Robinson+Cole

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Also admitted in Massachusetts

March 10, 2016

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

Re: **Notice of Exempt Modification – Facility Modification**
71 Moxley Road, Montville, Connecticut

Dear Ms. Bachman:

On January 5, 2015, the Council acknowledged the Cellco Partnership d/b/a Verizon Wireless ("Cellco") notice of intent to modify its existing wireless facility at 71 Moxley Road in Montville, Connecticut (EM-VER-086-141211). None of the facility modifications described in that filing were completed within one year of the approval and the approval has now expired. This letter seeks Council acknowledgement for these same facility modifications.

Cellco currently maintains twelve (12) antennas at the 141-foot level of the existing 190-foot tower at 71 Moxley Road in Montville, Connecticut (the "Property"). The tower is owned by SBA Communications Corporation ("SBA"). The Council approved Cellco's use of this tower in 1999. Cellco now intends to modify its facility by replacing nine (9) of its existing antennas with three (3) model LNX-8513DS, 850 MHz antennas; three (3) model HBXX-6517DS, 1900 MHZ antennas; and three (3) model HBXX-6517DS, 2100 MHZ antennas, all at the same 141-foot level on the tower. Cellco also intends to install three (3) remote radio heads ("RRHs") behind its new 2100 MHz antennas and one (1) HYBRIFLEX™ fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco's new antennas, 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 Ronald K. McDaniel, Mayor of the Town of Montville. A copy of this letter is also being sent to Ernest C. Wainwright and Walter N. Wainwright, the owners of the Property and 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).

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 the 141-foot level of the 190-foot 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 (6) 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. A cumulative General Power Density table 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, with certain modifications, can support Cellco's proposed modifications. (*See* Structural Analysis included in Attachment 3).

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:
Ronald K. McDaniel, Montville Mayor
Ernest C. Wainwright and Walter N. Wainwright, Jr.
SBA
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

LNX-8513DS-VTM

Andrew® Teletilt® Antenna, 698–896 MHz, 85° horizontal beamwidth, RET compatible

POWERED BY ANDREW.

Electrical Specifications

Frequency Band, MHz	698–806	806–896
Gain, dBi	14.6	15.3
Beamwidth, Horizontal, degrees	85	85
Beamwidth, Vertical, degrees	12.2	11.0
Beam Tilt, degrees	0–10	0–10
USLS, typical, dB	17	17
Front-to-Back Ratio at 180°, dB	25	26
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°

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
Antenna Dimensions, L x W x D	1847.0 mm x 301.0 mm x 181.0 mm | 72.7 in x 11.9 in x 7.1 in
Net Weight	17.8 kg | 39.2 lb
Model with factory installed AISG 2.0 RET	LNX-8513DS-A1M

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

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

Product Specifications

HBXX-6517DS-VTM

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 km/h | 150 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®

Packed Dimensions

Depth	292.0 mm | 11.5 in
Length	2219.0 mm | 87.4 in
Width	409.0 mm | 16.1 in
Shipping Weight	29.3 kg | 64.6 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

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.

Product Specifications

HBXX-6517DS-VTM

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

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.

SUPERIOR RF PERFORMANCE

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.

OPTIMIZED TCO

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.

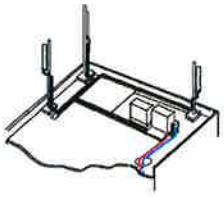
EASY INSTALLATION

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.

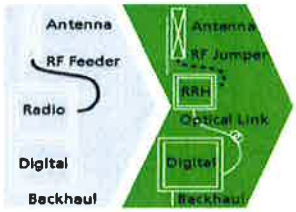
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation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

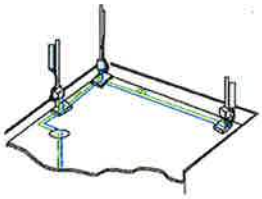
Installation can easily be done by a single person as the Alcatel–Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



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.

TECHNICAL SPECIFICATIONS

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 daisychaining 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

Alcatel·Lucent

AT THE SPEED OF IDEAS™

Product Data Sheet HB158-1-08U8-S8J18

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.

Figure 1: HYBRIFLEX Series

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

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 (0.205)
DC-Resistance Power Cable, 8.4mm²(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)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (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-93-658 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 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

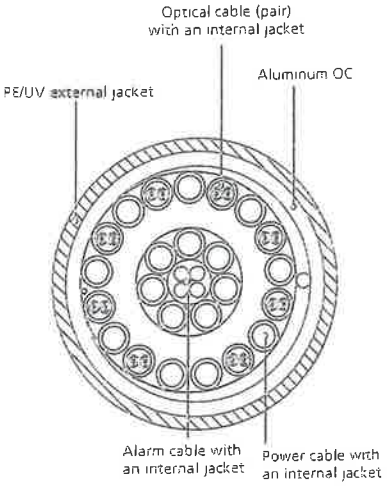


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Uncasville (Montville)								
Tower Height: 190ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Omnipoint			154	0.0148	1930	1.0000	0.15%	
*Sprint	2	693	160	0.0210	1900	1.0000	0.21%	
*Sprint	1	390	160	0.0059	850	0.5667	0.10%	
*Sprint	2	693	160	0.0210	2500	1.0000	0.21%	
*MetroPCS	3	444	175	0.0168	2140	1.0000	0.17%	
*AT&T	2	565	130	0.0264	880	0.5867	0.45%	
*AT&T	2	875	130	0.0409	1900	1.0000	0.41%	
*AT&T	1	283	130	0.0066	880	0.5867	0.11%	
*AT&T	4	525	130	0.0491	1900	1.0000	0.49%	
*AT&T	1	1375	130	0.0322	734	0.4893	0.66%	
Verizon PCS	**15**	**412**	**141**	**0.1118**	**1970**	**1.0000**	**11.18%**	
Verizon Cellular	**9**	**291**	**141**	**0.0474**	**869**	**0.5793**	**8.18%**	
Verizon AWS	**1**	**1807**	**141**	**0.0327**	**2145**	**1.0000**	**3.27%**	
Verizon 700	**1**	**857**	**141**	**0.0155**	**746**	**0.4973**	**3.12%**	
								28.70%
* Source: Siting Council								

ATTACHMENT 3

FDH VELOCITEL

ENGINEERING INNOVATION

FDH Velocitel, 6521 Meridien Drive Raleigh, NC 27616, Ph. 919.755.1012

Structural Analysis for SBA Network Services, Inc.

