STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP	:	PETITION NO. ____
D/B/A VERIZON WIRELESS FOR A	:	
DECLARATORY RULING ON THE NEED	:	
TO OBTAIN A SITING COUNCIL	:	
CERTIFICATE TO INSALL A WIRELESS	:	
TELECOMMUNICATIONS FACILITY AT	:	
115 PEAT MEADOW ROAD, NEW HAVEN,	:	
CONNECTICUT	:	JANUARY 14, 2021

PETITION FOR A DECLARATORY RULING:
INSTALLATION HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A."), Cellco Partnership d/b/a Verizon Wireless ("Cellco") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Petition") that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required under Section 16-50k(a) of the Connecticut General Statutes ("C.G.S.") for the installation of a wireless telecommunications facility at 115 Peat Meadow Road in New Haven, Connecticut (the "Property"). Cellco refers to this cell site as its East Haven 5 Facility.

II. The Property

The Property is a 6.0- acre parcel currently used for commercial purposes and is the home of the Brandfon Hyundai automobile dealership. The Property is owned 115 Peat Meadows LLC (the "Owner"). The Property is adjacent to Route 1 and Interstate-95, to the south, the New Haven-East Haven town line and the CarMax automobile dealership to the east, undeveloped land and a bulk oil storage facility to the north and residential uses to the west. In the southeast

corner of the Property is an existing two-sided billboard supported by a steel monopole support structure. The top of the billboard extends to a height of approximately 41 feet above ground level ("AGL"), 59 feet above mean sea level ("AMSL"). The billboard structure is owned by Outfront Media and is managed by Diamond Communications. *See* Attachment 1 – Site Vicinity and Site Schematic Maps (Aerial Photograph).

III. Cellco's Need for Improved Wireless Service

Cellco currently provides wireless service along Interstate-95 between the Quinnipiac River in New Haven and Lake Saltonstall in East Haven from two existing macro-cells, identified on the Site Vicinity Map as the New Haven East cell site, a rooftop installation at 153 Forbes Street in New Haven and the East Haven cell site, an rooftop installation at 65 Messina Drive in East Haven. Between these two existing cell sites, Cellco is experiencing a coverage deficiency and areas of unreliable service along and proximate to Interstate-95, resulting in dropped calls and ineffective attempts for its customers. The proposed East Haven 5 Facility, located between these two existing macro-cells, would eliminate the current coverage deficiencies. While not the primary objective, the proposed East Haven 5 Facility would also provide some capacity relief to the Gamma Sector antennas at Cellco's East Haven cell site.

IV. Cellco's Proposed East Haven 5 Facility

The proposed East Haven 5 Facility will consist of a 45'-10" extension of the existing billboard's monopole support structure, extending approximately 29' above the top of the existing billboard. Cellco will install six (6) new antennas at the top of the monopole at a centerline height of 67' above ground level and six (6) remote radio heads ("RRHs") immediately below the antennas. Two equipment cabinets and associated electric distribution equipment will be located within an 8'-8" x 18' fenced facility compound. No trees will need to be removed and no grading will be required to install Cellco's ground-mounted equipment. (*See*

Cellco's Project Plans included in Attachment 2).

Cellco is licensed to provide wireless telecommunications services in the 700 MHz, 850 MHz, 1900 MHz, and 2100 MHz frequency ranges in New Haven county and throughout the State of Connecticut. The proposed East Haven 5 Facility will utilize each of Cellco's licensed frequencies to provide 4G telecommunications services. Specifications for Cellco's antennas and remote radio heads are included in Attachment 3. A Structural Analysis Report, which includes a Mount Analysis, confirming that the billboard monopole support structure can adequately support Cellco's proposed improvements is included in Attachment 4.

IV. Discussion

A. The Proposed Facility Will Not Have A Substantial Adverse Environmental Effect

The Public Utility Environmental Standards Act (the "Act"), C.G.S. § 16-50g et seq., provides for the orderly and environmentally compatible development of telecommunications facilities in the state to avoid "a significant impact on the environment and ecology of the State of Connecticut." C.G.S. § 16-50g. To achieve these goals, the Act established the Council, and requires a Certificate of Environmental Compatibility and Public Need for the construction of cellular telecommunication towers "that may, as determined by the council, have a substantial adverse environmental effect". C.G.S. § 16-50k(a).

1. Physical Environmental Effects

Cellco respectfully submits that the proposed facility will not involve a significant alteration in the physical and environmental characteristics of the Property. No trees will be removed to construct the East Haven 5 Facility and minimal ground disturbance is necessary for the installation of Cellco's radio and electrical equipment.

2. Visual Effects

Views of the proposed facility would not significantly change the characteristics of the area. Visibility of the existing billboard and the proposed monopole extension will occur primarily along the Interstate-95 corridor and on the surrounding commercial and industrial properties. Views of the extended monopole and wireless antennas will be obscured within the nearest residential area, to the west of the Property. A Photo Documentation & Simulations report ("Visual Assessment") is included in Attachment 5.

3. FCC Compliance

Radio frequency ("RF") emissions from Cellco's facility will not exceed the maximum permissible exposure limits established by the Federal Communications Commission ("FCC"). Included in Attachment 6 is a Radio Frequency – Electromagnetic Energy (RF-EME) Jurisdictional Report that demonstrates that Cellco's facility will operate within the FCC safety standards.

4. FAA Notification Not Required

According to a Federal Airways & Airspace Summary Report ("FAA Report") the proposed East Haven 5 Facility would not constitute an obstruction or hazard to air navigation. No obstruction marking or lighting is required or proposed and notice to the FAA is not required. A copy of the FAA Report is included in Attachment 7.

B. Notice to the City, Property Owner and Abutting Landowners

On January 14, 2021, a copy of this Petition was sent to New Haven's Mayor, Justin Elicker; Aicha Woods, New Haven's Director of City Plan; East Haven's Mayor, Joseph Carfora; East Haven's Deputy Zoning Officer, Ellen Pellegrino; 115 Peat Meadows LLC, the Owner of the Property; Outfront Media, the owner of the billboard structure; and Diamond Communications, the Communications Manager for the billboard structure. Copies of the letters

sent to Mayors Elicker and Carfora; Ms. Woods and Ms. Pellegrino; 115 Peat Meadows LLC; Outfront Media; and Diamond Communications are included in Attachment 8.

A copy of this Petition was also sent to the owners of land that is considered to abut the Property. A sample abutter's letter and the list of those abutting landowners to whom notice was sent is included in Attachment 9.

V. Conclusion

Based on the information provided above, Cellco respectfully requests that the Council issue a determination, in the form of a declaratory ruling, that the extension of the billboard monopole support structure, the installation of antennas and RRHs on the monopole; and the installation of ground-mounted equipment near the base of the billboard, will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

By 

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1

Legend

- Proposed Verizon Wireless Facility
- Surrounding Verizon Wireless Facilities
- Municipal Boundary

Site Vicinity Map

Proposed Wireless
Telecommunications Facility
East Haven 5 CT
115 Peat Meadow Road
New Haven, Connecticut

verizon

2,700 1,350 0 2,700 Feet

Base Map Source: CT ECO 2019 Imagery
Map Scale:1 inch = 2,700 feet
Map Date: October 2020

ALL-POINTS TECHNOLOGY CORPORATION

Legend

- Proposed Verizon Wireless Lease Area
- Proposed Verizon Wireless Equipment
- Proposed Verizon Wireless Fence
- Proposed Verizon Wireless Access Easement
- Proposed Verizon Wireless Utility Easement
- Proposed Verizon Wireless Power and Telco Service
- Existing Utility Pole (By Others)
- Subject Property
- Approximate Parcel Boundary (CTDEEP GIS)

N
W E
S

100 50 0 100
Feet

Map Notes:
Base Map Source: CT ECO 2019 Aerial Imagery
Map Scale: 1 inch = 100 feet
Map Date: October 2020

Site Schematic

Proposed Wireless
Telecommunications Facility
East Haven 5 CT
115 Peat Meadow Road
New Haven, Connecticut

verizon

ALL-POINTS TECHNOLOGY CORPORATION

ATTACHMENT 2

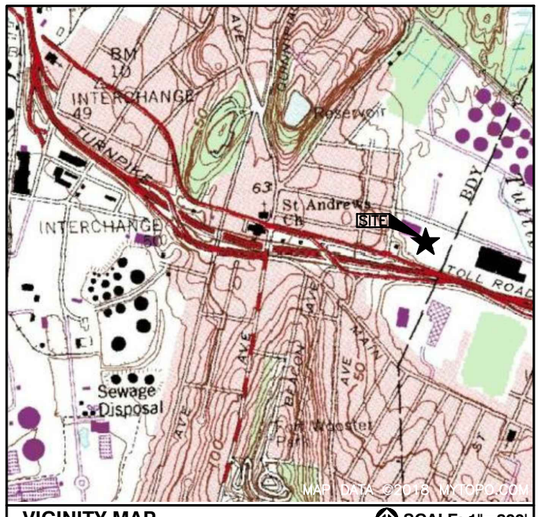
CELLCO PARTNERSHIP

d.b.a. verizon

WIRELESS COMMUNICATIONS FACILITY

EAST HAVEN 5 CT

115 PEAT MEADOW ROAD
NEW HAVEN, CT 06513



VICINITY MAP — **SCALE: 1"=800'**

DIRECTIONS TO SITE:

GET ON I-91 S FROM CT-68 E
HEAD NORTH ON ALEXANDER DR TOWARD BARNES INDUSTRIAL RD S
TURN RIGHT ONTO BARNES INDUSTRIAL RD S
TURN RIGHT ONTO CT-68 E
TURN RIGHT ONTO THE INTERSTATE 91 S RAMP TO NEW HAVEN
FOLLOW I-91 S TO MAIN STREET ANX IN NEW HAVEN
EXIT FROM I-95 N
MERGE ONTO I-91 S
USE THE LEFT LANE TO MERGE ONTO I-95 N TOWARD NEW LONDON
TAKE THE EXIT TOWARD MAIN STREET ANX
CONTINUE ON MAIN STREET ANX
TURN LEFT ONTO TOWNSEND AVE
TURN RIGHT AT THE 1ST CROSS STREET ONTO FORBES AVE
FORBES AVE TURNS LEFT AND BECOMES PEAT MEADOW ROAD
TURN RIGHT - 115 PEAT MEADOW ROAD, NEW HAVEN, CT

CONSULTANT TEAM

PROJECT ENGINEER

HUDSON DESIGN GROUP, LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: 1-(978)-557-5553
FAX: 1-(978)-336-5586

MEP ENGINEER

HUDSON DESIGN GROUP, LLC
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NORTH ANDOVER, MA 01845
TEL: 1-(978)-557-5553
FAX: 1-(978)-336-5586

PROJECT SUMMARY

SITE NAME:	EAST HAVEN 5 CT
SITE ADDRESS:	115 MEADOW ROAD NEW HAVEN, CT 06513
APPLICANT:	CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
LEGAL/REGULATORY COUNCIL:	KENNETH C. BALDWIN, ESQ. ROBINSON & COLE LLP 280 TRUMBULL STREET HARTFORD, CT 06103
LATITUDE:	N 41° 17' 18.84"
LONGITUDE:	W 72° 53' 09.07"
PROPERTY OWNER:	115 PEAT MEADOWS LLC 515 WEST MAIN ST BRANFORD, CT 06405

SCOPE OF WORK INFO.

VERIZON WIRELESS IS PROPOSING TO INSTALL THE FOLLOWING IMPROVEMENTS ON PROPOSED TELECOMMUNICATION SITE:

- NEW PANEL ANTENNAS: (2) ANTENNAS PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (6) ANTENNAS.
- NEW RRHs: (2) RRHs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (6) RRHs
- NEW JUNCTION BOXES: (1) OVP (JUNCTION BOX) TOTAL.
- NEW DIPLEXERS: (1) DIPLEXER PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) DIPLEXERS.

ITEMS LISTED ABOVE TO BE MOUNTED ON PROPOSED VERIZON EXTENSION POLE.

- NEW EQUIPMENT CABINETS: (2) CABINETS ON PROPOSED 7'x4' CONCRETE PAD.

ITEMS LISTED ABOVE TO BE INSTALLED WITHIN THE PROPOSED 8'-8"x18'-0" FENCED COMPOUND.

- NEW POWER AND TELCO SERVICES WILL BE ROUTED UNDERGROUND FROM EXISTING UTILITY POLE TO PROPOSED ELECTRICAL METER AND HOFFMAN BOX ON PROPOSED H-FRAME.
- FINAL UTILITY ROUTING TO BE DETERMINED/VERIFIED BY UTILITY COMPANIES.

SHEET INDEX

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
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TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

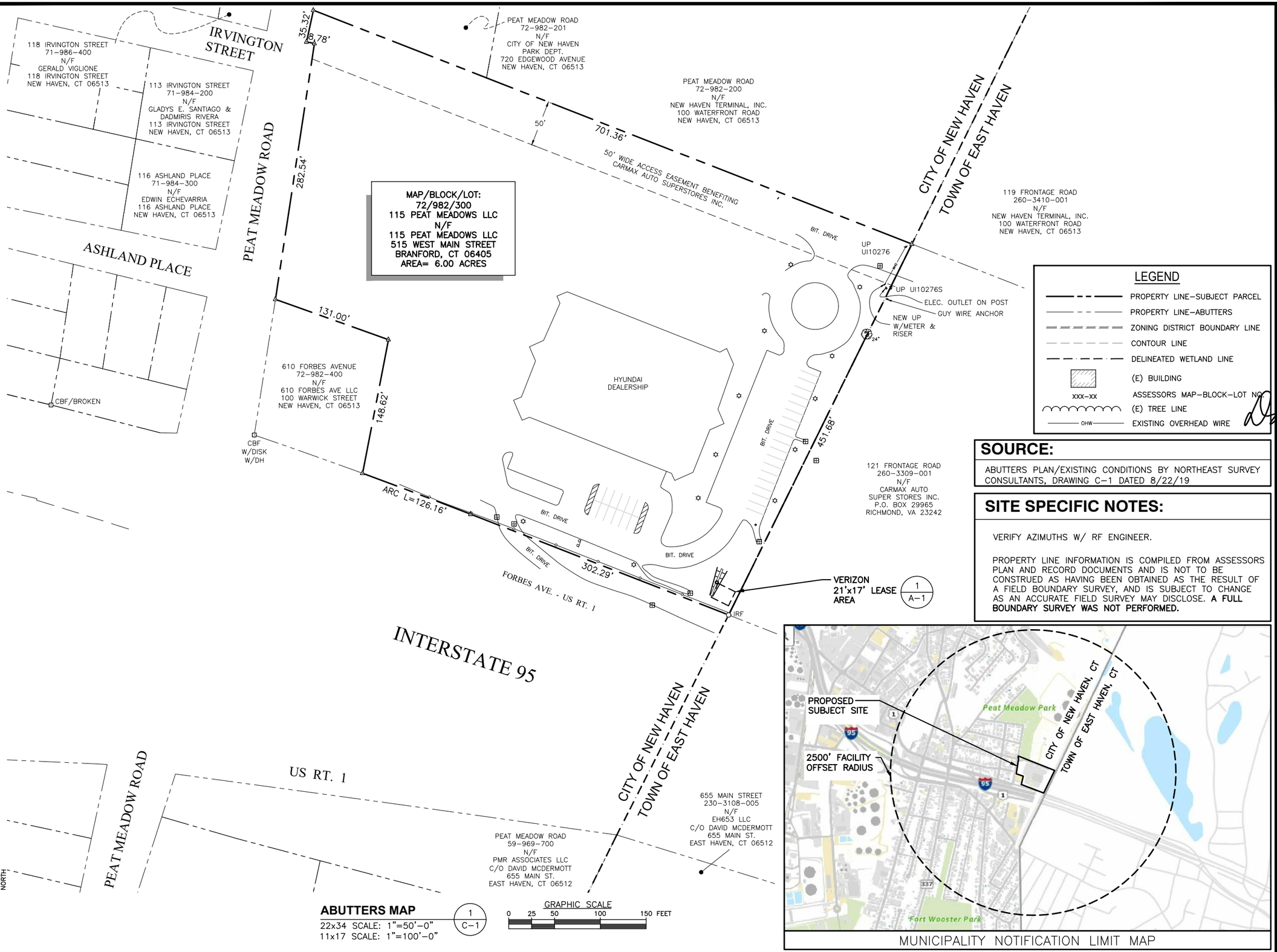
REV.	DATE	DESCRIPTION	BY
4	01/05/21	REVISED ANTENNA BRACKET	SLY
3	10/20/20	REVISED OVP & DIPLEXER QTY	SLY
2	10/4/19	RELOCATED COMPOUND	SLY
1	09/11/19	REVISED PER SURVEY	JS
0	12/21/18	ISSUED FOR REVIEW	KAM

SITE NAME:
EAST HAVEN 5 CT

SITE ADDRESS:
115 PEAT MEADOW ROAD
NEW HAVEN, CT 06513

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



LEGEND

- PROPERTY LINE–SUBJECT PARCEL
- PROPERTY LINE–ABUTTERS
- ZONING DISTRICT BOUNDARY LINE
- CONTOUR LINE
- DELINEATED WETLAND LINE
- (E) BUILDING
- XXX–XX ASSESSORS MAP–BLOCK–LOT NO.
- (E) TREE LINE
- OHW EXISTING OVERHEAD WIRE

SOURCE:

ABUTTERS PLAN/EXISTING CONDITIONS BY NORTHEAST SURVEY CONSULTANTS, DRAWING C-1 DATED 8/22/19

SITE SPECIFIC NOTES:

VERIFY AZIMUTHS W/ RF ENGINEER.

