Robinson+Cole

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December 27, 2017

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
Universal Drive, North Haven, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the top of an existing 78-foot tower off Universal Drive in North Haven, Connecticut (the "Property").[1] The tower and Property are owned by New York Central Lines LLC, c/o CSX Transportation Inc. Cellco's use of the tower was approved by the Council in 1997. Cellco now intends to replace six (6) of its existing antennas with three (3) model JAHH-65B-R3B, 700/2100 MHz antennas and three (3) model JAHH-65B-R3B, 850/1900 MHz antennas, at the same level on the tower. Cellco also intends to install six (6) remote radio heads ("RRHs") behind its antennas. Included in Attachment 1 are specifications for Cellco's replacement antennas and RRHs.

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 Michael J. Freda, First Selectman for the Town of North Haven; Alan Fredricksen, North Haven's Land Use Administrator; and New York Central Lines LLC, the tower owner and owner of the Property.

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 Council's Telecommunications Data Base identifies an alternative site address for this tower as 100 Universal Drive in North Haven.

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 at the top of 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. A cumulative General Power Density table for Cellco's modified facility (82-foot rad-center) is included behind 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 Report included in Attachment 3).

A copy of the parcel map and owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 5.

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:
Michael J. Freda, North Haven First Selectman
Alan Fredricksen, North Haven Land Use Administrator
New York Central Lines LLC
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

JAHH-65B-R3B

8-port sector antenna, 2x 698–787, 2x 824-894 and 4x 1695–2360 MHz, 65° HPBW, 3x RET and low bands have diplexers. Internal SBT's on first LB(Port 1) and first HB (Port 5).

- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- One RET for 700MHz, one RET for 850MHz, and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO
- Internal filter on low band and interleaved dipole technology providing for attractive, low wind load mechanical package
- Separate RS-485 RET input/output for low and high band

Electrical Specifications

Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.5	15.8	18.0	18.4	18.5	18.8
Beamwidth, Horizontal, degrees	67	65	63	63	65	68
Beamwidth, Vertical, degrees	12.4	10.5	5.7	5.2	4.9	4.4
Beam Tilt, degrees	2–14	2–14	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	18	18	20	20	21	23
Front-to-Back Ratio at 180°, dB	32	34	31	35	36	38
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
	2 ° | 14.3	2 ° | 15.0	0 ° | 17.2	0 ° | 17.6	0 ° | 17.7	0 ° | 17.9
Gain by Beam Tilt, average, dBi	8 ° | 14.3	8 ° | 14.9	5 ° | 17.6	5 ° | 18.2	5 ° | 18.3	5 ° | 18.7
	14 ° | 14.3	14 ° | 15.4	10 ° | 17.6	10 ° | 18.2	10 ° | 18.3	10 ° | 18.7
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.4	±4	±2.4	±2.9	±2.7
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.5	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	18	17	17	18	19	18
Front-to-Back Total Power at 180° ± 30°, dB	25	24	26	29	27	29
CPR at Boresight, dB	22	23	20	21	21	24
CPR at Sector, dB	11	12	11	11	11	8

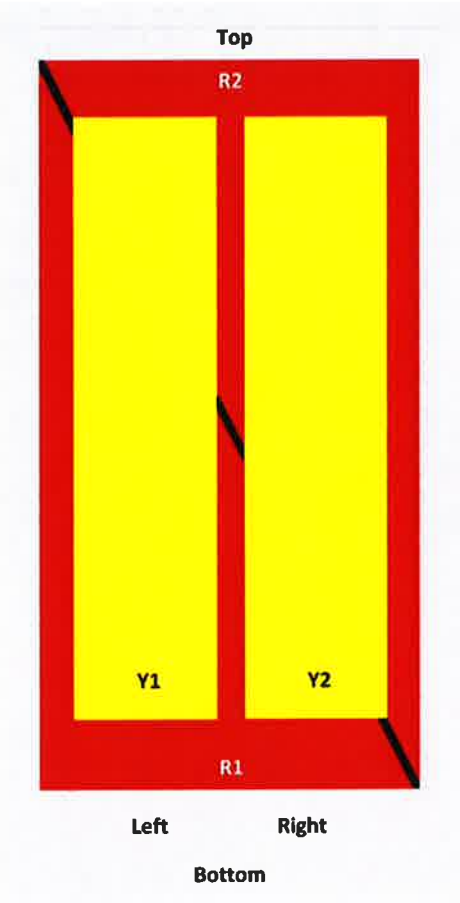
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Product Specifications

JAHH-65B-R3B

Array Layout

JAHH-65A-R3B JAHH-65B-R3B JAHH-65C-R3B



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxx3
Y2	1695-2360	7-8		

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

Operating Frequency Band	1695 – 2360 MHz | 698 – 787 MHz | 824 – 894 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	8
RF Connector Quantity, low band	4
RF Connector Quantity, high band	4
RF Connector Interface	4.3-10 Female

Product Specifications

JAHH-65B-R3B

Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	746.0 N @ 150 km/h 167.7 lbf @ 150 km/h
Wind Loading, lateral	243.0 N @ 150 km/h 54.6 lbf @ 150 km/h
Wind Loading, rear	776.0 N @ 150 km/h 174.5 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Length	1828.0 mm | 72.0 in
Width	350.0 mm | 13.8 in
Depth	208.0 mm | 8.2 in
Net Weight, without mounting kit	28.7 kg | 63.3 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 | Port 5
Internal RET	High band (1) | Low band (2)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	13 W
Protocol	3GPP/AISG 2.0 (Single RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male