190' Guyed Tower

SBA Site Name: Montville 3
SBA Site ID: CT10016-A-05
Verizon Site ID: Uncasville

FDH Project Number 15BJIT1400

Analysis Results

Tower Components	97.5%	Sufficient
Foundation	70.1%	Sufficient

Prepared By:

Mark S. Girgis

Mark S. Girgis, EI
Project Engineer

Reviewed By:

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

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

April 22, 2015

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY

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

- Rohn, Inc. (Eng. File No. 37183AE001) original design drawings dated April 21, 1998
- FDH, Inc. (Project No. 07-0319T) TIA Inspection Report dated April 13, 2007
- FDH Engineering, Inc. (Project No. 11-02193E G1) Geotechnical Evaluation of Subsurface Conditions dated August 10, 2011
- FDH Engineering, Inc. (Project No. 1465RU1400) Modification Drawings for a 190' Guyed Tower dated May 29, 2014
- FDH, Inc. (Project No. 1466I41700) Modification Inspection Report dated February 25, 2015.
- FDH Velocitel (Project No. 15BJIT1400) Modification Drawings for a 190' Guyed Tower dated April 22, 2015
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and the *2005 CBC* is 95 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 loading from Verizon in place at (see **Table 1**), the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 CBC* provided the **Recommendations** listed below are satisfied. Furthermore, given the dimensions of the existing foundations (see Rohn, Inc. Eng. File No. 37183AE001) and utilizing the existing geotechnical data (see FDH Engineering, Inc. Project No. 11-02193E G1), 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 Velocitel is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

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

1. The feed lines should be installed as shown in **Figure 1**.
2. RRU/RRH Stipulation: The equipment may be installed in any arrangement determined by the client.
3. The existing diplexers should be installed directly behind the proposed/existing panel antennas
4. The modifications outlined in FDH Velocitel (Project No. 15BJIT1400) Modification Drawings for a 190' Guyed Tower dated April 22, 2015 must be installed as specified in order for this analysis to be considered 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 Velocitel should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
183	(9) Allgon 7130.16.33.00	(9) 1-5/8"	Nextel[1]	183	(3) 12' T-Frames
175	(6) Kathrein 800 10504 (6) Kathrein 860-10118	(12) 1-5/8" (1) 3/8"	Metro PCS	175	(3) T-Frames (Andrew P/N QT-SF10-2-72)
160	(3) RFS APXVSPP18-C-A20 (3) RFS APXVTM14-C-I20 (3) Alcatel Lucent TD-RRH8x20-25 (3) Alcatel Lucent 1900 MHz RRHs (3) Alcatel Lucent 800 MHz RRHs (3) Alcatel Lucent 800 MHz External Notch Filters (4) RFS ACU-A20-N RETs	(4) 1-1/4"	Sprint	159.5	(3) 15.5' T-Frames
150.5	(3) Ericsson AIR 21 B2A/B4P (3) Ericsson AIR 21 B4A/B2P (3) Ericsson KRY 112 144/1	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile	150.5	(3) 15' T-Frames
141.5	(3) Antel BXA-70063/6CF-EDIN-0 (6) Rymsa AT-41-645TX (3) Rymsa MGD5-800T2 (6) RFS FD9R6004/2CL-3CL	(12) 1-5/8"	Verizon	141.5	(3) 13.5' T-Frames
130	(3) Powerwave 7770 (1) KMW AM-X-CD-16-65-00T (1) KMW AM-X-CD-14-65-00T (1) Andrew SBNH 1D6565C (6) Powerwave LGP21401 (6) Ericsson RRUS-11 (1) Raycap DC6-48-60-18-8F	(12) 1-1/4" (2) DC Power (1) Fiber	AT&T	130	(3) 12' T-Frames
76.5	(1) GPS (7.5" x 3")	(1) 1/2"	Verizon	76.5	(1) 38" Standoff

1. Nextel to remove all existing loading prior to the Sprint installation. This loading was not considered in this analysis.

Proposed Carrier Final Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
141	(3) Antel BXA-70063/6CF-EDIN-0 (6) RFS FD9R6004/2CL-3CL (3) Commscope LNX-8513DS-VTM (6) Commscope HBXX-6517DS-A2M (3) Alcatel Lucent RHR 2x60-AWS (1) RFS DB-T1-6Z-8AB-0Z	(12) 1-5/8" (1) 1-5/8" Hybrid Fiber	Verizon	141.5	(3) 13.5' T-Frames
76.5	(1) GPS (7.5" x 3")	(1) 1/2"		76.5	(1) 38" Standoff

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 (assumed)
Bracing	36 ksi (assumed)

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 Velocitel should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

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

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation (ft)	Component Type	Size	% Capacity*	Pass Fail
T1	190 - 170	Leg	ROHN 3 EH	11.3	Pass
T2	170 - 150	Leg	ROHN 3 EH	75.0	Pass
T3	150 - 147.227	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	65.0	Pass
T4	147.227 - 144.818	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	68.5	Pass
T5	144.818 - 142.409	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	71.4	Pass
T6	142.409 - 140	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	73.8	Pass
T7	140 - 137.591	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	73.3	Pass
T8	137.591 - 135.182	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	72.0	Pass
T9	135.182 - 132.773	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	70.7	Pass
T10	132.773 - 130	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	68.5	Pass
T11	130 - 110	Leg	2.875 OD x 0.276 + 180 deg 3.5 OD x 0.3 (v4.03)	73.6	Pass
T12	110 - 90	Leg	ROHN 3 EH	76.2	Pass
T13	90 - 87.2266	Leg	ROHN 3 EH	70.7	Pass
T14	87.2266 - 84.8177	Leg	ROHN 3 EH	60.2	Pass
T15	84.8177 - 82.4089	Leg	ROHN 3 EH	54.4	Pass
T16	82.4089 - 80	Leg	ROHN 3 EH	48.9	Pass
T17	80 - 77.5911	Leg	ROHN 3 EH	43.8	Pass
T18	77.5911 - 75.1823	Leg	ROHN 3 EH	43.8	Pass
T19	75.1823 - 72.7734	Leg	ROHN 3 EH	44.2	Pass
T20	72.7734 - 70	Leg	ROHN 3 EH	44.4	Pass
T21	70 - 50	Leg	ROHN 3 EH	61.6	Pass