PROPERTY LINE INFORMATION IS COMPILED FROM ASSESSORS PLAN AND RECORD DOCUMENTS AND IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD BOUNDARY SURVEY, AND IS SUBJECT TO CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE. **A FULL BOUNDARY SURVEY WAS NOT PERFORMED.**

MUNICIPALITY NOTIFICATION LIMIT MAP

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

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SITE NAME:

EAST HAVEN 5 CT

SITE ADDRESS:

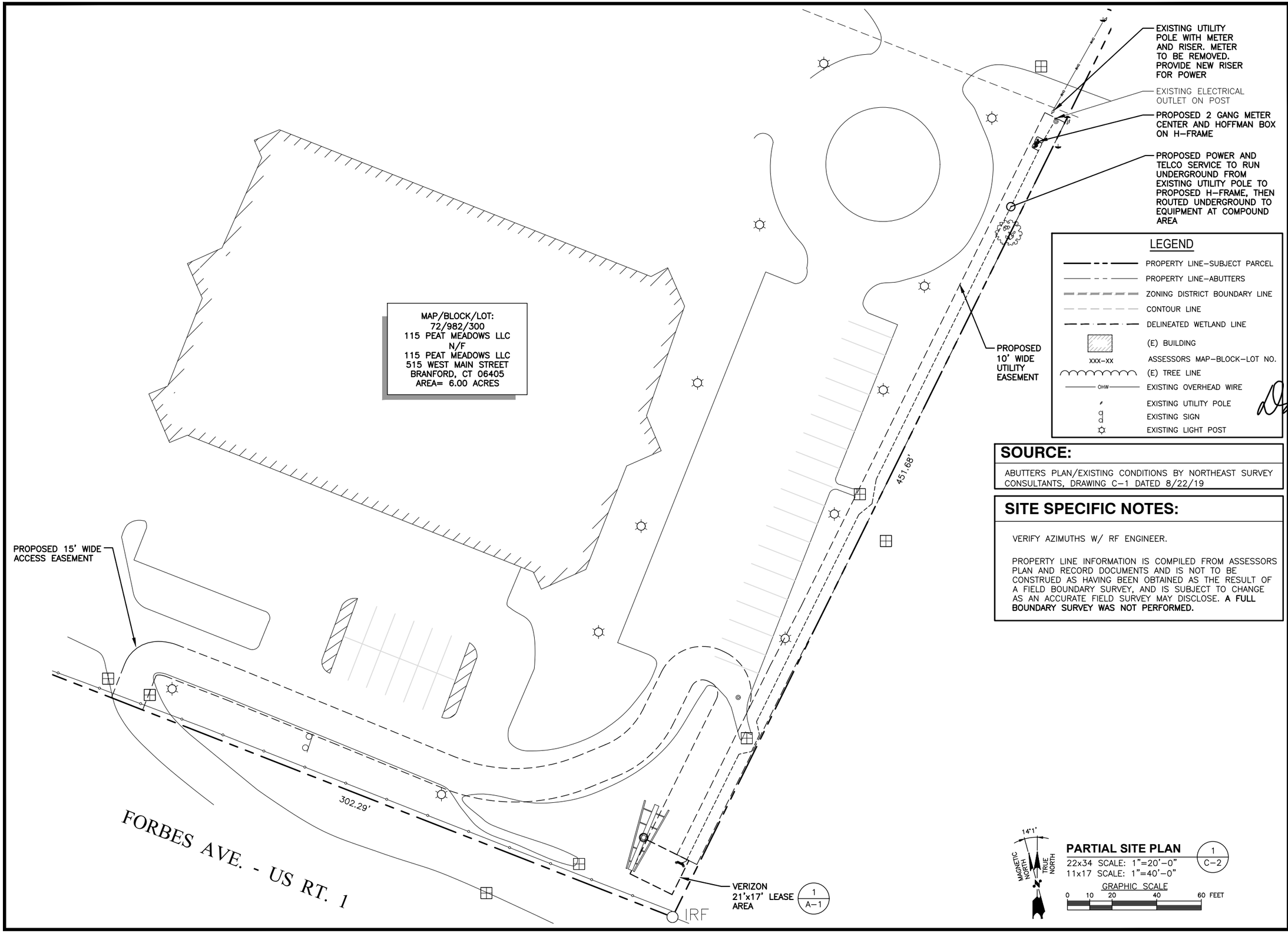
115 PEAT MEADOW ROAD
NEW HAVEN, CT 06513

SHEET TITLE

ABUTTERS MAP

SHEET NUMBER

C-1



SOURCE:

ABUTTERS PLAN/EXISTING CONDITIONS BY NORTHEAST SURVEY CONSULTANTS, DRAWING C-1 DATED 8/22/19

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PARTIAL SITE PLAN (1 / C-2)

22x34 SCALE: 1"=20'-0"
11x17 SCALE: 1"=40'-0"

GRAPHIC SCALE
0 10 20 40 60 FEET

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

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APPROVED BY: DPH

SUBMITTALS

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1	09/11/19	REVISED PER SURVEY	JS
0	12/21/18	ISSUED FOR REVIEW	KAM

SITE NAME:

EAST HAVEN 5 CT

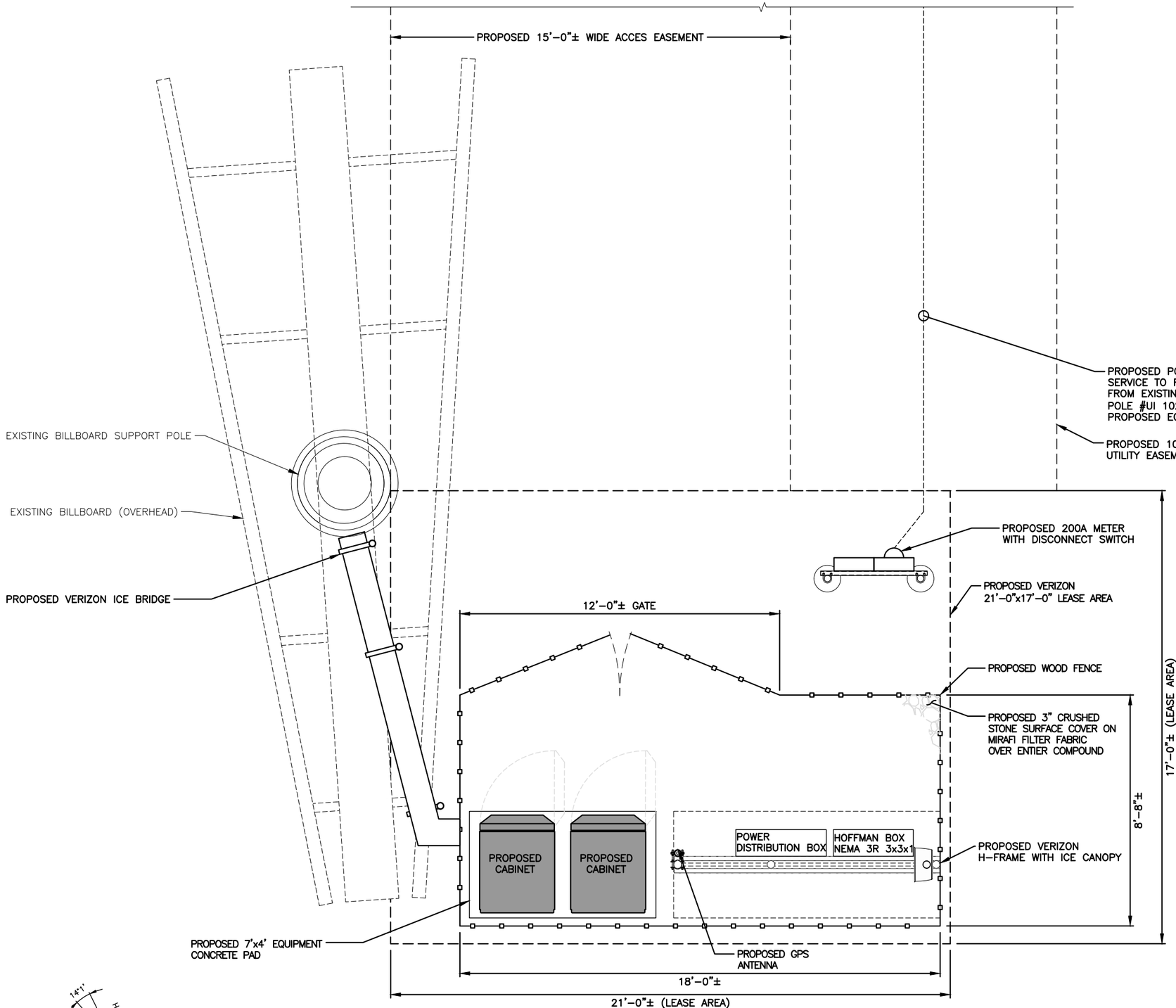
SITE ADDRESS:
115 PEAT MEADOW ROAD
NEW HAVEN, CT 06513

SHEET TITLE

PARTIAL SITE PLAN

SHEET NUMBER

C-2



EQUIPMENT PLAN

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

1 / A-1

GRAPHIC SCALE
0 1 2 4 6 FEET

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

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SITE NAME:

EAST HAVEN 5 CT

SITE ADDRESS:

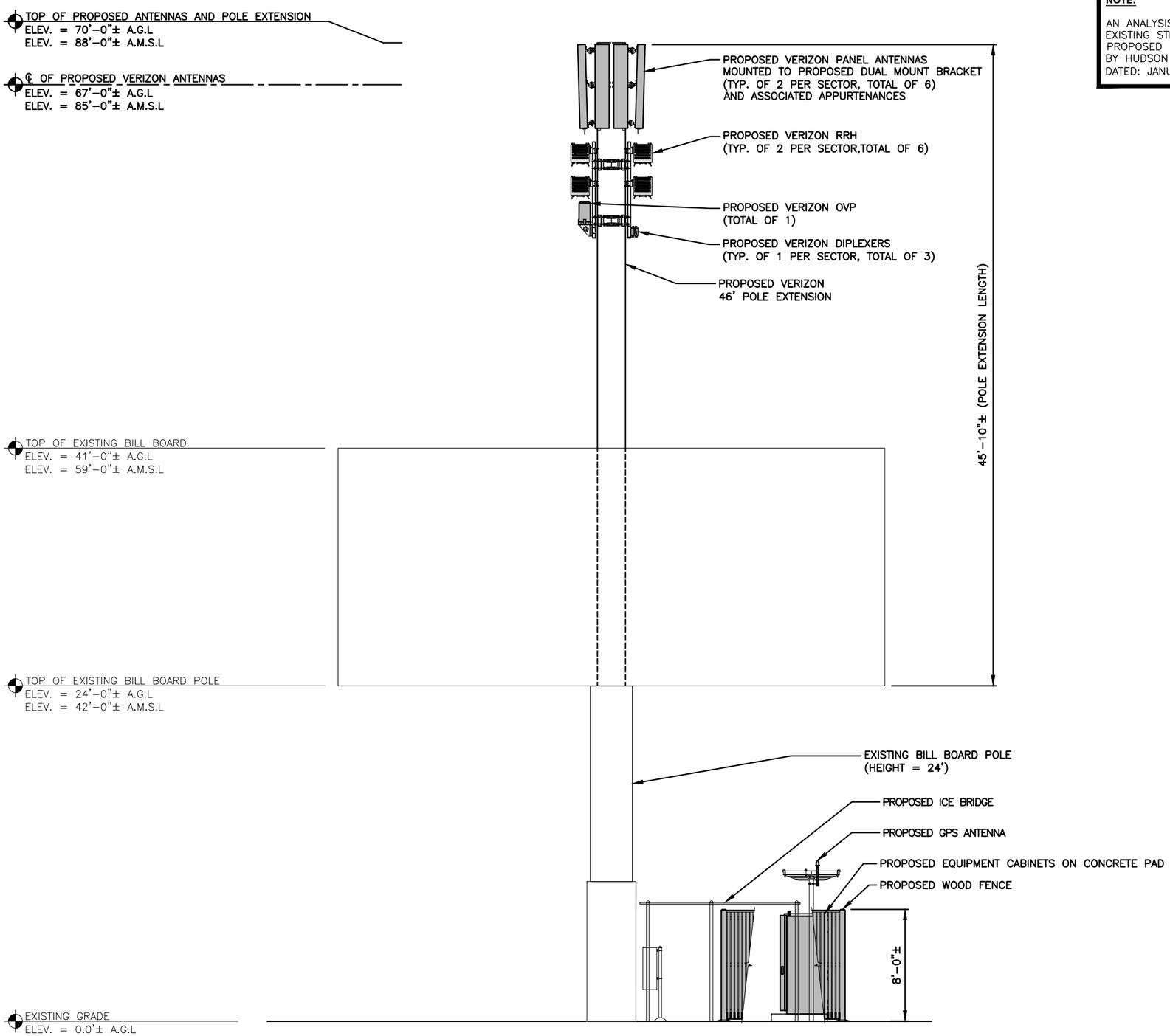
115 PEAT MEADOW ROAD
NEW HAVEN, CT 06513

SHEET TITLE

EQUIPMENT PLAN

SHEET NUMBER

A-1



EAST ELEVATION (1 / A-2)

22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

GRAPHIC SCALE
0 2 4 8 12 FEET

NOTE:

AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC.
DATED: JANUARY 5, 2021 (REV.2)

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

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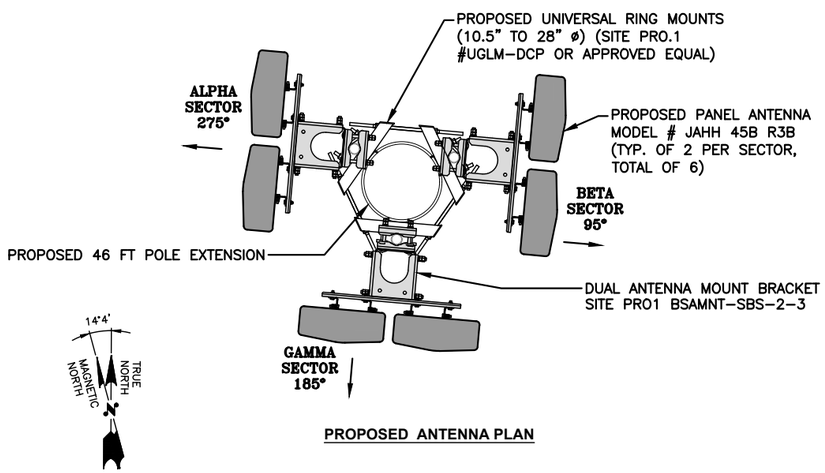
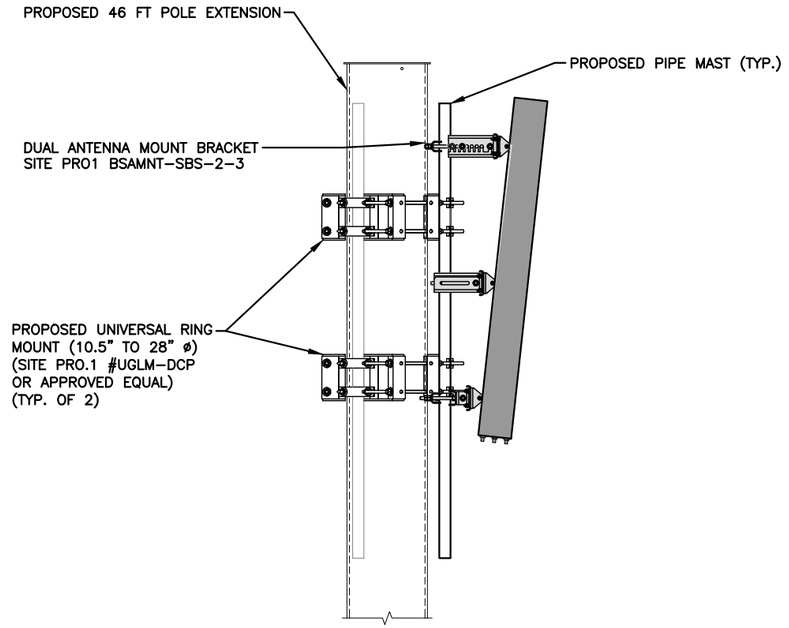
ELEVATION

SHEET NUMBER

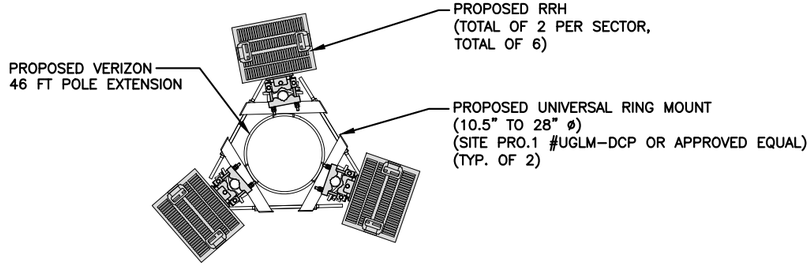
A-2



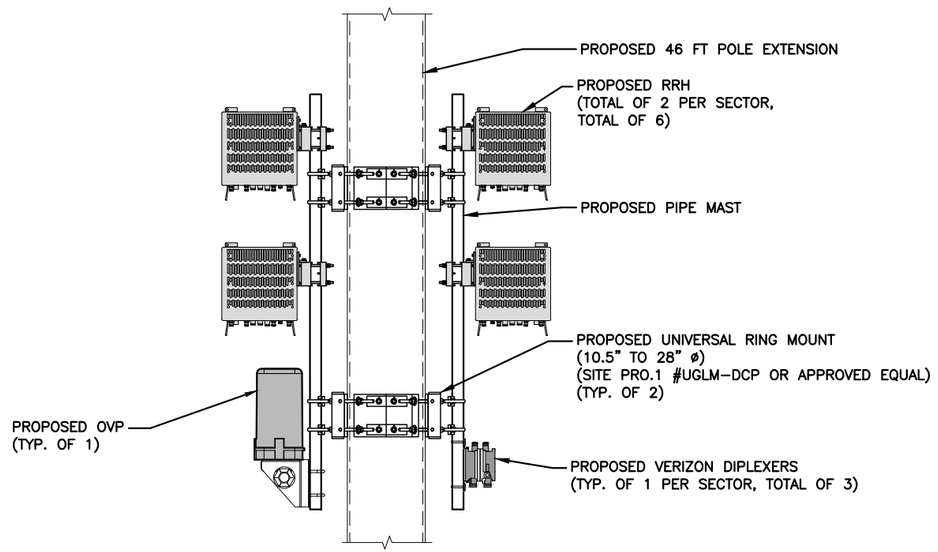
PROPOSED ANTENNA PLAN



ELEVATION



PROPOSED RRH PLAN



ANTENNA, RRH & OVP MOUNTING DETAILS (1 / A-3)

SCALE: N.T.S

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

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SHEET TITLE

RRH AND ANTENNA DETAILS

SHEET NUMBER

A-3

ATTACHMENT 3

JAHH-45B-R3B

8-port sector antenna, 2x 698–798, 2x 824-894 and 4x 1695–2360 MHz, 45° HPBW, low bands each have a RET and the high bands share a RET. Two internal SBTs.

