STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS FOR A DECLARATORY RULING ON THE NEED TO OBTAIN A SITING COUNCIL CERTIFICATE FOR MODIFICATIONS TO AN EXISTING WIRELESS TELECOMMUNICATIONS FACILITY AT 54 MEADOW STREET, NEW HAVEN, CONNECTICUT	:	PETITION NO. ____
	:	AUGUST 26, 2020

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 modifications to its existing wireless telecommunications facility at 54 Meadow Street in New Haven, Connecticut (the "Property"). *See* Attachment 1 – Site Vicinity and Site Schematic Maps (Aerial Photograph).

II. Factual Background

In April of 1991, Cellco received Council approval to establish a wireless telecommunication facility on the roof of the building at the Property (Council Docket No. 140). Cellco currently maintains twelve (12) antennas (three (3) sectors of four (4) antennas) attached to the façade of the rooftop penthouse on the building. Equipment associated with the Cellco antennas is located in a secure equipment room inside the building. The Property is owned by

Gateway Partners LLC (the "Owner"). MCM Holdings LLC manages the rooftop telecommunications facilities at the Property for the Owner.

III. Proposed Construction Activity

A. Cellco's Proposed Modifications to the New Haven Facility

The proposed facility modifications will involve the removal of nine (9) existing antennas and the installation of twelve (12) new antennas (fifteen (15) total) and ten (10) remote radio heads ("RRHs") at various locations on the roof of the building. Three (3) antennas will remain attached to the penthouse façade; four (4) new antennas will also be attached to the penthouse façade (Beta and Beta/Gamma Sector antennas); Two (2) existing antennas and four (4) new antennas will be attached to the existing mechanical screen wall in the northwest corner of the building rooftop (Alpha and Delta Sector antennas); and one (1) existing antenna and one (1) new antenna will be attached to the building façade along the southeast corner of the building (Beta and Gama Sector antennas). (*See* Cellco's Project Plans included in Attachment 2).

Cellco is licensed to provide wireless telecommunications services in the 850 MHz, 1900 MHz, 2100 MHz and 28 GHz frequency ranges in New Haven and throughout the State of Connecticut. The modified facility will utilize all of Cellco's frequency ranges. Specifications for Cellco's antennas and remote radio heads are included in Attachment 3. A Structural Assessment Letter confirming that the building's structural components and the antenna mounting systems can adequately support Cellco's proposed facility modifications is included in Attachment 4.

IV. Discussion

A. The Proposed Facility Modifications 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 modifications to its roof-top facility will not involve a significant alteration in the physical and environmental characteristics of the Property.

2. Visual Effects

Portions of the existing building and Cellco's modified facility may be visible from the commercial and industrial properties that surround the Property. The modifications proposed by Cellco will not, however, increase the visibility of the Cellco facility or the building and will not detract from the general characteristics of the building at the Property. A Photo Documentation & Simulations report ("Visual Assessment") is included in Attachment 5.

3. FCC Compliance

Radio frequency ("RF") emissions from Cellco's modified facility will not exceed the maximum permissible exposure limits established by the Federal Communications Commission ("FCC"). Included in Attachment 6 is a general power density table that demonstrates that Cellco's modified facility will operate within the FCC safety standards.

4. FAA Notification Not Required

Cellco has run an Obstruction Analysis Report ("FAA Report") for the proposed New Haven Facility modifications. According to the FAA Report, notice of the facility modifications 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 August 26, 2020, a copy of this Petition was sent to New Haven's Mayor, Justin Elicker; Aicha Woods, New Haven's Director of City Plan; Gateway Partners LLC, the Owner of the Property, and MCM Holdings LLC, the roof-top manager. Copies of the letters sent to Mayor Elicker, Ms. Woods, Gateway Partners LLC, and MCM Holdings LLC are included in Attachment 8.

A copy of this Petition was also sent to the owners of land that 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 replacement and relocation of antennas, RRHs and related equipment, as described above, 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,

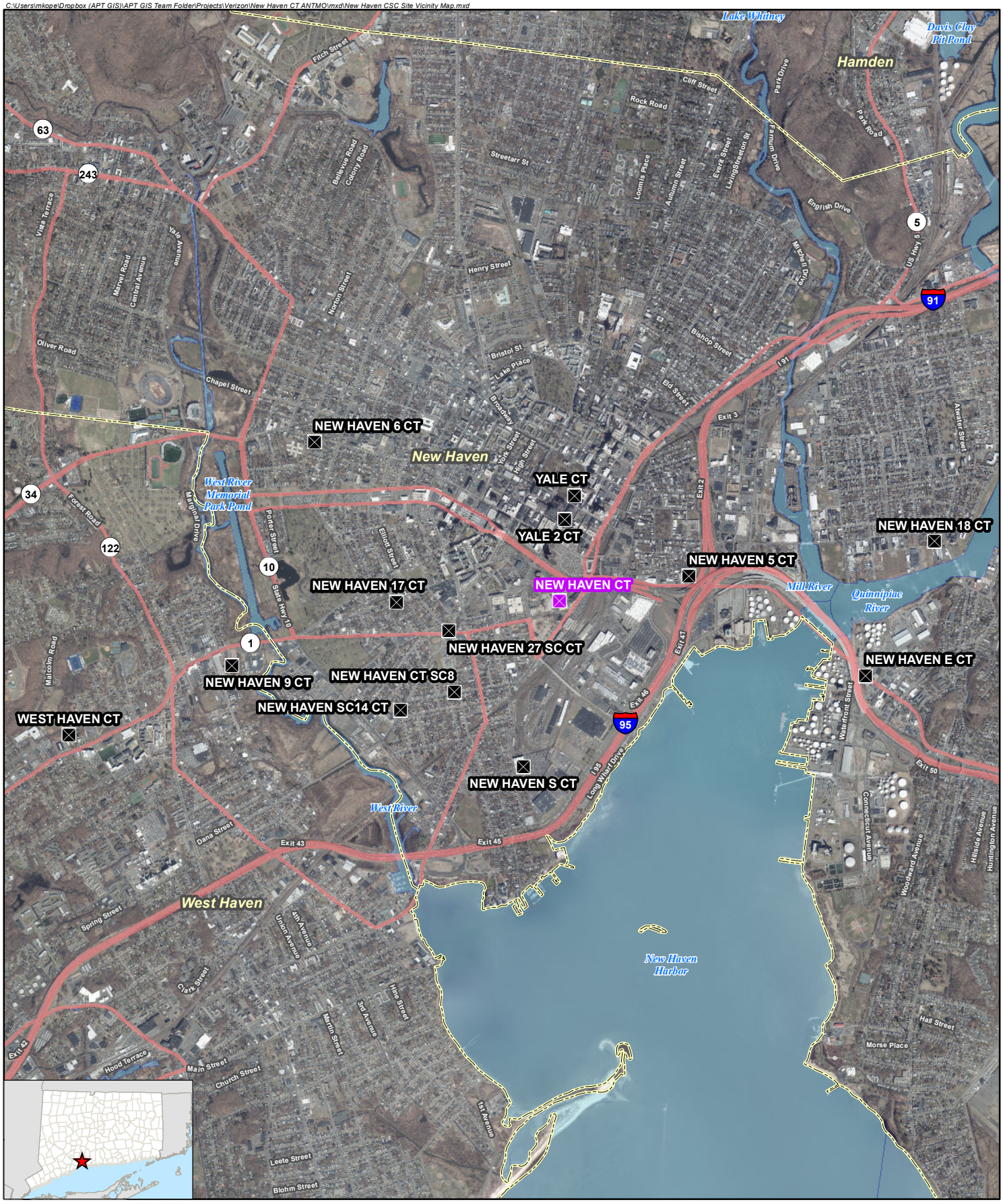
CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

By 

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

ATTACHMENT 1

C:\Users\mkope\Dropbox (APT GIS)\APT GIS Team Folder\Projects\Verizon\New Haven CT ANTMO\mxd\New Haven CSC Site Vicinity Map.mxd



Legend

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

Site Vicinity Map

Proposed Wireless
Telecommunications Facility
New Haven CT
54 Meadow Street
New Haven, Connecticut

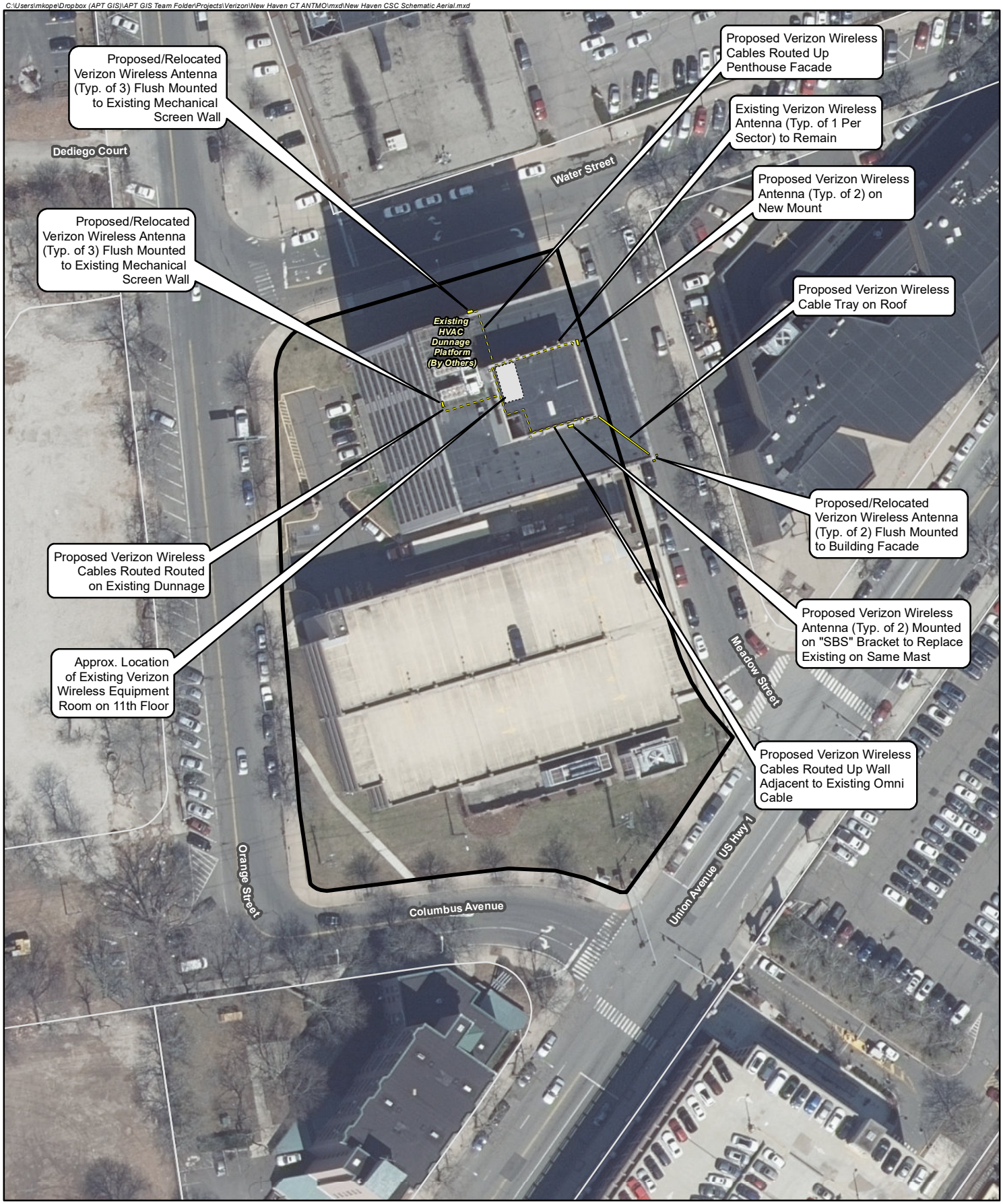
verizon

Base Map Source: CT ECO 2019 Imagery
Map Scale:1 inch = 3,000 feet
Map Date: June 2020

3,000 1,500 0 3,000 Feet

ALL-POINTS TECHNOLOGY CORPORATION

C:\Users\mkope\Dropbox (APT GIS)\APT GIS Team Folder\Projects\Verizon\New Haven CT ANTMO\mxd\New Haven CSC Schematic Aerial.mxd



Legend

- Proposed/Relocated Verizon Wireless Equipment
- Proposed Verizon Wireless Cable
- Existing Verizon Wireless Equipment to Remain
- Existing Verizon Wireless Equipment Room
- Subject Property
- Approximate Parcel Boundary

Site Schematic

Proposed Wireless Telecommunications Facility
New Haven CT
54 Meadow Street
New Haven, Connecticut

verizon

ALL-POINTS TECHNOLOGY CORPORATION

Map Notes:
Base Map Source: 2019 CT ECO Imagery
Map Scale:1 inch = 80 feet
Map Date: July 2020

80 40 0 80 Feet

ATTACHMENT 2

WIRELESS COMMUNICATIONS FACILITY

SITE NAME: NEW HAVEN CT

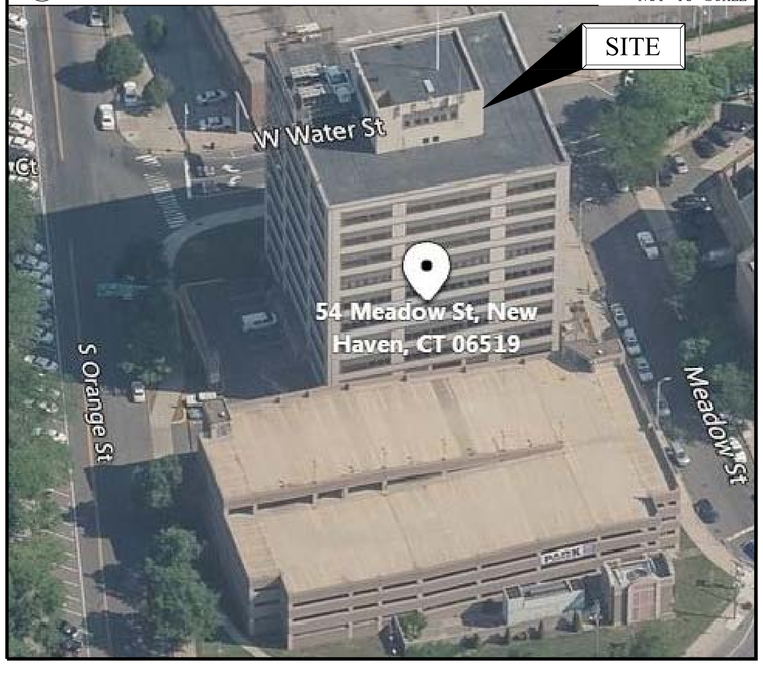
54 MEADOW ST.
NEW HAVEN, CT 06519

PROJECT DESCRIPTION

– REPLACEMENT & RELOCATION OF SEVERAL EXISTING VERIZON PANEL ANTENNAS CURRENTLY FACADE MOUNTED TO THE CENTRAL ROOFTOP PENTHOUSE. THE TOTAL ANTENNA QUANTITY WILL INCREASE FROM (12) TO (15) PANEL ANTENNAS.
– NEW ANTENNAS LOCATIONS INCLUDE FLUSH MOUNTS ON AN EXISTING MECHANICAL SCREEN WALL AND THE BUILDING FACADE. SEVERAL ANTENNAS TO REMAIN ON PENTHOUSE FACADE.
– ACCESSORY EQUIPMENT (RRH's, CABLE BOXES, ETC.) SHALL ALSO BE REPLACED AND RELOCATED WITH THEIR ASSOCIATED ANTENNA SECTORS.