Section No.	Elevation (ft)	Component Type	Size	% Capacity*	Pass Fail
T22	50 - 35	Leg	ROHN 3 EH	65.4	Pass
T23	35 - 20	Leg	ROHN 3 EH	65.4	Pass
T24	20 - 5	Leg	ROHN 3 EH	58.6	Pass
T25	5 - 0	Leg	ROHN 3 EH	51.0	Pass
T1	190 - 170	Diagonal	L2x2x1/4	11.0 24.1 (b)	Pass
T2	170 - 150	Diagonal	L2x2x1/4	36.3 79.0 (b)	Pass
T3	150 - 147.227	Diagonal	ROHN TS1.5x16 ga	53.0 60.8 (b)	Pass
T4	147.227 - 144.818	Diagonal	ROHN TS1.5x16 ga	40.9 53.1 (b)	Pass
T5	144.818 - 142.409	Diagonal	ROHN TS1.5x16 ga	42.6 49.6 (b)	Pass
T6	142.409 - 140	Diagonal	ROHN TS1.5x16 ga	18.2 23.4 (b)	Pass
T7	140 - 137.591	Diagonal	ROHN TS1.5x16 ga	23.6 27.9 (b)	Pass
T8	137.591 - 135.182	Diagonal	ROHN TS1.5x16 ga	25.2 29.7 (b)	Pass
T9	135.182 - 132.773	Diagonal	ROHN TS1.5x16 ga	26.5 34.6 (b)	Pass
T10	132.773 - 130	Diagonal	ROHN TS1.5x16 ga	39.5 41.6 (b)	Pass
T11	130 - 110	Diagonal	ROHN TS1.5x11 ga	58.5 72.7 (b)	Pass
T12	110 - 90	Diagonal	ROHN TS1.5x11 ga	79.0 97.5 (b)	Pass
T13	90 - 87.2266	Diagonal	L2x2x1/4	25.8 66.8 (b)	Pass
T14	87.2266 - 84.8177	Diagonal	ROHN TS1.5x16 ga	57.1 80.8 (b)	Pass
T15	84.8177 - 82.4089	Diagonal	ROHN TS1.5x16 ga	68.3 83.8 (b)	Pass
T16	82.4089 - 80	Diagonal	ROHN TS1.5x16 ga	62.4 79.5 (b)	Pass
T17	80 - 77.5911	Diagonal	ROHN TS1.5x16 ga	59.1 75.2 (b)	Pass
T18	77.5911 - 75.1823	Diagonal	ROHN TS1.5x16 ga	55.8 69.6 (b)	Pass
T19	75.1823 - 72.7734	Diagonal	ROHN TS1.5x16 ga	48.2 66.7 (b)	Pass
T20	72.7734 - 70	Diagonal	ROHN TS1.5x16 ga	62.7 65.5 (b)	Pass
T21	70 - 50	Diagonal	ROHN TS1.5x11 ga	51.4 62.4 (b)	Pass
T22	50 - 35	Diagonal	ROHN TS1.5x16 ga	35.0	Pass
T23	35 - 20	Diagonal	ROHN TS1.5x16 ga	49.9 54.9 (b)	Pass
T24	20 - 5	Diagonal	ROHN TS1.5x11 ga	37.0 45.0 (b)	Pass
T25	5 - 0	Horizontal	L3x3x1/4	20.3	Pass
T1	190 - 170	Top Girt	L2x2x1/4	0.3	Pass
T2	170 - 150	Top Girt	L2x2x1/4	13.7	Pass
T3	150 - 147.227	Top Girt	ROHN TS1.5x16 ga	2.0	Pass
T11	130 - 110	Top Girt	ROHN TS1.5x11 ga	10.4	Pass
T12	110 - 90	Top Girt	ROHN TS1.5x11 ga	9.2	Pass

Section No.	Elevation (ft)	Component Type	Size	% Capacity*	Pass Fail
T13	90 - 87.2266	Top Girt	ROHN TS1.5x16 ga	9.1	Pass
T21	70 - 50	Top Girt	ROHN TS1.5x11 ga	15.2	Pass
T22	50 - 35	Top Girt	ROHN TS1.5x16 ga	5.2	Pass
T23	35 - 20	Top Girt	ROHN TS1.5x16 ga	4.1	Pass
T24	20 - 5	Top Girt	ROHN TS1.5x11 ga	5.1	Pass
T1	190 - 170	Bottom Girt	L2x2x1/4	6.1	Pass
T2	170 - 150	Bottom Girt	L2x2x1/4	9.8	Pass
T10	132.773 - 130	Bottom Girt	ROHN TS1.5x16 ga	4.1	Pass
T11	130 - 110	Bottom Girt	ROHN TS1.5x11 ga	7.3	Pass
T12	110 - 90	Bottom Girt	ROHN TS1.5x11 ga	13.8	Pass
T20	72.7734 - 70	Bottom Girt	ROHN TS1.5x16 ga	9.2	Pass
T21	70 - 50	Bottom Girt	ROHN TS1.5x11 ga	4.5	Pass
T22	50 - 35	Bottom Girt	ROHN TS1.5x16 ga	3.2	Pass
T23	35 - 20	Bottom Girt	ROHN TS1.5x16 ga	6.2	Pass
T24	20 - 5	Bottom Girt	ROHN TS1.5x11 ga	20.6	Pass
T2	170 - 150	Guy A@167.227	7/8	52.4	Pass
T12	110 - 90	Guy A@92.7734	5/8	82.4	Pass
T2	170 - 150	Guy B@167.227	7/8	52.6	Pass
T12	110 - 90	Guy B@92.7734	5/8	82.4	Pass
T2	170 - 150	Guy C@167.227	7/8	52.6	Pass
T12	110 - 90	Guy C@92.7734	5/8	82.4	Pass
T2	170 - 150	Torque Arm Top@167.227	C15x40	48.7	Pass
T12	110 - 90	Torque Arm Top@92.7734	C15x40	32.5	Pass

*Capacities include a 1/3 allowable stress increase for wind per *TIA/EIA-222-F* standards.

Table 4 - Maximum Base Reactions

	Current Analysis* *(TIA/EIA-222-F)*		Original Design *(TIA/EIA-222-F)*	
Reaction	Horizontal	Vertical	Horizontal	Vertical
Tower Base	3 k	126 k	---	173 k
Anchor	48 k	56 k	66 k	59 k

*Foundation determined to be adequate per independent analysis.

Pre-Modification Installation

FDH Velocitel has considered the acceptability of the tower stress level with the existing and proposed loading prior to the installation of the proposed tower modifications referenced in this report. This opinion is consistent with *Section 4.5* of *TIA-1019-A-2012*, *Structural Standards for Installation, Alteration and Maintenance of Antenna Supporting Structures and Antennas*, using a non-operational, fastest-mile, basic design wind speed of 76 mph. This reduced loading is based upon the reduced statistical risk of a wind speed of that magnitude occurring for durations of up to 6 months.

FDH Velocitel has reviewed the tower and foundation per *TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures* with the loading listed in this structural analysis report and the specified wind speed with applicable reduction based on duration and has determined that the proposed loading may be installed on the tower prior to the installation of the proposed structural modifications. The proposed modifications must be installed within 6 months of the date of this report. It is the proposed Carrier's responsibility to have appropriate plans in place to install the full structural modifications before the onset of a forecasted wind event or hurricane. FDH Velocitel will not be liable or responsible for damage to the tower or any existing carrier's equipment.

