

June 20, 2016

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

**Re: Notice of Exempt Modification – Facility Modification
162 Birdseye Road, Shelton, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 98-foot level of the existing 120-foot tower at 162 Birdseye Road in Shelton, Connecticut (the “Property”). The tower is owned by SBA. The Council approved Cellco’s use of this tower in 2007. Cellco now intends to modify its facility by removing six (6) existing 850 MHz antennas and replacing them with three (3) model LNX-6514DS, 850 MHz antennas and three (3) model HBX-6517D5, 2100 MHz antennas, all at the same 98-foot level on the tower. Cellco also intends to install three (3) remote radio heads (“RRHs”) behind its 2100 MHz antennas and one (1) HYBRIFLEX™ antenna cable located inside the monopole. Included in Attachment 1 are specifications for Cellco’s replacement antenna, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mark A. Lauretti, Mayor of the City of Shelton. A copy of this letter is also being sent to Rudolph and Karen E. Hudak, the owners of the Property and to SBA, the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

14873526-v1

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1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed on Cellco's existing antenna platform at a height of 98 feet on the existing tower.
2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for Cellco's modified facility is included in Attachment 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support Cellco's proposed modifications. (*See Structural Analysis included in Attachment 3*).

A copy of the Shelton Assessor's Parcel Map and property owner information is included in Attachment 4.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Mark A. Lauretti, Mayor
Rudolph and Karen E. Hudak
SBA
Tim Parks

ATTACHMENT 1

Product Specifications



Andrew Solutions LNX-6514DS-T6M

DualPol® Antenna, 698–896 MHz, 65° horizontal beamwidth, fixed electrical tilt

- Broadband, providing future-ready single antenna for application in 700 MHz and existing 850 MHz cellular operation
- Air dielectric design provides superior PIM performance with repeatable antenna-to-antenna gain and pattern consistency
- Single piece radome provides long term mechanical stability
- Proven core design technology, with over 1,000,000 similar antennas deployed
- Exceptional USLS pattern shaping for optimizing coverage and interference mitigation for LTE applications
- Specifically designed to have physical dimensions similar to most existing cellular antennas

Electrical Specifications

Frequency Band, MHz	698–806	806–896
Gain, dBi	15.8	16.6
Beamwidth, Horizontal, degrees	65	65
Beamwidth, Vertical, degrees	12.6	11.0
Beam Tilt, degrees	6	6
USLS, typical, dB	18	18
Front-to-Back Ratio at 180°, dB	34	34
Isolation, dB	30	30
VSWR Return Loss, dB	1.35:1 16.5	1.35:1 16.5
PIM, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power per Port, maximum, watts	500	500
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm
Lightning Protection	dc Ground	dc Ground

Mechanical Specifications

Color Radome Material	Light gray Fiberglass, UV resistant
Connector Interface Location Quantity	7-16 DIN Female Bottom 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	181.0 mm 7.1 in
Length	1847.00 mm 72.72 in
Width	301.00 mm 11.85 in
Net Weight	17.40 kg 38.36 lb

Regulatory Compliance/Certifications

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

Product Specifications

COMMSCOPE®

LNK-6514DS-T6M



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.

Product Specifications

COMMScope®

POWERED BY



HBX-6517DS-VTM

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

- Superior azimuth tracking and pattern symmetry to minimize any sector overlap
- Rugged, reliable design with excellent passive intermodulation suppression
- The values presented on this datasheet have been calculated based on N-P-BASTA White Paper version 9.6 by the NGMN Alliance

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain by all Beam Tilts, average, dBi	18.5	18.6	18.9
Gain by all Beam Tilts Tolerance, dB	±0.2	±0.3	±0.4
	0° 18.3	0° 18.4	0° 18.8
Gain by Beam Tilt, average, dBi	3° 18.6	3° 18.7	3° 19.1
	6° 18.4	6° 18.6	6° 18.7
Beamwidth, Horizontal, degrees	67	66	64
Beamwidth, Horizontal Tolerance, degrees	±1.8	±0.9	±2.8
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beamwidth, Vertical Tolerance, degrees	±0.2	±0.2	±0.3
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	19	19	18
Front-to-Back Total Power at 180° ± 30°, dB	26	26	26
CPR at Boresight, dB	22	22	22
CPR at Sector, dB	11	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

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol®
Band	Single band
Brand	DualPol® Teletilt®
Operating Frequency Band	1710 – 2180 MHz
Number of Ports, all types	2

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

Product Specifications

COMMScope®

HBX-6517DS-VTM

RF Connector Quantity, total	2
Wind Loading, maximum	393.0 N @ 150 km/h 88.3 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h 149.8 mph



Dimensions

Depth	83.0 mm 3.3 in
Length	1902.0 mm 74.9 in
Width	166.0 mm 6.5 in
Net Weight	6.2 kg 13.7 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	HBX-6517DS-R2M
Model with Factory Installed AISG 2.0 Actuator	HBX-6517DS-A1M
RET System	Teletilt®

Regulatory Compliance/Certifications

Agency

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

Classification

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



Included Products

DB390 — Pipe Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Use for narrow panel antennas. Includes two pipe mounts.

DB5098E — Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

Alcatel-Lucent RRH2x40-AWS

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-AWS is a high-power, small form-factor Remote Radio Head (RRH) operating in the AWS frequency band (1700/2100MHz - 3GPP Band 4). The Alcatel-Lucent RRH2x40-AWS 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-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 RRH2x40-AWS has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to four-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 20 MHz of bandwidth.

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

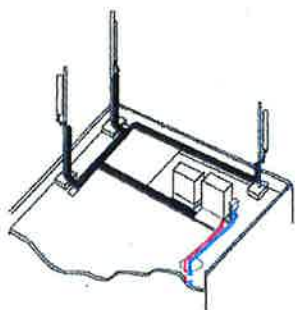
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-AWS 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-AWS 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-AWS is compact and weighs less than 20 kg (44 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

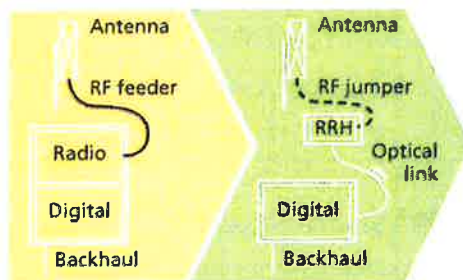
Because of its small size and weight, the Alcatel-Lucent RRH2x40-AWS can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-AWS where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation 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-AWS provides more RF power while at the same time consuming less electricity.