BIRDSEYE VIEW LOOKING NORTH

NOT–TO–SCALE



PROJECT SUMMARY

SITE NAME:	NEW HAVEN CT
SITE ADDRESS:	54 MEADOW ST. NEW HAVEN, CT 06519
PROPERTY OWNER:	GATEWAY PARTNERS LLC C/O LEXINGTON PROPERTY MGMT. 30 LEWIS ST. HARTFORD, CT 06103
ROOFTOP MGMT:	MCM SITE # CT-520
PARCEL ID:	238/ 0106/ 00101-00106
COORDINATES:	41° 17' 59.543" N 72° 55' 35.570" W
APPLICANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 20 ALEXANDER DR. WALLINGFORD, CT 06492
VERIZON WIRELESS CONTACTS:	ARLINDO NETO - CONSTRUCTION ALEKSEY TYURIN - LEASING
LEGAL/REGULATORY COUNSEL:	KENNETH C. BALDWIN, ESQ. ROBINSON & COLE, LLP (860) 275-8345

DRAWING SCHEDULE

SHEET NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
C-1	ROOF PLAN - EXISTING
C-2	ROOF PLAN - PROPOSED
C-3	ELEVATIONS
C-4	ANTENNA PLANS & SECTIONS

Cellco Partnership
d/b/a Verizon Wireless

WIRELESS COMMUNICATIONS FACILITY
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
onair@optonline.net
201-456-4624

LICENSURE

STATE OF CONNECTICUT · DAVID A. WEINPAHL · NO. 22144 · LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC. NO. 22144

NO.:	DATE:	SUBMISSIONS
0	06.06.20	REVIEW SET
1	06.19.20	REVISED PER CLIENT COMMENTS
2	07.13.20	CSC FILING

DRAWN BY:	CHECKED BY:
MF	DW

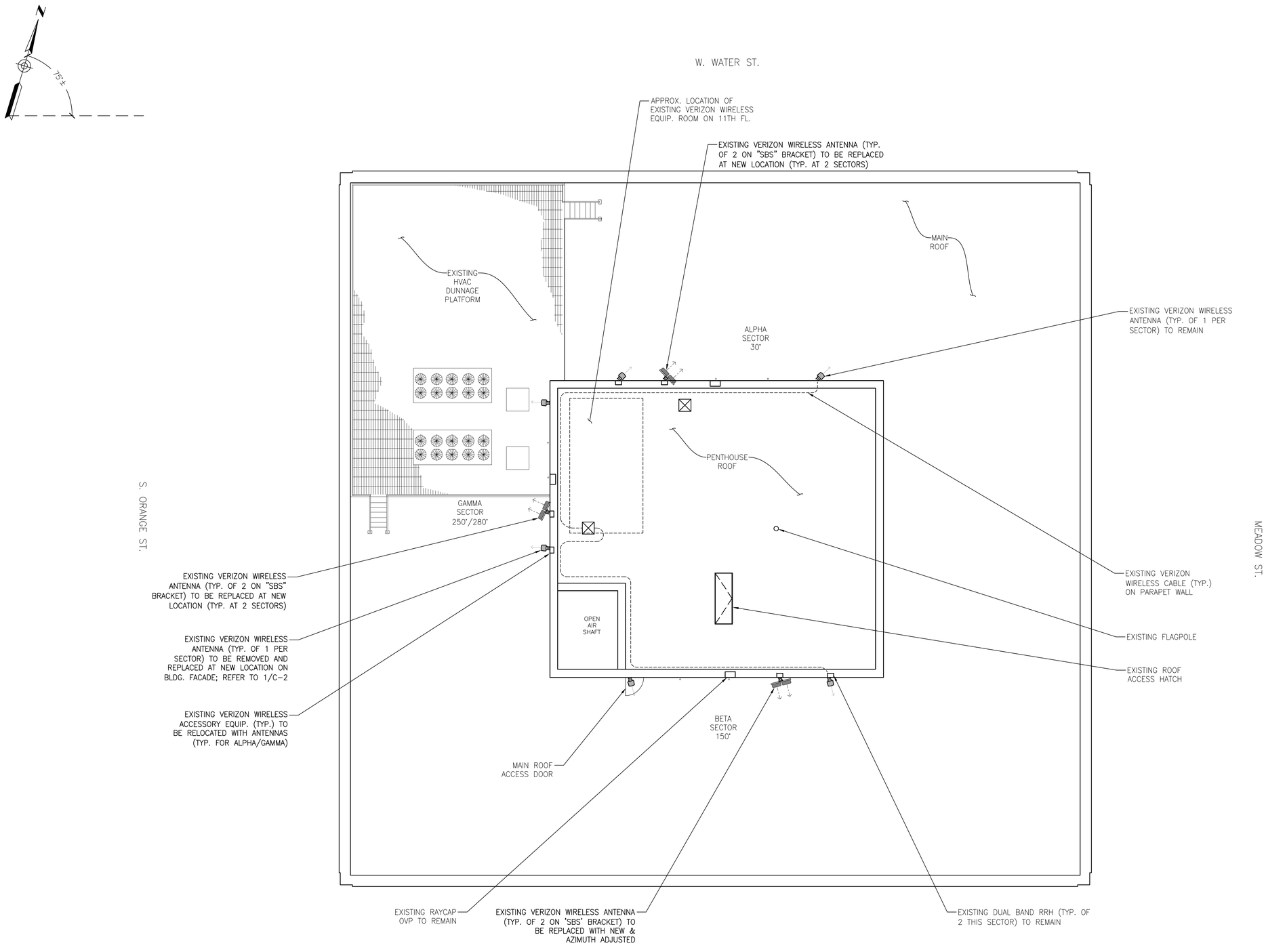
ANTMO 28GHz
CARRIER ADD
ZONING DRAWINGS

SITE NAME:
NEW HAVEN CT

PROJECT INFORMATION:
54 MEADOW ST.
NEW HAVEN, CT 06519

DRAWING TITLE:
TITLE SHEET

SHEET NUMBER:
T-1



1 / C-1 ROOF PLAN - EXISTING

Scale: 1/8" = 1'-0"

Cellco Partnership
d/b/a Verizon Wireless

verizon

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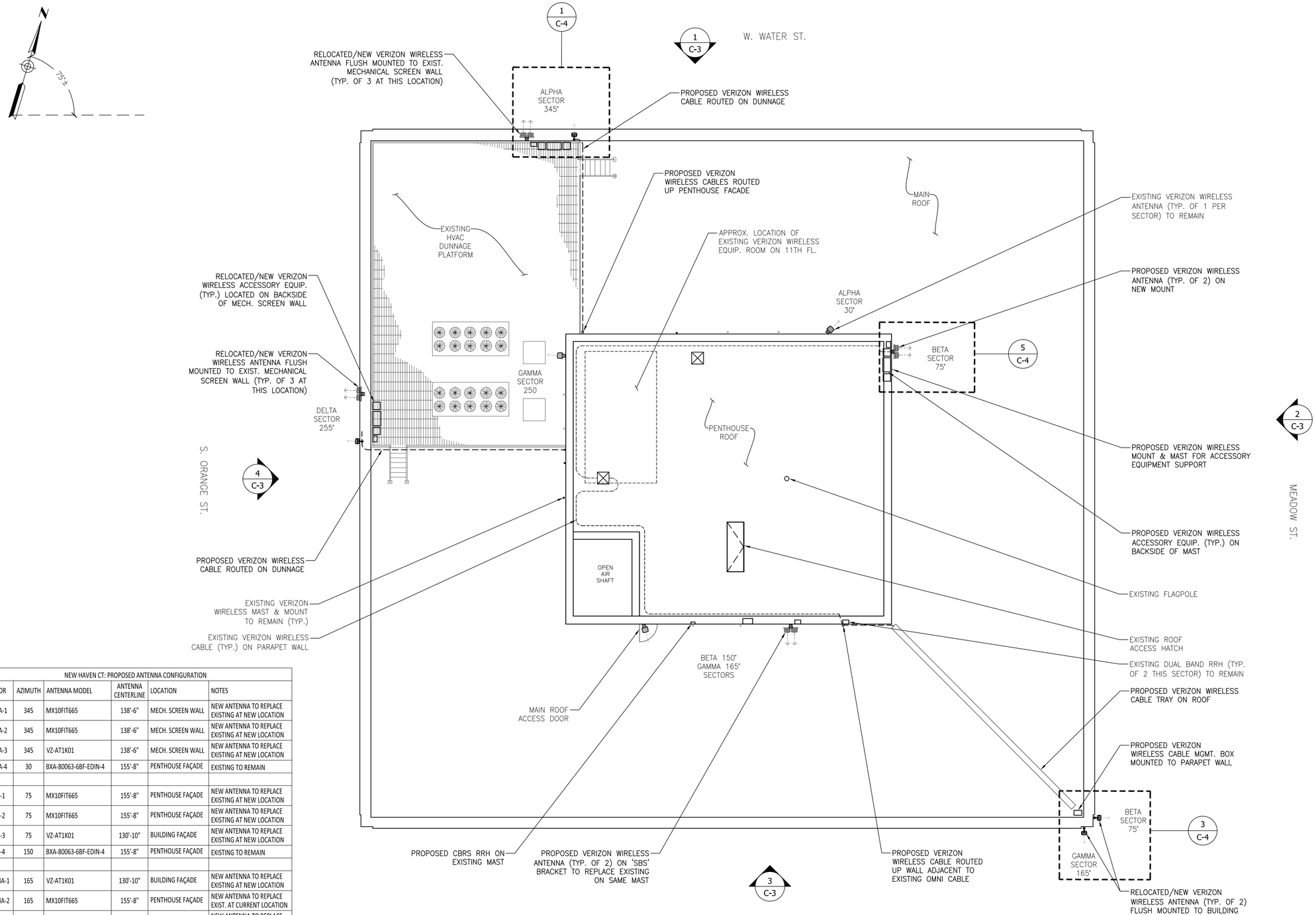
ROOF PLAN - EXISTING

SHEET NUMBER:

C-1



1 C-2 ROOF PLAN - PROPOSED

Scale: 1/8" = 1'-0"

NEW HAVEN CT: PROPOSED ANTENNA CONFIGURATION

SECTOR	AZIMUTH	ANTENNA MODEL	ANTENNA CENTERLINE	LOCATION	NOTES
ALPHA-1	345	MX10FIT665	138'-6"	MECH. SCREEN WALL	NEW ANTENNA TO REPLACE EXISTING AT NEW LOCATION
ALPHA-2	345	MX10FIT665	138'-6"	MECH. SCREEN WALL	NEW ANTENNA TO REPLACE EXISTING AT NEW LOCATION
ALPHA-3	345	VZ-AT1K01	138'-6"	MECH. SCREEN WALL	NEW ANTENNA TO REPLACE EXISTING AT NEW LOCATION
ALPHA-4	30	BXA-80063-6BF-EDIN-4	155'-8"	PENTHOUSE FAÇADE	EXISTING TO REMAIN
BETA-1	75	MX10FIT665	155'-8"	PENTHOUSE FAÇADE	NEW ANTENNA TO REPLACE EXISTING AT NEW LOCATION
BETA-2	75	MX10FIT665	155'-8"	PENTHOUSE FAÇADE	NEW ANTENNA TO REPLACE EXISTING AT NEW LOCATION
BETA-3	75	VZ-AT1K01	130'-10"	BUILDING FAÇADE	NEW ANTENNA TO REPLACE EXISTING AT NEW LOCATION
BETA-4	150	BXA-80063-6BF-EDIN-4	155'-8"	PENTHOUSE FAÇADE	EXISTING TO REMAIN
GAMMA-1	165	VZ-AT1K01	130'-10"	BUILDING FAÇADE	NEW ANTENNA TO REPLACE EXISTING AT NEW LOCATION
GAMMA-2	165	MX10FIT665	155'-8"	PENTHOUSE FAÇADE	NEW ANTENNA TO REPLACE EXIST. AT CURRENT LOCATION
GAMMA-3	165	MX10FIT665	155'-8"	PENTHOUSE FAÇADE	NEW ANTENNA TO REPLACE EXIST. AT CURRENT LOCATION
GAMMA-4	250	BXA-80063-6BF-EDIN-4	155'-8"	PENTHOUSE FAÇADE	EXISTING TO REMAIN
DELTA-1	255	MX10FIT665	138'-6"	MECH. SCREEN WALL	NEW ANTENNA
DELTA-2	255	MX10FIT665	138'-6"	MECH. SCREEN WALL	NEW ANTENNA
DELTA-3	255	VZ-AT1K01	138'-6"	MECH. SCREEN WALL	NEW ANTENNA