- 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
- Narrow beamwidth capacity antenna for higher level of densification and enhanced data throughput

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Effective Projective Area (EPA), frontal	1 m² | 10.764 ft²
Effective Projective Area (EPA), lateral	0.21 m² | 2.26 ft²
Grounding Type	RF connector body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Aluminum | Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	4
RF Connector Quantity, total	8

Remote Electrical Tilt (RET) Information, General

RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male

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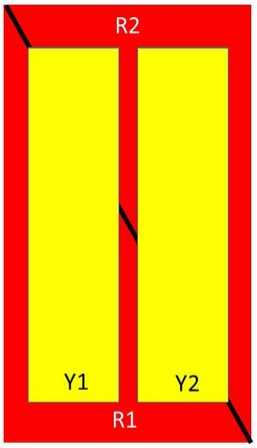
JAHH-45B-R3B

Dimensions

Width	457 mm | 17.992 in
Length	1829 mm | 72.008 in
Depth	178 mm | 7.008 in

Array Layout



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

Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANxxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxxx3
Y2	1695-2360	7-8		

Port Configuration

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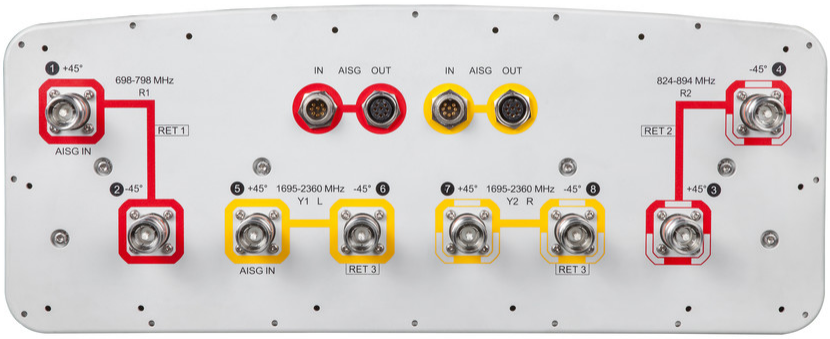
JAHH-45B-R3B



Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2360 MHz | 698 – 798 MHz | 824 – 894 MHz
Polarization	±45°
Total Input Power, maximum	800 W @ 50 °C

Remote Electrical Tilt (RET) Information, Electrical

Protocol	3GPP/AISG 2.0 (Single RET)
Power Consumption, idle state, maximum	1 W
Power Consumption, normal conditions, maximum	8 W
Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 | Port 5
Internal RET	High band (1) | Low band (2)

Electrical Specifications

Frequency Band, MHz	**698–798**	**824–894**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**
Gain, dBi	16.5	17.2	19.4	20.2	20.5	21.1
Beamwidth, Horizontal, degrees	48	43	44	43	41	38

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JAHH-45B-R3B

Beamwidth, Vertical, degrees	12.6	11.2	5.8	5.4	5	4.5
Beam Tilt, degrees	2–14	2–14	0–8	0–8	0–8	0–8
USLS (First Lobe), dB	16	21	18	18	18	18
Front-to-Back Ratio at 180°, dB	32	36	37	37	38	41
Isolation, Cross Polarization, dB	25	25	25	25	25	25
Isolation, Inter-band, dB	30	30	28	28	28	28
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	200	200	300	300	300	250

Electrical Specifications, BASTA

Frequency Band, MHz	**698–798**	**824–894**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**
Gain by all Beam Tilts, average, dBi	16.3	17	19.1	19.9	20.2	20.9
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.3	±0.5	±0.4	±0.3	±0.4
Gain by Beam Tilt, average, dBi	2 ° | 16.3 8 ° | 16.3 14 ° | 16.1	2 ° | 17.1 8 ° | 17.1 14 ° | 16.7	0 ° | 19.1 4 ° | 19.2 8 ° | 19.0	0 ° | 19.8 4 ° | 19.9 8 ° | 19.8	0 ° | 20.1 4 ° | 20.2 8 ° | 20.1	0 ° | 20.7 4 ° | 21.0 8 ° | 20.7
Beamwidth, Horizontal Tolerance, degrees	±1.1	±2.4	±2	±2.7	±2.9	±1.5
Beamwidth, Vertical Tolerance, degrees	±0.7	±0.6	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	16	21	17	17	17	17
Front-to-Back Total Power at 180° ± 30°, dB	23	24	29	31	33	34
CPR at Boresight, dB	25	26	20	21	20	20
CPR at Sector, dB	16	18	14	15	15	16

Mechanical Specifications

Wind Loading at Velocity, frontal	1,065.0 N @ 150 km/h
Wind Loading at Velocity, lateral	220.0 N @ 150 km/h
Wind Loading at Velocity, maximum	1,065.0 N @ 150 km/h | 239.4 lbf @ 150 km/h
Wind Loading at Velocity, rear	245.3 lbf @ 150 km/h | 935.0 N @ 150 km/h
Wind Speed, maximum	241 km/h | 149.75 mph

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JAHH-45B-R3B

Packaging and Weights

Width, packed	608 mm | 23.937 in
Depth, packed	346 mm | 13.622 in
Length, packed	1970 mm | 77.559 in
Net Weight, without mounting kit	41.5 kg | 91.492 lb
Weight, gross	71.5 kg | 157.63 lb

Regulatory Compliance/Certifications

Agency	**Classification**
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system

Included Products

BSAMNT-3 — 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.

BSAMNT-M — Middle Downtilt Mounting Kit for Long Antennas for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

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SAMSUNG

Dual-Band Radio Unit
AWS/PCS (B66/B2)
RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
    B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)
    B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)
Instantaneous Bandwidth:
    70MHz(B66) + 60MHz(B2)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 255mm (36.8L)
Weight: 38.3kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

SAMSUNG

Dual-Band Radio Unit
700/850MHz (B13/B5)
RFV01U-D2A

Samsung's RFV01U-D2A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D2A RU targets dual-band support across Band 13 (700MHz) and Band 5 (850MHz), making it an ideal product for broad coverage footprints across multiple common low-end, long-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B13: DL(746-756MHz)/UL(777-787MHz)
B5: DL(869-894MHz)/UL(824-849MHz)
Instantaneous Bandwidth: 10MHz(B13) + 25MHz(B5)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 207mm (29.9L)
Weight: 31.9kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

ATTACHMENT 4

(REVISED)
STRUCTURAL ANALYSIS REPORT

For

EAST HAVEN 5 CT

115 PEAT MEADOW ROAD
NEW HAVEN, CT 06513

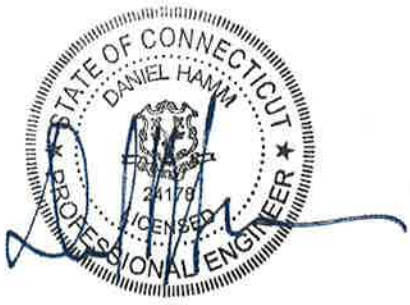
Antennas Mounted to the Monopole

Prepared for:

verizon

20 Alexander Drive
Wallingford, CT 06492

Dated: January 5, 2021 (Rev.2)
December 22, 2020 (Rev.1)
November 20, 2020



Prepared by:

HDG | HUDSON Design Group LLC

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

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by VERIZON to conduct a structural evaluation of the 24' monopole with proposed 46' extension supporting the proposed VERIZON's antennas located at elevation 67' above the ground level.

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

The following documents were used for our reference:

- Previous HDG Structural Analysis Report dated January 31, 2018.

TOWER CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole **is in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at **89.7%** - (Pole section L3 from EL.0' to EL.10' Controlling).

MOUNT CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing mount **is in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The mount is rated at **8.1%** - (Antenna Pipe Mast at EL.67' Controlling).

HUDSON Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
VERIZON	***(6) JAHH-45B-R3B Antennas***	***67'***	***BSAMNT-SBS-2-3 on Pipe Mast on UGLM-DC***
VERIZON	***(3) B2/B66A RRH-BR049 RRH's***	***62'***	***Pipe Mast on UGLM-DC***
VERIZON	***(3) B5/B13 RRH-BR04C RRH's***	***62'***	***Pipe Mast on UGLM-DC***
VERIZON	***(3) CBC78T-DS-43-2X Diplexers***	***62'***	***Pipe Mast on UGLM-DC***
VERIZON	***(1) Junction Box***	***62'***	***Pipe Mast on UGLM-DC***
	Billboards	35'	Top of Monopole

Proposed VERIZON Appurtenances shown in Bold.

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	***(1) Fiber Cable***	0' - 67'	Inside Monopole

Proposed VERIZON Coax Cables shown in Bold.

TOWER ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	80.4 %	24 – 70	PASS	
Pole Section-L2	76.0 %	10 – 24	PASS	
Pole Section-L3	**89.7 %**	0 – 10	PASS	**Controlling**

TOWER FOUNDATION COMPARISON SUMMARY:

	Proposed Reactions	*Previous Reactions	Pass/Fail	Comments
Shear	49220 lbs	49755 lbs	PASS	
Axial	68908 lbs	**150000 lbs	PASS	
Moment	1830401 lb-ft	1865196 lb-ft	PASS	

**** Reactions taken from previous HDG Tower Structural Analysis dated January 31, 2018.***
***** Reaction taken from previous HDG Foundation Evaluation dated January 31, 2018.***

MOUNT ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Antenna Pipe Mast	8.1 %	67	PASS	**Controlling**
RRH Pipe Mast	7.1 %	62	PASS	

HUDSON Design Group LLC

DESIGN CRITERIA:

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

   County: New Haven
   Wind Load: 105 mph (3 second gust)
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Crest Height: 0 ft.
   Nominal Ice Thickness: 0.75 inch

2. Approximate height above grade to proposed antennas: 67'

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

ASSUMPTIONS:

1. The monopole geometry and member sizes are as indicated in the record drawings prepared by Effective Engineering Solutions, LTD., dated October 15, 2012.

2. The monopole 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.

3. The support mounts and billboard supporting frames are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

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

5. Foundation and geotechnical information was gathered from the previous HDG Tower Structural Analysis dated January 31, 2018.

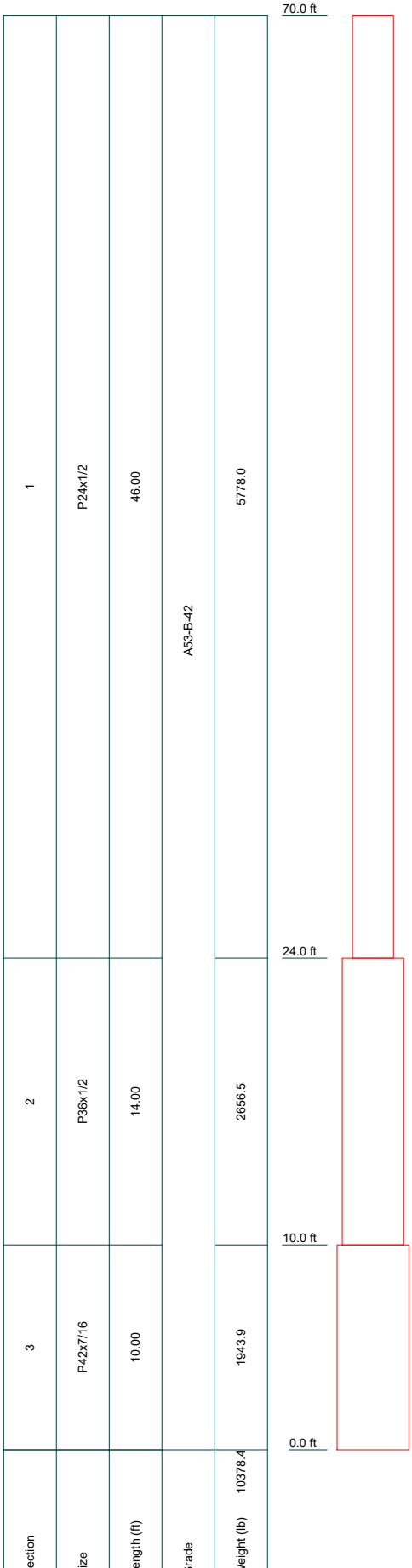
SUPPORT RECOMMENDATIONS:

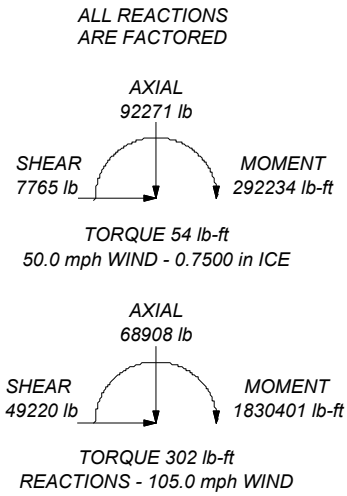
HDG recommends that the proposed antennas, RRHs and junction boxes be mounted on the proposed mounts supported by the proposed monopole extension.

Photo 1: Photo illustrating the monopole with Appurtenances shown.

HUDSON
Design Group LLC

TOWER
CALCULATIONS





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
CommScope BSAMNT-SBS-2-3 Mount (VERIZON - Propose)	67	JAHH-45B-R3B Antenna w/Mounting Pipe	67
CommScope BSAMNT-SBS-2-3 Mount	67	B2/B66A RRH-BR049 RRH	62
CommScope BSAMNT-SBS-2-3 Mount	67	B2/B66A RRH-BR049 RRH	62
JAHH-45B-R3B Antenna w/Mounting Pipe	67	B2/B66A RRH-BR049 RRH	62
JAHH-45B-R3B Antenna w/Mounting Pipe	67	B5/B13 RRH-BR04C RRH	62
JAHH-45B-R3B Antenna w/Mounting Pipe	67	B5/B13 RRH-BR04C RRH	62
JAHH-45B-R3B Antenna w/Mounting Pipe	67	B5/B13 RRH-BR04C RRH	62
JAHH-45B-R3B Antenna w/Mounting Pipe	67	CBC78T-DS-43-2X Diplexer	62
		CBC78T-DS-43-2X Diplexer	62
		CBC78T-DS-43-2X Diplexer	62
		Junction Box	62
		Billboards (Ease Haven 5 CT)	35

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 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 105.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 89.7%

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

Job: **EAST HAVEN 5 CT**			
Project: ***70 ft Monopole***			
Client: VERIZON	Drawn by: JN	App'd:	
Code: TIA-222-G	Date: 01/05/21	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
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 105.0 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 56.0 pcf.
- A wind speed of 50.0 mph is used in combination with ice.
- Temperature drop of 50.0 °F.
- Deflections calculated using a wind speed of 60.0 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	70.00-24.00	46.00	P24x1/2	A53-B-42 (42 ksi)	
L2	24.00-10.00	14.00	P36x1/2	A53-B-42 (42 ksi)	
L3	10.00-0.00	10.00	P42x7/16	A53-B-42 (42 ksi)	

Tower Elevation *ft*	*Gusset Area (per face)* ft^2	*Gusset Thickness* *in*	*Gusset Grade*	*Adjust. Factor* A_f	*Adjust. Factor* A_r	*Weight Mult.*	*Double Angle Stitch Bolt Spacing Diagonals* *in*	*Double Angle Stitch Bolt Spacing Horizontals* *in*	*Double Angle Stitch Bolt Spacing Redundants* *in*
L1 70.00-24.00				1	1	1			
L2 24.00-10.00				1	1	1			
L3 10.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Fiber (Verizon)	C	No	Yes	Inside Pole	67.00 - 0.00	1	No Ice	0.00	0.48
							1/2" Ice	0.00	0.48
							1" Ice	0.00	0.48
**********									
1 5/8	C	No	Yes	Inside Pole	35.00 - 0.00	10	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	70.00-24.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	135.21
L2	24.00-10.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	152.38
L3	10.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	108.84

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	70.00-24.00	A	1.557	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	135.21
L2	24.00-10.00	A	1.404	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	152.38
L3	10.00-0.00	A	1.242	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	108.84