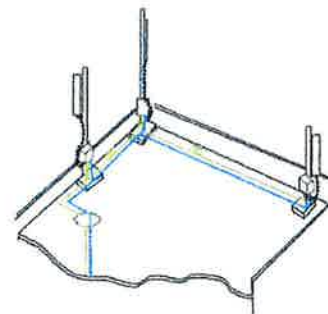
Macro

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
- Best-in-class power efficiency, with significantly reduced energy consumption



RRH for space-constrained cell sites



Distributed

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

Technical specifications

Physical dimensions

- Height: 620 mm (24.4 in.)
- Width: 270 mm (10.63 in.)
- Depth: 170mm (6.7 in.)
- Weight (without mounting kit): less than 20 kg (44 lb)

Power

- Power supply: -48VDC

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: 1700/2100 MHz (AWS); 3GPP Band 4
- Bandwidth: up to 20 MHz
- RF output power at antenna port: 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way with optional Rx Diversity module
- Noise figure: below 2.0 dB typical
- Antenna Line Device features
 - TMA and Remote electrical tilt (RET) support via AISG v2.0

Optical characteristics

Type/number of fibers

- Single-mode variant
 - One Single Mode Single Fiber per RRH2x, carrying UL and DL using CWDM
 - Single mode dual fiber (SM/DF)
- Multi-mode variant
 - Two Multi-mode fibers per RRH2x: one carrying UL, the other carrying DL

Optical fiber length

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

Digital Ports and Alarms

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

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

Product Description

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

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

Features/Benefits

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



Figure 1: HYBRIFLEX Series

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	(mm (in))	46.5 (1.83)
Jacket	Polyethylene, PE	(mm (in))	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Weight, Approximate		(kg/m (lb/ft))	1.9 (1.30)
Minimum Bending Radius, Single Bending		(mm (in))	200 (8)
Minimum Bending Radius, Repeated Bending		(mm (in))	500 (20)
Recommended/Maximum Clamp Spacing		(m (ft))	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		(Ω/km (Ω/1000ft))	068 (0.265)
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)	UL94-V0, UL1666, RoHS Compliant		
Size (Power)	(mm (AWG))	8.4 (8)	
Quantity, Wire Count (Power)	16 (8 pairs)		
Size (Alarm)	(mm (AWG))	9.8 (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)	

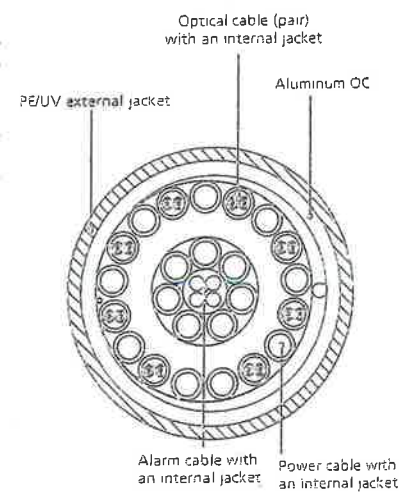


Figure 2: Construction Detail

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

* This data is provisional and subject to change

ATTACHMENT 2

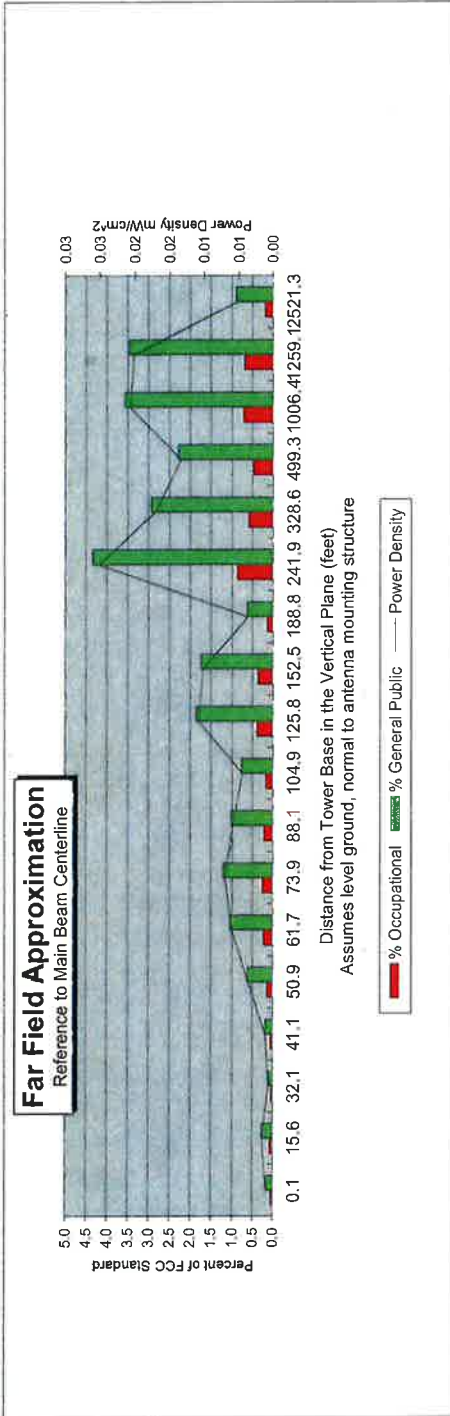
Far Field Approximation with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



Location:	SHELTON NORTH, CT
Site #:	5-0186
Date:	06/02/14
Name:	Ryan Ulanday
File Name:	SHELTON NORTH, CT - FF PC

Operating Freq. (MHz)	869.0
Antenna Height (ft)	91.0
Antenna Gain (dBi)	16.4
Antenna Size (in.)	72.7
Downtilt (degrees)	0.0
Feedline Loss (dB)	0.0
Power @ J4 (w)	3537.0



This approximation is only valid in the far field, which begins at: 65.7 Feet
Enter Main Beam Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	88.0	89.4	93.7	97.1	101.6	107.5	114.9	124.5	137.0	153.5	176.1	208.3	257.4	340.2	507.0	1010.2	1262.2	2522.8
Distance from Antenna Structure Base in Horizontal plane	0.1	15.6	32.1	41.1	50.9	61.7	73.9	88.1	104.9	125.8	152.5	188.8	241.9	328.6	499.3	1006.4	1259.1	#NUM!
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm ²)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.03	0.02	0.01	0.02	0.02	0.01
Percent of Occupational Standard	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.4	0.3	0.1	0.9	0.6	0.5	0.7	0.7	0.2
Percent of General Population Standard	0.2	0.3	0.1	0.2	0.6	1.0	1.2	1.0	0.8	1.9	1.7	0.6	4.3	2.9	2.3	3.6	3.5	0.9

Antenna Type LNX-6514DS-A1M
 Max% 4.34%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBi to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density.
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

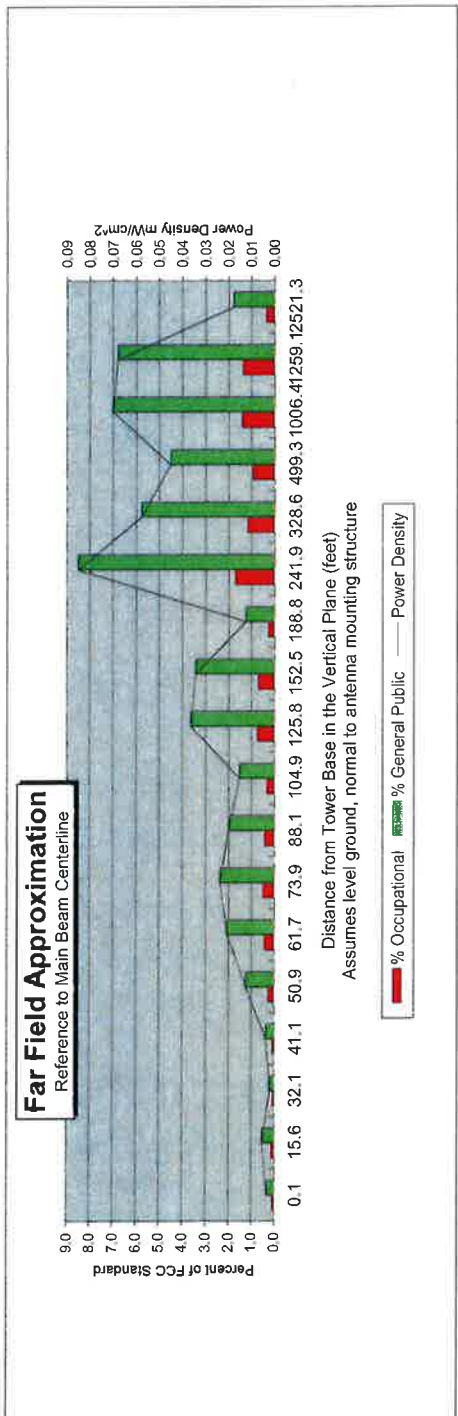
Far Field Approximation
with downtilt variation

**Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types**



Location:	SHELTON NORTH, CT
Site #:	5-0041
Date:	06/02/14
Name:	Ryan Ulanday
File Name:	SHELTON NORTH, CT - FF Po

Operating Freq. (MHz)	1971.0
Antenna Height (ft)	91.0
Antenna Gain (dBi)	18.7
Antenna Size (in.)	71.7
Downtilt (degrees)	0.0
Feedline Loss (dB)	0.0
Power @ J4 (w)	7035.0



This approximation is only valid in the far field, which begins at: 63.8 Feet

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	Enter Main Beam Distance in feet below:
Solve for r, dx to antenna	88.0	89.4	93.7	97.1	101.6	107.5	114.9	124.5	137.0	153.5	176.1	208.3	257.4	340.2	507.0	1010.2	1262.2	2522.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	15.6	32.1	41.1	50.9	61.7	73.9	88.1	104.9	125.8	152.5	188.8	241.9	328.6	499.3	1006.4	1259.1	2521.3	#NUM!
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	0
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.01	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.04	0.03	0.01	0.08	0.06	0.04	0.07	0.07	0.02	#NUM!
Percent of Occupational Standard	0.1	0.1	0.0	0.1	0.2	0.4	0.5	0.4	0.3	0.7	0.7	0.2	1.7	1.2	0.9	1.4	1.4	0.4	#NUM!
Percent of General Population Standard	0.3	0.5	0.2	0.4	1.2	2.0	2.4	2.0	1.5	3.6	3.4	1.2	8.5	5.8	4.5	7.0	6.8	1.8	#NUM!

Antenna Type BXA-171063-12BF-EDIN-2
Max% 8.50%

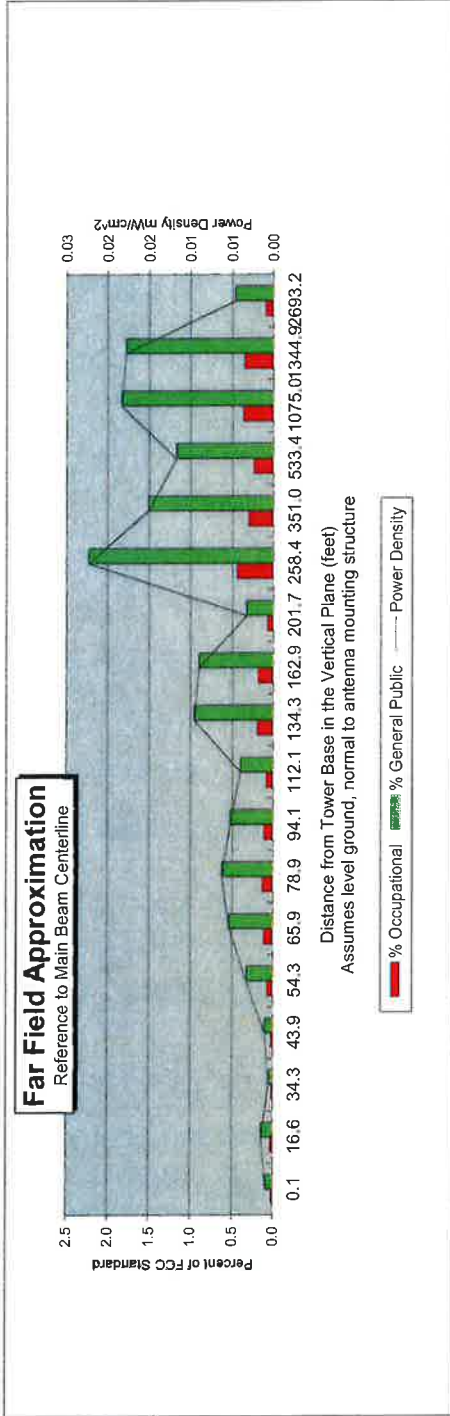
- Instructions:
- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
 - 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
 - 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBi to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density.
 - 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
 - 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
 - 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
 - 7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



Location:	MONROE EAST, CT
Site #:	5-0165
Date:	06/02/14
Name:	Ryan Ulanday
File Name:	MONROE EAST, CT - FF Power
Operating Freq. (MHz)	2110.0
Antenna Height (ft):	97.0
Antenna Gain (dBi):	19.5
Antenna Size (in.):	76.9
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	1750.0



This approximation is only valid in the far field, which begins at: 73.4 Feet

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	Enter Main Beam Distance in feet below:
Solve for r, dx to antenna	94.0	95.5	100.1	103.7	108.6	114.8	122.8	133.0	146.3	164.0	188.1	222.5	275.0	363.4	541.6	1079.1	1348.2	2694.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	16.6	34.3	43.9	54.3	65.9	78.9	94.1	112.1	134.3	162.9	201.7	258.4	351.0	533.4	1075.0	1344.9	2693.2	#NUM!
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	0
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm ²)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.02	0.02	0.01	0.02	0.02	0.00	#NUM!
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.4	0.3	0.2	0.4	0.4	0.1	#NUM!
Percent of General Population Standard	0.1	0.1	0.0	0.1	0.3	0.5	0.6	0.5	0.4	1.0	0.9	0.3	2.2	1.5	1.2	1.8	1.8	0.5	#NUM!

Antenna Type: Kathrein 742 213
Max%: 2.23%

- Instructions:
- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
 - 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
 - 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBi to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density.
 - 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
 - 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
 - 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
 - 7) An odd distance may be entered in the rightmost column of the lower table.

ATTACHMENT 3



FDH Engineering, Inc., 6521 Meridien Drive Raleigh, NC 27616, Ph. 919.755.1012

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

118' Monopole Tower

**SBA Site Name: Shelton - North
SBA Site ID: CT46133-A-00
Verizon Site Name: Shelton North**

FDH Project Number 1423GS1400

Analysis Results

Tower Components	98.2 %	Sufficient
Foundation	96.6 %	Sufficient

Prepared By:

Brandon T. Compton, EI
Project Engineer II

Reviewed By:

Bradley Newman, PE
Senior Project Engineer
CT PE License No. 29630

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6521 Meridien Drive
Raleigh, NC 27616
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April 11, 2014

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 Connecticut 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 monopole located in Shelton, 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 State Building Code (CSBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, geotechnical data, and member sizes was obtained from:

- Paul J. Ford (Job No. 29200-1700) original design drawings dated November 15, 2000
- Dr. Clarence Welti, PE, PC (Site No. CT-0921) Geotechnical Study for Nextel Communications Tower, CT-0921 dated June 5, 2000
- FDH Engineering, Inc. (Project No. 1423GS1400) Modification Drawings for a 118' Monopole Tower dated April 11, 2014
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and the *2005 CSBC* 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 98 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 CSBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was constructed per the original design drawings (see Paul J. Ford Job No. 29200-1700), and utilizing the existing soil parameters (see Dr. Clarence Welti, PE, PC Geotechnical Study for Nextel Communications Tower, CT-0921), 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 the *2005 CSBC* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed coax should be installed inside the pole's shaft.
2. Modifications per FDH Engineering, Inc. (Project No. 1423GS1400) Modification Drawings for a 118' Monopole Tower dated April 11, 2014 must be installed correctly for this analysis to be valid.