Packed Dimensions

Length	1975.0 mm | 77.8 in
Width	456.0 mm | 18.0 in
Depth	357.0 mm | 14.1 in
Shipping Weight	42.0 kg | 92.6 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

Product Specifications

JAHH-65B-R3B

Included Products

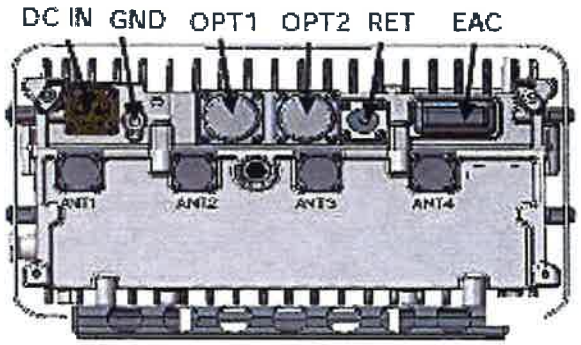
BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

AHCA AirScale RRH 4T4R B5 160W

Supported Frequency bands	3GPP band 5
Frequencies	DL 869-894MHz, UL 824-849MHz
Number of TX/RX paths/pipes	4TX/4RX
Instantaneous Bandwidth IBW	25MHz (Full Band)
Occupied Bandwidth OBW	25MHz (Full Band)
Output Power	4T4R @ 40W / 2T4R @ 60W
RF Sharing	LTE, WCDMA, LTE + NB-IoT supported
256 QAM Back Off	No backoff at 40W and 0.8dB at 60W.
Supply Voltage / Voltage Range	DC-48V / -36V to -60V
Typical Power Consumption	365W [50% ETSI Busy Hour Load at 4TX @ 40W]
	529W [100% RF Load at 4 TX @ 40W]
	574W [100% RF Load at 4 TX @ 40W with SBT and AISG ON]
Antenna Ports	4 Ports, 4.3-10+
Optical Ports	2x CPRI 9.8 Gbps
ALD Control Interfaces	AISG3.0 from ANT1,2, 3, 4 and RET (Power supply ANT1 and ANT3)
Other Interfaces	External Alarm MDR-26 Serial connector (4 inputs, 1 Output) DC Circular Power Connector



Operational Temperature Range	-40°C to 55°C (with solar cover)
Dimensions (mm) Height x width x depth	337 x 295 x 165 (radio only) 13.3" x 11.7" x 6.5" 428 x 324 x 208 (with bracket and enclosure) 16.9" x 12.8" x 8.2"
Volume (liters)	16.5
Weight (kg)	16/ 35.3 lb – w/o bracket
Ingress protection class	IP65
Installation options	Pole or Wall, Vertical or Horizontal Book Mount
Surge protection	Class II 5kA

NOKIA

B66a RRH4x45W

Datasheet

Radio Technology FDD-LTE

Feature description:

- Remote Radio Head 4x45W or 2x90W Switchable via SW

Power Output	4 x 45 W or 2x90W (SW Switchable) w/o fans
IBW	70MHz
OBW	60 MHz
RF Sharing	LTE
Mass/Volume	25.8kg/56.9 lb Weight 655H x 299W x 182D mm 25.8"x11.8"x7.2" 29.7L / 35.5L
Antenna Conf.	4Tx/4Rx
Temperature	-40 to 55 °C
IP class	IP65
Input Power	DC 48 V
Cooling	Natural Convection
Mounting	Wall, Pole mount
BBU connection	2x 9.8Gbps SFP(Rate 7 HW ready)

B66a RRH 4x45 – Interfaces

Power:

- Max power: 816W (add 58W for AISG)
- Breaker size: 25A
- Max distance with 6ga power feed and 5.5V drop: 284 feet

RF Interfaces:

- 4.3/10 Connectors
- No monitoring ports(Spectrum analyzer SW takes place of monitoring ports)

AISG:

- Two Smart Bias-T
- One AISG port

B66 Details

- Max power for a single carrier is:
  - 2x60W for 10,15,20 MHz carrier
  - 2x40W for 5 MHz carrier
- Multi- Carrier Support with AWS-1 carriers: 15.1
- Multi- Carrier Support with AWS-3 carriers: 16.2

Carrier power: Multi-carrier

- Assuming 2 Tx power can be assigned per carrier subject to 40W max for 5Mhz, 60W for larger in 2T, cut that power in half for 4T
- Example:B4 (20Mhz) and AWS3 (10MHz)
  - Power can be varied between those two carriers, can go 60W for 20 MHz carrier, 30W for 10 MHz carrier to use the 90W in 2T.
  - It could be 45/45 for 20Mhz/10Mhz if desired.

ATTACHMENT 2

Site Name: *NORTH HAVEN S CT*
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW 700	746	1	953	953	82	0.0510	0.4973	10.25%
VZW Cellular	875	3	302	906	82	0.0485	0.5833	8.31%
VZW 850 LTE	869	1	1451	1451	82	0.0776	0.5793	13.40%
VZW PCS	1970	1	3005	3005	82	0.1607	1.0000	16.07%
VZW AWS	2145	1	3304	3304	82	0.1767	1.0000	17.67%
Total Percentage of Maximum Permissible Exposure								65.70%

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

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used.