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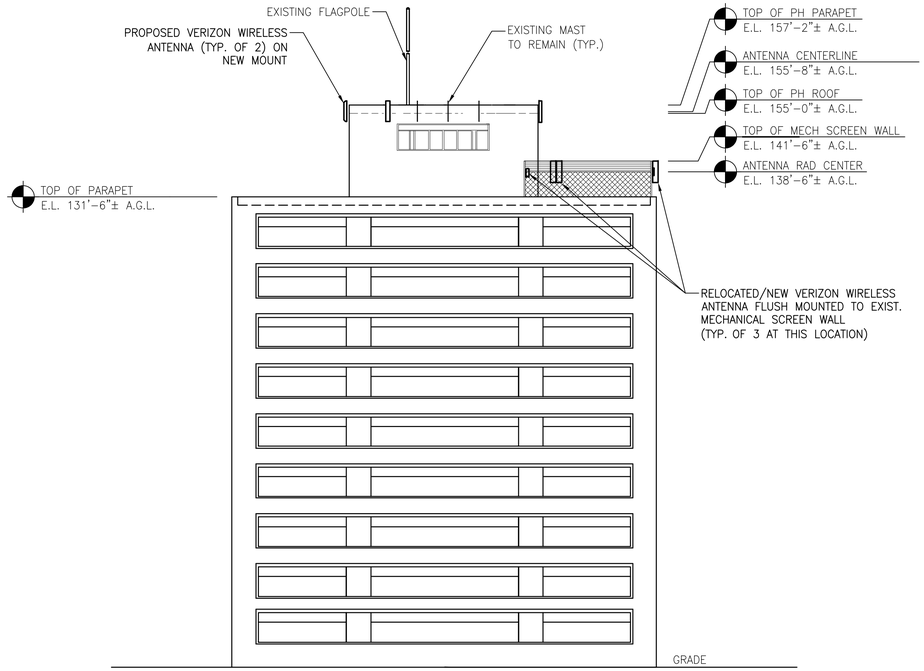
NEW HAVEN, CT 06519

DRAWING TITLE:

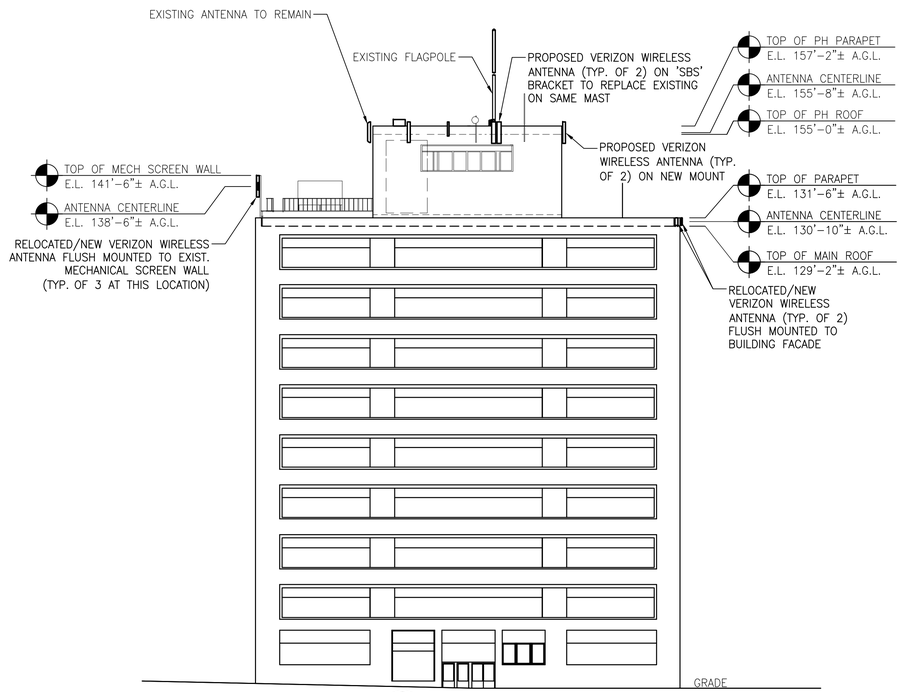
ROOF PLAN - PROPOSED

SHEET NUMBER:

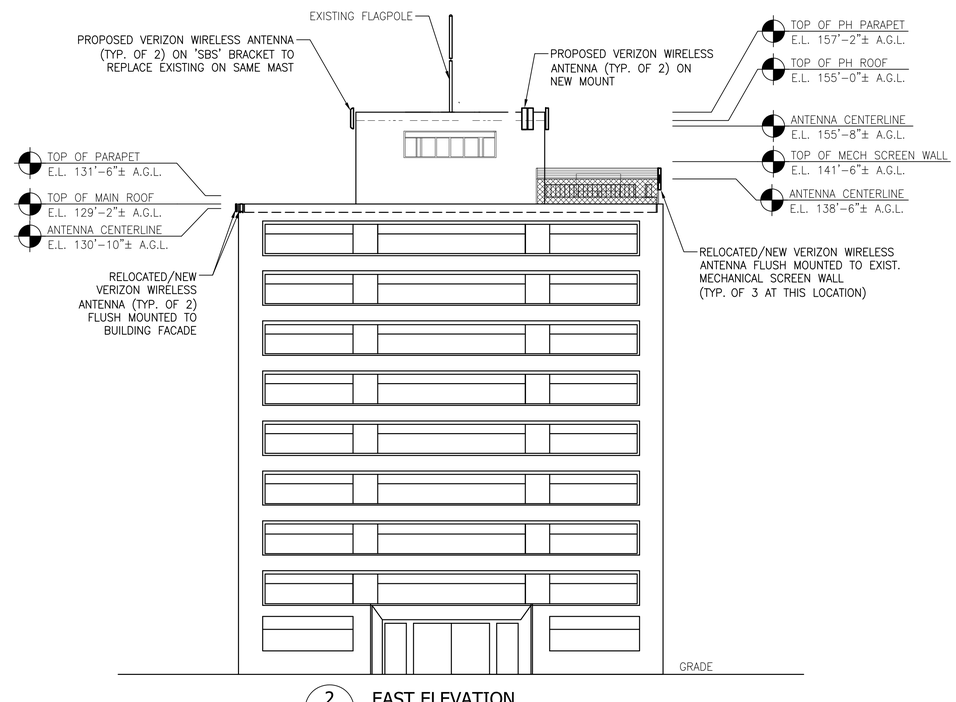
C-2



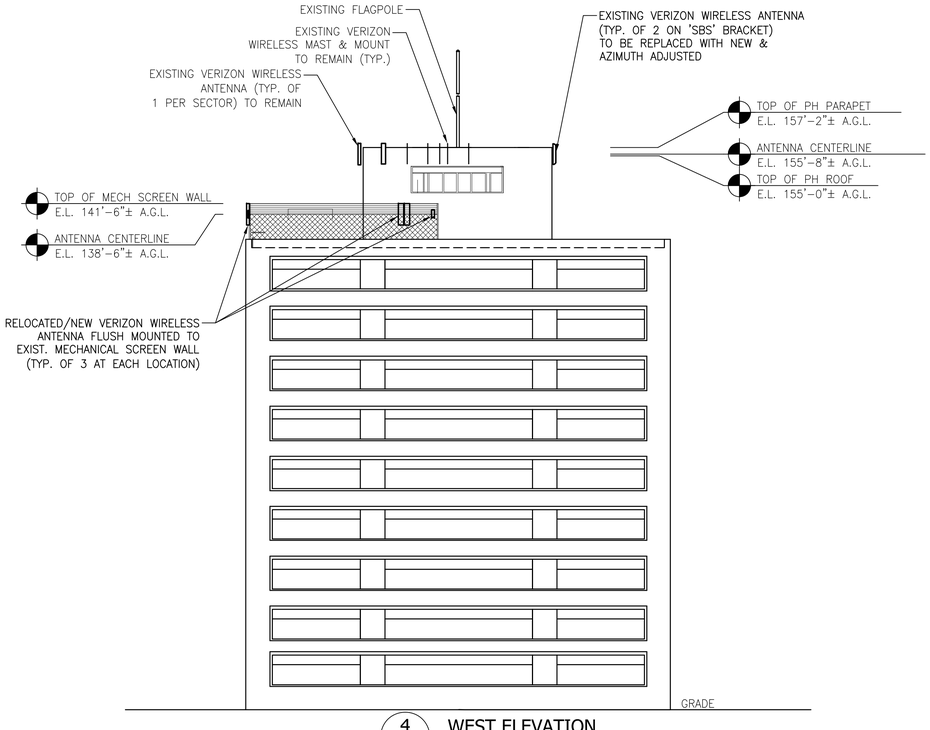
1 C-3 NORTH ELEVATION
Scale: 1" = 20"



3 C-3 SOUTH ELEVATION
Scale: 1" = 20"



2 C-3 EAST ELEVATION
Scale: 1" = 20"



4 C-3 WEST ELEVATION
Scale: 1" = 20"

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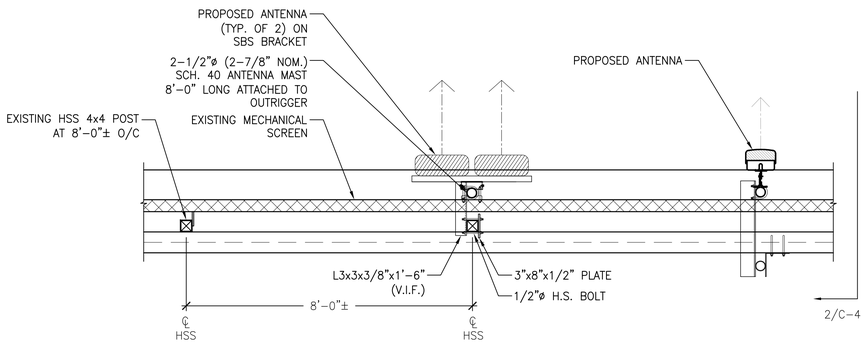
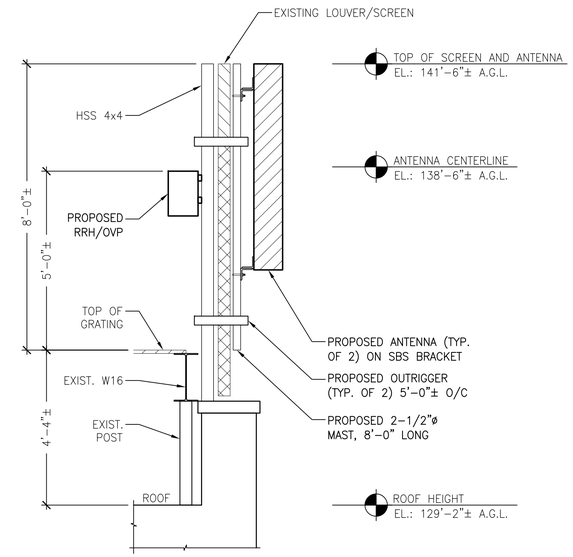
ELEVATIONS

SHEET NUMBER:
C-3



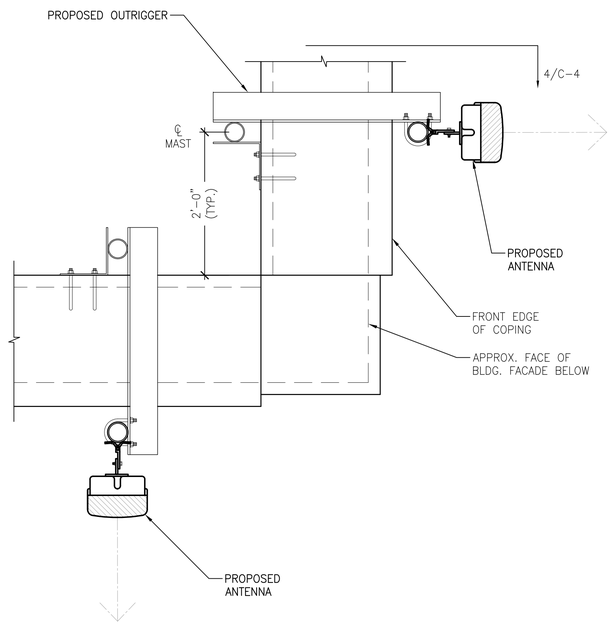
1 C-4 ANTENNA PLAN AT SCREEN WALL

Scale: 1/2" = 1'-0"



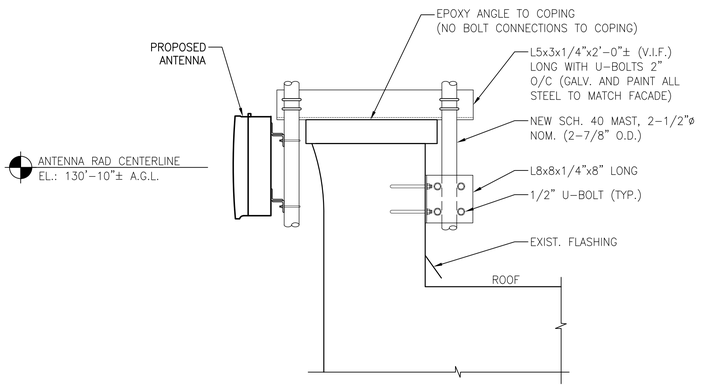
2 C-4 ANTENNA SECTION AT SCREEN WALL

Scale: 1/2" = 1'-0"