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	Feedlines	Carrier	Mount Elevation (ft)	Mount Type
120	(3) RFS APXVSPP18-C-A20 (6) Decibel DB844H90E-XY (3) Andrew 932LG65VTE-B (3) Alcatel Lucent 1900 RRH (25MHz) (3) Alcatel Lucent 800 RRHs (3) Alcatel Lucent External Notch Filters (6) RFS 1900 ACU-A20-N RETs (3) RFS 800 ACU-A20-N RETs	(9) 1-1/4" (6) 1-5/8"	Sprint	118	(1) Platform w/ Handrails
108	(3) Kathrein 800-10121 (3) Powerwave P65-16-XLH-RR (6) Powerwave LGP21401 TMAs (6) Ericsson RRUS-11 RRUs (3) REC/RETs (1) Raycap DC6-48-60-18-8CF	(6) 1-1/4" (1) 1/2" (1) 3/8" (2) 5/8"	AT&T	108	(1) Low Profile Platform
98	(3) Antel BXA-70063/4CF (3) Antel BXA-171063-12BF (6) Antel LPA-80063/4CF (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	98	(1) Low Profile Platform

Proposed Loading:

Antenna Elevation (ft)	Description	Feedlines	Carrier	Mount Elevation (ft)	Mount Type
98	(3) Antel BXA-70063/4CF (3) Antel BXA-171063-12BF (3) Andrew HBX-6517DS-VTM (3) Andrew LNX-6514DS-VTM (3) Alcatel Lucent RRH 2X40-AWS RRHs (1) RFS DB-T1-6Z-8AB-0Z Distribution Box (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8" (1) 1-5/8" Fiber	Verizon	98	(1) Low Profile Platform

RESULTS

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

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	50 ksi
Anchor Bolts	75 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. **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
L1	118 - 84.67	Pole	TP28.765x22x0.1875	91.1	Pass
	84.67 - 77	Pole w/ Modifications	TP28.765x22x0.1875 w/ Flat Plate Reinforcement	53.4	Pass
L2	77 - 40.75	Pole	TP34.371x27.7713x0.3125	95.4	Pass
L3	40.75 - 17.16	Pole	TP40.47x33.0448x0.375	98.2	Pass
	17.16 - 0	Pole w/ Modifications	TP40.47x33.0448x0.375 w/ Flat Plate Reinforcement	78.0	Pass
-	0	Anchor Bolts	(12) 2.25" Ø on a 48" BC	89.9	Pass
-	0	Base Plate	PL 3.25" x 46" Sq.	75.5	Pass

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis* (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	26 k	20.5 k
Shear	24 k	24.0 k
Moment	2,130 k-ft	2,040 k-ft

*Foundation determined adequate per independent analysis.

GENERAL COMMENTS

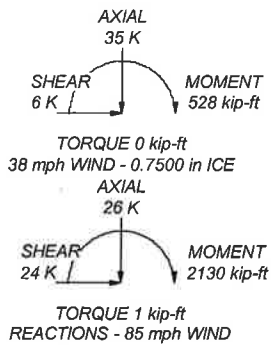
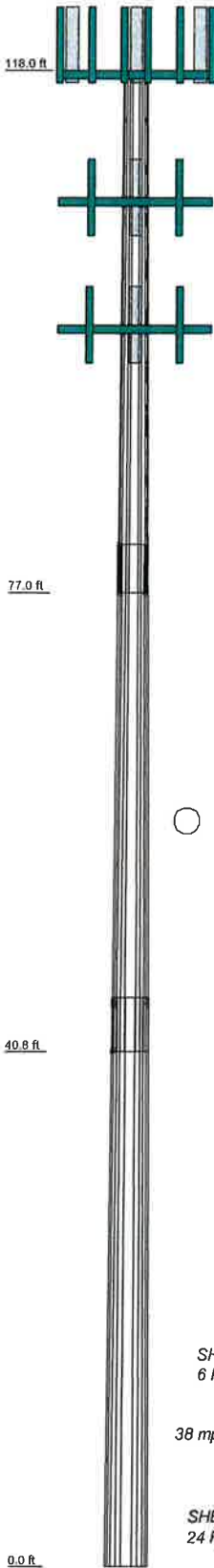
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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	1	2	3
Length (ft)	41.00	40.00	45.00
Number of Sides	12	12	12
Thickness (in)	0.1875	0.3125	0.3750
Socket Length (ft)	3.75	4.25	33.0448
Top Dia (in)	22.0000	27.7712	30.4700
Bot Dia (in)	28.7650	34.3710	40.4700
Grade		A572-65	
Weight (K)	2.1	4.2	6.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	118	(2) LGP21401 TMA	108
APXVSP18-C-A20 w/Mount Pipe	118	(2) LGP21401 TMA	108
APXVSP18-C-A20 w/Mount Pipe	118	(2) LGP21401 TMA	108
APXVSP18-C-A20 w/Mount Pipe	118	(2) RRRUS-11	108
(2) DB844H90E-XY w/Mount Pipe	118	(2) RRRUS-11	108
(2) DB844H90E-XY w/Mount Pipe	118	(2) RRRUS-11	108
(2) DB844H90E-XY w/Mount Pipe	118	REC/RET	108
932LG65VTE-B w/ Mount Pipe	118	REC/RET	108
932LG65VTE-B w/ Mount Pipe	118	REC/RET	108
932LG65VTE-B w/ Mount Pipe	118	DC6-48-60-18-8CF	108
ALU 1900 RRH (25MHz)	118	Low Profile Platform	108
ALU 1900 RRH (25MHz)	118	BXA-70063/4CF w/ Mount Pipe	98
ALU 1900 RRH (25MHz)	118	BXA-70063/4CF w/ Mount Pipe	98
ALU 800 RRH	118	BXA-70063/4CF w/ Mount Pipe	98
ALU 800 RRH	118	HBX-6517DS-VTM w/Mount Pipe	98
ALU 800 RRH	118	HBX-6517DS-VTM w/Mount Pipe	98
ALU External Notch Filter	118	HBX-6517DS-VTM w/Mount Pipe	98
ALU External Notch Filter	118	BXA-171063-12BF w/ Mount Pipe	98
ALU External Notch Filter	118	BXA-171063-12BF w/ Mount Pipe	98
(2) 1900 ACU-A20-N	118	BXA-171063-12BF w/ Mount Pipe	98
(2) 1900 ACU-A20-N	118	LNX-6514DS-VTM w/Mount Pipe	98
(2) 1900 ACU-A20-N	118	LNX-6514DS-VTM w/Mount Pipe	98
800 ACU-A20-N	118	LNX-6514DS-VTM w/Mount Pipe	98
800 ACU-A20-N	118	RRH2X40-AWS	98
800 ACU-A20-N	118	RRH2X40-AWS	98
Platform w/ Handrails	118	RRH2X40-AWS	98
800-10121 w/Mount Pipe	108	(2) FD9R6004/2C-3L Diplexer	98
800-10121 w/Mount Pipe	108	(2) FD9R6004/2C-3L Diplexer	98
800-10121 w/Mount Pipe	108	(2) FD9R6004/2C-3L Diplexer	98
P65-16-XLH-RRR w/Mount Pipe	108	DB-T1-6Z-8AB-OZ	98
P65-16-XLH-RRR w/Mount Pipe	108	Low Profile Platform	98
P65-16-XLH-RRR w/Mount Pipe	108		98

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield 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 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.