ATTACHMENT 3

STRUCTURAL ANALYSIS REPORT

For

NORTH HAVEN SOUTH CT

100 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

Antennas Mounted to the Tower

Prepared for:

verizon

99 East River Road, 9th Floor
East Hartford, CT 06108

Dated: October 9, 2017

Prepared by:

HUDSON Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

STATE OF CONNECTICUT
No. 28220
LICENSED PROFESSIONAL ENGINEER
10/9/2017

HUDSON
Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by VERIZON to conduct a structural evaluation of the 78' self-supporting tower supporting the proposed VERIZON's antennas located at elevation 82' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of VERIZON's existing and proposed antennas listed below.

Record drawings of the existing tower were not available for our use. The previous structural analysis report prepared by Centek Engineering, dated March 27, 2015, was provided to this office.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower and foundation **are in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **98.3%** - (Legs at Tower Section T4 from EL.0' to EL.19.6' Controlling).

HUDSON
Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
VERIZON	(3) BXA-80063-4BF Antennas	82'	Steel Platform
VERIZON	(3) HBXX-6516DS Antennas	82'	Steel Platform
VERIZON	***(6) JAHH-65B-R3B Antennas***	82'	Steel Platform
VERIZON	(3) RRH2X60 700	82'	Steel Platform
VERIZON	(3) RRH2X60 PCS	82'	Steel Platform
VERIZON	(2) DB-T1-6Z-8AB-0Z	82'	Steel Platform
VERIZON	***(3) RRH4X40 850***	82'	Steel Platform
VERIZON	***(3) RRH4X45 AWS***	82'	Steel Platform

Proposed VERIZON Appurtenances shown in Bold.

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(12) 1 5/8" Cables	82'	Tower Face
VERIZON	(2) Fiber Cables	82'	Tower Face

Proposed VERIZON Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	**98.3 %**	0 – 19.7	PASS	**Controlling**
Diagonals	31.7 %	0 – 19.7	PASS	
Top Girts	5.6 %	58.7 – 77.8	PASS	

HUDSON
Design Group LLC

DESIGN CRITERIA:

1. Connecticut State Building Code

2. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   City/Town: North Haven
   County: New Haven
   Wind Load: 97 mph (3 second gust)
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Nominal Ice Thickness: 0.75 inch

3. Approximate height above grade to proposed antennas: 82'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The tower geometry and member sizes are as indicated in the previous structural analysis report prepared by Centek Engineering, dated March 27, 2015.

2. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

3. The tower and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

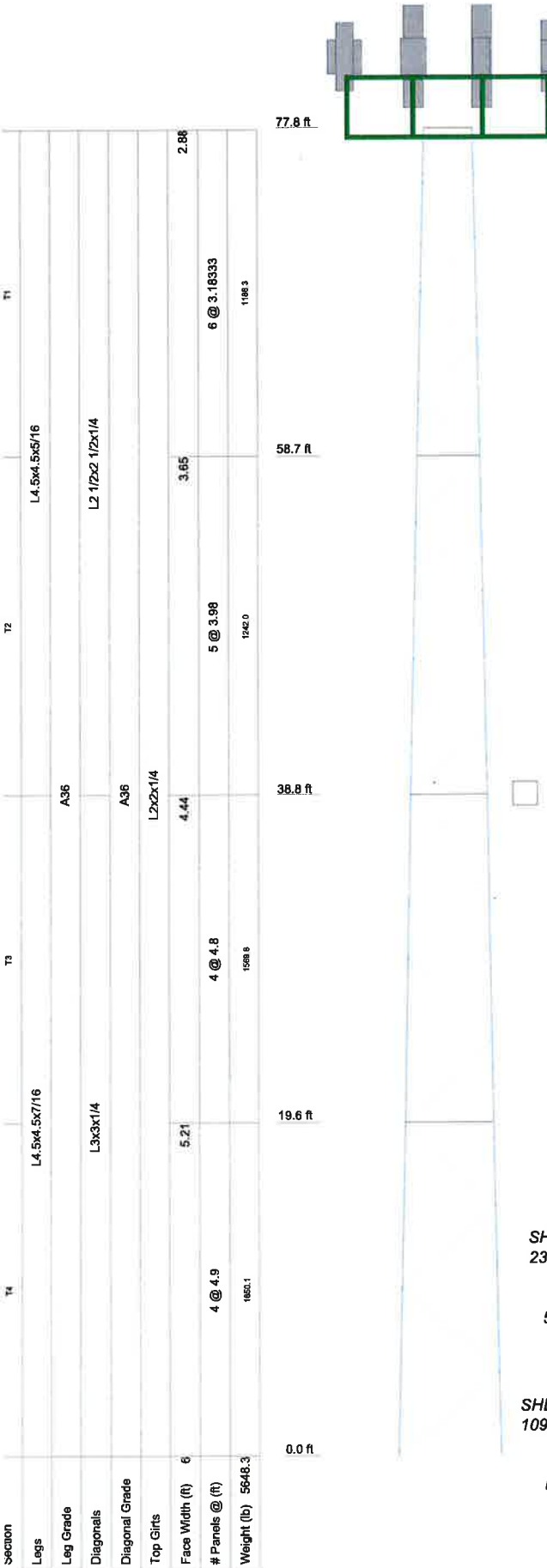
HDG recommends that the proposed antennas and RRHs be mounted on the existing steel platform supported by the tower.

HUDSON
Design Group LLC

Photo 1: Photo illustrating the Tower with Appurtenances shown.