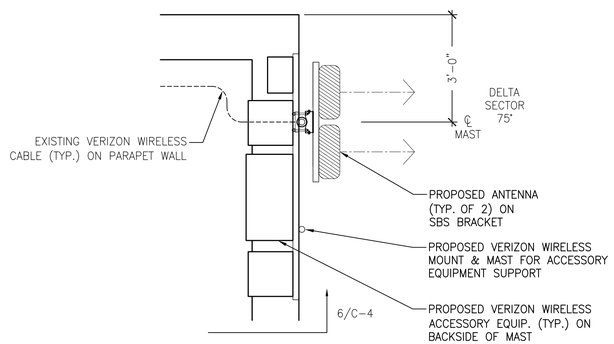
3 C-4 ANTENNA PLAN AT BUILDING FACADE

Scale: 1" = 1'-0"



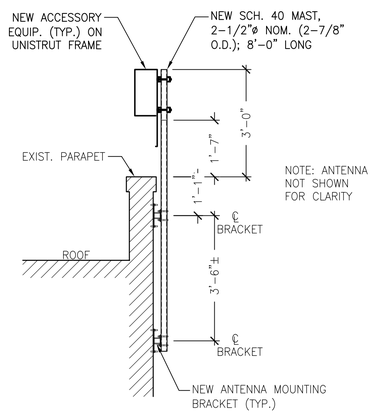
4 C-4 ANTENNA SECTION AT BUILDING FACADE

Scale: 1" = 1'-0"



5 C-4 ANTENNA PLAN AT PENTHOUSE

Scale: 1/2" = 1'-0"



6 C-4 ANTENNA SECTION AT PENTHOUSE

Scale: 1/2"=1'-0"

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verizon

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DRAWING TITLE:

ANTENNA PLANS & SECTIONS

SHEET NUMBER:

C-4

ATTACHMENT 3

PRELIMINARY

MX10FIT665-xx

NWAV™ X-Pol Ten-Port Antenna

X-Pol Ten-Port 6 ft, 65° Form in Tighter with Smart Bias Ts, 698-4200 MHz:

2 ports 698-894 MHz, 4 ports 1695-2180 MHz, and 4 ports 3400-4200 MHz

- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated (iRETs) with independent RET control for low band and mid band
- FET configured with internal RET for high band & ease of future network optimization.
- SON-Ready array spacing supports beamforming capabilities
- Suitable for 3G, 4G, and 5G interface technologies
- Integrated Smart Bias-Ts reduce leasing costs
- Optimized form factor for reduced wind loading

Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	14.4	14.8	17.8	18.1	18.2
Horizontal beamwidth (HBW), degrees[1]	66.0	57.0	63.0	63.0	58.0
Front-to-back ratio, co-polar power @180°± 30°, dB	>22	>22.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>17.0	>15.6	>23	>18	>18
Vertical beamwidth (VBW), degrees[1]	13.5	12.0	6.0	5.5	5.4
Electrical downtilt (EDT) range, degrees	2-14		0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-17.0	≤-16.0	≤-17.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports (1-10), watts	1500				

[1] Typical value over frequency and tilt

Electrical specification (minimum/maximum)	Ports 7, 8, 9, 10			
Frequency bands, MHz	3400-3550	3550-3700	3700-3950	3950-4200
Polarization	± 45°			
Average gain over all tilts, dBi	13.6	13.8	14.0	14.2
Horizontal beamwidth (HBW), degrees	65	62	60	58
Front-to-back ratio, co-polar power @180°± 30°, dB	>23	>23	>23	>22
Vertical beamwidth (VBW), degrees[1]	20	19.6	19.3	18.5
Electrical downtilt (EDT) range, degrees	2-12 orderable in 1 deg increments			
First upper side lobe (USLS) suppression, dB[1]	≤-15	≤-15	≤-15	≤-15
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0			
Max input power per any port, watts	150			
Total composite power all ports (1-10), watts	1500			

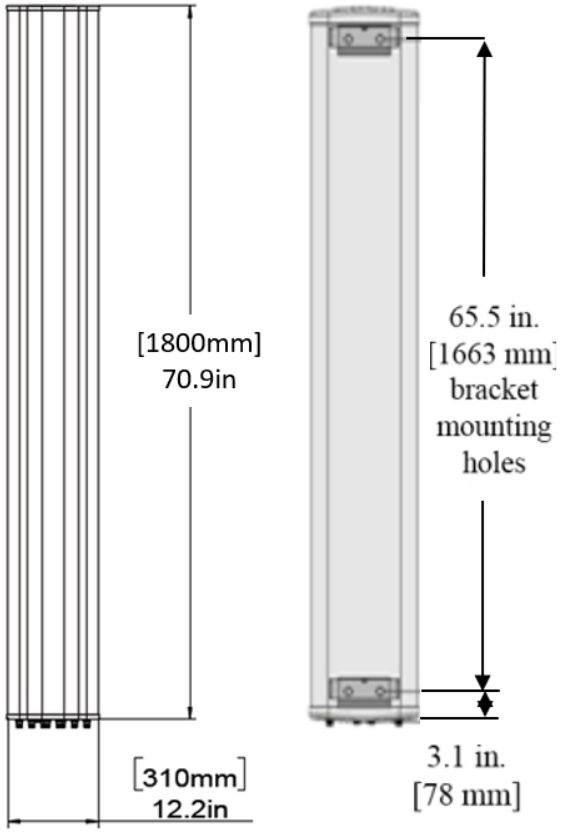
[1] Typical value over frequency and tilt

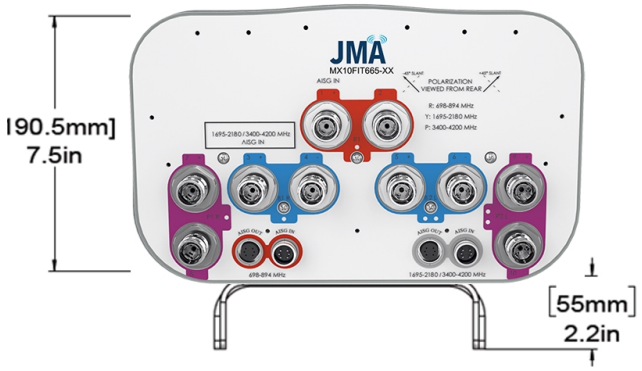
* For ports 7-10, the electrical downtilt is FET configured with internal RET, where the required electrical downtilt is defined at the time of order per the ordering information below.

Ordering information	
Antenna model	**Description**
MX10FIT665-xx (xx represents the FET in one degree increments for 3.4-4.2 GHz)	6F X- Pol 10 Port FIT 65º 2-14º/ 0-9º/ 2-12º, 4.3-10 & SBTs
	xx=02 thru 12 for each 1 degree tilt 3.4-4.2 GHz Examples MX10FIT665-02 – 2deg, MX10FIT665-09 – 9deg, MX10FIT665-12-12deg
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations
91900314-02	Dual Mount Bracket (see 91900314 bracket document for details)

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	70.9/ 12.2/ 7.5 (1800/ 309.9/ 190.5)
Shipping dimensions length/width/height, inches (mm)	76/ 20/ 14.5 (1930/ 508/ 368)
No. of RF input ports, connector type, and location	10 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	53.4 (24.3)
Shipping weight, lb (kg)	97.5 (44.3)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	20.3 (9.2)
Range of mechanical up/down tilt	-2° to 12°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	74.1 (330), 26.1 (116), 69.8 (311)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	1.49

Front view | **Back view** | **Bottom view**





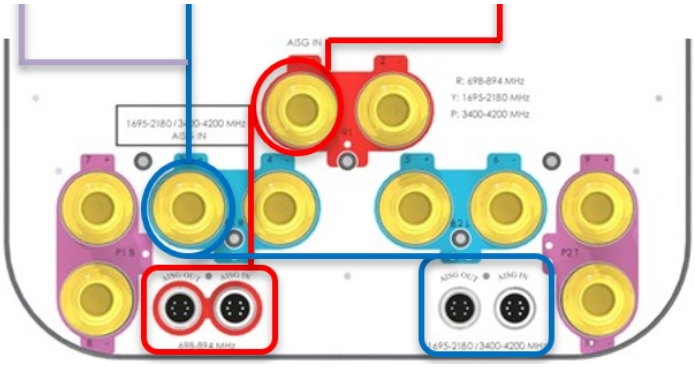
Remote electrical tilt (RET 1000) information	
RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9 or RF port bias-t
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors and 2 RF port bias-ts
RET interface connector location	Bottom of the antenna
Total no. of internal RETs 698-894 MHz	1
Total no. of internal RETs 1695-2180 MHz	1
Total no. of internal RETs 3400-4200 MHz	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF smart bias-t port as shown below:

Band	RF port	Band	RF port
3400-4200	7-10	1695-2180	3-6

Band	RF port
698-894	1-2



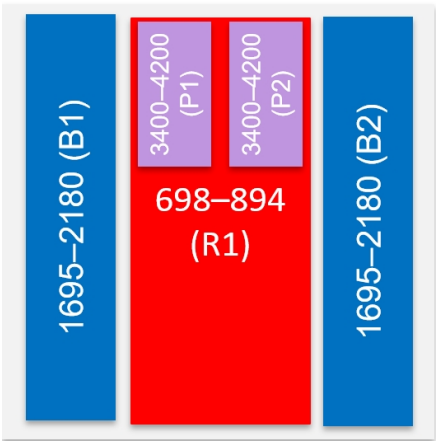
Note: The RET Device for 3400-4200 MHz is connected via the 1695-2180 Port 3 Bias T port or 1695-2180/3400-4200 MHz AISG ports.

Array topology

5 sets of radiating arrays

R1: 698-894 MHz
B1: 1695-2180 MHz
B2: 1695-2180 MHz
P1: 3400-4200 MHz
P2: 3400-4200 MHz

Band	RF port
698-894	1-2
1695-2180	3-4
1695-2180	5-6
3400-4200	7-8
3400-4200	9-10



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

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

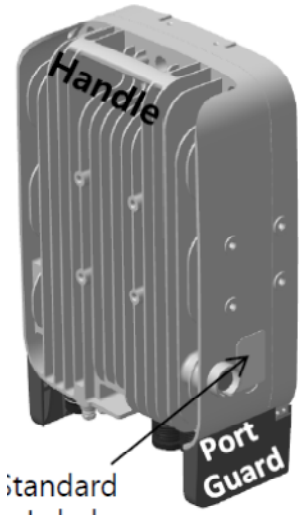
Specifications

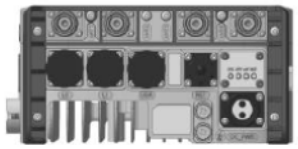
The table below outlines the main specifications of the AU:

Table 1. Specifications

Item		AT1K01
Technology		5G NR
Operating Frequency		27.5 to 28.35 GHz
RF Chain		1024 TR/unit
Antenna Array	Configuration	1024 AE (4T4R)
	Element	256 AE (16H16V)/path, 1024 AE/unit
	Gain	28 dBi/path
IBW/OBW		850/800 MHz
Channel Bandwidth/Capacity		100 MHz Max 8CC (50/200/400 MHz will be supported in ES2, SVR19A: 100 MHz)
RF Output Power		26 dBm/path, 32 dBm/unit
Input Voltage		-48 V DC (-36 to -58 V DC) or 100 to 240 V AC
Input Current		10.9 A @ -48 V DC 4.3 A @ 100 to 240 V AC
LED		Total: 1 EA Powered, Operational, Fail (3 Status w/different colors)
Operational Temperature		-40~55°C (with solar load)
Humidity		TBD
IP rating		IP65
EMC		FCC Title 47 CFR Part 15 Subpart B
Safety		UL 60950 or 62368
Installation		Pole/Wall/Tower mounting
Dimension (W × D × H)		• 9.57 in. (243 mm) × 6.89 in. (175 mm) × 16.81 in. (427 mm) •(@without cover) • 9.57 in. (243 mm) × 6.89 in. (175 mm) × 19.4 in. (493 mm) (@with cover & GPS Port)
Volume		< 18.16 L
Weight		< 33.07 lb (15.8 kg)

[CBRS RRH] Spec.