 FDH Engineering, Inc.	6521 Meridien Drive	Job: Shelton-north CT46133-A-00		
	Raleigh, NC 27616	Project: 1423GS1400		
	Phone: (919) 755-1012	Client: SBA Network Services, Inc.	Drawn by: Brandon Compton	App'd:
	FAX: (919) 755-1031	Code: TIA/EIA-222-F	Date: 04/11/14	Scale: NTS
Tower Analysis		Path:	Dwg No. E-1	

PREPARED BY:

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 100 WILSON ROAD
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 PHONE: 888-752-1012
 FAX: 301-752-1011
 ENGINEERING INNOVATION

REGISTERED FOR:

 SBA
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 HALLSBURG, MD 20638
 (800) 437-3121

STATE OF CONNECTICUT

 BRADLEY R. NEWMAN, P.E.
 PROFESSIONAL ENGINEER
 LICENSE NO. 24830
 EXPIRES 04/11/14

WJD
 BITC
 BRN
 142JST1400

DATE	DESCRIPTION	REV
04/17/14	CONSTRUCTION	1

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SITE NAME:
 SHELTON-NORTH
 SITE NUMBER:
 CT46133-A-00
 SITE ADDRESS:
 162 BIRDSEYE RD,
 SHELTON, CT 06484

SHEET TITLE
 POST CONSTRUCTION
 INSPECTION NOTES

SHEET NUMBER
 N-1

POST CONSTRUCTION INSPECTION NOTES:

GENERAL

- THE POST CONSTRUCTION INSPECTION (PCI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. EXCEPT WHERE SHOWN OTHERWISE, THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR),
- THE PCI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE PCI INSPECTOR TAKE RESPONSIBILITY FOR THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY REMAINS WITH THE EOR AT ALL TIMES.
- ALL PCIS SHALL BE CONDUCTED BY A PCI INSPECTOR THAT IS APPROVED TO PERFORM ELEVATED WORK FOR FDI ENGINEERING, INC.
- TO ENSURE THAT THE REQUIREMENTS OF THE PCI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE PCI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PRODUCTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR FDI POINT OF CONTACT (POC).
- REFER TO COR-01 : CONTRACTOR CLOSEOUT REQUIREMENTS FOR FURTHER DETAILS AND REQUIREMENTS.

PCI INSPECTOR

- THE PCI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE PCI TO, AT A MINIMUM:
 - REVIEW THE REQUIREMENTS OF THE PCI CHECKLIST
 - WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
- THE PCI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE REQUIREMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE PCI REPORT TO FDI.

CORRECTION OF FAILING PCIS

- IF THE MODIFICATION INSTALLATION WOULD FAIL THE PCI (FAILED PCI), THE GC SHALL WORK WITH FDI TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
 - CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT PCI.
 - OR, WITH FDI'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

REQUIRED PHOTOS

- BETWEEN THE GC AND THE PCI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE PCI REPORT:
 - PRE-CONSTRUCTION GENERAL SITE CONDITION
 - PHOTOGRAPHS DURING THE REINFORCEMENT/ MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
 - RAW MATERIALS
 - PHOTOS OF ALL CRITICAL DETAILS
 - WELD PREPARATION
 - WELD PREPARATION AND TORQUE
 - BOLT INSTALLATION AND TORQUE
 - FINAL INSTALLED CONDITION
 - SURFACE COATING REPAIR
 - POST-CONSTRUCTION PHOTOGRAPHS
 - FINAL INFELD CONDITION
- PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

PCI CHECKLIST	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED	REPORT ITEM
PRE-CONSTRUCTION	
X	PCI CHECKLIST DRAWING
N/A	EOR APPROVED SHOP DRAWINGS
N/A	FABRICATION INSPECTION
N/A	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
N/A	FABRICATOR NDE INSPECTION
N/A	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH AND SLUMP TESTS
N/A	POST INSTALLED ANCHOR ROD VERIFICATION
N/A	BASE PLATE GROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION
N/A	EARTHWORK LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	PCI INSPECTOR REDLINE OR RECORD DRAWING(S)
N/A	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PCI REPORT
 N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PCI REPORT

PREPARED BY:

FDH
 4521 MERRIMEN DRIVE
 RALEIGH, NC 27616
 TEL: 919-851-1000
 FAX: 919-851-1031
 ENGINEERING INNOVATION

PREPARED FOR:

SBA
 5000 BROOKS SOUND PARKWAY, 100
 BOCA RATON, FL 33433
 (800) 487-5116



BRADLEY R. NEWMAN, P.E. 04/11/14
 CONNECTICUT LIC. NO. 28630

DRAWN BY: WLD
 CHECKED BY: BTC
 ENG. APPROV'D: BRN
 PROJECT NO: 142.3031.400

SUBMITTALS	
DATE	REVISION
04/11/14	CONSTRUCTION
	1
	2
	3
	4
	5

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SITE NAME:
SHELTON-NORTH

SITE NUMBER:
CT46133-A-00

SITE ADDRESS:
 162 BIRDSEYE RD.
 SHELTON, CT 06484

SHEET TITLE
 MODIFICATION SCHEDULE

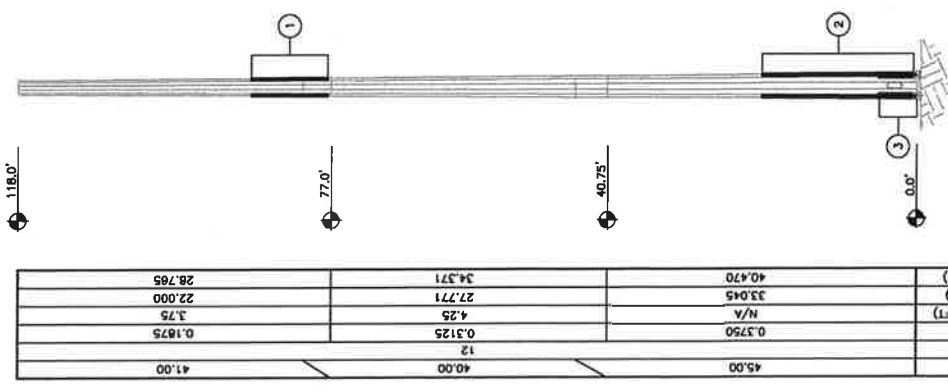
SHEET NUMBER
S-1

TOWER MODIFICATION SCHEDULE

NO.		BOTTOM ELEV. (FT)	TOP ELEV. (FT)
1	INSTALLATION OF NEW FLAT PLATE REINFORCEMENT. SEE S-2 & S-3 FOR DETAILS.	77.5±	87.5±
2	INSTALLATION OF NEW FLAT PLATE REINFORCEMENT. SEE S-2 & S-3 FOR DETAILS.	0.5±	20.5±
3	INSTALLATION OF NEW FLAT PLATE REINFORCEMENT. SEE S-4 FOR DETAILS.	0.0±	5.0±

TOWER FINISH: GALVANIZED

- APPURTENANCES MAY INTERFERE WITH PROPOSED MODIFICATIONS.
- ALL MODIFICATIONS TO BE INSTALLED CONTINUOUSLY THROUGH EXISTING EQUIPMENT. ALL EXISTING EQUIPMENT NOT TO BE DAMAGED OR TAKEN OFF AIR DURING INSTALLATION.
- ANTENNA GRAPHICS NOT SHOWN FOR CLARITY. SEE STRUCTURAL ANALYSIS REPORT FOR EXISTING ANTENNA LOADING.