GENERAL COMMENTS

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

LIMITATIONS

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

APPENDIX

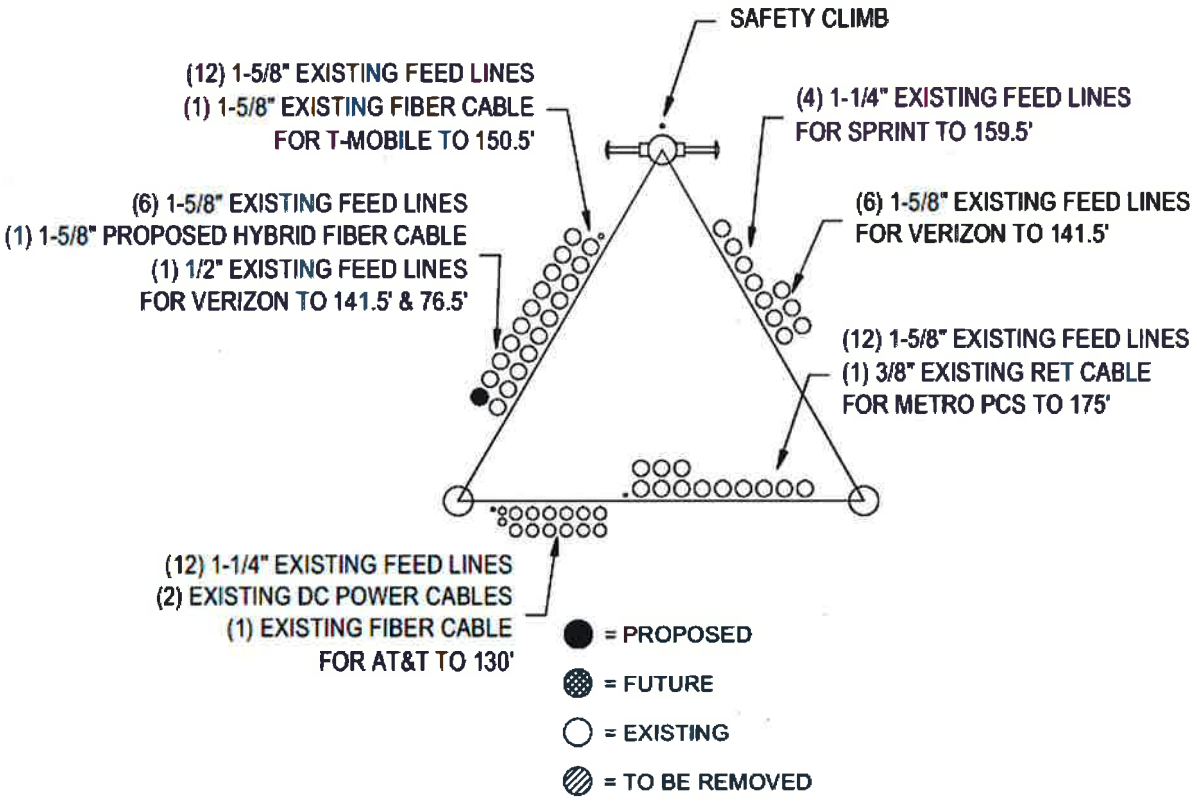
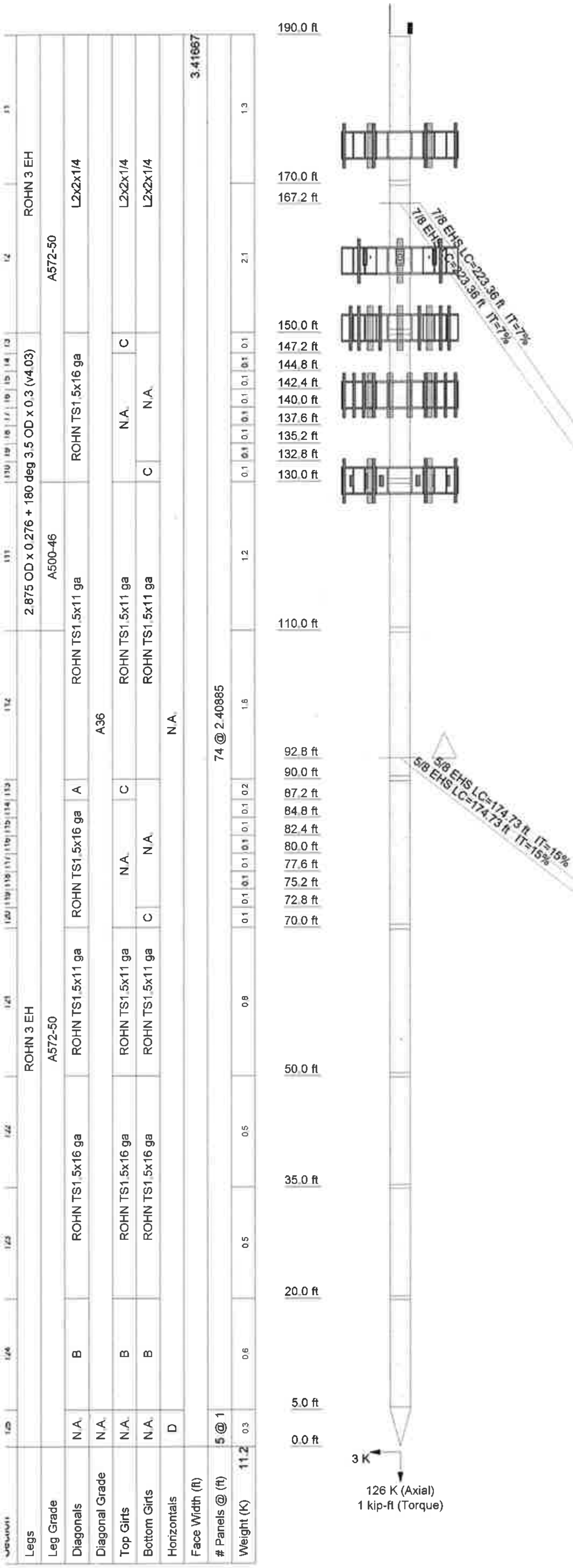
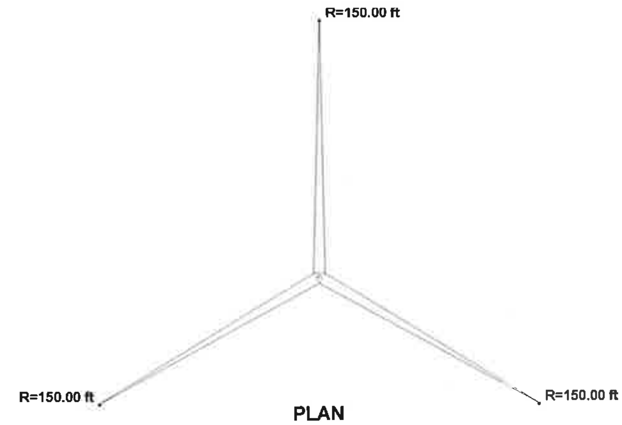