Current Size: 216 x 307 x 105.5 mm (6.99L)
(8.5 x 12.1 x 4.1 inch., excluding Port Guard)
Design is subject to minor change

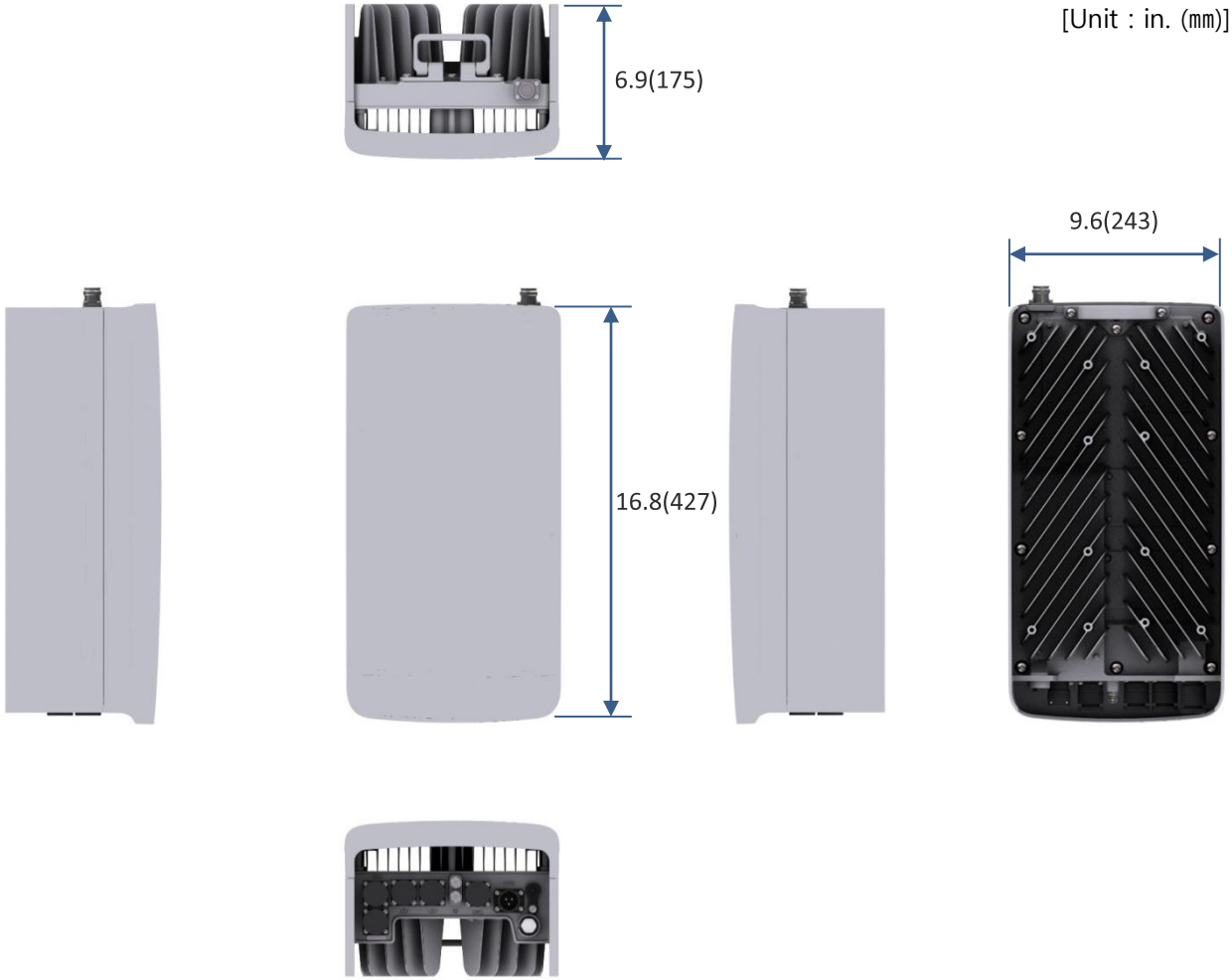
Item	Specification
Band	Band 48 (3.5 GHz)
Frequency	3550~3700 MHz
IBW	150 MHz
OBW	80 MHz
# of Carriers	5/10/15/20 MHz x 4 carriers
RF Chain	4TX / 4RX
RF Output Power & EIRP	4 path x 5 W (Total: 20 W = 43 dBm) (EIRP: 47 dBm / 10 MHz)
RX Sensitivity	Typical : -101.5 dBm @ 1 Rx (3GPP 36.104, Wide Area)
Modulation	256-QAM support (1024-QAM with 1~2dB power back-off)
Input Power	-48 VDC (-38 to -57 VDC, 1 SKU), with clip-on AC-DC converter (Option)
Power Consumption	About 160 Watt @ 100% RF load, typical conditions
Volume	**Under 7L** (w/o Antenna), Under 9.6L (with antenna)
Weight	**Under 8.0 kg** (**18.64** lb) (w/o Antenna), Under 10.5 Kg (with ant.)
Operating Temperature	-40℃ (-40℉) ~ 55℃ (131℉) (W/o solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 Category A
	[B48] : FCC 47 CFR 96.41 e)
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP, single mode, duplex or Bi-Di
CPRI Cascade	Not supported
# of Antenna Port	4
External Alarm (UDA)	4
RET	AISG 2.2
TMA & built-in Bias-T I//F and PIM cancellation	Not supported
Mounting Options	Pole, wall, tower, back to back, side by side (for external ant), 3 RRH with Clip-on Antenna on the pole
Antenna Type	Integrated (Clip-on) antenna (Option), External antenna (Option)
NB-IoT	Not Supported (HW Resource reserved for 1 Guard Band NB-IoT per LTE carrier)
Spectrum Analyzer	TX/RX Support
External Alarm (UDA)	4
5G NR	Support with S/W upgrade
XRAN	Support with S/W upgrade

5G NR AU (AT1K01) Product Specifications

	28GHz	39GHz
Integrated AU		
Operating frequency	26.5 ~ 29. 5GHz	37 ~ 40GHz
IBW/OBW	850MHz/800MHz	1.4GHz/800MHz
EIRP	60dBm	59dBm
Antenna Gain	25dBi	24dBi
Tx/Rx	4T4R	
Antenna Elements	1,024	
Beam Scan Range	120H / 40V	
Size/Weight	9.6 x 16.8 x 6.9 in (18.1L) / 15.0Kg (33lbs)	
Input Power	-48VDC / 100 ~ 240VAC	
Power Consumption	362W	
Midhaul (gNB-CU Interface)	10G Optic x 2 ports	
Installation	Outdoor Pole/Wall Mount	
Clock Synchronization	GPS and IEEE 1588v2	
Operating Temperature	-40 deg C to +55 deg C with solar load	
Cooling	Natural Convection	

Appearance

[Unit : in. (㎜)]



ATTACHMENT 4

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
onair@optonline.net

July 13, 2020

Mr. Aleksey Tyurin
Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Re: New Haven CT - Structural Assessment Letter – ANTMO 28GHz Carrier Add/Sector Add
MCM Site # CT-520; 54 Meadow St., New Haven, CT

Dear Aleksey:

This letter serves as a Structural Assessment for the proposed Cellco Partnership (d/b/a Verizon Wireless) antenna modification on the above referenced building.

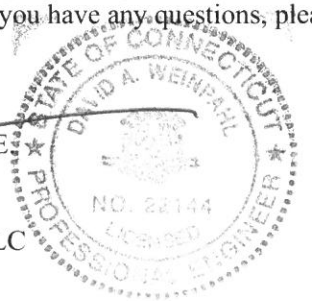
Verizon Wireless is proposing to modify their existing 3-sector antenna configuration with a 4-sector configuration by replacing existing antennas, adding new antennas and relocating several antennas on the structure. The proposed antenna locations are detailed in Zoning Drawings prepared by our office dated July 13, 2020. Verizon's equipment room is located on the 11th floor inside the building.

Verizon's existing (12) panel antennas are all flush mounted to the central penthouse façade, extending approx. 18" above the parapet wall. The proposed re-configuration will maintain (7) antenna positions on the penthouse, some of which are being relocated to new mounts on the eastern penthouse facade. Verizon's other (5) antennas will be replaced and relocated to the existing mechanical HVAC screen wall framing in the northwest corner of the roof and supplemented with a sixth antenna, all flush mounted to that structure. Lastly, two additional antennas are proposed in southeast corner of the building, mounted to the inside parapet wall and extending over the top to achieve a "flush mount" appearance. Verizon's existing RRH's and OVP's will also be replaced, relocated and supplemented with new equipment as part of the modification, which will yield a total of (15) panel antennas upon completion.

The building structural components have been evaluated for this proposed modification, including the new antenna mounts and we have determined that they are capable of supporting the proposed loading, as per the attached structural calculations.

In conclusion, the proposed Verizon Wireless modification will not negatively impact the structural integrity of the host building and will be installed in accordance with the 2018 Connecticut State Building Code, adopted model codes (as amended) and all referenced standards, including TIA-222-G. Our findings are based on the assumption that the hosting structure and all structural members and appurtenances were properly designed, detailed, fabricated, installed and have been properly maintained since erection. Should you have any questions, please do not hesitate to contact our office.

Very truly yours,



David A. Weinpahl, P.E.
CT License No. 22144
Managing Partner
On Air Engineering, LLC

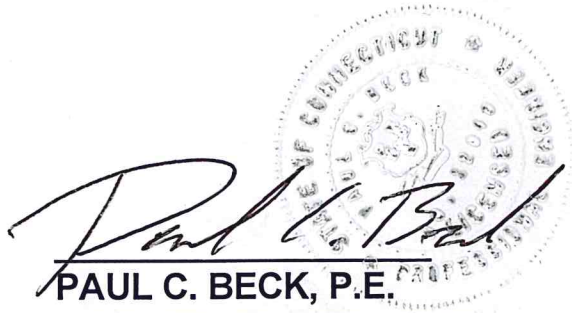
DW:dw
enclosure

STRUCTURAL CALCULATIONS

FOR

VERIZON
SITE NAME: NEW HAVEN CT
54 MEADOW ST
NEW HAVEN, CT

DAVID A. WEINPAHL, P.E.
ON AIR ENGINEERING, LLC
88 FOUNDRY POND ROAD
COLD SPRING, NY 10516



PAUL C. BECK, P.E.
LICENSE NO. (CT) 12949
PRESIDENT

PBA ENGINEERING, P.C.
12 KULICK ROAD
FAIRFIELD, NEW JERSEY 07004-3363
PHONE: (973) 276-1700
FAX: (973) 276-9766

STRUCTURAL ENGINEERS
PROJECT NO. N-545
DATE: 6/15/2020
TOTAL NO. PAGES ATTACHED: 17

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS												
				Wind Design Parameters								
Municipality	**Ground Snow Load**	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds, V_{ult}** (mph)			**Nominal Design Wind Speeds, V_{asd}** (mph)			**Wind-Borne Debris Regions[1]**		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
New Haven	30	0.186	0.062	115	125	135	89	97	105		Type C	Yes
Newington	30	0.182	0.064	115	125	135	89	97	105			
New London	30	0.161	0.058	125	135	145	97	105	112	Type B	Type A	Yes
New Milford	35	0.198	0.066	105	115	125	81	89	97			
Newtown	30	0.208	0.066	110	120	130	85	93	101			Yes
Norfolk	40	0.175	0.065	105	115	125	81	89	97			
North Branford	30	0.179	0.061	120	130	140	93	101	108			Yes
North Canaan	40	0.173	0.065	105	115	120	81	89	93			
North Haven	30	0.184	0.062	115	125	135	89	97	105			Yes
North Stonington	30	0.163	0.059	125	135	145	97	105	112		Type A	Yes
Norwalk	30	0.232	0.067	110	120	130	85	93	101			Yes
Norwich	30	0.168	0.060	125	135	145	97	105	112		Type A	Yes
Old Lyme	30	0.164	0.059	125	135	145	97	105	112	Type B	Type A	Yes
Old Saybrook	30	0.164	0.059	125	135	145	97	105	112	Type B	Type A	Yes
Orange	30	0.192	0.063	115	125	135	89	97	105			Yes
Oxford	30	0.196	0.064	110	125	130	85	97	101			Yes
Plainfield	35	0.170	0.061	125	135	145	97	105	112		Type A	Yes
Plainville	35	0.184	0.064	115	125	135	89	97	105			Yes
Plymouth	35	0.186	0.064	110	120	130	85	93	101			Yes
Pomfret	40	0.172	0.063	120	130	140	93	101	108			Yes
Portland	30	0.180	0.063	115	130	135	89	101	105			Yes
Preston	30	0.167	0.060	125	135	145	97	105	112		Type A	Yes
Prospect	30	0.188	0.064	115	125	135	89	97	105			Yes
Putnam	40	0.172	0.063	120	130	140	93	101	108			Yes
Redding	30	0.220	0.067	110	120	130	85	93	101			Yes
Ridgefield	30	0.230	0.068	110	120	125	85	93	97			Yes
Rocky Hill	30	0.181	0.063	115	125	135	89	97	105			Yes
Roxbury	35	0.197	0.065	110	120	125	85	93	97			Yes
Salem	30	0.170	0.060	120	135	140	93	105	108		Type A	Yes
Salisbury	40	0.173	0.065	105	115	120	81	89	93			
Scotland	30	0.172	0.061	120	130	140	93	101	108			Yes
Seymour	30	0.194	0.064	115	125	135	89	97	105			Yes
Sharon	40	0.179	0.065	105	115	120	81	89	93			
Shelton	30	0.199	0.064	115	125	135	89	97	105			Yes
Sherman	35	0.202	0.066	105	115	120	81	89	93			
Simsbury	35	0.179	0.064	110	120	130	85	93	101			Yes
Somers	35	0.174	0.064	115	125	135	89	97	105			Yes
Southbury	35	0.198	0.065	110	120	130	85	93	101			Yes
Southington	30	0.185	0.064	115	125	135	89	97	105			Yes
South Windsor	30	0.178	0.064	115	125	135	89	97	105			Yes

MecaWind v2333

Calculations Prepared by:
Date: Jun 12, 2020

FileLocation : U:\Mike\N-Jobs\N-545\N-545.wnd

Basic Wind Parameters

Wind Load Standard	= ASCE 7-16	Exposure Category	= B
Wind Design Speed	= 125.0 mph	Risk Category	= II
Structure Type	= Other	Other Structure Type	= Solid Sign

General Wind Settings

Incl_LF	= Include ASD Load Factor of 0.6 in Pressures	= False
DynType	= Dynamic Type of Structure	= Rigid
NF	= Natural Frequency of Structure (Mode 1)	= 1.000 Hz
Zg	= Altitude (Ground Elevation) above Sea Level	= 0.000 ft
Bdist	= Base Elevation of Structure	= 0.000 ft
Reacs	= Show the Base Reactions in the output	= False
MWFRSType	= MWFRS Method Selected	= Ch 27 Pt 1