HUDSON
Design Group LLC

CALCULATIONS



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-80063-4BF	82	JAHH-65B-R3B (Verizon - Proposed)	82
BXA-80063-4BF	82	JAHH-65B-R3B	82
BXA-80063-4BF	82	JAHH-65B-R3B	82
HBXX-6516DS-A2M	82	JAHH-65B-R3B	82
HBXX-6516DS-A2M	82	JAHH-65B-R3B	82
HBXX-6516DS-A2M	82	JAHH-65B-R3B	82
RRH2x60-700	82	RRH 4x40-850	82
RRH2x60-700	82	RRH 4x40-850	82
RRH2x60-700	82	RRH 4x40-850	82
RRH2x60 PCS	82	RRH 4X45 AWS	82
RRH2x60 PCS	82	RRH 4X45 AWS	82
RRH2x60 PCS	82	RRH 4X45 AWS	82
RFS DB-T1-6Z-8AB-0Z	82	PiROD 13' Platform w/handrail (Verizon - Existing)	79
RFS DB-T1-6Z-8AB-0Z	82		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 98.3%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 69918 lb
SHEAR: 4504 lb

UPLIFT: -67224 lb
SHEAR: 3747 lb

AXIAL
29013 lb

SHEAR
2357 lb

MOMENT
140231 lb-ft

TORQUE 818 lb-ft
50 mph WIND - 0.7500 in ICE

AXIAL
11826 lb

SHEAR
10988 lb

MOMENT
599943 lb-ft

TORQUE 4694 lb-ft
REACTIONS - 97 mph WIND

Hudson Design Group LLC
45 Beechwood Drive
North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Job: **NORTH HAVEN S CT**			
Project: ***78 ft Self Supporting Tower***			
Client: VERIZON	Drawn by: kw	App'd:	
Code: TIA-222-G	Date: 10/09/17	Scale: N	
Path:		Dwg No.	

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 77.80 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 2.88 ft at the top and 6.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	77.80-58.70			2.88	1	19.10
T2	58.70-38.80			3.65	1	19.90
T3	38.80-19.60			4.44	1	19.20
T4	19.60-0.00			5.21	1	19.60

Tower Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
T1	77.80-58.70	3.18	K Brace Right	No	No	0.0000	0.0000
T2	58.70-38.80	3.98	K Brace Left	No	No	0.0000	0.0000
T3	38.80-19.60	4.80	K Brace Left	No	No	0.0000	0.0000
T4	19.60-0.00	4.90	K Brace Left	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 77.80-58.70	Equal Angle	L4.5x4.5x5/16	A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T2 58.70-38.80	Equal Angle	L4.5x4.5x5/16	A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T3 38.80-19.60	Equal Angle	L4.5x4.5x7/16	A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T4 19.60-0.00	Equal Angle	L4.5x4.5x7/16	A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 77.80-58.70	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T2 58.70-38.80	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 38.80-19.60	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T4 19.60-0.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (VERIZON - existing)	A	No	Ar (CaAa)	77.80 - 5.00	0.0000	0	12	6	0.0000	1.9800		1.04
1 5/8 Fiber Cable	A	No	Ar (CaAa)	77.80 - 5.00	0.0000	-0.2	2	2	0.0000	1.9800		1.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
PiROD 13' Platform w/handrail (Verizon - Existing)	A	None		0.0000	79.00	No Ice 1/2" Ice 1" Ice	31.30 40.20 49.10	31.30 40.20 49.10	1822.00 2452.00 3082.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
BXA-80063-4BF	A	From Face	3.00	0.0000	82.00	No Ice	4.71	2.25	10.00
			-6.00			1/2" Ice	5.03	2.55	37.83
			0.00			1" Ice	5.35	2.85	69.94
BXA-80063-4BF	B	From Face	3.00	0.0000	82.00	No Ice	4.71	2.25	10.00
			-6.00			1/2" Ice	5.03	2.55	37.83
			0.00			1" Ice	5.35	2.85	69.94
BXA-80063-4BF	C	From Face	3.00	0.0000	82.00	No Ice	4.71	2.25	10.00
			-6.00			1/2" Ice	5.03	2.55	37.83
			0.00			1" Ice	5.35	2.85	69.94
HBXX-6516DS-A2M	A	From Face	3.00	0.0000	82.00	No Ice	5.42	3.28	30.60
			6.00			1/2" Ice	5.76	3.61	65.93
			0.00			1" Ice	6.11	3.94	105.94
HBXX-6516DS-A2M	B	From Face	3.00	0.0000	82.00	No Ice	5.42	3.28	30.60
			6.00			1/2" Ice	5.76	3.61	65.93
			0.00			1" Ice	6.11	3.94	105.94
HBXX-6516DS-A2M	C	From Face	3.00	0.0000	82.00	No Ice	5.42	3.28	30.60
			6.00			1/2" Ice	5.76	3.61	65.93
			0.00			1" Ice	6.11	3.94	105.94
RRH2x60-700	A	From Face	2.00	0.0000	82.00	No Ice	3.50	1.82	60.00
			-6.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
RRH2x60-700	B	From Face	2.00	0.0000	82.00	No Ice	3.50	1.82	60.00
			-6.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
RRH2x60-700	C	From Face	2.00	0.0000	82.00	No Ice	3.50	1.82	60.00
			-6.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
RRH2x60 PCS	A	From Face	2.00	0.0000	82.00	No Ice	2.15	1.35	55.00
			6.00			1/2" Ice	2.34	1.50	72.75
			0.00			1" Ice	2.54	1.67	93.35
RRH2x60 PCS	B	From Face	2.00	0.0000	82.00	No Ice	2.15	1.35	55.00
			6.00			1/2" Ice	2.34	1.50	72.75
			0.00			1" Ice	2.54	1.67	93.35
RRH2x60 PCS	C	From Face	2.00	0.0000	82.00	No Ice	2.15	1.35	55.00
			6.00			1/2" Ice	2.34	1.50	72.75
			0.00			1" Ice	2.54	1.67	93.35
RFS DB-T1-6Z-8AB-0Z	B	From Face	2.00	0.0000	82.00	No Ice	4.80	2.00	44.00
			-6.00			1/2" Ice	5.07	2.19	80.13
			0.00			1" Ice	5.35	2.39	120.22
RFS DB-T1-6Z-8AB-0Z	C	From Face	2.00	0.0000	82.00	No Ice	4.80	2.00	44.00
			6.00			1/2" Ice	5.07	2.19	80.13
			0.00			1" Ice	5.35	2.39	120.22
**********									
JAHH-65B-R3B (Verizon - Proposed)	A	From Face	3.00	0.0000	82.00	No Ice	9.11	5.98	63.30
			-2.00			1/2" Ice	9.58	6.44	121.38
			0.00			1" Ice	10.05	6.91	185.75
JAHH-65B-R3B	B	From Face	3.00	0.0000	82.00	No Ice	9.11	5.98	63.30
			-2.00			1/2" Ice	9.58	6.44	121.38
			0.00			1" Ice	10.05	6.91	185.75
JAHH-65B-R3B	C	From Face	3.00	0.0000	82.00	No Ice	9.11	5.98	63.30
			-2.00			1/2" Ice	9.58	6.44	121.38
			0.00			1" Ice	10.05	6.91	185.75
JAHH-65B-R3B	A	From Face	3.00	0.0000	82.00	No Ice	9.11	5.98	63.30
			2.00			1/2" Ice	9.58	6.44	121.38
			0.00			1" Ice	10.05	6.91	185.75
JAHH-65B-R3B	B	From Face	3.00	0.0000	82.00	No Ice	9.11	5.98	63.30
			2.00			1/2" Ice	9.58	6.44	121.38