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

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
CommScope	A	From Face	1.50	0.0000	67.00	No Ice	0.00	0.00	110.00
BSAMNT-SBS-2-3 Mount			0.00			1/2" Ice	0.00	0.00	120.00
(VERIZON - Propose)			0.00			1" Ice	0.00	0.00	130.00
CommScope	B	From Face	1.50	0.0000	67.00	No Ice	0.00	0.00	110.00
BSAMNT-SBS-2-3 Mount			0.00			1/2" Ice	0.00	0.00	120.00
			0.00			1" Ice	0.00	0.00	130.00
CommScope	C	From Face	1.50	0.0000	67.00	No Ice	0.00	0.00	110.00
BSAMNT-SBS-2-3 Mount			0.00			1/2" Ice	0.00	0.00	120.00
			0.00			1" Ice	0.00	0.00	130.00
JAHH-45B-R3B Antenna	A	From Face	3.00	0.0000	67.00	No Ice	11.40	6.71	113.90
w/Mounting Pipe			-1.00			1/2" Ice	11.89	7.66	195.38
			0.00			1" Ice	12.38	8.49	285.02
JAHH-45B-R3B Antenna	B	From Face	3.00	0.0000	67.00	No Ice	11.40	6.71	113.90
w/Mounting Pipe			-1.00			1/2" Ice	11.89	7.66	195.38
			0.00			1" Ice	12.38	8.49	285.02
JAHH-45B-R3B Antenna	C	From Face	3.00	0.0000	67.00	No Ice	11.40	6.71	113.90
w/Mounting Pipe			-1.00			1/2" Ice	11.89	7.66	195.38
			0.00			1" Ice	12.38	8.49	285.02
JAHH-45B-R3B Antenna	A	From Face	3.00	0.0000	67.00	No Ice	11.40	6.71	113.90
w/Mounting Pipe			1.00			1/2" Ice	11.89	7.66	195.38
			0.00			1" Ice	12.38	8.49	285.02
JAHH-45B-R3B Antenna	B	From Face	3.00	0.0000	67.00	No Ice	11.40	6.71	113.90
w/Mounting Pipe			1.00			1/2" Ice	11.89	7.66	195.38
			0.00			1" Ice	12.38	8.49	285.02
JAHH-45B-R3B Antenna	C	From Face	3.00	0.0000	67.00	No Ice	11.40	6.71	113.90
w/Mounting Pipe			1.00			1/2" Ice	11.89	7.66	195.38
			0.00			1" Ice	12.38	8.49	285.02
B2/B66A RRH-BR049 RRH	A	From Face	2.00	0.0000	62.00	No Ice	1.88	1.25	98.00
			0.00			1/2" Ice	2.05	1.39	116.34
			2.00			1" Ice	2.22	1.54	137.47
B2/B66A RRH-BR049 RRH	B	From Face	2.00	0.0000	62.00	No Ice	1.88	1.25	98.00
			0.00			1/2" Ice	2.05	1.39	116.34
			2.00			1" Ice	2.22	1.54	137.47
B2/B66A RRH-BR049 RRH	C	From Face	2.00	0.0000	62.00	No Ice	1.88	1.25	98.00
			0.00			1/2" Ice	2.05	1.39	116.34
			2.00			1" Ice	2.22	1.54	137.47
B5/B13 RRH-BR04C RRH	A	From Face	2.00	0.0000	62.00	No Ice	1.88	1.01	82.00
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B5/B13 RRH-BR04C RRH	B	From Face	2.00	0.0000	62.00	No Ice	1.88	1.01	82.00
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B5/B13 RRH-BR04C RRH	C	From Face	2.00	0.0000	62.00	No Ice	1.88	1.01	82.00
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
CBC78T-DS-43-2X Diplexer	A	From Face	2.00	0.0000	62.00	No Ice	0.56	0.52	21.00
			0.00			1/2" Ice	0.65	0.61	27.39
			-2.00			1" Ice	0.76	0.71	35.46
CBC78T-DS-43-2X Diplexer	B	From Face	2.00	0.0000	62.00	No Ice	0.56	0.52	21.00
			0.00			1/2" Ice	0.65	0.61	27.39
			-2.00			1" Ice	0.76	0.71	35.46
CBC78T-DS-43-2X Diplexer	C	From Face	2.00	0.0000	62.00	No Ice	0.56	0.52	21.00
			0.00			1/2" Ice	0.65	0.61	27.39
			-2.00			1" Ice	0.76	0.71	35.46
Junction Box	A	From Face	2.00	0.0000	62.00	No Ice	3.78	2.51	32.00
			0.00			1/2" Ice	4.03	2.72	63.40
			-2.00			1" Ice	4.29	2.94	98.56

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
**********									
Billboards (Ease Haven 5 CT)	C	None		0.0000	35.00	No Ice	1238.40	78.12	45000.00
						1/2" Ice	1243.04	79.76	50654.87
						1" Ice	1247.68	81.40	56365.93

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
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

Comb. No.	Description
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
Pole	Max. Vert	26	92271.36	0.00	0.00
	Max. H_x	20	68907.89	49207.28	22.21
	Max. H_z	2	68907.89	22.21	49181.64
	Max. M_x	2	1827983.31	22.21	49181.64
	Max. M_z	8	1829392.76	-49207.28	-22.21
	Max. Torsion	5	301.98	-24584.41	42581.44
	Min. Vert	17	51680.92	24584.41	-42581.44
	Min. H_x	8	68907.89	-49207.28	-22.21
	Min. H_z	14	68907.89	-22.21	-49181.64
	Min. M_x	14	-1827864.32	-22.21	-49181.64
	Min. M_z	20	-1829598.85	49207.28	22.21
	Min. Torsion	17	-301.99	24584.41	-42581.44

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	57423.25	0.00	0.00	-48.00	83.14	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	68907.89	-22.21	-49181.64	-1827983.31	1464.61	-262.06
0.9 Dead+1.6 Wind 0 deg - No Ice	51680.92	-22.21	-49181.64	-1820604.43	1430.71	-262.37
1.2 Dead+1.6 Wind 30 deg - No Ice	68907.89	24584.41	-42581.44	-1582407.12	-913466.11	-301.62
0.9 Dead+1.6 Wind 30 deg - No Ice	51680.92	24584.41	-42581.44	-1576018.59	-909812.81	-301.98
1.2 Dead+1.6 Wind 60 deg - No Ice	68907.89	42603.65	-24571.59	-912841.84	-1583606.44	-260.36
0.9 Dead+1.6 Wind 60 deg - No Ice	51680.92	42603.65	-24571.59	-909151.37	-1577251.94	-260.68
1.2 Dead+1.6 Wind 90 deg - No Ice	68907.89	49207.28	22.21	1302.45	-1829392.76	-149.96
0.9 Dead+1.6 Wind 90 deg - No Ice	51680.92	49207.28	22.21	1310.10	-1822046.82	-150.14
1.2 Dead+1.6 Wind 120 deg - No Ice	68907.89	42625.86	24610.05	915081.41	-1584967.50	0.00
0.9 Dead+1.6 Wind 120 deg - No Ice	51680.92	42625.85	24610.05	911408.30	-1578605.49	0.00
1.2 Dead+1.6 Wind 150 deg - No Ice	68907.89	24622.87	42603.65	1583649.38	-915824.34	149.95

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
0.9 Dead+1.6 Wind 150 deg - No Ice	51680.92	24622.87	42603.65	1577283.78	-912158.00	150.14
1.2 Dead+1.6 Wind 180 deg - No Ice	68907.89	22.21	49181.64	1827864.32	-1259.00	260.36
0.9 Dead+1.6 Wind 180 deg - No Ice	51680.92	22.21	49181.64	1820515.93	-1277.79	260.68
1.2 Dead+1.6 Wind 210 deg - No Ice	68907.89	-24584.41	42581.44	1582288.41	913671.72	301.62
0.9 Dead+1.6 Wind 210 deg - No Ice	51680.92	-24584.41	42581.44	1575930.30	909965.73	301.99
1.2 Dead+1.6 Wind 240 deg - No Ice	68907.89	-42603.65	24571.59	912723.27	1583812.29	262.06
0.9 Dead+1.6 Wind 240 deg - No Ice	51680.92	-42603.65	24571.59	909063.18	1577405.04	262.37
1.2 Dead+1.6 Wind 270 deg - No Ice	68907.89	-49207.28	-22.21	-1421.16	1829598.85	151.66
0.9 Dead+1.6 Wind 270 deg - No Ice	51680.92	-49207.28	-22.21	-1398.39	1822200.10	151.84
1.2 Dead+1.6 Wind 300 deg - No Ice	68907.89	-42625.86	-24610.05	-915200.40	1585173.58	0.00
0.9 Dead+1.6 Wind 300 deg - No Ice	51680.92	-42625.85	-24610.05	-911496.80	1578758.76	0.00
1.2 Dead+1.6 Wind 330 deg - No Ice	68907.89	-24622.87	-42603.65	-1583768.51	916030.19	-151.66
0.9 Dead+1.6 Wind 330 deg - No Ice	51680.92	-24622.87	-42603.65	-1577372.38	912311.09	-151.84
1.2 Dead+1.0 Ice+1.0 Temp	92271.36	0.00	0.00	-230.61	399.44	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	92271.36	-3.44	-7759.29	-291623.02	632.30	-46.94
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	92271.36	3878.65	-6718.02	-252478.82	-145209.77	-54.18
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	92271.36	6721.46	-3876.66	-145747.98	-252030.67	-46.90
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	92271.36	7763.26	3.44	-28.94	-291207.82	-27.07
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	92271.36	6724.90	3882.62	145633.00	-252243.75	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	92271.36	3884.61	6721.46	252207.84	-145578.84	27.07
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	92271.36	3.44	7759.29	291138.95	206.12	46.90
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	92271.36	-3878.65	6718.02	251994.76	146048.19	54.18
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	92271.36	-6721.46	3876.66	145263.92	252869.10	46.94
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	92271.36	-7763.26	-3.44	-455.12	292046.26	27.11
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	92271.36	-6724.90	-3882.62	-146117.07	253082.18	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	92271.36	-3884.61	-6721.46	-252691.92	146417.27	-27.11
Dead+Wind 0 deg - Service	57423.25	-4.05	-8980.54	-332957.91	333.25	-47.80
Dead+Wind 30 deg - Service	57423.25	4489.10	-7775.34	-288232.73	-166297.29	-55.17
Dead+Wind 60 deg - Service	57423.25	7779.40	-4486.76	-166289.04	-288345.69	-47.75
Dead+Wind 90 deg - Service	57423.25	8985.22	4.05	198.44	-333109.20	-27.55
Dead+Wind 120 deg - Service	57423.25	7783.45	4493.78	166619.52	-288593.47	0.00
Dead+Wind 150 deg - Service	57423.25	4496.12	7779.40	288381.81	-166726.45	27.55
Dead+Wind 180 deg - Service	57423.25	4.05	8980.54	332859.21	-162.32	47.75
Dead+Wind 210 deg - Service	57423.25	-4489.10	7775.34	288134.04	166468.22	55.17
Dead+Wind 240 deg - Service	57423.25	-7779.40	4486.76	166190.35	288516.63	47.80
Dead+Wind 270 deg - Service	57423.25	-8985.22	-4.05	-297.13	333280.15	27.61

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+Wind 300 deg - Service	57423.25	-7783.45	-4493.78	-166718.21	288764.41	0.00
Dead+Wind 330 deg - Service	57423.25	-4496.12	-7779.40	-288480.51	166897.39	-27.61

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-57423.25	0.00	0.00	57423.25	0.00	0.000%
2	-22.21	-68907.89	-49181.63	22.21	68907.89	49181.64	0.000%
3	-22.21	-51680.92	-49181.63	22.21	51680.92	49181.64	0.000%
4	24584.41	-68907.89	-42581.44	-24584.41	68907.89	42581.44	0.000%
5	24584.41	-51680.92	-42581.44	-24584.41	51680.92	42581.44	0.000%
6	42603.65	-68907.89	-24571.59	-42603.65	68907.89	24571.59	0.000%
7	42603.65	-51680.92	-24571.59	-42603.65	51680.92	24571.59	0.000%
8	49207.27	-68907.89	22.21	-49207.28	68907.89	-22.21	0.000%
9	49207.27	-51680.92	22.21	-49207.28	51680.92	-22.21	0.000%
10	42625.85	-68907.89	24610.05	-42625.86	68907.89	-24610.05	0.000%
11	42625.85	-51680.92	24610.05	-42625.85	51680.92	-24610.05	0.000%
12	24622.87	-68907.89	42603.65	-24622.87	68907.89	-42603.65	0.000%
13	24622.87	-51680.92	42603.65	-24622.87	51680.92	-42603.65	0.000%
14	22.21	-68907.89	49181.63	-22.21	68907.89	-49181.64	0.000%
15	22.21	-51680.92	49181.63	-22.21	51680.92	-49181.64	0.000%
16	-24584.41	-68907.89	42581.44	24584.41	68907.89	-42581.44	0.000%
17	-24584.41	-51680.92	42581.44	24584.41	51680.92	-42581.44	0.000%
18	-42603.65	-68907.89	24571.59	42603.65	68907.89	-24571.59	0.000%
19	-42603.65	-51680.92	24571.59	42603.65	51680.92	-24571.59	0.000%
20	-49207.27	-68907.89	-22.21	49207.28	68907.89	22.21	0.000%
21	-49207.27	-51680.92	-22.21	49207.28	51680.92	22.21	0.000%
22	-42625.85	-68907.89	-24610.05	42625.86	68907.89	24610.05	0.000%
23	-42625.85	-51680.92	-24610.05	42625.85	51680.92	24610.05	0.000%
24	-24622.87	-68907.89	-42603.65	24622.87	68907.89	42603.65	0.000%
25	-24622.87	-51680.92	-42603.65	24622.87	51680.92	42603.65	0.000%
26	0.00	-92271.36	0.00	0.00	92271.36	0.00	0.000%
27	-3.44	-92271.36	-7759.27	3.44	92271.36	7759.29	0.000%
28	3878.64	-92271.36	-6718.01	-3878.65	92271.36	6718.02	0.000%
29	6721.45	-92271.36	-3876.66	-6721.46	92271.36	3876.66	0.000%
30	7763.25	-92271.36	3.44	-7763.26	92271.36	-3.44	0.000%
31	6724.89	-92271.36	3882.62	-6724.90	92271.36	-3882.62	0.000%
32	3884.60	-92271.36	6721.45	-3884.61	92271.36	-6721.46	0.000%
33	3.44	-92271.36	7759.27	-3.44	92271.36	-7759.29	0.000%
34	-3878.64	-92271.36	6718.01	3878.65	92271.36	-6718.02	0.000%
35	-6721.45	-92271.36	3876.66	6721.46	92271.36	-3876.66	0.000%
36	-7763.25	-92271.36	-3.44	7763.26	92271.36	3.44	0.000%
37	-6724.89	-92271.36	-3882.62	6724.90	92271.36	3882.62	0.000%
38	-3884.60	-92271.36	-6721.45	3884.61	92271.36	6721.46	0.000%
39	-4.05	-57423.25	-8980.53	4.05	57423.25	8980.54	0.000%
40	4489.10	-57423.25	-7775.34	-4489.10	57423.25	7775.34	0.000%
41	7779.40	-57423.25	-4486.76	-7779.40	57423.25	4486.76	0.000%
42	8985.22	-57423.25	4.05	-8985.22	57423.25	-4.05	0.000%
43	7783.45	-57423.25	4493.78	-7783.45	57423.25	-4493.78	0.000%
44	4496.12	-57423.25	7779.40	-4496.12	57423.25	-7779.40	0.000%
45	4.05	-57423.25	8980.53	-4.05	57423.25	-8980.54	0.000%
46	-4489.10	-57423.25	7775.34	4489.10	57423.25	-7775.34	0.000%
47	-7779.40	-57423.25	4486.76	7779.40	57423.25	-4486.76	0.000%
48	-8985.22	-57423.25	-4.05	8985.22	57423.25	4.05	0.000%
49	-7783.45	-57423.25	-4493.78	7783.45	57423.25	4493.78	0.000%
50	-4496.12	-57423.25	-7779.40	4496.12	57423.25	7779.40	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00003119
3	Yes	4	0.00000001	0.00001567
4	Yes	4	0.00000001	0.00008441
5	Yes	4	0.00000001	0.00005132
6	Yes	4	0.00000001	0.00008743
7	Yes	4	0.00000001	0.00005348
8	Yes	4	0.00000001	0.00003102
9	Yes	4	0.00000001	0.00001551
10	Yes	4	0.00000001	0.00008635
11	Yes	4	0.00000001	0.00005268
12	Yes	4	0.00000001	0.00008554
13	Yes	4	0.00000001	0.00005210
14	Yes	4	0.00000001	0.00003115
15	Yes	4	0.00000001	0.00001564
16	Yes	4	0.00000001	0.00008765
17	Yes	4	0.00000001	0.00005364
18	Yes	4	0.00000001	0.00008463
19	Yes	4	0.00000001	0.00005148
20	Yes	4	0.00000001	0.00003105
21	Yes	4	0.00000001	0.00001553
22	Yes	4	0.00000001	0.00008641
23	Yes	4	0.00000001	0.00005270
24	Yes	4	0.00000001	0.00008721
25	Yes	4	0.00000001	0.00005328
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00009394
28	Yes	4	0.00000001	0.00009403
29	Yes	4	0.00000001	0.00009390
30	Yes	4	0.00000001	0.00009353
31	Yes	4	0.00000001	0.00009388
32	Yes	4	0.00000001	0.00009387
33	Yes	4	0.00000001	0.00009355
34	Yes	4	0.00000001	0.00009404
35	Yes	4	0.00000001	0.00009428
36	Yes	4	0.00000001	0.00009419
37	Yes	4	0.00000001	0.00009465
38	Yes	4	0.00000001	0.00009454
39	Yes	4	0.00000001	0.00000493
40	Yes	4	0.00000001	0.00000518
41	Yes	4	0.00000001	0.00000519
42	Yes	4	0.00000001	0.00000493
43	Yes	4	0.00000001	0.00000519
44	Yes	4	0.00000001	0.00000519
45	Yes	4	0.00000001	0.00000492
46	Yes	4	0.00000001	0.00000519
47	Yes	4	0.00000001	0.00000519
48	Yes	4	0.00000001	0.00000493
49	Yes	4	0.00000001	0.00000520
50	Yes	4	0.00000001	0.00000520