Topographic Factor per Fig 26.8-1

Topo	= Topographic Feature	= None
Kzt	= Topographic Factor	= 1.000

Solid Sign Inputs

h : Height to Top of Sign	= 141.500 ft	B : Horizontal Width of Sign	= 3.000 ft
Lr : Dimension of return corner	= 1.000 ft	s : Vertical Height of Sign	= 8.000 ft
e : Solidity Ratio	= 1.000	Att: Attached to Wall	= False

Exposure Constants per Table 26.11-1:

Alpha:	Const from Table 26.11-1= 7.000	Zg:	Const from Table 26.11-1= 1200.000 ft
At:	Const from Table 26.11-1= 0.143	Bt:	Const from Table 26.11-1= 0.840
Am:	Const from Table 26.11-1= 0.250	Bm:	Const from Table 26.11-1= 0.450
C:	Const from Table 26.11-1= 0.300	Eps:	Const from Table 26.11-1= 0.333

Gust Factor Calculation:

Gust Factor Category I Rigid Structures - Simplified Method

G1	= For Rigid Structures (Nat. Freq.>1 Hz) use 0.85	= 0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Zm	= 0.6 * Ht	= 84.900 ft
Izm	= Cc * (33 / Zm) ^ 0.167	= 0.256
Lzm	= L * (Zm / 33) ^ Epsilon	= 438.478
Q	= (1 / (1 + 0.63 * ((B + Ht) / Lzm)^0.63))^0.5	= 0.873
G2	= 0.925*((1+1.7*lzm*3.4*Q)/(1+1.7*3.4*lzm))	= 0.855

Gust Factor Used in Analysis

G	= Lessor Of G1 Or G2	= 0.850

Main Wind Force Resisting System (MWFRS) Calculations for Solid Sign per Ch 29:

LF	= Load Factor based upon STRENGTH Design	= 1.00
hs	= Overall height of structure	= 141.500 ft
h	= Mean Roof Height above grade	= 141.500 ft
Kh	= 15 ft [4.572 m]< Z <Zg -->(2.01*(Z/zg)^(2/Alpha) {Table 26.10-1}	= 1.091
Kzt	= Topographic Factor is 1 since no Topographic feature specified	= 1.000
Kd	= Wind Directionality Factor per Table 26.6-1	= 0.85
qh	= (0.00256 * Kh * Kzt * Kd * Ke * V^2) * LF	= 37.10 psf

MWFRS Pressures on Solid Sign per Fig 29.3-1:

R	= Reduction factor to account for openings: (1-(1-e)^1.5)	= 1.000
Rc	= Reduction factor for Case C not applicable since s/h <= 0.8	= 1.000
As	= Gross Area of Sign: B * s	= 24.00 sq ft
B/s	= Aspect Ratio: B / s	= 0.375
s/h	= Clearance Ratio: s / h	= 0.057
Cf	= Net Force Coefficient for Case A and B per Fig 29.3-1	= 1.850

```
Case A:  Resultant force acts normal to face through geometric center
F         = Design Wind force:  qh * G * Cf * As * R                    = 1400 lb

Case B:  Resultant force acts normal to face at a distance from the geometric
         center toward the windward edge equal to 0.2 times the average width
Dx        = Force Offset from Center toward windward edge:  0.2 * B     = 0.600 ft
F         = Design Wind force:  qh * G * Cf * As * R                    = 1400 lb

Case C:  Since B/s < 2 then Case C need not be considered
```


Dual antenna mount
Wind= 37.1 psf
Vertical pipe mast w/ outriggers


wind = 37.1 psf
Parapet Bracket
Attach bracket w/ Hilti Anchors

Mike Plescia
PBA Engineering, P.C.
12 Kulick Road

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Lic. # : KW-06000304 PBA ENGINEERING, P.C.

DESCRIPTION: New Antenna Pipe Mast

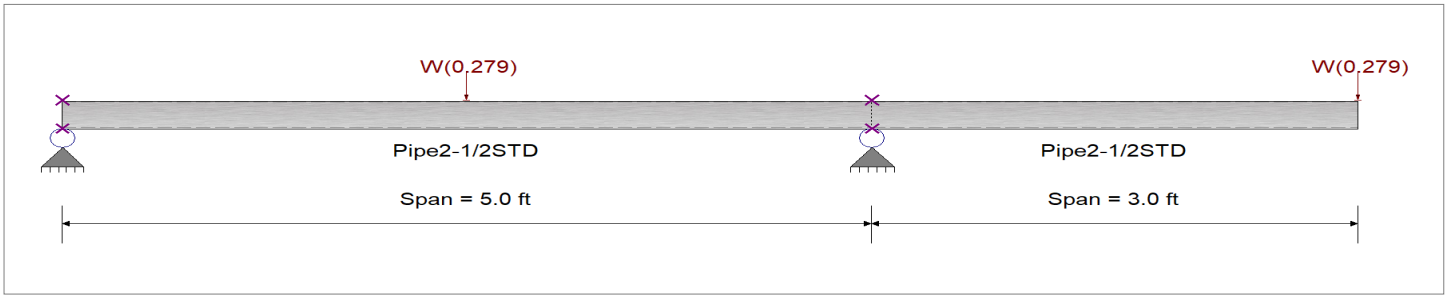
CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Strength 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 = 0.2790 k @ 2.50 ft

Load(s) for Span Number 2
Point Load : W = 0.2790 k @ 3.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.210 : 1	Maximum Shear Stress Ratio =	0.018 : 1
Section used for this span	Pipe2-1/2STD	Section used for this span	Pipe2-1/2STD
Ma : Applied	0.502 k-ft	Va : Applied	0.1841 k
Mn / Omega : Allowable	2.393 k-ft	Vn/Omega : Allowable	10.123 k
Load Combination	+D+0.60W+H	Load Combination	+D+0.60W+H
Location of maximum on span	5.000 ft	Location of maximum on span	2.520 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.221 in	Ratio =	325 >=180.
Max Upward Transient Deflection	-0.028 in	Ratio =	2,161 >=180.
Max Downward Total Deflection	0.133 in	Ratio =	543 >=180.
Max Upward Total Deflection	-0.017 in	Ratio =	3602 >=180.

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+L+H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+Lr+H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+S+H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+0.750Lr+0.750L+H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+0.750L+0.750S+H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+0.60W+H													

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Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

File: N-545.ec6

Lic. # : KW-06000304

PBA ENGINEERING, P.C.

DESCRIPTION: New Antenna Pipe Mast

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
Dsgn. L = 5.00 ft	1	0.210	0.018		-0.50	0.50	4.00	2.39	2.72	1.00	0.18	16.91	10.12
Dsgn. L = 3.00 ft	2	0.210	0.017		-0.50	0.50	4.00	2.39	1.00	1.00	0.17	16.91	10.12
+D+0.750Lr+0.750L+0.450W+H													
Dsgn. L = 5.00 ft	1	0.157	0.014		-0.38	0.38	4.00	2.39	2.72	1.00	0.14	16.91	10.12
Dsgn. L = 3.00 ft	2	0.157	0.012		-0.38	0.38	4.00	2.39	1.00	1.00	0.13	16.91	10.12
+D+0.750L+0.750S+0.450W+H													
Dsgn. L = 5.00 ft	1	0.157	0.014		-0.38	0.38	4.00	2.39	2.72	1.00	0.14	16.91	10.12
Dsgn. L = 3.00 ft	2	0.157	0.012		-0.38	0.38	4.00	2.39	1.00	1.00	0.13	16.91	10.12
+0.60D+0.60W+0.60H													
Dsgn. L = 5.00 ft	1	0.210	0.018		-0.50	0.50	4.00	2.39	2.72	1.00	0.18	16.91	10.12
Dsgn. L = 3.00 ft	2	0.210	0.017		-0.50	0.50	4.00	2.39	1.00	1.00	0.17	16.91	10.12
+D+0.70E+0.60H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+0.750L+0.750S+0.5250E+H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+0.60D+0.70E+H													
Dsgn. L = 5.00 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 3.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	W Only	-0.0278	3.380
W Only	2	0.2211	3.000		0.0000	3.380

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	-0.028	0.586	
Overall MINimum	-0.013	0.264	
+D+0.60W+H	-0.017	0.352	
+D+0.750Lr+0.750L+0.450W+H	-0.013	0.264	
+D+0.750L+0.750S+0.450W+H	-0.013	0.264	
+0.60D+0.60W+0.60H	-0.017	0.352	
W Only	-0.028	0.586	
H Only			

Mike Plescia
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Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Lic. # : KW-06000304 PBA ENGINEERING, P.C.

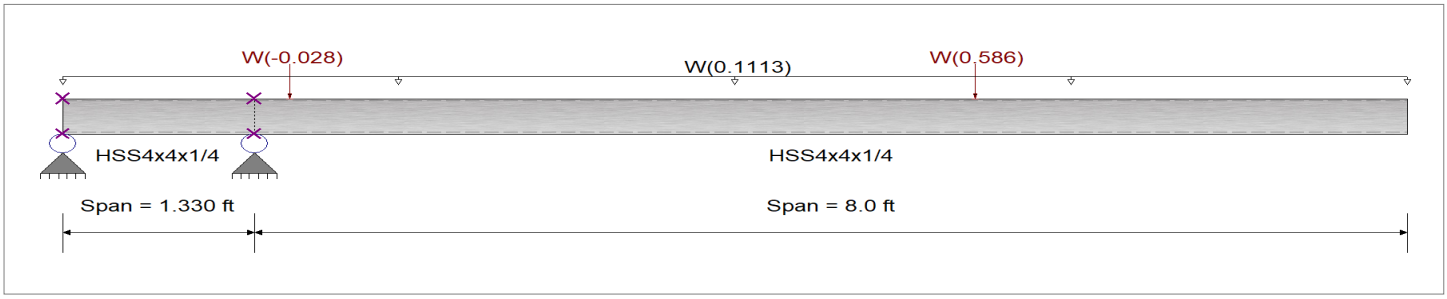
DESCRIPTION: Existing Screen Verticals

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method :	Allowable Strength Design	Fy : Steel Yield :	46.0 ksi
Beam Bracing :	Completely Unbraced	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

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

Beam self weight NOT internally calculated and added
Loads on all spans...
Uniform Load on ALL spans : W = 0.01855 ksf, Tributary Width = 6.0 ft

Load(s) for Span Number 2
Point Load : W = -0.0280 k @ 0.250 ft

Point Load : W = 0.5860 k @ 5.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.361 : 1	Maximum Shear Stress Ratio =	0.117 : 1
Section used for this span	HSS4x4x1/4	Section used for this span	HSS4x4x1/4
Ma : Applied	3.891 k-ft	Va : Applied	2.970 k
Mn / Omega : Allowable	10.765 k-ft	Vn/Omega : Allowable	25.423 k
Load Combination	+D+0.60W+H	Load Combination	+D+0.60W+H
Location of maximum on span	1.330 ft	Location of maximum on span	1.330 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.963 in	Ratio =	199 >=180.
Max Upward Transient Deflection	-0.006 in	Ratio =	2,841 >=180.
Max Downward Total Deflection	0.578 in	Ratio =	332 >=180.
Max Upward Total Deflection	-0.003 in	Ratio =	4736 >=180.

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+H													
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
+D+L+H													
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
+D+Lr+H													
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
+D+S+H													
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
+D+0.750Lr+0.750L+H													
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
+D+0.750L+0.750S+H													

Mike Plescia
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Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

DESCRIPTION: Existing Screen Verticals

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
+D+0.60W+H													
Dsgn. L = 1.33 ft	1	0.361	0.117		-3.89	3.89	17.98	10.77	1.67	1.00	2.97	42.46	25.42
Dsgn. L = 8.00 ft	2	0.361	0.034		-3.89	3.89	17.98	10.77	1.00	1.00	0.87	42.46	25.42
+D+0.750Lr+0.750L+0.450W+H													
Dsgn. L = 1.33 ft	1	0.271	0.088		-2.92	2.92	17.98	10.77	1.67	1.00	2.23	42.46	25.42
Dsgn. L = 8.00 ft	2	0.271	0.026		-2.92	2.92	17.98	10.77	1.00	1.00	0.65	42.46	25.42
+D+0.750L+0.750S+0.450W+H													
Dsgn. L = 1.33 ft	1	0.271	0.088		-2.92	2.92	17.98	10.77	1.67	1.00	2.23	42.46	25.42
Dsgn. L = 8.00 ft	2	0.271	0.026		-2.92	2.92	17.98	10.77	1.00	1.00	0.65	42.46	25.42
+0.60D+0.60W+0.60H													
Dsgn. L = 1.33 ft	1	0.361	0.117		-3.89	3.89	17.98	10.77	1.67	1.00	2.97	42.46	25.42
Dsgn. L = 8.00 ft	2	0.361	0.034		-3.89	3.89	17.98	10.77	1.00	1.00	0.87	42.46	25.42
+D+0.70E+0.60H													
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
+D+0.750L+0.750S+0.5250E+H													
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
+0.60D+0.70E+H													
Dsgn. L = 1.33 ft	1		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42
Dsgn. L = 8.00 ft	2		0.000				17.98	10.77	1.00	1.00	-0.00	42.46	25.42

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	W Only	-0.0056	0.771
W Only	2	0.9626	8.000		0.0000	0.771

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	-4.802	6.398	
Overall MINimum	-2.161	2.879	
+D+0.60W+H	-2.881	3.839	
+D+0.750Lr+0.750L+0.450W+H	-2.161	2.879	
+D+0.750L+0.750S+0.450W+H	-2.161	2.879	
+0.60D+0.60W+0.60H	-2.881	3.839	
W Only	-4.802	6.398	
H Only			

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Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Lic. # : KW-06000304 PBA ENGINEERING, P.C.