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	10.05	6.91	185.75
JAHH-65B-R3B	C	From Face	3.00	0.0000	82.00	No Ice	9.11	5.98	63.30
			2.00			1/2" Ice	9.58	6.44	121.38
			0.00			1" Ice	10.05	6.91	185.75
RRH 4x40-850	A	From Face	3.00	0.0000	82.00	No Ice	3.70	1.29	66.14
			-2.00			1/2" Ice	3.95	1.46	90.08
			0.00			1" Ice	4.20	1.64	117.36
RRH 4x40-850	B	From Face	3.00	0.0000	82.00	No Ice	3.70	1.29	66.14
			-2.00			1/2" Ice	3.95	1.46	90.08
			0.00			1" Ice	4.20	1.64	117.36
RRH 4x40-850	B	From Face	3.00	0.0000	82.00	No Ice	3.70	1.29	66.14
			-2.00			1/2" Ice	3.95	1.46	90.08
			0.00			1" Ice	4.20	1.64	117.36
RRH 4X45 AWS	A	From Face	3.00	0.0000	82.00	No Ice	2.66	1.59	64.00
			2.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85
RRH 4X45 AWS	B	From Face	3.00	0.0000	82.00	No Ice	2.66	1.59	64.00
			2.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85
RRH 4X45 AWS	C	From Face	3.00	0.0000	82.00	No Ice	2.66	1.59	64.00
			2.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp

Comb. No.	Description
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg D	Max. Vert	16	69535.21	2626.22	-1361.82
	Max. H_x	20	51406.10	4047.59	-1041.50
	Max. H_z	7	-66794.04	-4209.69	1400.20
	Min. Vert	5	-66819.76	-2973.38	1391.20
	Min. H_x	7	-66794.04	-4209.69	1400.20
	Min. H_z	18	69523.55	3857.63	-1377.40
Leg C	Max. Vert	12	68925.41	-1368.48	-4227.04
	Max. H_x	25	-67219.90	1408.74	4568.45
	Max. H_z	25	-67219.90	1408.74	4568.45
	Min. Vert	23	-67224.46	1397.30	3476.80
	Min. H_x	12	68925.41	-1368.48	-4227.04
	Min. H_z	12	68925.41	-1368.48	-4227.04
Leg B	Max. Vert	6	69317.63	-4655.60	1374.31
	Max. H_x	19	-67022.58	4976.71	-1400.40
	Max. H_z	6	69317.63	-4655.60	1374.31
	Min. Vert	19	-67022.58	4976.71	-1400.40
	Min. H_x	8	51229.92	-4701.76	1040.04
	Min. H_z	19	-67022.58	4976.71	-1400.40
Leg A	Max. Vert	24	69918.20	1383.30	4286.25
	Max. H_x	24	69918.20	1383.30	4286.25
	Max. H_z	2	51796.86	1048.66	4564.96
	Min. Vert	11	-66609.66	-1383.36	-3149.74
	Min. H_x	13	-66594.38	-1391.80	-4617.88
	Min. H_z	13	-66594.38	-1391.80	-4617.88