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	70 - 24	2.7838	49	0.2717	0.0004
L2	24 - 10	0.4029	49	0.1488	0.0000
L3	10 - 0	0.0733	49	0.0666	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
67.00	CommScope BSAMNT-SBS-2-3 Mount	49	2.6007	0.2672	0.0003	90800
62.00	B2/B66A RRH-BR049 RRH	49	2.2974	0.2595	0.0003	56750
35.00	Billboards (Ease Haven 5 CT)	49	0.8349	0.1957	0.0001	12971

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	70 - 24	15.2867	22	1.4914	0.0019
L2	24 - 10	2.2124	22	0.8176	0.0003
L3	10 - 0	0.4025	22	0.3655	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
67.00	CommScope BSAMNT-SBS-2-3 Mount	22	14.2811	1.4669	0.0018	16557
62.00	B2/B66A RRH-BR049 RRH	22	12.6158	1.4248	0.0016	10348
35.00	Billboards (Ease Haven 5 CT)	22	4.5846	1.0747	0.0005	2364

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	70 - 24 (1)	P24x1/2	46.00	0.00	0.0	36.9137	-62319.60	1395340.00	0.045
L2	24 - 10 (2)	P36x1/2	14.00	0.00	0.0	55.7633	-66115.50	2107850.00	0.031
L3	10 - 0 (3)	P42x7/16	10.00	0.00	0.0	57.1254	-68889.90	2028190.00	0.034

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	70 - 24 (1)	P24x1/2	656175.83	869925.00	0.754	0.00	869925.00	0.000
L2	24 - 10 (2)	P36x1/2	1339416.67	1842816.67	0.727	0.00	1842816.67	0.000
L3	10 - 0 (3)	P42x7/16	1830400.00	2125975.00	0.861	0.00	2125975.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	70 - 24 (1)	P24x1/2	48675.60	697669.00	0.070	0.00	1338408.33	0.000
L2	24 - 10 (2)	P36x1/2	48974.00	1053930.00	0.046	0.00	3075166.67	0.000
L3	10 - 0 (3)	P42x7/16	49245.30	1014090.00	0.049	0.00	3476150.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	70 - 24 (1)	0.045	0.754	0.000	0.070	0.000	0.804 ✔	1.000	4.8.2 ✔
L2	24 - 10 (2)	0.031	0.727	0.000	0.046	0.000	0.760 ✔	1.000	4.8.2 ✔
L3	10 - 0 (3)	0.034	0.861	0.000	0.049	0.000	0.897 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	70 - 24	Pole	P24x1/2	1	-62319.60	1395340.00	80.4	Pass
L2	24 - 10	Pole	P36x1/2	2	-66115.50	2107850.00	76.0	Pass
L3	10 - 0	Pole	P42x7/16	3	-68889.90	2028190.00	89.7	Pass
							Summary	
						Pole (L3)	89.7	Pass
						RATING =	**89.7**	**Pass**

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MOUNT
CALCULATIONS

Date: 1/5/2021
Project Name: EAST HAVEN 5 CT
Designed By: JN **Checked By:** MSC

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2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

z=	67	(ft)
z_g=	1200	(ft)
α=	7.0	

K_z= 0.881

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_e K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

K_h=	#DIV/0!	
K_e=	0.9	(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
z=	67	
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	
K_{iz} =	1.07	(from Sec. 2.6.8)

(If Category 1 then K_{zt} =1.0)

Category= **1**

2.6.8 Design Ice Thickness

Max Ice Thickness = t_i = 0.75 in

Importance Factor, I_{ice} = I_{ice}= 1.00 (from Table 2-3)

$t_{iz} = 2.0*t_i*I_{ice}*K_{iz}*(Kzt)^{0.35}$ t_{iz} = 1.61 in

Date: 1/5/2021
Project Name: EAST HAVEN 5 CT
Designed By: JN Checked By: MSC

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2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	70	Gh=	0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh=	1.35	**Gh=**	**1.00**

2.6.9.2 Design Wind Force on Appurtenances

$$F = q_z * Gh * (EPA)_A$$

$$q_z = 0.00256 * K_z * K_{zt} * K_d * V_{max}^2 * I$$

		K_z=	0.881	
		K_{zt}=	1.0	
q_z=	**23.63**	K_d=	0.95	(from Table 2-2)
$q_{z\,(ice)}$=	**5.36**	V_{max}=	105	mph
$q_{z\,(30)}$=	**1.93**	$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph
		I=	1.0	(from Table 2-3)
		I_{wice}=	1.0	(from Table 2-3)

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

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Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		**Aspect Ratio ≤ 2.5**	**Aspect Ratio = 7**	**Aspect Ratio ≥ 25**
		Ca	**Ca**	**Ca**
Flat		1.2	1.4	2.0
Round	**C < 32** (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{-1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.61** **in** | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	**Height**	**Width**	**Depth**	**Flat Area**	**Aspect Ratio**	**Ca**	**Force (lbs)**	**Force (lbs) (w/ Ice)**	**Force (lbs) (30 mph)**
JAHH-45B-R3B Antenna	72.0	18.0	7.0	9.00	4.00	1.27	**269**	**75**	**22**
B2/B66A RRH-BR049 RRH	15.0	15.0	10.0	1.56	1.00	1.20	**44**	**15**	**4**
B5/B13 RRH-BR04C RRH	15.0	15.0	8.1	1.56	1.00	1.20	**44**	**15**	**4**
CBC78T-DS-43-2X Diplexer	9.6	6.9	6.4	0.46	1.39	1.20	**13**	**6**	**1**
Junction Box	28.9	15.7	10.3	3.15	1.84	1.20	**89**	**27**	**7**

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Engineer:
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Project Descr:

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Hudson Design Group LLC

DESCRIPTION: Antenna Pipe Mast

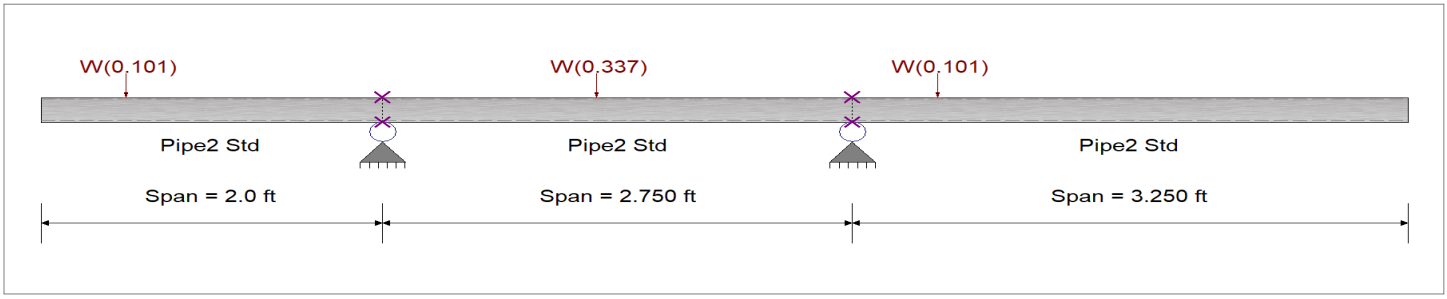
CODE REFERENCES

Calculations per AISC 360-10, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Load Resistance Factor Design
Beam Bracing : Completely Unbraced
Bending Axis : Major Axis Bending

Fy : Steel Yield : 35.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Load(s) for Span Number 1
Point Load : W = 0.1010 k @ 0.50 ft, (Antenna Load)

Load(s) for Span Number 2
Point Load : W = 0.3370 k @ 1.250 ft, (Antenna Load)

Load(s) for Span Number 3
Point Load : W = 0.1010 k @ 0.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.081 : 1	Maximum Shear Stress Ratio =	0.023 : 1
Section used for this span	Pipe2 Std	Section used for this span	Pipe2 Std
Mu : Applied	0.152 k-ft	Vu : Applied	0.2205 k
Mn * Phi : Allowable	1.872 k-ft	Vn * Phi : Allowable	9.450 k
Load Combination	+1.20D+0.50Lr+0.50L+W+1.60H	Load Combination	+1.20D+0.50Lr+0.50L+W+1.60H
Location of maximum on span	2.000 ft	Location of maximum on span	2.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.016 in	Ratio =	2,975	>=360
Max Upward Transient Deflection	-0.008 in	Ratio =	9,897	>=360
Max Downward Total Deflection	0.010 in	Ratio =	4960	>=180
Max Upward Total Deflection	-0.005 in	Ratio =	16495	>=180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	Summary of Shear Values VuMax	Vnx	Phi*Vnx
+1.40D+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.75 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 3.25 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+0.50Lr+1.60L+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.75 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 3.25 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+1.60L+0.50S+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.75 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 3.25 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+1.60Lr+0.50L+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.75 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45

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DESCRIPTION: Antenna Pipe Mast

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	Summary of Shear Values VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.25 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+1.60Lr+0.50W+1.60H													
Dsgn. L = 2.00 ft	1	0.040	0.012		-0.08	0.08	2.08	1.87	1.00	1.00	0.11	10.50	9.45
Dsgn. L = 2.75 ft	2	0.040	0.012	0.06	-0.08	0.08	2.08	1.87	2.09	1.00	0.11	10.50	9.45
Dsgn. L = 3.25 ft	3	0.013	0.005		-0.03	0.03	2.08	1.87	1.00	1.00	0.05	10.50	9.45
+1.20D+0.50L+1.60S+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.75 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 3.25 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+1.60S+0.50W+1.60H													
Dsgn. L = 2.00 ft	1	0.040	0.012		-0.08	0.08	2.08	1.87	1.00	1.00	0.11	10.50	9.45
Dsgn. L = 2.75 ft	2	0.040	0.012	0.06	-0.08	0.08	2.08	1.87	2.09	1.00	0.11	10.50	9.45
Dsgn. L = 3.25 ft	3	0.013	0.005		-0.03	0.03	2.08	1.87	1.00	1.00	0.05	10.50	9.45
+1.20D+0.50Lr+0.50L+W+1.60H													
Dsgn. L = 2.00 ft	1	0.081	0.023		-0.15	0.15	2.08	1.87	1.00	1.00	0.22	10.50	9.45
Dsgn. L = 2.75 ft	2	0.081	0.023	0.12	-0.15	0.15	2.08	1.87	2.09	1.00	0.22	10.50	9.45
Dsgn. L = 3.25 ft	3	0.027	0.011		-0.05	0.05	2.08	1.87	1.00	1.00	0.10	10.50	9.45
+1.20D+0.50L+0.50S+W+1.60H													
Dsgn. L = 2.00 ft	1	0.081	0.023		-0.15	0.15	2.08	1.87	1.00	1.00	0.22	10.50	9.45
Dsgn. L = 2.75 ft	2	0.081	0.023	0.12	-0.15	0.15	2.08	1.87	2.09	1.00	0.22	10.50	9.45
Dsgn. L = 3.25 ft	3	0.027	0.011		-0.05	0.05	2.08	1.87	1.00	1.00	0.10	10.50	9.45
+1.20D+0.50L+0.20S+E+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.75 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 3.25 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+0.90D+W+0.90H													
Dsgn. L = 2.00 ft	1	0.081	0.023		-0.15	0.15	2.08	1.87	1.00	1.00	0.22	10.50	9.45
Dsgn. L = 2.75 ft	2	0.081	0.023	0.12	-0.15	0.15	2.08	1.87	2.09	1.00	0.22	10.50	9.45
Dsgn. L = 3.25 ft	3	0.027	0.011		-0.05	0.05	2.08	1.87	1.00	1.00	0.10	10.50	9.45
+0.90D+E+0.90H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.75 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 3.25 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
W Only	1	0.0161	0.000		0.0000	0.000
W Only	2	0.0046	1.412		0.0000	0.000
	3	0.0000	1.412	W Only	-0.0079	3.250

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Overall MAXimum		0.322	0.217	
Overall MINimum		0.145	0.098	
+D+0.60W+H		0.193	0.130	
+D+0.750Lr+0.750L+0.450W+H		0.145	0.098	
+D+0.750L+0.750S+0.450W+H		0.145	0.098	
+0.60D+0.60W+0.60H		0.193	0.130	
W Only		0.322	0.217	
H Only				

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Hudson Design Group LLC

DESCRIPTION: RRH Pipe Mast

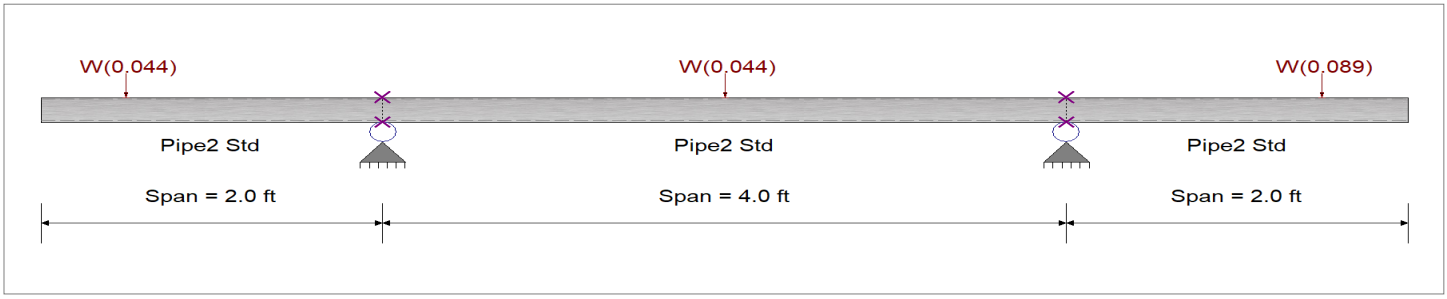
CODE REFERENCES

Calculations per AISC 360-10, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Load Resistance Factor Design
Beam Bracing : Completely Unbraced
Bending Axis : Major Axis Bending

Fy : Steel Yield : 35.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Load(s) for Span Number 1
Point Load : W = 0.0440 k @ 0.50 ft, (Antenna Load)

Load(s) for Span Number 2
Point Load : W = 0.0440 k @ 2.0 ft, (Antenna Load)

Load(s) for Span Number 3
Point Load : W = 0.0890 k @ 1.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.071 : 1	Maximum Shear Stress Ratio =	0.009 : 1
Section used for this span	Pipe2 Std	Section used for this span	Pipe2 Std
Mu : Applied	0.134 k-ft	Vu : Applied	0.0890 k
Mn * Phi : Allowable	1.872 k-ft	Vn * Phi : Allowable	9.450 k
Load Combination	+1.20D+0.50Lr+0.50L+W+1.60H	Load Combination	+1.20D+0.50Lr+0.50L+W+1.60H
Location of maximum on span	4.000ft	Location of maximum on span	4.000 ft
Span # where maximum occurs	Span # 2	Span # where maximum occurs	Span # 2

Maximum Deflection

Max Downward Transient Deflection	0.048 in	Ratio =	999 >=360
Max Upward Transient Deflection	-0.014 in	Ratio =	3,514 >=360
Max Downward Total Deflection	0.029 in	Ratio =	1665 >=240.
Max Upward Total Deflection	-0.008 in	Ratio =	5858 >=240.

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	Summary of Shear Values VuMax	Vnx	Phi*Vnx
+1.40D+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 4.00 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.00 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+0.50Lr+1.60L+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 4.00 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.00 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+1.60L+0.50S+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 4.00 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.00 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+1.60Lr+0.50L+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 4.00 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45

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Engineer:
Project ID:
Project Descr:

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Steel Beam

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Hudson Design Group LLC

DESCRIPTION: RRH Pipe Mast

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	Summary of Shear Values VuMax	Vnx	Phi*Vnx
Dsgn. L = 2.00 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+1.60Lr+0.50W+1.60H													
Dsgn. L = 2.00 ft	1	0.018	0.002		-0.03	0.03	2.08	1.87	1.00	1.00	0.02	10.50	9.45
Dsgn. L = 4.00 ft	2	0.036	0.005	-0.00	-0.07	0.07	2.08	1.87	1.63	1.00	0.04	10.50	9.45
Dsgn. L = 2.00 ft	3	0.036	0.005		-0.07	0.07	2.08	1.87	1.00	1.00	0.04	10.50	9.45
+1.20D+0.50L+1.60S+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 4.00 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.00 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+1.20D+1.60S+0.50W+1.60H													
Dsgn. L = 2.00 ft	1	0.018	0.002		-0.03	0.03	2.08	1.87	1.00	1.00	0.02	10.50	9.45
Dsgn. L = 4.00 ft	2	0.036	0.005	-0.00	-0.07	0.07	2.08	1.87	1.63	1.00	0.04	10.50	9.45
Dsgn. L = 2.00 ft	3	0.036	0.005		-0.07	0.07	2.08	1.87	1.00	1.00	0.04	10.50	9.45
+1.20D+0.50Lr+0.50L+W+1.60H													
Dsgn. L = 2.00 ft	1	0.035	0.005		-0.07	0.07	2.08	1.87	1.00	1.00	0.04	10.50	9.45
Dsgn. L = 4.00 ft	2	0.071	0.009	-0.00	-0.13	0.13	2.08	1.87	1.63	1.00	0.09	10.50	9.45
Dsgn. L = 2.00 ft	3	0.071	0.009		-0.13	0.13	2.08	1.87	1.00	1.00	0.09	10.50	9.45
+1.20D+0.50L+0.50S+W+1.60H													
Dsgn. L = 2.00 ft	1	0.035	0.005		-0.07	0.07	2.08	1.87	1.00	1.00	0.04	10.50	9.45
Dsgn. L = 4.00 ft	2	0.071	0.009	-0.00	-0.13	0.13	2.08	1.87	1.63	1.00	0.09	10.50	9.45
Dsgn. L = 2.00 ft	3	0.071	0.009		-0.13	0.13	2.08	1.87	1.00	1.00	0.09	10.50	9.45
+1.20D+0.50L+0.20S+E+1.60H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 4.00 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.00 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
+0.90D+W+0.90H													
Dsgn. L = 2.00 ft	1	0.035	0.005		-0.07	0.07	2.08	1.87	1.00	1.00	0.04	10.50	9.45
Dsgn. L = 4.00 ft	2	0.071	0.009	-0.00	-0.13	0.13	2.08	1.87	1.63	1.00	0.09	10.50	9.45
Dsgn. L = 2.00 ft	3	0.071	0.009		-0.13	0.13	2.08	1.87	1.00	1.00	0.09	10.50	9.45
+0.90D+E+0.90H													
Dsgn. L = 2.00 ft	1		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 4.00 ft	2		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45
Dsgn. L = 2.00 ft	3		0.000				2.08	1.87	1.00	1.00	-0.00	10.50	9.45

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
W Only	1	0.0324	0.000		0.0000	0.000
	2	0.0000	0.000	W Only	-0.0137	2.213
W Only	3	0.0480	2.000		0.0000	2.213

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Overall MAXimum		0.049	0.128	
Overall MINimum		0.022	0.058	
+D+0.60W+H		0.029	0.077	
+D+0.750Lr+0.750L+0.450W+H		0.022	0.058	
+D+0.750L+0.750S+0.450W+H		0.022	0.058	
+0.60D+0.60W+0.60H		0.029	0.077	
W Only		0.049	0.128	
H Only				

ATTACHMENT 5

Photographic Documentation & Simulations

EAST HAVEN 5 CT
115 PEAT MEADOW ROAD
NEW HAVEN, CT 06513

Prepared in January 2021 by:
All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06385

Prepared for Verizon Wireless

ALL-POINTS
TECHNOLOGY CORPORATION

VISUAL ASSESSMENT & PHOTO-SIMULATIONS

Cellco Partnership, d/b/a Verizon Wireless is seeking approval for the installation of a wireless communications facility (the "Facility") at 115 Peat Meadow Road in New Haven, Connecticut. At the request of Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") completed this visibility assessment and prepared computer-generated photo-simulations depicting the Facility.