Figure 1 - Feed Line Layout





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	190	KRY 112 144/1 TMA	150.5
Beacon	190	KRY 112 144/1 TMA	150.5
(2) 800 10504 w/ Mount Pipe	175	(3) 15' T-Frames	150.5
(2) 800 10504 w/ Mount Pipe	175	BXA-70063/6CF-EDIN w/ Mount Pipe	141.5
(2) 800 10504 w/ Mount Pipe	175	BXA-70063/6CF-EDIN w/ Mount Pipe	141.5
(2) 860 10118 RET	175	BXA-70063/6CF-EDIN w/ Mount Pipe	141.5
(2) 860 10118 RET	175	(2) FD9R6004/2CL-3CL Diplexer	141.5
(2) 860 10118 RET	175	(2) FD9R6004/2CL-3CL Diplexer	141.5
(3) T-Frames (Andrew QT-SF10-2-72)	175	(2) FD9R6004/2CL-3CL Diplexer	141.5
APXVSPP18-C-A20 w/Mount Pipe	159.5	(3) 13.5' T-Frames	141.5
APXVSPP18-C-A20 w/Mount Pipe	159.5	LNX-8513DS-VTM w/ Mount Pipe	141.5
APXVSPP18-C-A20 w/Mount Pipe	159.5	LNX-8513DS-VTM w/ Mount Pipe	141.5
APXVTM14-C-I20 w/Mount Pipe	159.5	LNX-8513DS-VTM w/ Mount Pipe	141.5
APXVTM14-C-I20 w/Mount Pipe	159.5	(2) HBXX-6517DS-A2M w/Mount Pipe	141.5
APXVTM14-C-I20 w/Mount Pipe	159.5	(2) HBXX-6517DS-A2M w/Mount Pipe	141.5
TD-RRH8x20-25	159.5	(2) HBXX-6517DS-A2M w/Mount Pipe	141.5
TD-RRH8x20-25	159.5	RRH 2x60-AWS	141.5
TD-RRH8x20-25	159.5	RRH 2x60-AWS	141.5
1900 MHz RRH	159.5	RRH 2x60-AWS	141.5
1900 MHz RRH	159.5	DB-T1-6Z-8AB-0Z	141.5
1900 MHz RRH	159.5	7770 w/Mount Pipe	130
800 MHz RRH	159.5	7770 w/Mount Pipe	130
800 MHz RRH	159.5	7770 w/Mount Pipe	130
800 MHz RRH	159.5	AM-X-CD-16-65-00T-RET w/ Mount Pipe	130
800 MHz Filter	159.5	AM-X-CD-14-65-00T w/ Mount Pipe	130
800 MHz Filter	159.5	SBNH-1D6565C w/ Mount Pipe	130
800 MHz Filter	159.5	(2) TMA-LGP 21401	130
(2) ACU-A20-N RET	159.5	(2) TMA-LGP 21401	130
ACU-A20-N RET	159.5	(2) TMA-LGP 21401	130
ACU-A20-N RET	159.5	(2) RRUS-11	130
(2) Empty Mount Pipe	159.5	(2) RRUS-11	130
(2) Empty Mount Pipe	159.5	(2) RRUS-11	130
(2) Empty Mount Pipe	159.5	DC6-48-60-18-8F Surge Arrestor	130
(3) 15' T-Frames	159.5	Empty Mount Pipe	130
AIR 21 B2A/B4P	150.5	Empty Mount Pipe	130
AIR 21 B2A/B4P	150.5	Empty Mount Pipe	130
AIR 21 B2A/B4P	150.5	(3) 12' T-Frames	130
AIR 21 B4A/B2P	150.5	38" Standoff	76.5
AIR 21 B4A/B2P	150.5	GPS	76.5
AIR 21 B4A/B2P	150.5		
KRY 112 144/1 TMA	150.5		

SYMBOL LIST

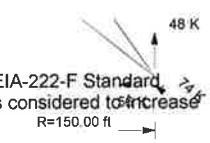
MARK	SIZE	MARK	SIZE
A	L2x2x1/4	C	ROHN TS1.5x16 ga
B	ROHN TS1.5x11 ga	D	L3x3x1/4

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A500-46	46 ksi	62 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 95 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.
5. TOWER RATING: 97.5%



FDH Velocitel
6521 Meridien Drive
Raleigh, NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031

Job: **Montville 3, CT10016-A-05**			
Project: **15BJIT1400**			
Client: SBA Network Services, Inc.	Drawn by: Mark S. Girgis	App'd:	
Code: TIA/EIA-222-F	Date: 04/22/15	Scale: N	
Path:		Dwg No.	

PROJECT DESCRIPTION:

MODIFICATION DRAWINGS FOR A 190' GUYED TOWER

SITE NAME:

MONTVILLE 3, CT

SITE NUMBER:

CT10016-A-05

SITE ADDRESS:

71 MOXLEY ROAD,
UNCASVILLE, CT 06382

COORDINATES:

LAT: 41.4352°
LONG: -72.1233°

PROJECT DATA

CODES AND STANDARDS	
BUILDING CODE	2005 CONNECTICUT BUILDING CODE
STANDARD	TIA-222-F
NOMINAL / ULTIMATE WIND SPEED WITHOUT ICE (MPH)	95
NOMINAL / ULTIMATE WIND SPEED WITH ICE (MPH)	38
SERVICE WIND SPEED (MPH)	50
ICE THICKNESS (IN)	0.75
EXPOSURE CATEGORY	-
RISK CATEGORY	-
TOPOGRAPHIC CATEGORY	-
CREST HEIGHT (FT)	-
S_S (G)	-
S_1 (G)	-

PROJECT CONTACTS

FDH PROJECT MANAGER NAME	JEFF JOHNSON
FDH PROJECT MANAGER EMAIL ADDRESS	JEFFREY.JOHNSON@FDHVELOCITEL.COM
FDH PROJECT MANAGER PHONE NUMBER	(919) 755-1012
FDH PROJECT ENGINEER NAME	MARK GIRGIS, EI
FDH PROJECT ENGINEER EMAIL ADDRESS	MARK.GIRGIS@FDHVELOCITEL.COM
FDH PROJECT ENGINEER PHONE NUMBER	(919) 755-1012

FAILING STRUCTURAL ANALYSIS

STRUCTURAL ANALYSIS COMPANY	FDH ENGINEERING, INC.
PROJECT NO.	14BDF41400 (R4)
DATE	MARCH 10, 2015

THIS REPORT WAS BASED ON A SPECIFIC ANTENNA AND COAX CONFIGURATOIN PROVIDED BY THE TOWER OWNER. ANY CHANGE TO THIS INFORMATION MUST BE REVIEWED BY FDH VELOCITEL.