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead Only	9855.28	0.00	0.00	-1634.97	2912.71	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	11826.34	0.05	-10592.40	-582200.23	3515.36	-2288.84
0.9 Dead+1.6 Wind 0 deg - No Ice	8869.75	0.05	-10592.40	-581062.77	2633.07	-2284.41
1.2 Dead+1.6 Wind 30 deg - No Ice	11826.34	5494.15	-9515.98	-518069.79	-294427.10	-4184.91
0.9 Dead+1.6 Wind 30 deg - No Ice	8869.75	5494.16	-9515.98	-517004.01	-294982.21	-4178.92
1.2 Dead+1.6 Wind 60 deg - No Ice	11826.34	9515.88	-5494.05	-299926.48	-512575.37	-4694.44
0.9 Dead+1.6 Wind 60 deg - No Ice	8869.75	9515.88	-5494.05	-299099.46	-512890.03	-4688.62
1.2 Dead+1.6 Wind 90 deg - No Ice	11826.34	10592.40	0.06	-1980.57	-576716.56	-3829.46
0.9 Dead+1.6 Wind 90 deg - No Ice	8869.75	10592.40	0.06	-1481.66	-576956.43	-3825.45
1.2 Dead+1.6 Wind 120 deg - No Ice	11826.33	9515.98	5494.17	295965.76	-512582.37	-1914.18
0.9 Dead+1.6 Wind 120 deg - No Ice	8869.75	9515.98	5494.17	296135.77	-512894.63	-1912.87
1.2 Dead+1.6 Wind 150 deg - No Ice	11826.33	5494.05	9515.90	514113.22	-294435.64	356.72
0.9 Dead+1.6 Wind 150 deg - No Ice	8869.75	5494.05	9515.90	514042.66	-294988.01	354.91
1.2 Dead+1.6 Wind 180 deg - No Ice	11826.34	-0.07	10592.41	578249.08	3510.72	2287.61
0.9 Dead+1.6 Wind 180 deg - No Ice	8869.75	-0.07	10592.41	578105.46	2629.31	2283.31
1.2 Dead+1.6 Wind 210 deg - No Ice	11826.33	-5494.20	9515.98	514110.97	301456.65	4185.24
0.9 Dead+1.6 Wind 210 deg - No Ice	8869.75	-5494.19	9515.98	514041.51	300246.29	4179.34
1.2 Dead+1.6 Wind 240 deg - No Ice	11826.33	-9515.91	5494.05	295966.76	519602.71	4691.45
0.9 Dead+1.6 Wind 240 deg - No Ice	8869.75	-9515.90	5494.05	296137.29	518152.58	4685.70
1.2 Dead+1.6 Wind 270 deg - No Ice	11826.34	-10592.40	-0.07	-1971.64	583738.28	3828.14
0.9 Dead+1.6 Wind 270 deg - No Ice	8869.75	-10592.40	-0.06	-1474.30	582215.70	3824.19
1.2 Dead+1.6 Wind 300 deg - No Ice	11826.34	-9515.98	-5494.17	-299911.54	519600.87	1914.45
0.9 Dead+1.6 Wind 300 deg - No Ice	8869.75	-9515.98	-5494.17	-299087.70	518152.36	1913.24
1.2 Dead+1.6 Wind 330 deg - No Ice	11826.34	-5494.05	-9515.88	-518058.06	301456.47	-359.63
0.9 Dead+1.6 Wind 330 deg - No Ice	8869.75	-5494.05	-9515.89	-516994.88	300247.46	-357.74
1.2 Dead+1.0 Ice+1.0 Temp	29013.04	0.00	-0.00	-5744.35	10040.81	-0.37
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	29013.04	0.00	-2240.96	-129951.16	10048.50	-274.70
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	29013.04	1178.74	-2041.64	-117168.29	-54278.88	-647.59
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	29013.04	2041.64	-1178.74	-70077.84	-101370.95	-817.80
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	29013.04	2240.96	0.00	-5751.38	-114155.51	-760.63

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	29013.04	2041.64	1178.74	58576.17	-101372.00	-496.90
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	29013.04	1178.74	2041.64	105666.90	-54280.55	-112.24
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	29013.04	-0.00	2240.96	118449.86	10047.47	274.29
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	29013.04	-1178.74	2041.64	105665.48	74376.18	647.69
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	29013.04	-2041.64	1178.74	58574.77	121467.56	818.34
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	29013.04	-2240.96	-0.00	-5750.86	134250.81	760.25
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	29013.04	-2041.64	-1178.74	-70076.80	121466.47	497.07
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	29013.04	-1178.74	-2041.64	-117167.30	74375.07	112.81
Dead+Wind 0 deg - Service	9855.28	0.00	-2533.00	-140293.69	2923.85	-546.45
Dead+Wind 30 deg - Service	9855.28	1313.81	-2275.58	-124973.59	-68279.96	-999.98
Dead+Wind 60 deg - Service	9855.28	2275.58	-1313.81	-72848.62	-120405.53	-1121.46
Dead+Wind 90 deg - Service	9855.28	2533.00	0.00	-1644.68	-135726.43	-914.92
Dead+Wind 120 deg - Service	9855.28	2275.58	1313.81	69559.16	-120405.88	-457.61
Dead+Wind 150 deg - Service	9855.28	1313.81	2275.58	121684.35	-68280.03	85.88
Dead+Wind 180 deg - Service	9855.28	-0.00	2533.00	137005.45	2923.64	546.62
Dead+Wind 210 deg - Service	9855.28	-1313.81	2275.58	121684.87	74127.62	999.93
Dead+Wind 240 deg - Service	9855.28	-2275.58	1313.81	69559.54	126252.79	1121.80
Dead+Wind 270 deg - Service	9855.28	-2533.00	-0.00	-1643.57	141573.80	915.08
Dead+Wind 300 deg - Service	9855.28	-2275.58	-1313.81	-72847.10	126253.02	457.55
Dead+Wind 330 deg - Service	9855.28	-1313.81	-2275.58	-124972.55	74127.77	-85.46