Project Undertaking

The Facility would be located on a proposed extension to an existing billboard support structure. A 16" diameter mast pipe would be installed on the existing monopole support. The billboard currently extends to a height of ±45' 6" above ground level ("AGL"); the proposed mast would extend to a height of ±70' AGL. Verizon Wireless would install six (6) panel antennas at the top of the mast, at an approximate centerline height of 67' above ground level ("AGL"). Six (6) remote radio heads ("RRHs") would be mounted below the antennas. A ±8' 8" by ±19' 6" wood fence-enclosed compound would be located at the base of the billboard.

Please refer to the Site Drawings prepared by Hudson Design Group, LLC, Rev. 4, dated January 5, 2021, and provided under separate cover, for details regarding the proposed installation.

Project Vicinity

The existing billboard is located north of Frontage Road, Interstate 95 ("I-95") and U.S. Route 1 in the southeast corner of a property developed as a car dealership. Industrial development and a City of New Haven park are located to the north. Commercial development, consisting primarily of big box retail businesses and car dealerships, extends along both the north and south sides of the I-95 corridor to the east. Dense residential development is to the west. The municipal boundary between the City of New Haven and the Town of East Haven is immediately to the east.

Field Reconnaissance

APT completed field reconnaissance in the vicinity of the Facility to record existing conditions, inventory visible and non-visible locations, and provide photographic documentation from publicly accessible areas. The field reconnaissance was completed on October 23, 2020.

Photographic Documentation and Simulations

During the field reconnaissance, APT obtained photographs from representative locations where the billboard is currently visible. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") technology. Photographs were taken with a Canon EOS 6D digital camera body[1] and Canon EF 24 to 105 millimeter ("mm") zoom lens. APT used a standard focal length of 50mm to present a consistent field of view.

Photographic simulations were generated to portray scaled renderings of the proposed Facility from six (6) locations presented herein where the Facility may be recognizable. Using field data, Site plan information and 3-dimensional (3D) modeling software, spatially referenced models of the Facility were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo-simulations were then created using a combination of renderings generated in the 3D model and photo-rendering software programs, which were ultimately composited and merged with the existing conditions photographs (using Photoshop image editing software). The scale of the subjects in the photograph (the billboard) and the corresponding simulation (depicting the Facility components) is proportional to their surroundings.

For presentation purposes in this report, the photographs were produced in an approximate 7-inch by 10.5-inch format. When reproducing the images in this format size, we believe it is important to present the largest view while providing key contextual landscape elements (existing developments, street signs, utility poles, etc.) so that the viewer can determine the proportionate scale of each object within the scene. Photographs presented in the attachment at the end of this report include documentation of existing conditions and photo-simulations of the modified Facility. The photo-simulations are intended to provide the reader with a general understanding of the different view characteristics associated with the Facility from various locations. Photographs were taken from publicly-accessible areas and unobstructed view lines were chosen wherever possible.

The table on the following page summarizes the photographs and simulations presented in the attachment to this report, and includes a description of each location, view orientation, and distance from where the photo was taken relative to the proposed Facility. The photo locations are depicted on the photolog provided as an attachment to this report.

[1] The Canon EOS 6D is a full-framed camera which includes a lens receptor of the same size as the film used in 35mm cameras. As such, the images produced are comparable to those taken with a conventional 35mm camera.

Table 1 – Photo Locations

Photo	Location	Orientation	Distance to Site
1	Carmax Entrance at Frontage Road	Northwest	± 0.23 Mile
2	Access Road behind Host Property	Southwest	± 491 Feet
3	Host Property	Northwest	± 0.38 Mile
4	U.S. Route 1	Northeast	± 0.14 Mile
5	U.S. Route 1	Northwest	± 0.11 Mile
6	U.S. Route 1	Northwest	± 0.26 Mile

Conclusions

As presented on the attached photo-simulations, views of the proposed Facility would not significantly change the characteristics of the area. The visibility of the existing billboard occurs primarily along the transportation corridor travel ways and within the adjoining commercial/industrial properties. Where visible, the monopole structure extension and proposed antennas will be seen among other existing infrastructure and development. It is anticipated that visibility to the west within most of the residential areas will be obscured by intervening vegetation, including mature trees.

Limitations

The photo-simulations provide a representation of the Facility under similar settings as those encountered during the field review and reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the field review included variable winds and cloudy skies.

ATTACHMENTS

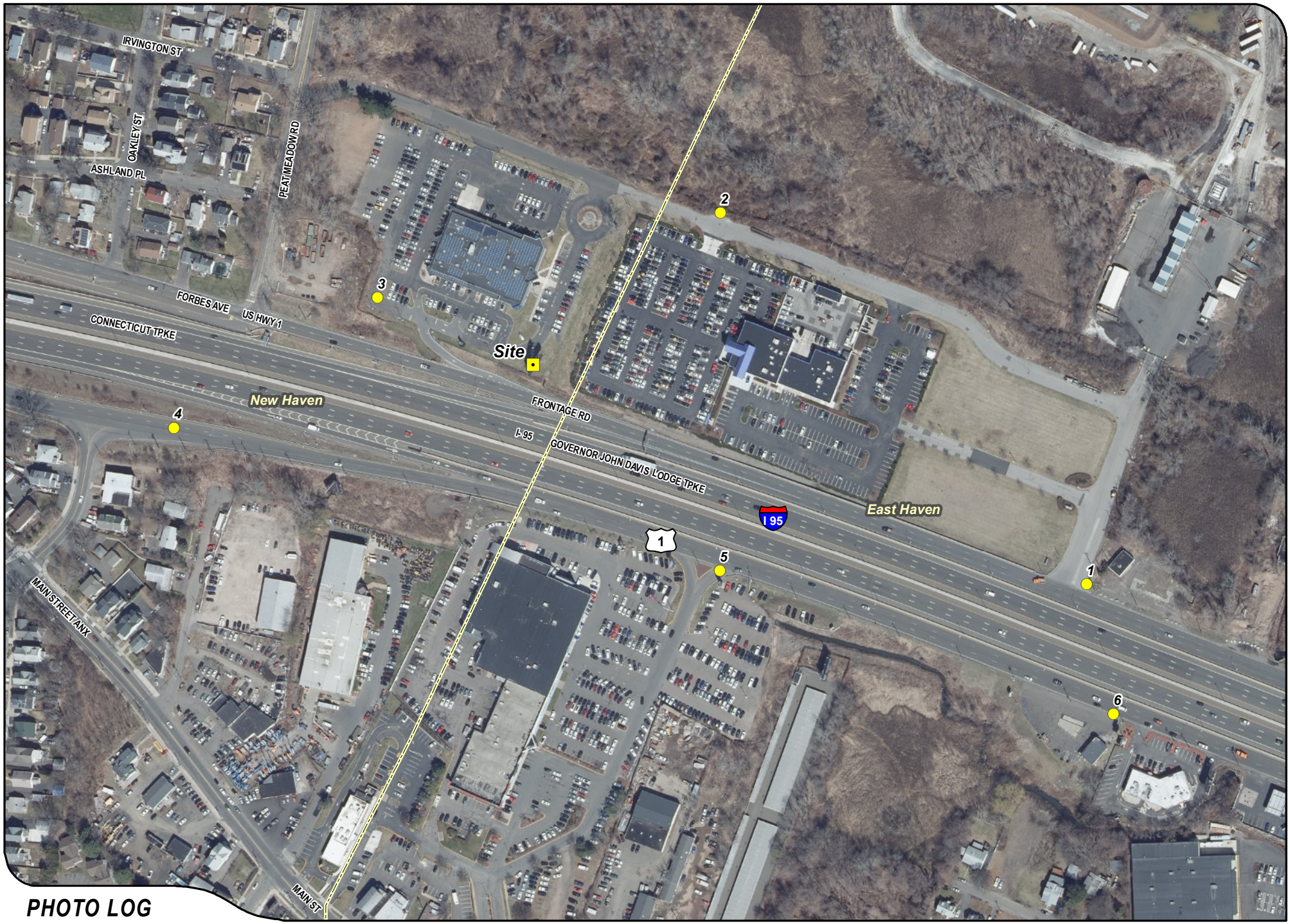

PHOTO LOG

Legend

Site · Visible · Municipal Boundary

N W E S

1 inch = 250 feet

250 125 0 250 Feet

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 10/23/2020

EXISTING

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
1	**CARMAX ENTRANCE AT FRONTAGE ROAD**	**+/- 0.23 MILE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
1	**CARMAX ENTRANCE AT FRONTAGE ROAD**	**+/- 0.23 MILE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 10/23/2020

EXISTING

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
2	**ACCESS ROAD BEHIND HOST PROPERTY**	**+/- 491 FEET**	**SOUTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
2	**ACCESS ROAD BEHIND HOST PROPERTY**	**+/- 491 FEET**	**SOUTHWEST**

PHOTOGRAPHED ON 10/23/2020

EXISTING

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
3	**HOST PROPERTY**	**+/- 491 FEET**	**SOUTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
3	**HOST PROPERTY**	**+/- 491 FEET**	**SOUTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 10/23/2020

EXISTING

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
4	**U.S. ROUTE 1**	**+/- 0.14 MILE**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
4	**U.S. ROUTE 1**	**+/- 0.14 MILE**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 10/23/2020

EXISTING

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
5	**U.S. ROUTE 1**	**+/- 0.11 MILE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
5	**U.S. ROUTE 1**	**+/- 0.11 MILE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 10/23/2020

EXISTING

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
6	**U.S. ROUTE 1**	**+/- 0.26 MILE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	DISTANCE TO SITE	ORIENTATION
6	**U.S. ROUTE 1**	**+/- 0.26 MILE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

ATTACHMENT 6

Radio Frequency - Electromagnetic Energy (RF-EME) Jurisdictional Report

Site No. 469676
East Haven 5 CT
115 Peat Meadow Road
New Haven, Connecticut 06513
New Haven County
41° 17' 18.84" N, -72° 53' 9.07" W NAD83

EBI Project No. 6220005942
December 21, 2020

Prepared for:

Verizon Wireless
400 Friberg Parkway
Westborough, MA 01581

Prepared by:

EBI Consulting
environmental | engineering | due diligence

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APPENDICES

EXECUTIVE SUMMARY

Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Verizon Wireless ("Verizon") to conduct radio frequency electromagnetic (RF-EME) modeling for Verizon Site 469676 located at 115 Peat Meadow Road in New Haven, Connecticut to determine RF-EME exposure levels from proposed Verizon communications equipment at this site. As described in greater detail in Appendix C of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for the general public and for occupational activities. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

Statement of Compliance

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

As presented in the sections below, based on worst-case predictive modeling, there are no modeled areas on any accessible catwalk and ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site. Additionally, there are areas where workers who may be elevated above the catwalk and ground may be exposed to power densities greater than the occupational limits. Therefore, workers should be informed about the presence and locations of antennas and their associated fields.

At the nearest walking/working surfaces to the Verizon antennas, the maximum power density generated by the Verizon antennas is approximately **1.05** percent of the FCC's general public limit (**0.21** percent of the FCC's occupational limit).

The composite exposure level from all carriers on this site is approximately **1.05** percent of the FCC's general public limit (**0.21** percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Verizon should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with Verizon's standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Verizon since only Verizon has the ability to lockout/tagout the facility, or to authorize others to do so.

1.0 INTRODUCTION

Radio frequency waves are electromagnetic waves from the portion of the electromagnetic spectrum at frequencies lower than visible light and microwaves. The wavelengths of radio waves range from thousands of meters to around 30 centimeters. These wavelengths correspond to frequencies as low as 3 cycles per second (or hertz [Hz]) to as high as one gigahertz (one billion cycles per second).

Personal Communication (PCS) facilities used by Verizon in this area will potentially operate within a frequency range of 700 to 5000 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed a distance above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of in areas in the immediate vicinity of the antennas.

MPE limits do not represent levels where a health risk exists, since they are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size or health.

2.0 SITE DESCRIPTION

This project site includes the following proposed wireless telecommunication antennas on a sign located at 115 Peat Meadow Road in New Haven, Connecticut.

Ant #	Operator	Antenna Make	Antenna Model	Frequency (MHz)	Azimuth (deg.)	Mechanical Downtilt (deg.)	Horizontal Beamwidth (Degrees)	Aperture (feet)	Total Power Input (Watts)	Antenna Gain (dBd)	Total ERP (Watts)	Total EIRP (Watts)
1	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 700	700	275	0	46	6.0	80	14.21	1879.71	3082.72
1	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 850	850	275	0	42	6.0	80	14.76	2133.49	3498.92
1	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 1900	1900	275	0	43	6.0	80	17.71	4208.14	6901.35
1	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 2100	2100	275	0	42	6.0	80	18.12	4624.77	7584.62
2	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 700	700	275	0	46	6.0	80	14.21	1879.71	3082.72
2	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 850	850	275	0	42	6.0	80	14.76	2133.49	3498.92
2	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 1900	1900	275	0	43	6.0	80	17.71	4208.14	6901.35
2	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 2100	2100	275	0	42	6.0	80	18.12	4624.77	7584.62
3	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 700	700	95	0	46	6.0	80	14.21	1879.71	3082.72
3	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 850	850	95	0	42	6.0	80	14.76	2133.49	3498.92
3	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 1900	1900	95	0	43	6.0	80	17.71	4208.14	6901.35
3	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 2100	2100	95	0	42	6.0	80	18.12	4624.77	7584.62
4	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 700	700	95	0	46	6.0	80	14.21	1879.71	3082.72
4	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 850	850	95	0	42	6.0	80	14.76	2133.49	3498.92
4	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 1900	1900	95	0	43	6.0	80	17.71	4208.14	6901.35
4	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 2100	2100	95	0	42	6.0	80	18.12	4624.77	7584.62

5	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 700	700	185	0	46	6.0	80	14.21	1879.71	3082.72
5	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 850	850	185	0	42	6.0	80	14.76	2133.49	3498.92
5	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 1900	1900	185	0	43	6.0	80	17.71	4208.14	6901.35
5	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 2100	2100	185	0	42	6.0	80	18.12	4624.77	7584.62
6	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 700	700	185	0	46	6.0	80	14.21	1879.71	3082.72
6	Verizon	COMMSCOPE	JAHH-45B-R3B 02DT 850	850	185	0	42	6.0	80	14.76	2133.49	3498.92
6	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 1900	1900	185	0	43	6.0	80	17.71	4208.14	6901.35
6	Verizon	COMMSCOPE	JAHH-45B-R3B 00DT 2100	2100	185	0	42	6.0	80	18.12	4624.77	7584.62

• Note there are 2 Verizon antennas per sector at this site. For clarity, the different frequencies for each antenna are entered on separate lines.

Ant #	NAME	X	Y	Antenna Radiation Centerline	Z-Height Catwalk	Z-Height Ground
1	Verizon	0.4	1.4	67.0	26.0	67.0
2	Verizon	0.2	0.3	67.0	26.0	67.0
3	Verizon	4.6	0.1	67.0	26.0	67.0
4	Verizon	4.3	1.8	67.0	26.0	67.0
5	Verizon	2.6	3.9	67.0	26.0	67.0
6	Verizon	1.0	3.7	67.0	26.0	67.0

• Note the Z-Height represents the distance from the antenna centerline.

The above tables contain an inventory of proposed Verizon Antennas and other carrier antennas if sufficient information was available to model them. Note that EBI uses an assumed set of antenna specifications and powers for unknown and other carrier antennas for modeling purposes. The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general population/uncontrolled exposure limits for members of the general public that may be exposed to antenna fields. While access to this site is considered uncontrolled, the analysis has considered exposures with respect to both controlled and uncontrolled limits as an untrained worker may access adjacent rooftop locations. Additional information regarding controlled/uncontrolled exposure limits is provided in Appendix C. Appendix B presents a site safety plan that provides a plan view of the sign with antenna locations.