ALL CONSTRUCTION SHALL COMPLY WITH THE TIA-1019-A STANDARD

SHEET INDEX

PREPARED BY:

FDH VELOCITEL
ENGINEERING INNOVATION
VELOCITEL, INC. d.b.a. FDH VELOCITEL
8521 NEWKIRK DRIVE, RALEIGH, NC 27615
PHONE: 919-755-1012 FAX: 919-755-1031

PREPARED FOR:

SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800) 487-SITE

STATE OF CONNECTICUT
DENNIS D. ABEL
No. 23247
LICENSED PROFESSIONAL ENGINEER

04/22/15

DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY:	DRW
CHECKED BY:	MSG
ENG APPV'D:	DDA

SUBMITTALS

DATE	DESCRIPTION	REV
04/22/15	CONSTRUCTION	0

FDH PROJECT NUMBER:

15BJIT1400

SITE NAME:

MONTVILLE 3, CT

SITE NUMBER:

CT10016-A-05

SITE ADDRESS:

71 MOXLEY ROAD,
UNCASVILLE, CT 06382

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

MI CHECKLIST	
INSPECTIONS AND TESTING REQUIRED	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING
N/A	EOR APPROVED SHOP DRAWINGS
X	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
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMPRESSIVE 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 GALVANIZATIONS
N/A	GUY WIRE TENSION REPORT
X	GC AS BUILT DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	MI 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 PMI REPORT
N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

MODIFICATION INSPECTION NOTES:

GENERAL:

1. THE POST CONSTRUCTION INSPECTION (MI) 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, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).
2. THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.
3. ALL MI'S SHALL BE CONDUCTED BY A MI INSPECTOR THAT IS APPROVED TO PERFORM ELEVATED WORK FOR FDH VELOCITEL.
4. TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR FDH VELOCITEL POINT OF CONTACT (POC).
5. REFER TO CCR-01 : CONTRACTOR CLOSEOUT REQUIREMENTS FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR:

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

CORRECTION OF FAILING MI's:

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH FDH VELOCITEL 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 MI.
   - OR, WITH FDH VELOCITEL'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

REQUIRED PHOTOS:

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

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04/22/15
DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY:	DRW
CHECKED BY:	MSG
ENG APPV'D:	DDA

SUBMITTALS

DATE	DESCRIPTION	REV
04/22/15	CONSTRUCTION	0

FDH PROJECT NUMBER:
15BJIT1400

SITE NAME:
MONTVILLE 3, CT

SITE NUMBER:
CT10016-A-05

SITE ADDRESS:
71 MOXLEY ROAD, UNCASVILLE, CT 06382

SHEET TITLE
MODIFICATION INSPECTION CHECKLIST

SHEET NUMBER
N-1

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT AND ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO FDH ENGINEERING FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
3. INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO FDH ENGINEERING PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE FDH ENGINEERING APPROVAL.
4. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER THE COMPLETION OF THE PROJECT.
5. CONTRACTOR SHALL PROMPTLY REMOVE ANY & ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRECONSTRUCTION CONDITION.

CONTRACTOR QUALIFICATION NOTES:

1. ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT AND WITH WORKING KNOWLEDGE OF THE TIA/EIA 222-F "STRUCTURAL STANDARD FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
2. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, FDH ENGINEERING, INC. IS WILLING TO OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
3. ALL SUBMITTAL INFORMATION MUST BE SENT TO FDH ENGINEERING, INC. 6521 MERIDIEN DRIVE, RALEIGH NC, 27616, TEL. (919) 755-1012, FAX. (919) 755-1031, E-MAIL INFO@FDH-INC.COM. ANY VARIATION OF THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM FDH ENGINEERING, INC. WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS FDH ENGINEERING, INC.
4. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THE TIA-1019-A STANDARD.

JOB SITE SAFETY & NOTES:

1. NEITHER THE PROFESSIONAL ACTIVITIES OF FDH ENGINEERING, INC. NOR THE PRESENCE OF FDH ENGINEERING, INC. OR EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND OR SUBCONTRACTORS AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE GENERAL CONTRACTOR AND OR SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY, AND WARRANTS THAT THIS INTENT IS EVIDENT BY ACCEPTING THIS WORK.

STEEL:

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.
2. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325N, THREAD INCLUDED WITH SHEAR PLANE (UNLESS OTHERWISE NOTED).
3. ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 8.1, UNLESS OTHERWISE SPECIFIED. WHEN "X" TYPE BOLTS ARE USED, CONTRACTOR MAY BE REQUIRED TO STACK ADDITIONAL WASHERS TO OBTAIN PROPER SNUG TIGHT INSTALLATION. ALL NUTS SHALL BE HEAVY HEX UNLESS OTHERWISE NOTED.
4. ALL STEEL, AFTER FABRICATION, SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH MULTIPLE COATS OF ZRC COLD GALVANIZING COMPOUND ACHEIVING A MINIMUM OF 4 MILS DRY FILM PER ASTM A 780.
5. ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED. CONTRACTOR IS REQUIRED TO PROVIDE FDH ENGINEERING, INC. WITH A PASSING CERTIFIED WELDING INSPECTION FOR ALL WELDS.
6. STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.

MISC. NOTES:

1. ALL MODIFICATIONS ARE ASSUMED TO BE MADE ON AN EMPTY TOWER. CONTRACTOR IS RESPONSIBLE TO MAKE PROVISIONS TO SUPPORT OR WORK AROUND EXISTING ANTENNAS AND TRANSMISSION LINES. MODIFICATIONS MUST BE CONTINUOUS THROUGH ALL AREAS SHOWN.
2. CONTRACTOR FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

FABRICATION NOTES:

1. ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.
2. NEW STEEL MEMBERS MUST HAVE SINGLE DRILLED HOLES. SLOTTED AND DOUBLE DRILLED HOLES ARE NOT ACCEPTABLE MEANS OF FABRICATION.

SUBSTITUTES AND/OR EQUALS:

1. IF CONTRACTOR WISHES TO FURNISH OR USE A SUBSTITUTE ITEM OF MATERIAL OR EQUIPMENT, CONTRACTOR SHALL FIRST MAKE WRITTEN APPLICATION TO ENGINEER OF RECORD FOR ACCEPTANCE THEREOF, CERTIFYING THAT THE PROPOSED SUBSTITUTE WILL PERFORM ADEQUATELY THE FUNCTIONS AND ACHIEVE THE RESULTS CALLED FOR BY THE GENERAL DESIGN, BE SIMILAR IN SUBSTANCE TO THAT SPECIFIED AND SUITED TO THE SAME USE AS THAT SPECIFIED. ALL VARIATIONS OF THE PROPOSED SUBSTITUTE FROM THAT SPECIFIED WILL BE IDENTIFIED IN THE APPLICATION AND AVAILABLE MAINTENANCE, REPAIR AND REPLACEMENT SERVICE WILL BE INDICATED. THE APPLICATION WILL ALSO CONTAIN AN ITEMIZED ESTIMATE OF ALL COSTS OR CREDITS THAT WILL RESULT DIRECTLY OR INDIRECTLY FROM ACCEPTANCE OF SUCH SUBSTITUTE INCLUDING COSTS OF REDESIGN AND CLAIMS OF OTHER CONTRACTORS AFFECTED BY THE RESULTING CHANGE, ALL OF WHICH WILL BE CONSIDERED BY ENGINEER OF RECORD IN EVALUATION OF THE PROPOSED SUBSTITUTE. ENGINEER OF RECORD MAY REQUIRE CONTRACTOR TO FURNISH ADDITIONAL DATA ABOUT THE PROPOSED SUBSTITUTE.