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	77.8 - 58.7	1.206	49	0.1260	0.0241
T2	58.7 - 38.8	0.723	49	0.1078	0.0147
T3	38.8 - 19.6	0.331	49	0.0722	0.0067
T4	19.6 - 0	0.094	49	0.0392	0.0028

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
82.00	BXA-80063-4BF	49	1.206	0.1260	0.0241	133703
79.00	PiROD 13' Platform w/handrail	49	1.206	0.1260	0.0241	133703

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	77.8 - 58.7	Leg	L4.5x4.5x5/16	3	-20423.70	69960.10	29.2	Pass
T2	58.7 - 38.8	Leg	L4.5x4.5x5/16	36	-37512.60	61497.10	61.0	Pass
T3	38.8 - 19.6	Leg	L4.5x4.5x7/16	64	-53232.00	71510.90	74.4	Pass
T4	19.6 - 0	Leg	L4.5x4.5x7/16	88	-68726.60	69935.50	98.3	Pass
T1	77.8 - 58.7	Diagonal	L2 1/2x2 1/2x1/4	11	-3658.17	21591.90	16.9	Pass
T2	58.7 - 38.8	Diagonal	L2 1/2x2 1/2x1/4	43	-4163.48	15428.10	27.0	Pass
T3	38.8 - 19.6	Diagonal	L3x3x1/4	71	-4625.69	18707.20	24.7	Pass
T4	19.6 - 0	Diagonal	L3x3x1/4	95	-4861.66	15342.50	31.7	Pass
T1	77.8 - 58.7	Top Girt	L2x2x1/4	7	-1249.28	22264.60	5.6	Pass
T2	58.7 - 38.8	Top Girt	L2x2x1/4	40	-117.43	17855.50	0.7	Pass
T3	38.8 - 19.6	Top Girt	L2x2x1/4	65	-148.52	13393.60	1.1	Pass
T4	19.6 - 0	Top Girt	L2x2x1/4	89	-180.71	9623.67	1.9	Pass
							Summary	
						Leg (T4)	98.3	Pass
						Diagonal (T4)	31.7	Pass
						Top Girt (T1)	5.6	Pass
						RATING =	**98.3**	**Pass**

Unit Base Foundation

Checks capacity of square mat foundation with raised piers for a self-supporting tower

BU#: NORTH HAVEN SOUTH
Site Name:
App Number:
TIA-222 Revision: G

Design Reactions		
Shear, **S**:	11.0	kips
Moment, **M**:	600.0	ft-kips
Compression/leg, **Ca**:	69.9	kips
Uplift/leg, **Ua**:	67.2	kips
Tower Weight, **Wt**:	11.8	kips
Tower Height, **H**:	78	ft
Base Face Width, **w'**:	6.0	ft

Block Properties		
Depth, **D**:	4.5	ft
Pad Width, **W**:	14.5	ft
Ext. Above Grade, **E**:	0.5	ft
Neglected Depth, **N**:	0.0	ft
Pad Rebar Size, **Sp**:		
Pad Rebar Quantity, **mp**:		#N/A