TOWER ELEVATION
 SCALE: NTS

DATE	DESCRIPTION	REV
04/11/14	CONSTRUCTION	0

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SITE NAME:
SHELTON-NORTH

SITE NUMBER:
CT146133-A-00

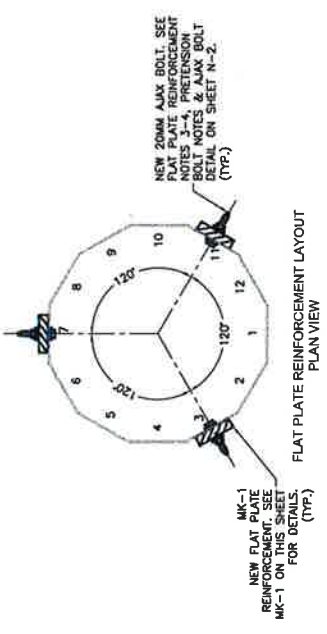
SITE ADDRESS:
**162 BIRDSEYE RD,
 SHELTON, CT 06484**

SHEET TITLE
**FLAT PLATE INSTALLATION
 DETAILS I**

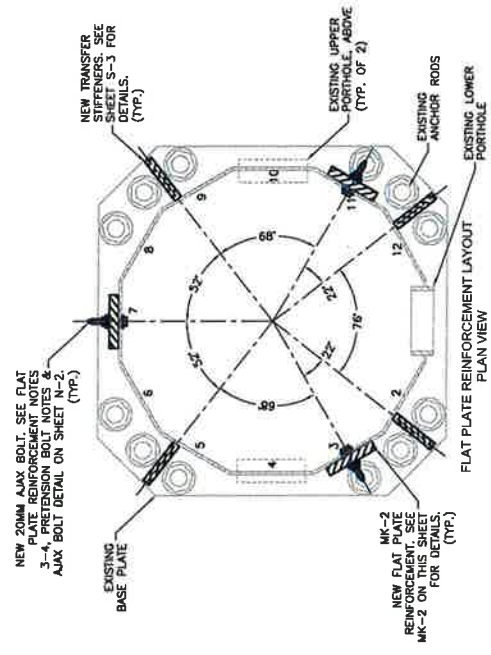
SHEET NUMBER
S-2

FLAT PLATE INSTALLATION SCHEDULE

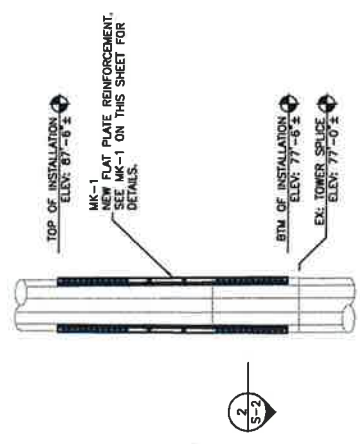
PART #	QTY.	DESCRIPTION	ELEVATION	FLATS
MK-1	3	FLAT PLATE REINFORCEMENT	77'-6" ± TO 87'-6" ±	3 - 7 - 11
MK-2	3	FLAT PLATE REINFORCEMENT	0'-6" ± TO 20'-6" ±	3 - 7 - 11
-	180	20MM AJAX BOLTS	VARIES	-



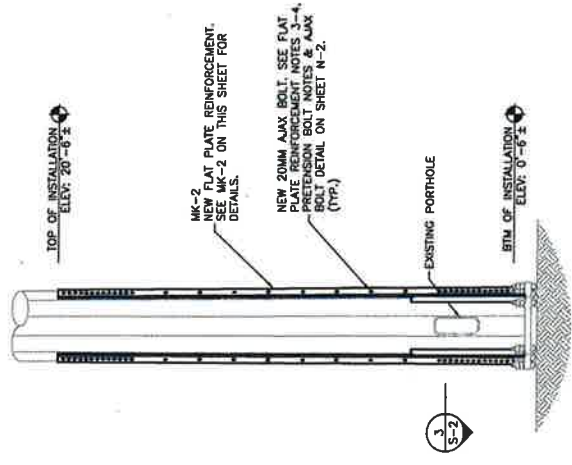
2
 S-2
 SCALE: 3/4" = 1'-0"



3
 S-2
 SCALE: 3/4" = 1'-0"

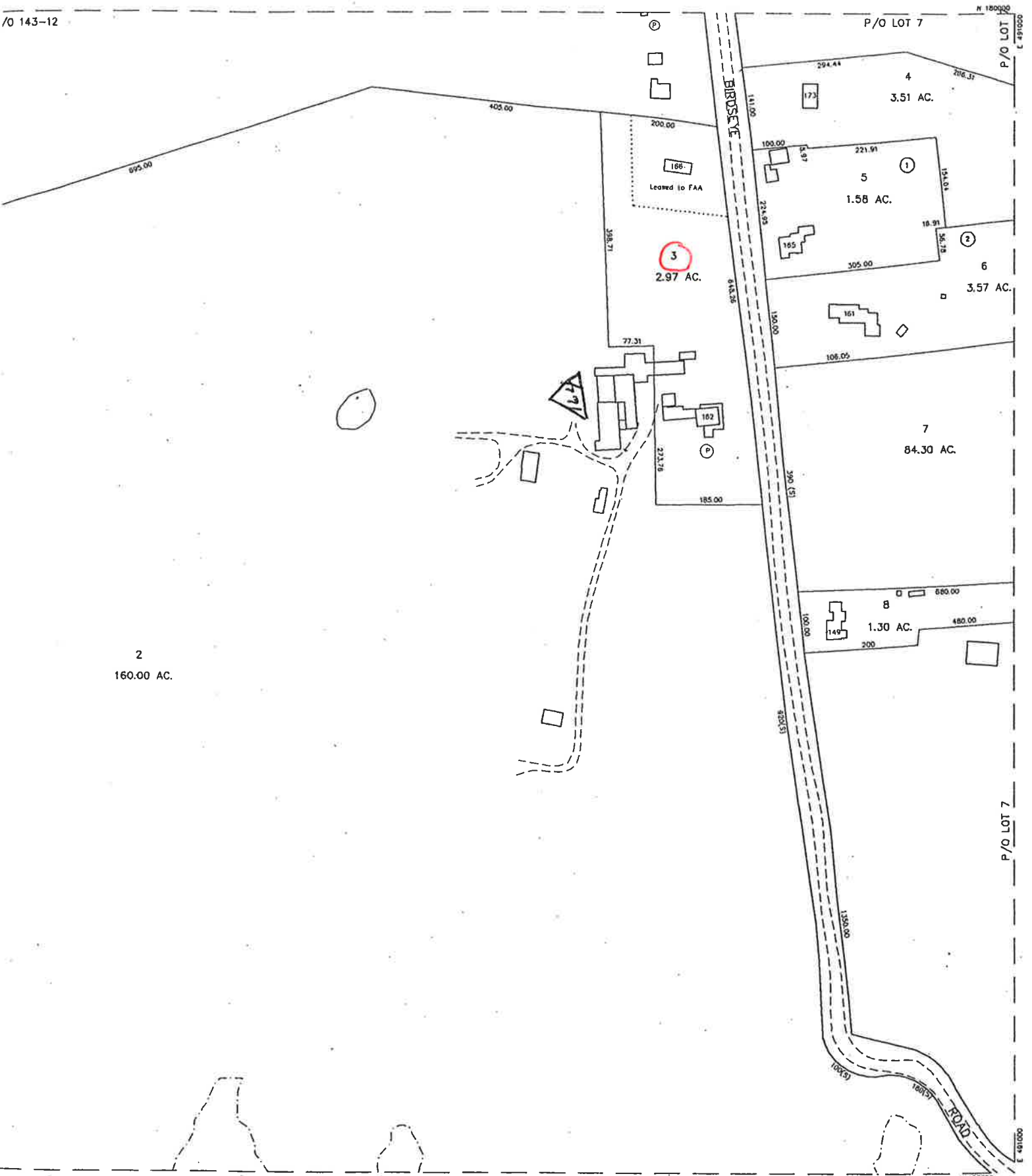


1
 S-2
 SCALE: 3/16" = 1'-0"



3
 S-2

ATTACHMENT 4



2
160.00 AC.