SPLIT-PIPE REINFORCEMENT NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL LENGTHS PRIOR TO CONSTRUCTION.
2. ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.

SURFACE PREPARATION:

1. PREPARE SURFACE TO BE WELDED BY REMOVING PAINT OR GALVANIZATION TO BARE METAL USING POWER WIRE BRUSHING IN ACCORDANCE WITH SSPC-SP11, (STEEL STRUCTURES PAINTING COUNCIL). FOLLOWING POWER WIRE BRUSHING CONTRACTOR SHALL POLISH METAL SURFACE WITH HIGH SPEED GRINDER WITH 400+ GRIT SANDPAPER.
2. BUTTER INTERIOR (SIDE IN CONTACT WITH LEG) OF REINFORCEMENT WITH SILICON GEL TO FORM GASKET BETWEEN CONTACT SURFACE.

SPLIT PIPE WELDING:

1. ALL WELDING TO THE EXISTING TOWER SHALL BE PERFORMED BY CERTIFIED WELDERS UTILIZING PROCEDURES QUALIFIED IN ACCORDANCE WITH AWS D1.1 AND AWS C5.4.
2. CONTRACTOR SHALL COMPLY WITH AWS D1.1 FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". CONTRACTOR SHALL SUBMIT CERTIFICATION OF WELDERS TO THE ENGINEER PRIOR TO COMMENCEMENT OF THE WORK.
3. CONTRACTOR RESPONSIBLE FOR TEMPORARY HEAT SHIELDING AS REQUIRED DURING WELDING.
4. ALL WELDS TO BE VISUALLY INSPECTED BY A CERTIFIED WELD INSPECTOR PER AWS D1.1.
5. CONTRACTOR TO BE AWARE THAT EXISTING TOWER LEG THICKNESS IS EXTREMELY THIN. CONTRACTOR TO USE CAUTION WHEN WELDING TO PREVENT LEG BLOW OUT.

COLD GALVANIZATION/SURFACE PREPARATION NOTES:

1. CONTRACTOR TO USE ZINGA OR ZRC COLD GALVANIZATION COMPOUNDS OR APPROVED EQUIVALENT.
2. PREPARE RUSTED/CORRODED SURFACE FOR TREATMENT ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
3. CONTRACTOR TO APPLY (2) COATS OF COLD GALVANIZATION COMPOUND PER MANUFACTURER'S RECOMMENDATION. DRYING AND CURING TIMES MUST BE UTILIZED PER MANUFACTURER'S RECOMMENDATION.
4. APPLY ALL COATINGS BY BRUSH IN CALM WIND CONDITIONS. THE USE OF AEROSOL IS NOT PERMITTED.
5. IF THE TOWER IS PAINTED, BRUSH PAINT ALL TREATED AREAS TO MATCH TOWER AFTER COLD GALVANIZATION COMPOUND IS ALLOWED TO CURE.

STEEL GRADE SCHEDULE

SCOPE	SHAPE	GRADE	YIELD STRENGTH (F_y)	ULTIMATE STRENGTH (F_u)
ALL	PIPE	A500 GR. C	46 KSI	62 KSI
ALL	PLATE	A36	36 KSI	58 KSI
ALL	U-BOLT	A36	36 KSI	58 KSI

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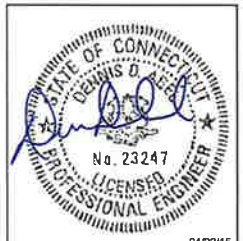


04/22/15

DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY:	DRW
CHECKED BY:	MSG
ENG APPV'D:	DDA

SUBMITTALS

DATE	DESCRIPTION	REV
04/22/15	CONSTRUCTION	0

FDH PROJECT NUMBER:

15BJIT1400

SITE NAME:

MONTVILLE 3, CT

SITE NUMBER:

CT10016-A-05

SITE ADDRESS:

**71 MOXLEY ROAD,
UNCASVILLE, CT 06382**

SHEET TITLE

GENERAL NOTES

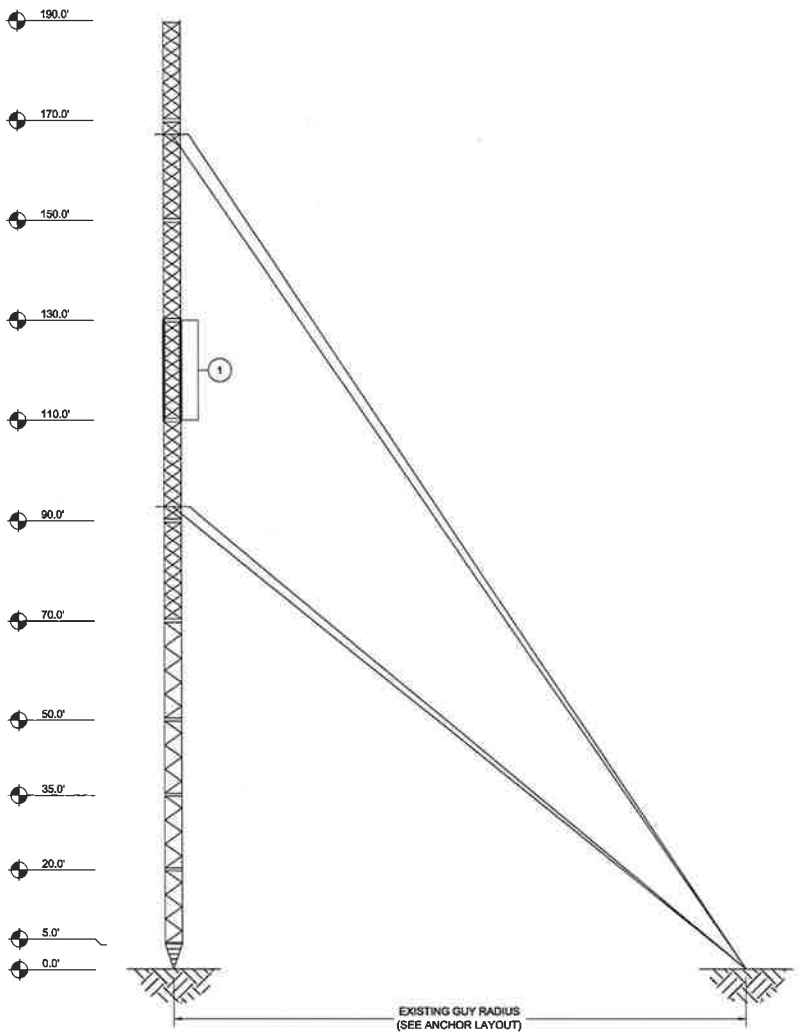
SHEET NUMBER

N-2

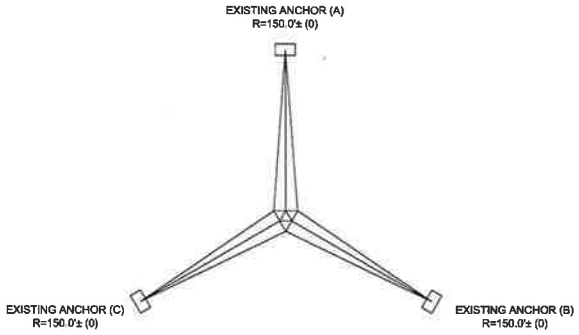
TOWER MODIFICATION SCHEDULE

NO.	TYPE OF MODIFICATION	BTM. ELEV.	TOP ELEV.	SHEET
1	INSTALLATION OF NEW SPLIT PIPE LEG REINFORCEMENT.	110.0±	130.0±	S-2
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



ANCHOR LAYOUT
SCALE: NTS

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STATE OF CONNECTICUT
DENNIS D. ABEL
No. 23247
LICENSED
PROFESSIONAL ENGINEER

04/22/15
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**71 MOXLEY ROAD,
UNCASVILLE, CT 06382**

SHEET TITLE
MODIFICATION SCHEDULE

SHEET NUMBER
S-1

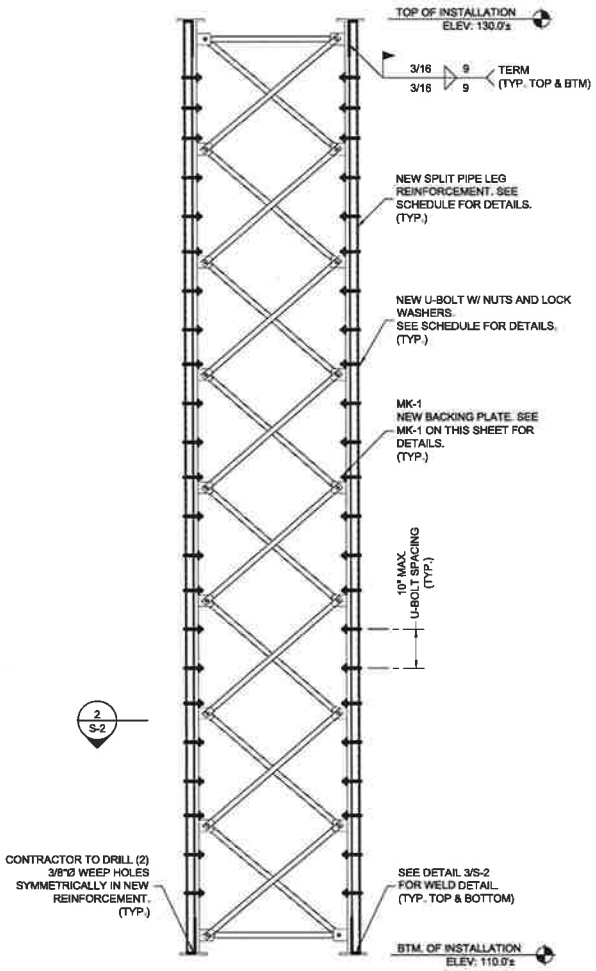
CONTRACTOR TO CONTACT EOR IF MAX. U-BOLT SPACING CANNOT BE MET.

SPLIT PIPE LEG REINFORCEMENT INSTALLATION SCHEDULE

ELEVATION	EXISTING LEG SIZE	NEW SPLIT PIPE	PRELIMINARY LENGTH	BACKING PLATE	U-BOLT W/ NUTS & LOCK WASHERS
110.0'± TO 130.0'±	P2.5X0.276 (2.875 OD)	(3) 180° P3X0.300 (3.5 OD)	20'-0"±	(69) MK-1	(69) 1/2"Ø

CONTRACTOR TO INSTALL NEW SPLIT PIPE REINFORCEMENT CONTINUOUSLY THROUGH EXISTING EQUIPMENT.

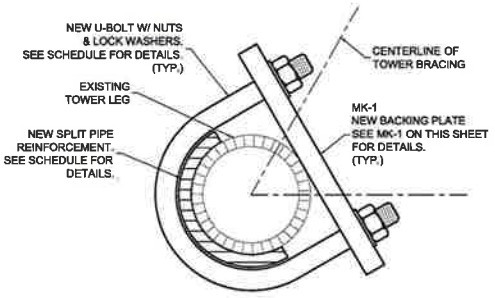
CONTRACTOR TO NOTCH NEW SPLIT PIPE REINFORCEMENT AROUND EXISTING FLANGE BOLTS AS REQUIRED. CONTRACTOR NOT TO REMOVE MORE THAN HALF OF NEW SPLIT PIPE REINFORCEMENT AREA AT FLANGE CONNECTION. (AT LEAST HALF OF THE TOTAL SPLIT PIPE REINFORCEMENT AREA MUST BE WELDED TO BOTTOM FLANGES ONLY)



SPLIT PIPE LEG REINFORCEMENT ELEVATION VIEW

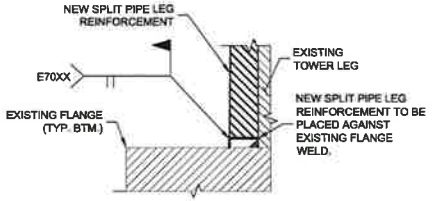
1 / S-2 ELEVATION
SCALE: 3/8" = 1'-0"

EXISTING FLANGE BOLTS NOT SHOWN FOR CLARITY.



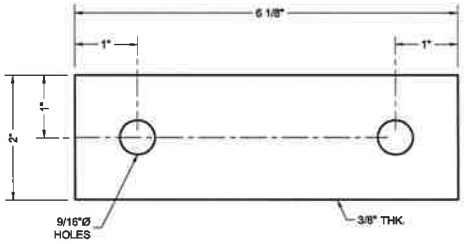
SPLIT PIPE LEG REINFORCEMENT PLAN VIEW

2 / S-2 SECTION
NTS



TERMINATION WELD DETAIL ELEVATION VIEW

3 / S-2 DETAIL
NTS



BACKING PLATE FRONT VIEW

MK-1 / S-2 DETAIL
SCALE 6" = 1'-0"

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S-2