3.0 WORST-CASE PREDICTIVE MODELING

EBI has performed theoretical MPE modeling using RoofMaster™ software to estimate the worst-case power density at the site's nearby broadcast levels resulting from operation of the antennas. RoofMaster™ is a widely-used predictive modeling program that has been developed by Waterford Consultants to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications Commission (FCC) Office of Engineering & Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

For this report, EBI utilized antenna and power data provided by Verizon and compared the resultant worst-case MPE levels to the FCC's occupational/controlled exposure limits outlined in OET Bulletin 65. The assumptions used in the modeling are based upon information provided by Verizon and information gathered from other sources. The parameters used for modeling are summarized in the Site Description antenna inventory table in Section 2.0.

There are no other wireless carriers with equipment installed at this site.

Based on worst-case predictive modeling, there are no modeled areas on any accessible catwalk and ground-level walking/working surface related to the proposed Verizon antennas that exceed the FCC's occupational or general public exposure limits at this site. At the nearest walking/working surfaces to the Verizon antennas, the maximum power density generated by the Verizon antennas is approximately 1.05 percent of the FCC's general public limit (0.21 percent of the FCC's occupational limit). The composite exposure level from all carriers on this site is approximately 1.05 percent of the FCC's general public limit (0.21 percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

The Site Safety Plan also presents areas where Verizon Wireless antennas contribute greater than 5% of the applicable MPE limit for a site. A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

The inputs used in the modeling are summarized in the Site Description antenna inventory table in Section 2.0. A graphical representation of the RoofMaster™ modeling results is presented in Appendix B. Microwave dish antennas are designed for point-to-point operations at the elevations of the installed equipment rather than ground level coverage. The maximum power density generated by all carrier antennas, including microwaves and panel antennas, is included in the modeling results presented within this report.

4.0 MITIGATION/SITE CONTROL OPTIONS

EBI's modeling indicates that there are no areas in front of the Verizon antennas that exceed the FCC standards for occupational or general public exposure. All exposures above the FCC's safe limits require that individuals be elevated above the the catwalk and ground. In order to alert people accessing the sign, a Guidelines sign and an NOC Information sign are recommended for installation at the access ladder.

There are no barriers recommended on this site.

These protocols and recommended control measures have been summarized and included with a graphic representation of the antennas and associated signage and control areas in a RF-EME Site Safety Plan, which is included as Appendix B. Individuals and workers accessing the sign should be provided with a copy of the attached Site Safety Plan, made aware of the posted signage, and signify their understanding of the Site Safety Plan.

To reduce the risk of exposure, EBI recommends that access to areas associated with the active antenna installation be restricted and secured where possible.

Implementation of the signage recommended in the Site Safety Plan and in this report will bring this site into compliance with the FCC's rules and regulations.

5.0 SUMMARY AND CONCLUSIONS

EBI has prepared a Radiofrequency – Electromagnetic Energy (RF-EME) Compliance Report for telecommunications equipment installed by Verizon Site Number 469676 located at 115 Peat Meadow Road in New Haven, Connecticut to determine worst-case predicted RF-EME exposure levels from wireless communications equipment installed at this site. This report summarizes the results of RF-EME modeling in relation to relevant Federal Communications Commission (FCC) RF-EME compliance standards for limiting human exposure to RF-EME fields.

As presented in the sections above, based on the FCC criteria, there are no modeled areas on any accessible catwalk and ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site.

Workers should be informed about the presence and locations of antennas and their associated fields. Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Verizon should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with Verizon's standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Verizon since only Verizon has the ability to lockout/tagout the facility, or to authorize others to do so.

6.0 LIMITATIONS

This report was prepared for the use of Verizon Wireless. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

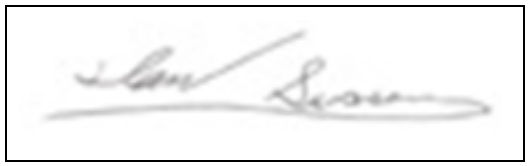
Appendix A

Certifications

Preparer Certification

I, Ian Swanson, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified "occupational" under the FCC regulations.
- I am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.



Reviewed and Approved by:

sealed 21dec2020 mike@h2dc.com
H2DC PLLC CT CoA#: PEC.0001714

Michael McGuire
Electrical Engineer
mike@h2dc.com

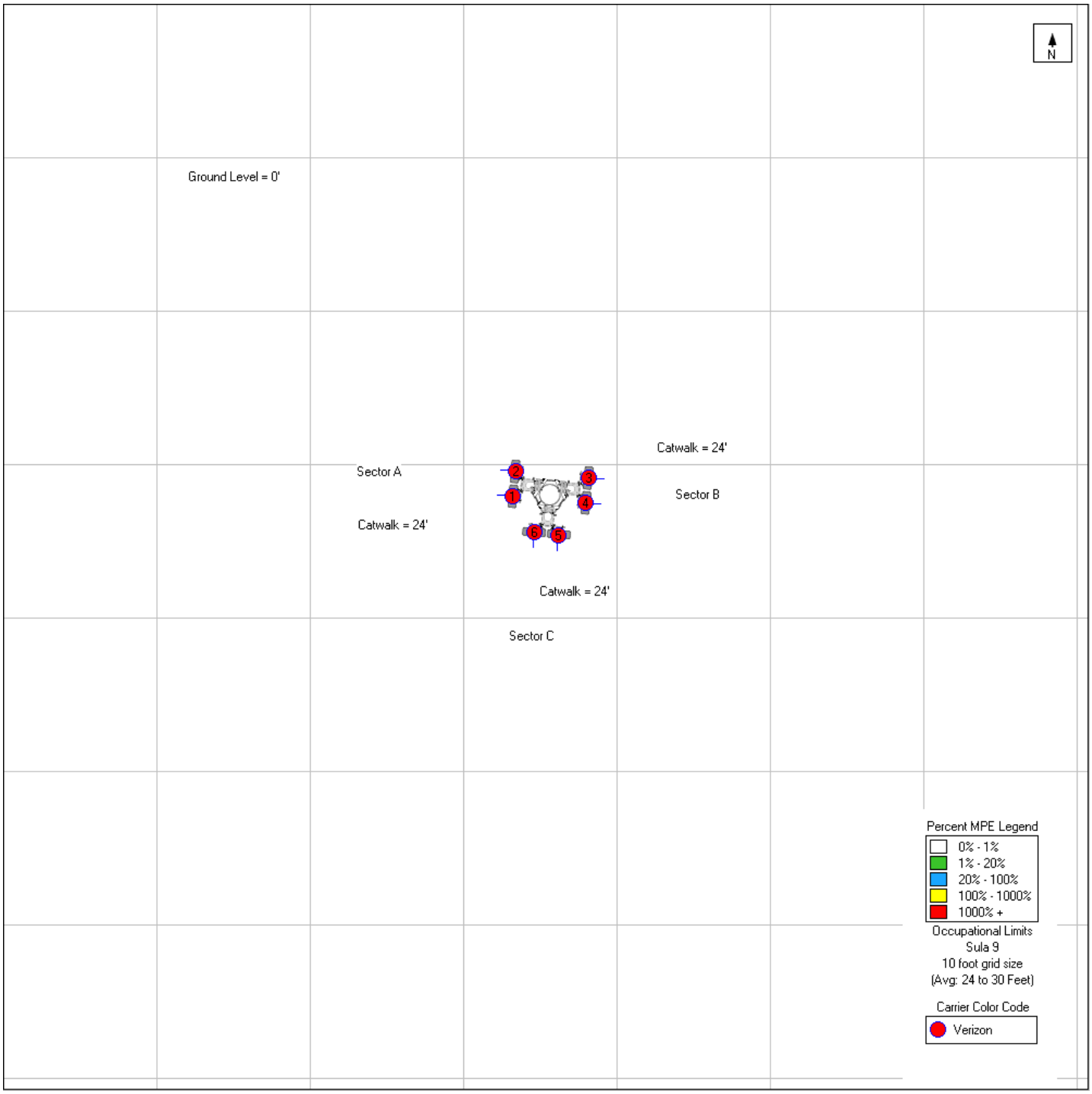
Note that EBI's scope of work is limited to an evaluation of the Radio Frequency – Electromagnetic Energy (RF-EME) field generated by the antennas and broadcast equipment noted in this report. The engineering and design of the building and related structures, as well as the impact of the antennas and broadcast equipment on the structural integrity of the building, are specifically excluded from EBI's scope of work.

Appendix B

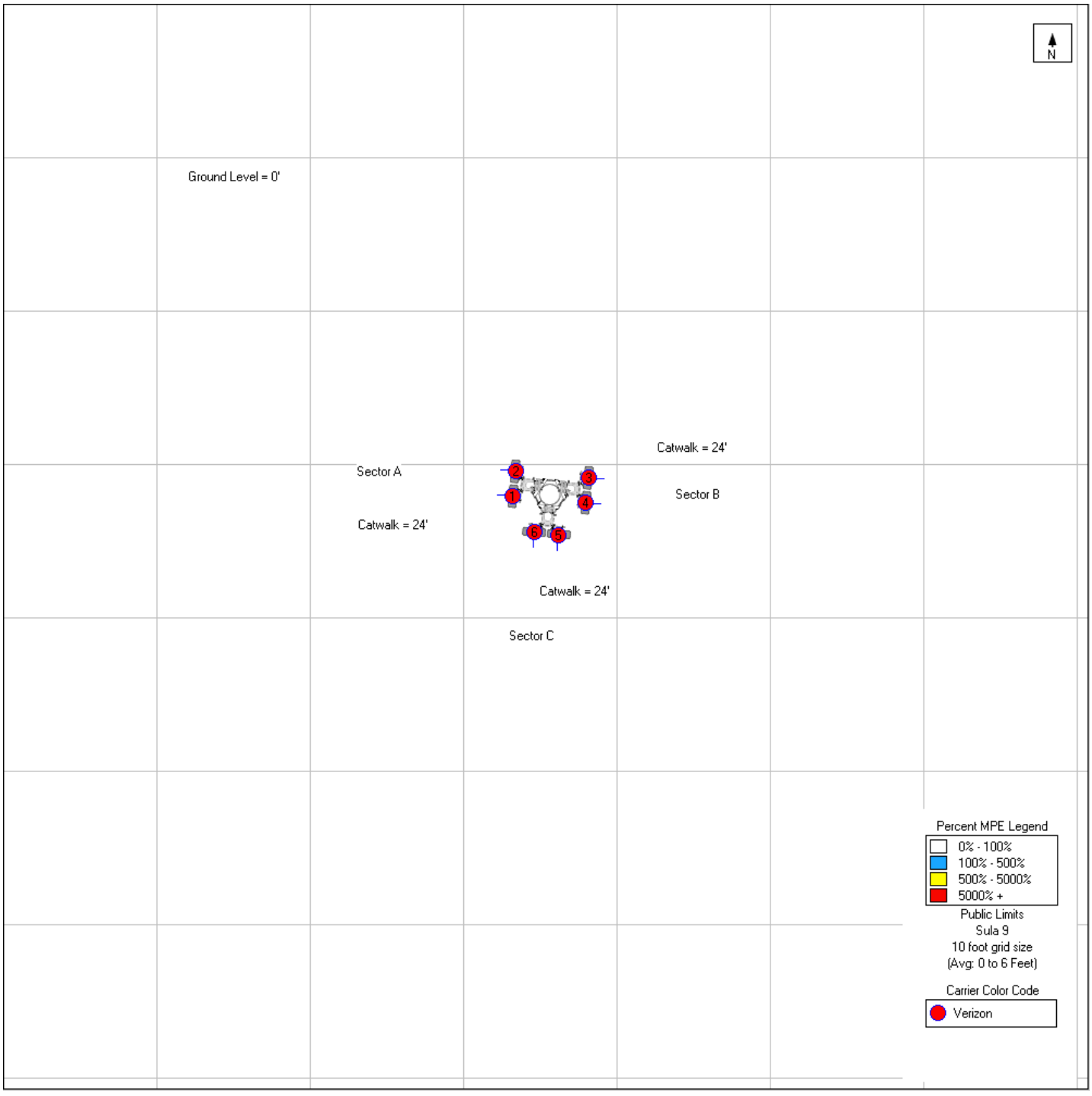
Radio Frequency Electromagnetic Energy

Safety Information and Signage Plans

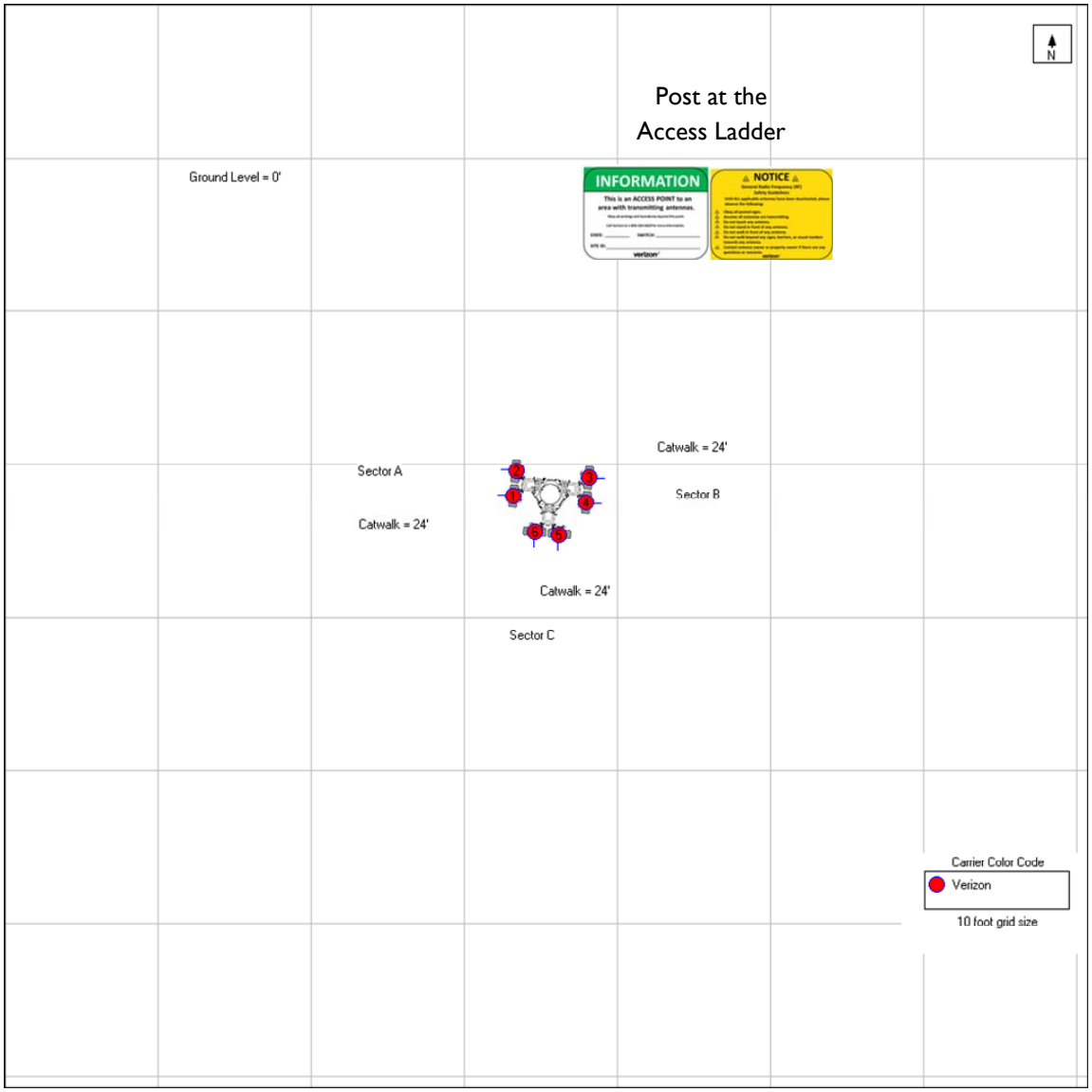
Catwalk Level Simulation



Ground Level Simulation



Verizon Signage Plan



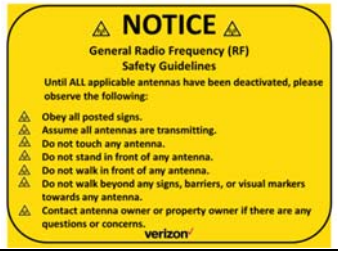
Sign	Posting Instructions	Required Signage / Mitigation
	Securely post at the access ladder in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.	1 at the access ladder
	Securely post at the access ladder in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.	1 at the access ladder
	Not Required.	N/A
	Not Required.	N/A

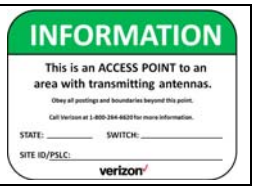
	Not Required.	N/A

RF Signage and Safety Information

RF Signage

Areas or portions of any transmitter site may be susceptible to high power densities that could cause personnel exposures in excess of the FCC guidelines. These areas must be demarcated by conspicuously posted signage that identifies the potential exposure. Signage must be viewable regardless of the viewer's position. Signs must be legible and readily viewable and readable at a minimum distance of five feet (1.52 meters) from the boundary (and as necessary on approach to this boundary) at which the applicable limits are exceeded, and that controls or indicators be placed at compliance boundaries. The minimum readable letter height at 5 feet from the signage is 0.20 inches for the Message and 0.44 inches for the Signal.

GUIDELINES	NOTICE	CAUTION	WARNING
This sign will inform anyone of the basic precautions to follow when entering an access point to an area with transmitting radiofrequency equipment.	This sign indicates that RF emissions may exceed the FCC General Population MPE limit.	This sign indicates that RF emissions may exceed the FCC Occupational MPE limit.	This sign indicates that RF emissions may exceed at least 10x the FCC Occupational MPE limit.
			