DESCRIPTION: Facade Mount Vertical

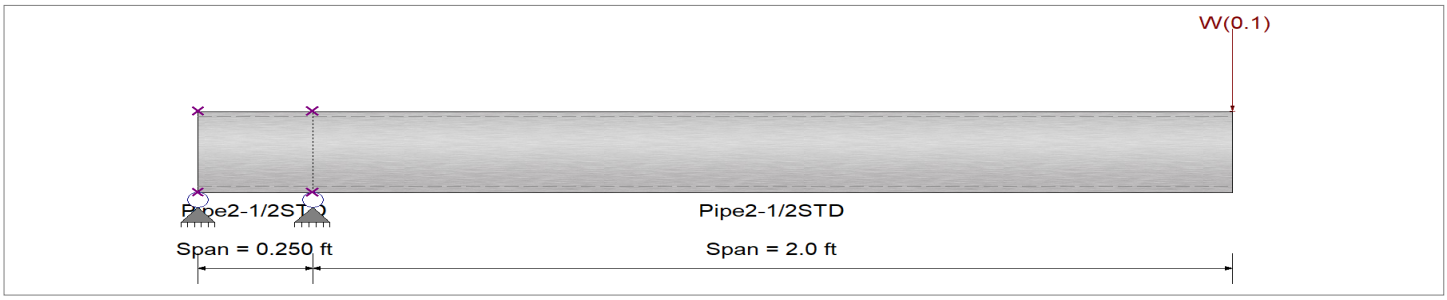
CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Strength 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 2
Point Load : W = 0.10 k @ 2.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.050 : 1	Maximum Shear Stress Ratio =	0.047 : 1
Section used for this span	Pipe2-1/2STD	Section used for this span	Pipe2-1/2STD
Ma : Applied	0.120 k-ft	Va : Applied	0.480 k
Mn / Omega : Allowable	2.393 k-ft	Vn/Omega : Allowable	10.123 k
Load Combination	+D+0.60W+H	Load Combination	+D+0.60W+H
Location of maximum on span	0.250 ft	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.012 in	Ratio =	3,903 >=180.
Max Upward Transient Deflection	0.000 in	Ratio =	0 <180.0
Max Downward Total Deflection	0.007 in	Ratio =	6507 >=180.
Max Upward Total Deflection	-0.000 in	Ratio =	150950 >=180.

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+L+H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+Lr+H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+S+H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+0.750Lr+0.750L+H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+0.750L+0.750S+H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+0.60W+H													
Dsgn. L = 0.25 ft	1	0.050	0.047		-0.12	0.12	4.00	2.39	1.67	1.00	0.48	16.91	10.12
Dsgn. L = 2.00 ft	2	0.050	0.006		-0.12	0.12	4.00	2.39	1.00	1.00	0.06	16.91	10.12
+D+0.750Lr+0.750L+0.450W+H													
Dsgn. L = 0.25 ft	1	0.038	0.036		-0.09	0.09	4.00	2.39	1.67	1.00	0.36	16.91	10.12

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Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

File: N-545.ec6

Lic. # : KW-06000304

PBA ENGINEERING, P.C.

DESCRIPTION: Facade Mount Vertical

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
Dsgn. L = 2.00 ft	2	0.038	0.004		-0.09	0.09	4.00	2.39	1.00	1.00	0.05	16.91	10.12
+D+0.750L+0.750S+0.450W+H													
Dsgn. L = 0.25 ft	1	0.038	0.036		-0.09	0.09	4.00	2.39	1.67	1.00	0.36	16.91	10.12
Dsgn. L = 2.00 ft	2	0.038	0.004		-0.09	0.09	4.00	2.39	1.00	1.00	0.05	16.91	10.12
+0.60D+0.60W+0.60H													
Dsgn. L = 0.25 ft	1	0.050	0.047		-0.12	0.12	4.00	2.39	1.67	1.00	0.48	16.91	10.12
Dsgn. L = 2.00 ft	2	0.050	0.006		-0.12	0.12	4.00	2.39	1.00	1.00	0.06	16.91	10.12
+D+0.70E+0.60H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+D+0.750L+0.750S+0.5250E+H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
+0.60D+0.70E+H													
Dsgn. L = 0.25 ft	1		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12
Dsgn. L = 2.00 ft	2		0.000				4.00	2.39	1.00	1.00	-0.00	16.91	10.12

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	W Only	-0.0000	0.145
W Only	2	0.0123	2.000		0.0000	0.145

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	-0.800	0.900	
Overall MINimum	-0.360	0.405	
+D+0.60W+H	-0.480	0.540	
+D+0.750Lr+0.750L+0.450W+H	-0.360	0.405	
+D+0.750L+0.750S+0.450W+H	-0.360	0.405	
+0.60D+0.60W+0.60H	-0.480	0.540	
W Only	-0.800	0.900	
H Only			

Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Jun 12, 2020	Date:	6/12/2020
Fastening point:			

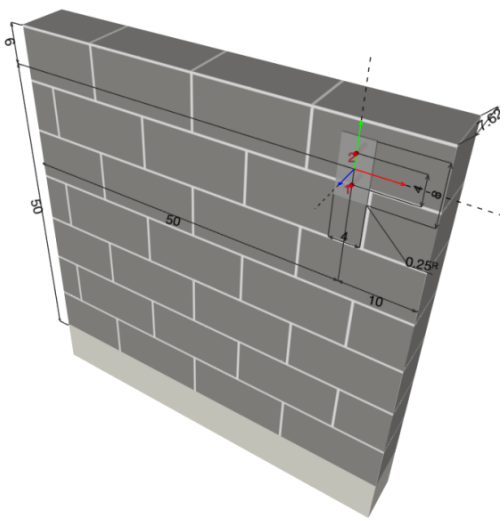
Specifier's comments:

1 Input data

Anchor type and diameter:	**HY 270 + threaded rod 5.8 1/2, HIT-SC 18x50**
Item number:	385422 HAS 5.8 1/2"x3-1/8" (element) / 2194247 HIT-HY 270 (adhesive) / 360485 HIT-SC 18x50 (sieve sleeve)
Effective embedment depth:	h_{ef} = 2.000 in.
Material:	5.8
Evaluation Service Report:	ESR-4143
Issued I Valid:	1/1/2020 | 1/1/2021
Proof:	Design Method ASD Masonry
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.250 in.
Anchor plate[R]:	l_x x l_y x t = 4.000 in. x 8.000 in. x 0.250 in.; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	Hollow CMU, L x W x H: 16.000 in. x 8.000 in. x 8.000 in.; Joints: vertical: 0.375 in.; horizontal: 0.375 in. Base material temperature: 68 °F
Installation:	Face installation
Seismic loads	no

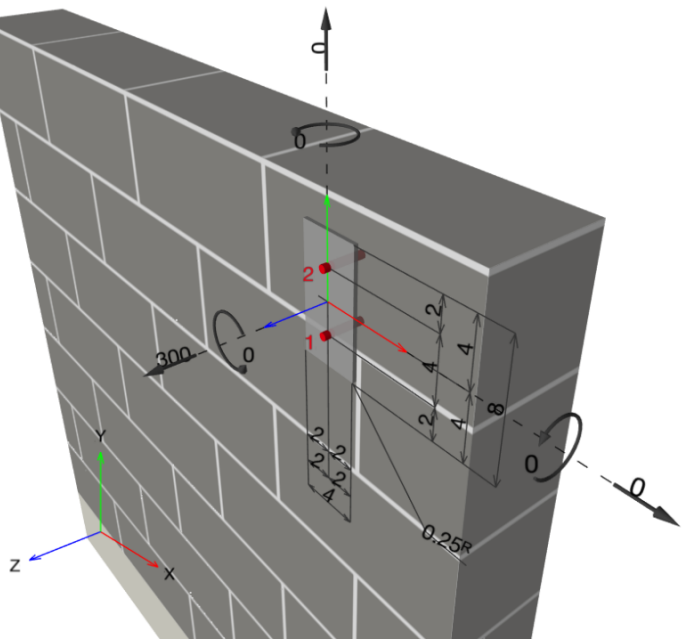
[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.]



Company:		Page:	2
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Jun 12, 2020	Date:	6/12/2020
Fastening point:			

Geometry [in.] & Loading [lb, in.lb]

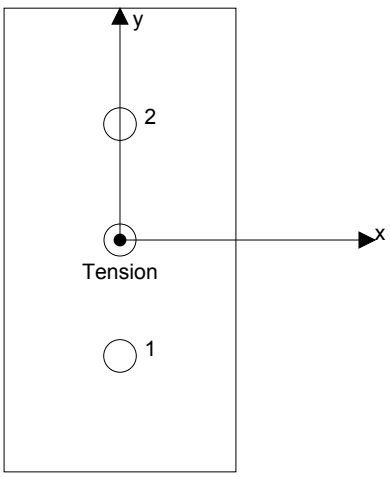


1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 300; V_x = 0; V_y = 0; M_x = 0; M_y = 0; M_z = 0;	no	46

2 Load case/Resulting anchor forces

Load case: Service loads



Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	150	0	0	0
2	150	0	0	0

max. compressive strain: - [‰]
max. compressive stress: - [psi]
resulting tension force in (x/y)=(0.000/0.000): 300 [lb]
resulting compression force in (x/y)=(0.000/0.000): 0 [lb]

Anchor forces are calculated based on the assumption of a rigid anchor plate.

Company:		Page:	3
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Jun 12, 2020	Date:	6/12/2020
Fastening point:			

3 Tension load (Most utilized anchor 1)

	Load P_s [lb]	Capacity P_t [lb]	Utilization $\beta_P = P_s/P_t$ [%]	Status
Steel strength	150	4,700	4	OK
Bond strength	150	330	46	OK

3.1 Steel strength

$P_{t,s}$ = ESR Value refer to ICC-ES ESR-4143
$P_{t,s} \geq P_s$

Results

$P_{t,s}$ [lb]	P_s [lb]
4,700	150

3.2 Bond strength

$P_{t,b,Base}$ = ESR Value refer to ICC-ES ESR-4143
$P_{t,b} = P_{t,b,Base} \cdot f_{red,E} \cdot f_{red,s} \cdot f_{red,Temp}$
$P_{t,b} \geq P_s$

Variables

c_{min} [in.]	c_{cr} [in.]	s_{min} [in.]	s_{cr} [in.]	Temperature [°F]
4.000	-	4.000	-	68

Results

$P_{t,b}$ [lb]	$P_{t,b,Base}$ [lb]	P_s [lb]	$f_{red,E}$	$f_{red,S}$	$f_{red,Temp}$	$f_{red,TwoInOne}$
330	330	150	1.000	1.000	1.000	1.000

Company:		Page:	4
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Jun 12, 2020	Date:	6/12/2020
Fastening point:			

4 Shear load (Most utilized anchor 1)

	Load V_s [lb]	Capacity V_t [lb]	Utilization $\beta_V = V_s/V_t$ [%]	Status
Overall strength	N/A	N/A	N/A	N/A

5 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2018, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Refer to the manufacturer's product literature for cleaning and installation instructions.
- For additional information about ACI 318 strength design provisions, please go to https://submittals.us.hilti.com/PROFISAnchorDesignGuide/
- The min. sizes of the bricks, the masonry compressive strength, the type / strength of the mortar and the grout (in case of fully grouted CMU walls) has to fulfill the requirements given in the relevant ESR-approval or in the PTG.
- Only the local load transfer from the anchor(s) to the wall is considered, a further load transfer in the wall is not covered by PROFIS!
- Wall is assumed as being perfectly aligned vertically – checking required(!): Noncompliance can lead to significantly different distribution of forces and higher tension loads than those calculated by PROFIS. Masonry wall must not have any damages (neither visible nor not visible)! While installation, the positioning of the anchors needs to be maintained as in the design phase i.e. either relative to the brick or relative to the mortar joints.
- The effect of the joints on the compressive stress distribution on the plate / bricks was not taken into consideration.
- If no significant resistance is felt over the entire depth of the hole when drilling (e.g. in unfilled butt joints), the anchor should not be set at this position or the area should be assessed and reinforced. Hilti recommends the anchoring in masonry always with sieve sleeve. Anchors can only be installed without sieve sleeves in solid bricks when it is guaranteed that it has not any hole or void.
- The accessories and installation remarks listed on this report are for the information of the user only. In any case, the instructions for use provided with the product have to be followed to ensure a proper installation.
- The compliance with current standards (e.g. 2015, 2012, 2009 and 2006 IBC) is the responsibility of the user.
- Drilling method (hammer, rotary) to be in accordance with the approval!
- Masonry needs to be built in a regular way in accordance with state-of the art guidelines!
- Warnings/Notes - OST in Masonry HNA!

Fastening meets the design criteria!

Company:		Page:	5
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Jun 12, 2020	Date:	6/12/2020
Fastening point:			

6 Installation data

Anchor type and diameter: HY 270 + threaded rod 5.8 1/2, HIT-SC 18x50

Profile: no profile

Item number: 385422 HAS 5.8 1/2"x3-1/8" (element) / 2194247 HIT-HY 270 (adhesive) / 360485 HIT-SC 18x50 (sieve sleeve)

Hole diameter in the fixture: d_f = 0.563 in.

Installation torque: 54 in.lb

Plate thickness (input): 0.250 in.