Base Plate Dimensions		
Base Plate Width, **di**:		in

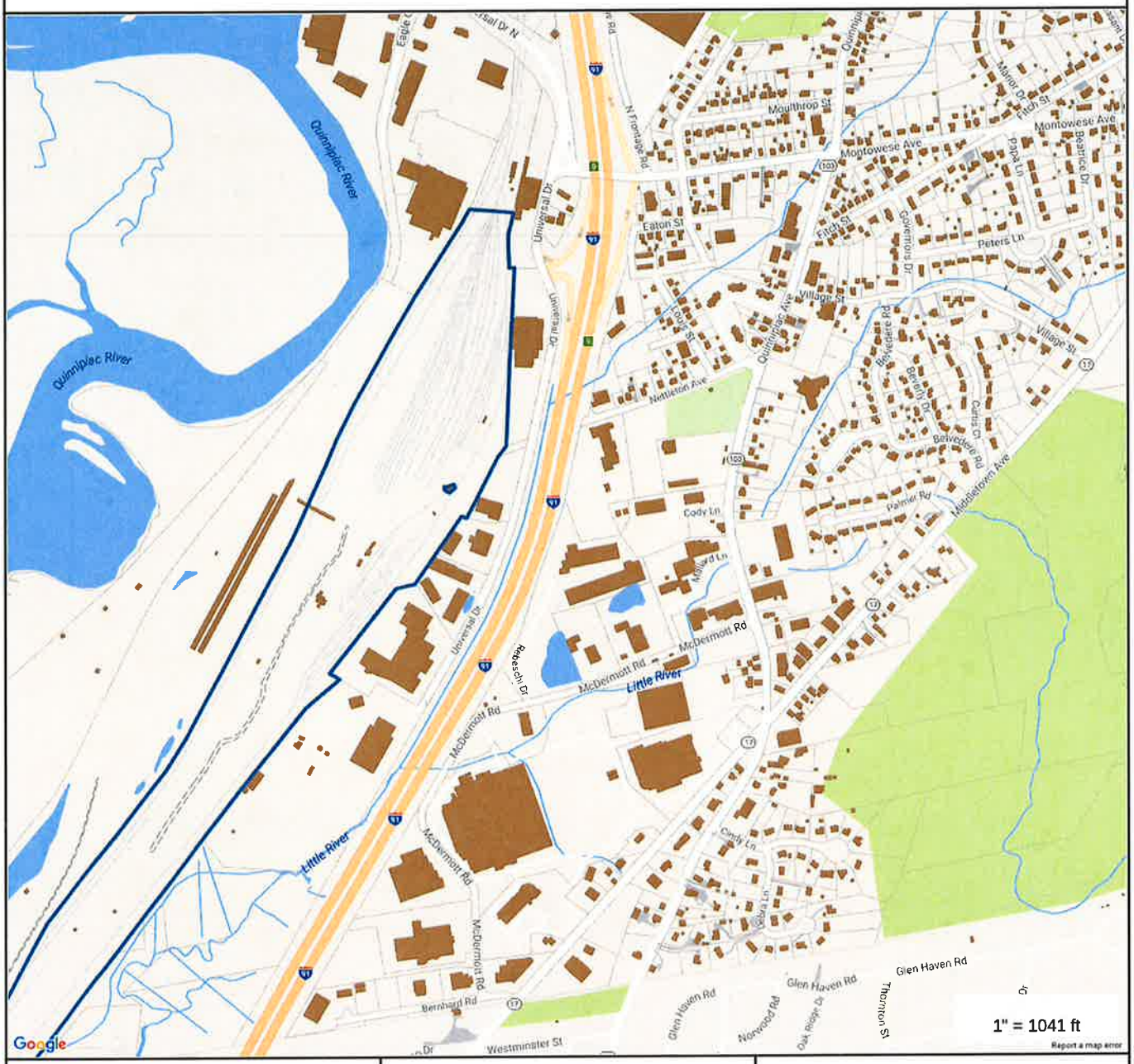
Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, **δc**:	150	pcf
Clear Cover, **cc**:	3	in

Soil Properties		
Soil Unit Weight, **γ**:	120	pcf
Ultimate Bearing: **Bc**:	6.000	ksf
Cohesion, **Co**:	0.000	ksf
Friction Angle, **φ**:	30	degrees
Base Sliding, **μ**:	0.35	

Design Checks	*Capacity/ Availability*	*Demand/ Limits*	*Check*
Base Sliding (kips):	198.76	11.00	**5.5%**
Overturning (k-ft):	882.22	600.00	**68.0%**
Bearing (ksf):	4.50	2.00	**44.5%**
1-way Shear (kips):	#N/A	#N/A	**#N/A**
2-way Shear (kips):	#N/A	69.90	**#N/A**
Pad moment capacity(k-ft):	#N/A	614.02	**#N/A**

☐ Tower centroid is offset from foundation

ATTACHMENT 4



Property Information

Property ID	2/1
Location	90 UNIVERSAL DR
Owner	NEW YORK CENTRAL LINES LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of North Haven, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated 10/1/2016
Properties updated 12/18/2017

90 UNIVERSAL DR

Location	90 UNIVERSAL DR	**Mblu**	002/ / 001/ /
Acct#	908700	**Owner**	NEW YORK CENTRAL LINES LLC
Assessment	$2,862,370	**Appraisal**	$4,089,100
PID	9226	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$0	$4,089,100	$4,089,100
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$0	$2,862,370	$2,862,370

Owner of Record

Owner	NEW YORK CENTRAL LINES LLC
Co-Owner	C/O CSX TRANSPORTATION INC
Address	500 WATER ST (J-910) JACKSONVILLE, FL 32202
Sale Price	$0
Certificate	1
Book & Page	542/ 928
Sale Date	06/24/1999

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
NEW YORK CENTRAL LINES LLC	$0	1	542/ 928	06/24/1999
PENN CENTRAL CO	$0	4		10/03/1978
CONSOLIDATED RAIL SYSTEMS INC	$0	3	303/ 510	10/03/1978

Building Information

Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	
Replacement Cost Less Depreciation:	$0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Fuel Type	
System Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplaces	
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Garages	

Building Photo

(http://images.vgsi.com/photos/NorthHavenCTPhotos//\00\02\(

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	920V
Description	NON-PROFIT M00
Zone	IL30

Land Line Valuation

Size (Acres)	104.55
Frontage	
Depth	

Neighborhood	305	**Assessed Value**	$2,862,370
Alt Land Appr Category	No	**Appraised Value**	$4,089,100

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$0	$4,162,700	$4,162,700
2008	$0	$4,192,000	$4,192,000
2007		$2,934,400	$2,934,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$0	$2,913,890	$2,913,890
2008	$0	$2,934,400	$2,934,400
2007		$2,934,400	$2,934,400

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	neopost 12/27/2017 US POSTAGE $002.38⁰ ZIP 06103 041L12203380
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Michael J. Freda, First Selectman Town of North Haven 18 Church Street North Haven, CT 06473				
2.	Alan Fredricksen, Land Use Administrator Town of North Haven 18 Church Street North Haven, CT 06473				
3.	New York Central Lines LLC c/o CSX Transportation Inc 500 Water Street (J-910) Jacksonville, FL 32202				
4.					
5.					
6.					