NOC INFORMATION	
Information signs are used as a means to provide contact information for any questions or concerns. They will include specific cell site identification information and the Verizon Wireless Network Operations Center phone number.	

Physical Barriers

Physical barriers are control measures that require awareness and participation of personnel. Physical barriers are employed as an additional administration control to complement RF signage and physically demarcate an area in which RF exposure levels may exceed the FCC General Population limit. **Example**: chain-connected stanchions

Indicative Markers

Indicative markers are visible control measures that require awareness and participation of personnel, as they cannot physically prevent someone from entering an area of potential concern. Indicative markers are employed as an additional administration control to complement RF signage and visually demarcate an area in which RF exposure levels may exceed the FCC General Population limit. **Example**: paint stripes

Occupational Safety and Health Administration (OSHA) Requirements

A formal adopter of FCC Standards, OSHA stipulates that those in the Occupational classification must complete training in the following: RF Safety, RF Awareness, and Utilization of Personal Protective Equipment. OSHA also provides options for Hazard Prevention and Control:

Hazard Prevention	Control
• Utilization of good equipment • Enact control of hazard areas • Limit exposures • Employ medical surveillance and accident response	• Employ Lockout/Tag out • Utilize personal alarms & protective clothing • Prevent access to hazardous locations • Develop or operate an administrative control program

Appendix C

Federal Communications

Commission (FCC) Requirements

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/ controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general public/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

General public/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

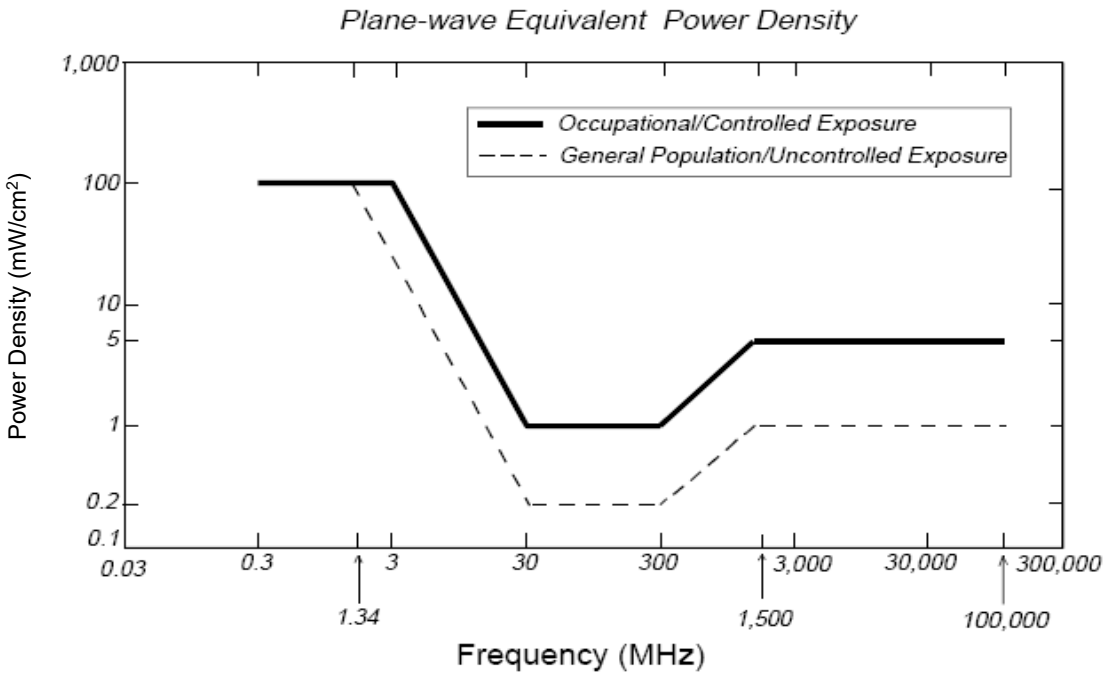
Table 1 and Figure 1 (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm^2). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm^2) and an uncontrolled MPE of 1 mW/cm^2 for equipment operating in the 1900 MHz frequency range. For the Verizon equipment operating at 700 MHz or 850 MHz, the FCC's occupational MPE is 2.83 mW/cm^2 and an uncontrolled MPE of 0.57 mW/cm^2. For the Verizon equipment operating at 1900 MHz, the FCC's occupational MPE is 5.0 mW/cm^2 and an uncontrolled MPE limit of 1.0 mW/cm^2. These limits are considered protective of these populations.

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)
* Plane-wave equivalent power density

Figure 1. *FCC Limits for Maximum Permissible Exposure (MPE)*



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Microwave (Point-to-Point)	5,000 - 80,000 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Broadband Radio (BRS)	2,600 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Wireless Communication (WCS)	2,300 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Advanced Wireless (AWS)	2,100 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Cellular Telephone	870 MHz	2.90 mW/cm^2	0.58 mW/cm^2
Specialized Mobile Radio (SMR)	855 MHz	2.85 mW/cm^2	0.57 mW/cm^2
Long Term Evolution (LTE)	700 MHz	2.33 mW/cm^2	0.47 mW/cm^2
Most Restrictive Frequency Range	30-300 MHz	1.00 mW/cm^2	0.20 mW/cm^2

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication (PCS) facilities used by Verizon in this area will potentially operate within a frequency range of 700 to 2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

FCC Compliance Requirement

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

ATTACHMENT 7

```
*****************************************************
                     *            Federal Airways & Airspace
*
                     *         Summary Report: New Construction
*
                     *                 Antenna Structure
*

*****************************************************

                     Airspace User: Not Identified

                     File: EASTHAVEN5CT

                     Location:  New Haven, CT

                     Latitude:  41°-17'-18.81"         Longitude:
72°-53'-8.98"

                     SITE ELEVATION AMSL.....18 ft.
                     STRUCTURE HEIGHT.........70 ft.
                     OVERALL HEIGHT AMSL.....88 ft.

     NOTICE CRITERIA
       FAR 77.9(a): NNR (DNE 200 ft AGL)
       FAR 77.9(b): NR  (Exceeds Notice Slope, Maximum: 75 ft.)
       FAR 77.9(c): NNR (Not a Traverse Way)
       FAR 77.9:    NR  Exceeds HVN Rwy 20, TERPS analysis
required.
       FAR 77.9:    NNR (No Expected TERPS® impact BDR)
       FAR 77.9(d): NNR (Off Airport Construction)

       NR  = Notice Required
       NNR = Notice Not Required
       PNR = Possible Notice Required (depends upon actual IFR
procedure)
             For new construction review Air Navigation
Facilities at bottom
             of this report.

       Notice to the FAA is required because height exceeds
Notice Slope criteria.
       Notice is required. Height exceeds FAA IFR straight-in
screening criteria.
       The maximum height to avoid notice is: 75 ft AMSL.

     OBSTRUCTION STANDARDS
       FAR 77.17(a)(1): DNE 499 ft AGL
       FAR 77.17(a)(2): DNE - Airport Surface
       FAR 77.19(a):    DNE - Horizontal Surface
       FAR 77.19(b):    DNE - Conical Surface
```

FAR 77.19(c): DNE - Primary Surface
FAR 77.19(d): DNE - Approach Surface
FAR 77.19(e): DNE - Approach Transitional Surface
FAR 77.19(e): DNE - Abeam Transitional Surface

VFR TRAFFIC PATTERN AIRSPACE FOR: HVN: TWEED-NEW HAVEN
Type: A RD: 6263.607 RE: 12.6
FAR 77.17(a)(1): DNE
FAR 77.17(a)(2): DNE - Height No Greater Than 200 feet AGL.
VFR Horizontal Surface: DNE
VFR Conical Surface: DNE
VFR Primary Surface: DNE
VFR Approach Surface: DNE
VFR Transitional Surface: DNE

The structure is within VFR - Traffic Pattern Airspace Climb/Descent Area.
Structures exceeding the greater of 350' AAE, 77.17(a)(2), or VFR horizontal
and conical surfaces will receive a hazard determination from the FAA.
Maximum AMSL of Climb/Descent Area is 363 feet.

VFR TRAFFIC PATTERN AIRSPACE FOR: BDR: IGOR I SIKORSKY MEMORIAL
Type: A RD: 78218.16 RE: 6.5
FAR 77.17(a)(1): DNE
FAR 77.17(a)(2): DNE - Greater Than 5.99 NM.
VFR Horizontal Surface: DNE
VFR Conical Surface: DNE
VFR Primary Surface: DNE
VFR Approach Surface: DNE
VFR Transitional Surface: DNE

TERPS DEPARTURE PROCEDURE (FAA Order 8260.3, Volume 4)
FAR 77.17(a)(3) Departure Surface Criteria (40:1)
DNE Departure Surface

MINIMUM OBSTACLE CLEARANCE ALTITUDE (MOCA)
FAR 77.17(a)(4) MOCA Altitude Enroute Criteria
The Maximum Height Permitted is 500 ft AMSL

PRIVATE LANDING FACILITIES

FACIL IDENT	TYP	NAME	BEARING To FACIL	RANGE IN NM	DELTA	ARP ELEVATION	FAA IFR
1CT2	HEL	YALE NEW HAVEN HOSPITAL	292.52	2.49		-131	

No Impact to Private Landing Facility
Structure 131 ft below heliport.

CT40 HEL BOB THOMAS FORD 343.75 5.07
+8
No Impact to Private Landing Facility
Structure is beyond notice limit by 25806 feet.

CT84 HEL PARTYKA CHEVROLET 348.59 5.2
+38
No Impact to Private Landing Facility
Structure is beyond notice limit by 26596 feet.

AIR NAVIGATION ELECTRONIC FACILITIES

FAC IDNT	TYPE	AT	FREQ	VECTOR	DIST (ft)	DELTA ELEVA	ST	LOCATION	GRND ANGLE	APCH BEAR
HVN	LOCALIZER	I	109.1	183.55	5324	+71	CT	RWY 02 TWEED-NEW	.76	16

Warning! Notice Required For new construction. Possible ILS/LOC approach impact.
Exceeds Localizer Critical Area limits as defined by FAA Order 6750.16D, ILS
Siting Criteria. Requires additional study to determine impact to Back
Course, if any.

HVN	ATCT	I	A/G	178.17	8314	-3	CT	TWEED-NEW HAVEN	-.02	

Notice Required. Exceeds Communication Facility EMI Notice Criteria.

MAD	VOR/DME	R	110.4	80.11	53999	-128	CT	MADISON	-.14	
JWE	NDB	D	36	298.85	71011	-483	CT	CLERA	-.39	
BDR	VOR/DME	R	108.8	234.55	80507	+79	CT	BRIDGEPORT	.06	
CCC	VOR/DME	R	117.2	169.64	132961	+3	NY	CALVERTON	0.00	
KOKX	RADAR WXL	Y		177.76	154239	-107	NY	NEW YORK	-.04	
HFD	VOR/DME	R	114.9	35.72	158439	-761	CT	HARTFORD	-.28	
QVH	RADAR ARSR	Y	1326.9	159.93	159052	-263	NY	RIVERHEAD	-.09	
FOK	TACAN	R	111.0	156.99	178562	+38	NY	SUFFOLK CO	.01	
ISP	RADAR	I	2735.	198.15	184993	-94	NY	LONG		

ISLAND MacAR -.03
CMK VOR/DME R 116.6 268.85 191177 -606 NY
CARMEL -.18
HTO VORTAC R 113.6 130.83 206728 +66 NY
HAMPTON .02
HPN RADAR I 2735. 250.73 241515 -422 NY
WESTCHESTER COUNT -.1

SECTION 2110 FAA EXTENSION, SAFETY AND SECURITY ACT - RURAL AREA ANALYSIS

Object Not Located Within Rural Area. User has identified location is not
on or adjacent to Agricultural Land.

******** Rural Tower Registration with the FAA is not Required. ********

CFR Title 47, §1.30000-§1.30004
AM STUDY NOT REQUIRED: Structure is not near a FCC licensed AM station.
Movement Method Proof as specified in §73.151(c) is not required.
Please review 'AM Station Report' for details.

Nearest AM Station: WAVZ @ 5051 meters.

Airspace® Summary Version 20.9.584

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10-28-2020
13:27:39

ATTACHMENT 8

Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

January 14, 2021

Via Certificate of Mailing

Justin Elicker, Mayor
City of New Haven
165 Church Street
New Haven, CT 06510

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 115 Peat Meadow Road, New Haven, Connecticut**

Dear Mayor Elicker:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to establish a new telecommunications facility on an existing billboard sign structure at Brandfon Hyundai at 115 Peat Meadow Road in New Haven (the "Property").

The facility will consist of six (6) panel antennas and six (6) remote radio heads ("RRHs") attached to a 45'-10" tower extension. Equipment associated with Cellco's antennas will be located in an equipment cabinet near the base of the tower. A copy of the full Petition is attached for your review. Landowners whose parcels are considered to abut the Property were also sent notice of this filing along with a copy of the Petition.

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

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson+Cole

KENNETH C. BALDWIN

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Hartford, CT 06103-3597
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January 14, 2021

Via Certificate of Mailing

Joseph Carfora, Mayor
Town of East Haven
250 Main Street
East Haven, CT 06512

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 115 Peat Meadow Road, New Haven, Connecticut**

Dear Mayor Carfora:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to establish a new telecommunications facility on an existing billboard sign structure at Brandfon Hyundai at 115 Peat Meadow Road in New Haven (the "Property").

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January 14, 2021

Via Certificate of Mailing

Aicha Woods, Executive Director
City Plan
165 Church Street
New Haven, CT 06510

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 115 Peat Meadow Road, New Haven, Connecticut**

Dear Ms. Woods:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to establish a new telecommunications facility on an existing billboard sign structure at Brandfon Hyundai at 115 Peat Meadow Road in New Haven (the "Property").

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January 14, 2021

Via Certificate of Mailing

Ellen Pellegrino, Deputy Zoning Officer
Town of East Haven
250 Main Street
East Haven, CT 06512

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 115 Peat Meadow Road, New Haven, Connecticut**

Dear Ms. Pellegrino:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to establish a new telecommunications facility on an existing billboard sign structure at Brandfon Hyundai at 115 Peat Meadow Road in New Haven (the "Property").

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Also admitted in Massachusetts
and New York

January 14, 2021

Via Certificate of Mailing

115 Peat Meadows LLC
515 West Main Street
Branford, CT 06405

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 115 Peat Meadow Road, New Haven, Connecticut**

Dear Sir or Madam:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to establish a new telecommunications facility on an existing billboard sign structure at Brandfon Hyundai at 115 Peat Meadow Road in New Haven (the "Property").

The facility will consist of six (6) panel antennas and six (6) remote radio heads ("RRHs") attached to a 45'-10" tower extension. Equipment associated with Cellco's antennas will be located in an equipment cabinet near the base of the tower. A copy of the full Petition is attached for your review. Landowners whose parcels are considered to abut the Property were also sent notice of this filing along with a copy of the Petition.

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

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

January 14, 2021

Via Certificate of Mailing

Outfront Media
Richard Bourne, Operations Manager
355 Washington Avenue
New Haven, CT 06473

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 115 Peat Meadow Road, New Haven, Connecticut**

Dear Mr. Bourne:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to establish a new telecommunications facility on an existing billboard sign structure at Brandfon Hyundai at 115 Peat Meadow Road in New Haven (the "Property").

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

Sincerely,

Kenneth C. Baldwin

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Via Certificate of Mailing

Diamond Communications
Tyler Peters, Operations Analyst
820 Morris Tpke, Ste 104
Short Hills, NJ 07078

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 115 Peat Meadow Road, New Haven, Connecticut**

Dear Mr. Peters:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to establish a new telecommunications facility on an existing billboard sign structure at Brandfon Hyundai at 115 Peat Meadow Road in New Haven (the "Property").

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

Sincerely,

Kenneth C. Baldwin

Attachment

ATTACHMENT 9

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
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kbaldwin@rc.com
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January 14, 2021

Via Certificate of Mailing

«Name_and_Address»

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 115 Peat Meadow Road, New Haven, Connecticut**

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to establish a new telecommunications facility on an existing billboard sign structure at Brandfon Hyundai, 115 Peat Meadow Road in New Haven (the "Property").

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This notice is being sent to you because you are listed on the City Assessor's records as an owner of land that abuts the Property. If you have any questions regarding the Petition, the Council's process for reviewing the Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

Sincerely,

Kenneth C. Baldwin

Attachment

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTING PROPERTY OWNERS

115 PEAT MEADOW ROAD
NEW HAVEN, CONNECTICUT

NEW HAVEN

	Property Address	**Owner's and Mailing Address**
1.	Peat Meadow Road	City of New Haven Park Department 720 Edgewood Avenue New Haven, CT 06513
2.	Peat Meadow Road	New Haven Terminal, Inc. 100 Waterfront Road New Haven, CT 06513
3.	610 Forbes Avenue	610 Forbes Avenue LLC 100 Warwick Street New Haven, CT 06513
4.	Ashland Place	Alessandro Piscitelli 115 Ashland Place New Haven, CT 06512
5.	116 Ashland Place	Edwin Echewarria 116 Ashland Place New Haven, CT 06513
6.	113 Irvington Street	Gladys Santiago & Dadmiris Rivera 113 Irvington Street New Haven, CT 06513
7.	118 Irvington Street	Gerald Viglione 118 Irvington Street New Haven, CT 06513
8.	Peat Meadow Road	PMR Associates LLC c/o David McDermott 655 Main Street East Haven, CT 06512

EAST HAVEN

	Property Address	**Owner's and Mailing Address**
1.	119 Frontage Road	New Haven Terminal, Inc. 100 Waterfront Road New Haven, CT 06513
2.	121 Frontage Road	Carmax Auto Super Stores, Inc. PO Box 29954 Richmond, VA 23242
3.	655 Main Street	EH653 LLC c/o David McDermott 655 Main Street East Haven, CT 06512