3
2.97 AC.

4
3.51 AC.

5
1.58 AC.

6
3.57 AC.

7
84.30 AC.

8
1.30 AC.

BIRSEVE
ROAD

143

ZONE R-1

REVISION 8/23/02
LAST LOT # 9

133 134 135

124

CITY OF SHELTON REAL PROPERTY DATA

PROPERTY LOCATION	ASSRS MAP - LOT	SURVEY MAP - LOT	ZONE	CENSUS TRACT	NBHD	SITE	CARD	RUNDATE	SIDE
162 BIRDSEYE RD	134.-3		R-1	1106.	12030	01		07/13/2015	1
CURRENT OWNER									
NAME 1 - HUDAK RUDOLPH&KAREN E MCGUIRE									
NAME 2 - TRS ROBERTA G HUDAK FAM TRUST									
ADDRESS - 162 BIRDSEYE RD									
ADDRESS - SHELTON CT									
ZIP - 06484									
OWNER HISTORY									
NAME	VOL	PAGE	DATE	SALE PRICE	VALID	DEED TYP			
HUDAK RUDOLPH&KAREN E MCGUIRE	2651	94	02/06/2006		N	N			
HUDAK RUDOLPH & KAREN E TRS OF	2416	203	08/10/2004		N	Q			
HUDAK RUDOLPH & KAREN E T	2416	201	08/10/2004		N	Q			
HUDAK RUDOLPH & KAREN E T	2369	93	05/05/2004		N	C			
HUDAK RUDOLPH & EST OF	1970	313	07/24/2002		N	P			
HUDAK RUDOLPH & ROBERTA G	1543	123	10/06/1998		N	Q			
HUDAK RUDOLPH	263	992	00/00/0 00		N				
LAND DESCRIPTION DATA									
LAND TYPE	ACREAGE	INFL CODE	INFL FACT	USE CODE	UNIT PRICE	FULL VALUE	ASSESSED		
PRIME SITE	.92	OTHER	.75	1-1	101020.00	101020	70714		
RESIDUAL	2.05			1-2	24450.00	37592	26314		
						TOTAL	138612	97020	
SITE NOTES									
TELECOMMUNICATIONS TOWERS ON PROPERTY									
TELECOM BLDG OWNED BY FAA									
PROPERTY CLASSIFICATION CODES									
RESIDENTIAL 1-	1-6 MOBILE MFG HOMES	PUBLIC UTILITY 4-		VACANT LAND 5-		USE ASSESSMENT 6-			
1-1 LAND	1-7 CONDO OPTIONS	4-1 LAND	4-2 BUILDINGS	5-1 RESIDENTIAL LAND	5-2 COMMERCIAL LAND	6-1 FARM	6-2 FOREST		
1-2 EXCESS ACRES	1-8 MIXED - USE	4-3 OUTBUILDINGS	5-3 INDUSTRIAL LAND	5-4 WETLANDS	5-5 OUTBUILDINGS	6-3 OPEN SPACE	6-4 OUTBUILDINGS		
1-3 DWELLINGS						6-5 WATER SUPPLY			
1-4 OUTBUILDINGS									
1-5 CONDOMINIUMS									

YEAR	CLASS	UNITS	FULL VALUE	ASSESSED
2011	1-1	1.00	101008	70710
	1-2	2.05	37592	26310
	1-3	1.00	196680	137680
	1-4	5.00	27020	18910
	TOTAL		362300	253610
2006	1-1	1.00	160009	112010
	1-2	2.05	51491	36040
	1-3	1.00	216320	151420
	1-4	5.00	29780	20850
	TOTAL		457600	320320
2004	1-1	1.00	104544	73180
	1-2	2.05	33656	23560
	1-3	1.00	133030	93120
	1-4	5.00	18370	12860
	TOTAL		289600	202720

COST CALCULATIONS

ITEM	MEAS1	MEAS2	UNIT	RATE	RCN
UNFN FULL	330		SQFT X	61.75-	\$20,380-
UNFN HALF	566		SQFT X	16.47	\$9,327
BASMT AREA	1131		SQFT X	34.37	\$38,875
FIN HALF	1		SQFT X	85.70	\$86
SEC STORY	1131		SQFT X	107.60	\$121,703
FRST STORY	1275		SQFT X	145.80	\$185,901
#F BATHS	1	1.00	QTY X	9,037	\$9,038
TOTALS =(RCN=	344,550)*(GOOD=	60%)*(RCNLD	206,731)	
(FUNCT=100%)*(MKT	=090%)*(RCNLD	206,731)	=FINAL RCNLD=		
TOTAL OTHER IMPRV (RCNLD)=					\$37,659
GRAND TOTAL IMPRV (RCNLD)=					\$223,717
GRAND TOTAL FOR LAND+IMPRV					\$362,300

CITY OF SHELTON REAL PROPERTY DATA

ASSRS MAP - LOT SURVEY MAP - LOT

SIDE

134.-3

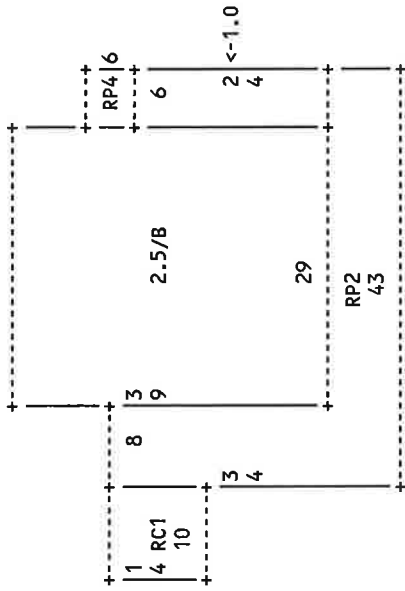
2

162 BIRDSEYE RD

SKETCH

BUILDING DESCRIPTION DATA
 STYLE - COLONIAL
 USE CODE - 1-3 - RES DWELLING
 # OF FAMILIES - 1
 STORIES - 2.5
 YR BUILT - 1747
 EFF YR BUILT -
 PARTIAL CONST -
 EXTERIOR COND -
 EXTERIOR MAT -
 HEAT TYPE - AVERAGE
 FUEL TYPE - FRAME
 CENTRAL
 OIL
 KITCHENS - 1
 # F BATHS - 2
 # H BATHS - 0
 EXTRA FIXTURES - 0
 BEDROOMS - 3
 ROOMS - 8
 FIREPLC STACK -
 FIREPLC OP -
 TYP FIREPLC -
 INTERIOR COND - AVERAGE
 BASMT GAR OPEN -
 REMODEL YEAR -
 CLASS - IV
 CLASS MODIFIER - 1.00
 FRST STORY - 1275
 FIN HALF - 1-
 FIN TOR - 1131
 SEC STORY -
 ADD STORY -
 FIN OVGAR -
 FIN ATTIC -
 BASMT AREA - 1131
 FIN BASMT -
 REC ROOM -
 UNFN HALF -
 UNFN TOR -
 UNFN FULL -
 SFLA - 2075
 FRVU VALUE CD - COST VAL
 FTOTAL - 362300
 ASSESSED VAL - 253610

