUT**

	<u>Map/Lot</u>	<u>Property Address</u>	<u>Owner and Mailing Address</u>
1.	38/35	47 Industrial Park Road	Putnam Financial Associates LLC 29 Lambs Way Stonington, CT 06378
2.	38/51	6 Highland Drive	Durand Family Enterprises 6 Highland Drive Putnam, CT 06260
3.	38/68	5 Highland Drive	Highland Drive Associates LLC 5 Highland Drive Putnam, CT 06260
4.	38/60	77 Industrial Park Road	Labonte Properties LLC 77 Industrial Park Road Putnam, CT 06260
5.	37/59	38 Park Road	Labonte Properties LLC 77 Industrial Park Road Putnam, CT 06260
6.	37/52	22 Park Road	Gordon C. Mauer 21 Shippee Woods Drive Putnam, CT 06260
7.		Railroad ROW	State of Connecticut DOT Rail Division 2800 Berlin Turnpike Newington, CT 06111