SFLA :2075



IMPROVEMENT DATA

STR/MOD DESCR	MEASURE	DIM 1	DIM 2	QTY	CLASS	COND	YR BLT	USE CD	RCN	PET GD	COST MOD	RCNLD	ASSESSED
CARPRT	SQUARE FEE	140		1	C	3	1920	1-3	2709	60		1625	1137
PORCH, COVER	SQUARE FEE	552		1	C	3	1747	1-3	12851	60		7711	5397
PORCH, ENCLSD	SQUARE FEE	36		1	C	3	1920	1-3	2179	60		1307	914
BARN, 1.0 GEN	DIMENSIONS	36	20	1	C	2	1900	1-4	21950	25		5488	3841
COMMON WALL	QUANTITY			1	C	2	1747	1-3					
SHED, WOOD	DIMENSIONS	12	23	1	C	2	1900	1-4	4064	25		1016	711
CARPRT	DIMENSIONS	8	23	1	C	3	1985	1-4	3561	81		2884	2018
ATT GAR 1.0 ST	DIMENSIONS	20	35	1	C	3	1930	1-4	25980	60		15588	10911
TOTAL													26361

BUILDING PERMITS

NUMBER	DATE	VALUE	DESCRIPTION	C.O. DATE	COMP DATE
TOTAL					

NOTES

CITY OF SHELTON REAL PROPERTY DATA

PROPERTY LOCATION	ASSRS MAP - LOT	SURVEY MAP - LOT	ZONE	CENSUS TRACT	NBHD	SITE	CARD	RUNDATE	SIDE	
162 BIRDSEYE RD	134.-3		R-1	1106.	12030	01		07/13/2015	1	
ASSESSMENT INFORMATION										
NAME 1	NAME 2	ADDRESS	ADDRESS	ADDRESS	ZIP	YEAR	CLASS	UNITS	FULL VALUE	ASSESSED
HUDAK RUDOLPH&KAREN E MCGUIRE	TRS ROBERTA G HUDAK FAM TRUST	162 BIRDSEYE RD	SHELTON CT		06484					

NAME	VOL	PAGE	DATE	SALE PRICE	VALID	DEED TYP
HUDAK RUDOLPH&KAREN E MCGUIRE	2651	94	02/06/2006		N	N
HUDAK RUDOLPH & KAREN E TRS OF	2416	203	08/10/2004		N	Q
HUDAK RUDOLPH & KAREN E T	2416	201	08/10/2004		N	Q
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HUDAK RUDOLPH & EST OF	1970	313	07/24/2002		N	P
HUDAK RUDOLPH & ROBERTA G	1543	123	10/06/1998		N	Q
HUDAK RUDOLPH	263	992	00/00/0 00		N	

LAND DESCRIPTION DATA							
LAND TYPE	ACREAGE	INFL CODE	INFL FACT	USE CODE	UNIT PRICE	FULL VALUE	ASSESSED
PRIME SITE	.92			1-1	101020.00	101020	70714
RESIDUAL	2.05	OTHER	.75	1-2	24450.00	37592	26314
TOTAL					138612		97020

SITE		NOTES
NBHD TYPE - RESIDENTIAL ROAD - LOCAL TRAFFIC - LIGHT BLDG SET BACK - 30' TO 60' VIEW - AVERAGE ELEVATION - EVEN SEWER - NO WATER - PRIVATE UTILITIES - ELECTRIC COMPARED - TYPICAL DESIRABILITY - TYPICAL LANDSCAPING - TYPICAL DRIVEWAY - PAVED	TELECOMMUNICATIONS TOWERS ON PROPERTY TELECOM BLDG OWNED BY FAA	PROPERTY CLASSIFICATION CODES PUBLIC UTILITY 4- VACANT LAND 5- 4-1 LAND 5-1 RESIDENTIAL LAND 4-2 BUILDINGS 5-2 COMMERCIAL LAND 4-3 OUTBUILDINGS 5-3 INDUSTRIAL LAND 5-4 WETLANDS 5-4 OUTBUILDINGS 5-5 OUTBUILDINGS 6-5 WATER SUPPLY

COST CALCULATIONS	
ITEM MEAS1 MEAS2 UNIT RATE RCN UNFN FULL 330 SQFT X 61.75- \$20,380- UNFN HALF 566 SQFT X 16.47 \$9,327 BASMT AREA 1131 SQFT X 34.37 \$38,875 FIN HALF 1 SQFT X 85.70 \$86 SEC STORY 1131 SQFT X 107.60 \$121,703 FRST STORY 1275 SQFT X 145.80 \$185,901 #F BATHS 1 1.00 QTY X 9,037 \$9,038 TOTALS =(RCN= 344,550)*(GOOD= 60%)=(RCNLD 206,731) (FUNCT=100%)*(MKT =090%)*(RCNLD 206,731)=FINAL RCNLD= \$186,058 GRAND TOTAL IMPRV (RCNLD)= TOTAL OTHER IMPRV (RCNLD)= \$37,659 GRAND TOTAL FOR LAND+IMPRV \$223,717 ROUNDED TO \$223,700	

CITY OF SHELTON REAL PROPERTY DATA

PROPERTY LOCATION		ASSRS MAP - LOT	SURVEY MAP - LOT	SIDE													
162 BIRDSEYE RD		134.-3		2													
BUILDING DESCRIPTION DATA																	
STYLE	COLONIAL																
USE CODE	1-3 -RES DWELLING																
# OF FAMILIES	1																
STORIES	2.5																
YR BUILT	1747																
EFF YR BUILT																	
PARTIAL CONST																	
EXTERIOR COND	AVERAGE																
EXTWAL MAT	FRAME																
HEAT TYPE	CENTRAL																
FUEL TYPE	OIL																
KITCHENS	1																
# BATHS	2																
#H BATHS	0																
EXTRA FIXTURES	0																
BEDROOMS	3																
ROOMS	8																
FIREPLC STACK																	
FIREPLC OP																	
TYP FIREPLC																	
INTERIOR COND	AVERAGE																
BASMT GAR OPEN																	
REMODEL YEAR																	
CLASS	IV																
CLASS MODIFIER	1.00																
FRST STORY	12/75																
FIN HALF	1-																
FIN TOR																	
SEC STORY	1131																
ADD STORY																	
FIN DVGAR																	
FIN ATTIC																	
BASMT AREA	1131																
FIN BASMT																	
REC ROOM																	
UNFN HALF																	
UNFN TOR																	
UNFN FULL																	
SFLA	330																
FRVU VALUE CD	2075																
FTOTAL	COST VAL																
ASSESSED VAL	362300																
	253610																
NOTES																	
SFLA :2075																	
IMPROVEMENT DATA																	
STR/MOD DESCR	MEASURE	DIM 1	DIM 2	QTY	CLSS	COND	YR	BLT	USE	CD	RCN	PCT	GD	COST	MOD	RCNLD	ASSESSED
POULTRY,1.0	DIMENSIONS	12	27	1	C	2	1900	1-4	1-4		8160	25		2040		1428	
TOTAL																	
37659 26361																	
BUILDING PERMITS																	
NUMBER	DATE	VALUE	DESCRIPTION	C.O. DATE	COMP DATE												