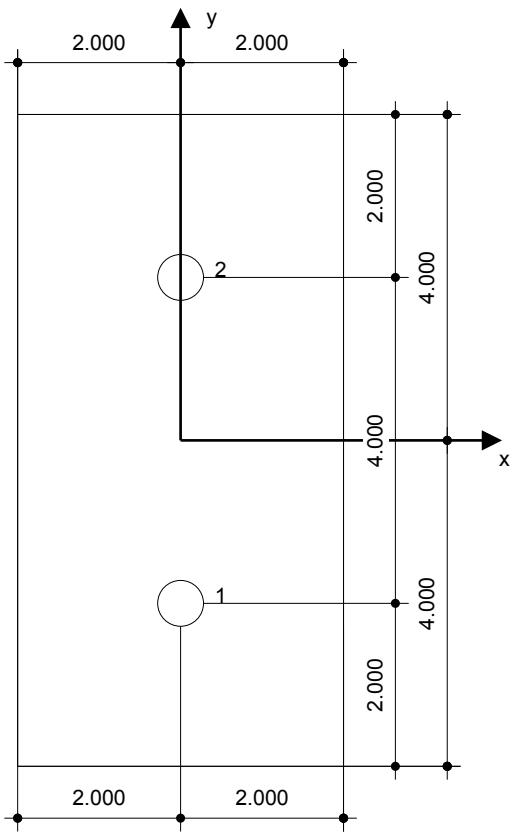
Hole diameter in the base material: 0.688 in.

Hole depth in the base material: 2.375 in.

Drilling method: Drilled in rotary mode

Minimum thickness of the base material: 7.625 in.

Hilti HIT-V threaded rod with HIT-HY 270 injection mortar and 1 HIT-SC 18x50 sieve sleeve(s) with 2 in embedment h_ef, 1/2, Steel galvanized, Rotary drilled installation per ESR-4143



Coordinates Anchor [in.]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0.000	-2.000	50.000	10.000	48.000	8.000
2	0.000	2.000	50.000	10.000	52.000	4.000

Company:		Page:	6
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Jun 12, 2020	Date:	6/12/2020
Fastening point:			

7 Remarks; Your Cooperation Duties

- Any and all information and data contained in the Software concern solely the use of Hilti products and are based on the principles, formulas and security regulations in accordance with Hilti's technical directions and operating, mounting and assembly instructions, etc., that must be strictly complied with by the user. All figures contained therein are average figures, and therefore use-specific tests are to be conducted prior to using the relevant Hilti product. The results of the calculations carried out by means of the Software are based essentially on the data you put in. Therefore, you bear the sole responsibility for the absence of errors, the completeness and the relevance of the data to be put in by you. Moreover, you bear sole responsibility for having the results of the calculation checked and cleared by an expert, particularly with regard to compliance with applicable norms and permits, prior to using them for your specific facility. The Software serves only as an aid to interpret norms and permits without any guarantee as to the absence of errors, the correctness and the relevance of the results or suitability for a specific application.
- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

ATTACHMENT 5

Photo Documentation & Simulations

NEW HAVEN CT
54 MEADOW STREET
NEW HAVEN, CT 06519

Prepared in July 2020 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 modification of an existing wireless communications facility (the "Facility") at 54 Meadow Street in New Haven, Connecticut. At the request of Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") completed this assessment and prepared computer-generated photo-simulations depicting the Facility.

Project Undertaking

The proposed modifications to the Facility would take place on the rooftop of an existing multi-story building (the "Host Building"). Currently, Verizon Wireless maintains twelve (12) antennas and various appurtenances on the building's penthouse. Verizon Wireless plans to replace nine (9) antennas, leave three (3) existing antennas as is, and install three (3) new antennas for a total of fifteen (15) antennas. Of the nine (9) antennas being replaced, seven (7) will be relocated to positions on the building façade, penthouse façade, and an existing mechanical screen wall on the rooftop.

The building rooftop extends to a height of approximately 129' 2" above ground level ("AGL"). A parapet wall extends to a height of approximately 131' 6" AGL. The penthouse rooftop extends to a height of approximately 155' AGL with a parapet extending to approximately 157' 2" AGL. Please refer to the Site Drawings prepared by On Air Engineering, LLC, Rev. 2 dated July 13, 2020, and provided under separate cover, for details regarding the proposed installation.

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 July 8, 2020. Weather conditions were favorable for the in-field activity with partly cloudy skies.

Photographic Documentation and Simulations

During the field reconnaissance, APT obtained photo-documentation of representative locations where the Host Building was 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 typically uses a standard focal length of 50mm to present a consistent

[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.

field of view. On occasion, photos are taken at lower focal lengths to provide a greater depth of field and to provide context to the scene by including surrounding features within the photograph. During this evaluation, one (1) photograph was taken at a 24mm focal length as noted in the table (Table 1 – Photo Locations) on the following pages.

Photographic simulations were generated to portray scaled renderings of the proposed Facility from all eight (8) 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 Host Building) and the corresponding simulation (the Facility) 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, identification of antennas proposed for removal/relocation, identification of relocated/new antennas, 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.

Table 1 – Photo Locations

Photo	Location	Orientation	Distance to Site
1	Orange Street at George Street	South	± 0.23 Mile
2	Church Street South	Southeast	± 0.18 Mile
3	Cedar Street	Northeast	± 0.32 Mile
4	Union Avenue	Northeast	± 0.22 Mile
5	Church Street	Northwest	± 0.44 Mile
6	Food Terminal Plaza	Northwest	± 0.41 Mile
7	Brewery Street	Northwest	± 0.32 Mile
8	Union Avenue	West	± 309 Feet

Conclusions

As presented on the attached photo-simulations, views of the Facility would change slightly with the proposed modifications. The Host Building currently has multiple antennas and equipment mounted on the penthouse façade. The modifications as proposed by Verizon Wireless do not increase visibility of the Facility, nor do they detract from the general characteristics of the Host Building, as is.

Limitations

This analysis may not account for all visible locations, as it is based on the combination of computer modeling, incorporating aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

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 sunny skies.

ATTACHMENTS

PHOTO LOG

Legend

- Site
- Photographic Location

1 inch = 600 feet

600 300 0 600 Feet

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	**ORANGE STREET AT GEORGE STREET**	**SOUTH**	**+/- 0.23 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	**ORANGE STREET AT GEORGE STREET**	**SOUTH**	**+/- 0.23 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	**ORANGE STREET AT GEORGE STREET**	**SOUTH**	**+/- 0.23 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	**ORANGE STREET AT GEORGE STREET**	**SOUTH**	**+/- 0.23 MILE**

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**CHURCH STREET SOUTH**	**SOUTHEAST**	**+/- 0.18 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**CHURCH STREET SOUTH**	**SOUTHEAST**	**+/- 0.18 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**CHURCH STREET SOUTH**	**SOUTHEAST**	**+/- 0.18 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**CHURCH STREET SOUTH**	**SOUTHEAST**	**+/- 0.18 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**CEDAR STREET**	**NORTHEAST**	**+/- 0.32 MILE**

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**CEDAR STREET**	**NORTHEAST**	**+/- 0.32 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**CEDAR STREET**	**NORTHEAST**	**+/- 0.32 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**CEDAR STREET**	**NORTHEAST**	**+/- 0.32 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
4	**UNION AVENUE**	**NORTHEAST**	**+/- 0.22 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
4	**UNION AVENUE**	**NORTHEAST**	**+/- 0.22 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
4	**UNION AVENUE**	**NORTHEAST**	**+/- 0.22 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
4	**UNION AVENUE**	**NORTHEAST**	**+/- 0.22 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
5	**CHURCH STREET EXTENSION**	**NORTHWEST**	**+/- 0.44 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
5	**CHURCH STREET EXTENSION**	**NORTHWEST**	**+/- 0.44 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
5	**CHURCH STREET EXTENSION**	**NORTHWEST**	**+/- 0.44 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
5	**CHURCH STREET EXTENSION**	**NORTHWEST**	**+/- 0.44 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
6	**FOOD TERMINAL PLAZA**	**NORTHWEST**	**+/- 0.41 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
6	**FOOD TERMINAL PLAZA**	**NORTHWEST**	**+/- 0.41 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
6	**FOOD TERMINAL PLAZA**	**NORTHWEST**	**+/- 0.41 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
6	**FOOD TERMINAL PLAZA**	**NORTHWEST**	**+/- 0.41 MILE**

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
7	**BREWERY STREET**	**NORTHWEST**	**+/- 0.32 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
7	**BREWERY STREET**	**NORTHWEST**	**+/- 0.32 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
7	**BREWERY STREET**	**NORTHWEST**	**+/- 0.32 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
7	**BREWERY STREET**	**NORTHWEST**	**+/- 0.32 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

24mm Focal Length

PHOTOGRAPHED ON 7/8/2020

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
8	**UNION AVENUE**	**WEST**	**+/- 309 FEET**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
8	**UNION AVENUE**	**WEST**	**+/- 309 FEET**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
8	**UNION AVENUE**	**WEST**	**+/- 309 FEET**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
8	**UNION AVENUE**	**WEST**	**+/- 309 FEET**

ATTACHMENT 6

Site Name: New Haven CT

Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW 700	746	4	556	2,224	136	0.0432	0.497333333	8.69%
VZW Cellular	869	2	354	708	155	0.0106	0.579333333	1.83%
VZW Cellular	880	4	556	2,224	136	0.0432	0.586666667	7.37%
VZW PCS	1,970	4	1,303	5,213	136	0.1013	1.0	10.13%
VZW AWS	2,145	4	1,396	5,585	136	0.1086	1.0	10.86%
VZW CBRS	3,550	4	51	204	136	0.0040	1.0	0.40%
VZW 28GHz	27,600	1	610	610	136	0.0119	1.0	1.19%

Total Percentage of Maximum Permissible Exposure 40.47%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

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

Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

ATTACHMENT 7

AIRSPACE®

Federal Aviation Regulations Part 77 Sub-Part C
Obstruction Analysis Report

Verizon Wireless
Ziad Cheiban
20 Alexander Drive
Wallingford, CT 06492

E-mail: ziad.cheiban@verizonwireless.com
Phone: 8604717860 Fax:

Site Identification: MCM_CT-520
Nearest City: New Haven, CT

Site Information (Coordinate Datum - NAD83)

Latitude:	41° - 17' - 59.54"	**Decimal Degrees:** 41.2998722222222°
Longitude:	72° - 55' - 35.57"	**Decimal Degrees:** 72.9265472222222°

Ground Elevation:	11 feet AMSL
Structure Height:	160 feet AGL
Overall Height:	171 feet AMSL

FAA Number: Null
Airspace Study #: 2020-APS-3708-OE

Analyzed on: 5/22/2020. Using Airspace® 20.5.463. Airspace® Data Date: 5/15/2020

This Airspace Analysis was completed under all obstacle evaluation rules specified in Federal Aviation Regulations (FAR) Part 77 sub-Part C.

Approved,

Bella B Harris, Airspace Technician
Federal Airways and Airspace®
1423 S. Patrick Dr.
Satellite Beach, FL 32935
(321)777-1266

Clyde J Pittman, Aerospace Engineer

Date Printed: 05-22-2020

AIRSPACE®

Site ID Number: MCM_CT-520

AERONAUTICAL RECOMMENDATIONS

Notice to the FAA is not required at the analyzed height and location.

TERPS® analysis has been completed for the proposed site. **The maximum allowable height identified is 363 feet AMSL based upon HVN VFR Traffic Pattern Airspace.**

The proposed structure does not penetrate obstruction standards. An aeronautical analysis by the Federal Aviation Administration would likely find no adverse aeronautical impact. **An extended study will not be required. The maximum not to exceed height to avoid an extended study by the FAA is 213 feet AMSL based upon HVN FAR 77.17(a)(2) VFR Transitional Surface.**

Marking and Lighting are not normally required for structures 200 feet or less. However, it may become a requirement based upon the outcome of the aeronautical study conducted by the FAA. It will then become part of the determination and a requirement of the determination.

No adverse impact to low altitude federal airways are identified.

No impact to VFR Traffic Pattern Airspace.

No Potential FCC Licensed AM Broadcast Station interference identified.

No impact to an Air Navigation Facility has been identified.

Date Printed: 05-22-2020

AIRSPACE®

Site ID Number: MCM_CT-520

LANDING FACILITY INFORMATION

The nearest public use landing facility to the proposed location is:
TWEED-NEW HAVE (Ident: HVN)

The distance to the nearest runway of this landing facility is 14983 feet or 2.8 statute miles. The true bearing is 140.12° to this landing facility.

Private landing facilities are exempt from review by the FAA under FAR Part 77. However, locating near a private landing facility may affect aircraft operations during take-off and landing.

The nearest private landing facility is: 1CT2: YALE
The proposed structure is located 3220 feet or .6 statute miles.
The true bearing to this landing facility is 301 degrees.

The proposed structure is within 3 nautical miles (3.45 statute miles) of a private landing facility. This landing facility and supporters are likely to resist this proposal during the local zoning board hearing.

FAA NOTICE REQUIREMENTS

Notice to the FAA is not required because the proposed structure
1) is less than 200 feet above ground level [FAR Part 77.9(a)].
2) does not exceed runway slope criteria [FAR Part 77.9(b)].
3) is not a traverse way (road) [FAR 77.9(c)].
4) is not within a protected instrument procedure area [FAR 77.9 IFR].
5) is not on airport property [FAR 77.9(d)].
6) is not near an air navigation facility [FAR 77.9 IFR].

Date Printed: 05-22-2020

AIRSPACE®

Site ID Number: MCM_CT-520

AERONAUTICAL IMPACT

FAR Part 77 Subpart-C Obstruction Standards

The proposed structure would not violate or exceed obstruction standards as defined by FAR Part 77.17(a)(1), 77.17(a)(2) and 77.19.

Terminal Instrument Procedure Standards - FAR Part 77.17(a)(3)

No adverse impact with a US Terminal Approach or Departure Procedure has been identified.

Minimum Obstacle Clearance Altitude (MOCA) - FAR Part 77.17(a)(4)

The proposed structure is not located within a low altitude airway area or will not impact aircraft using any airway.

VFR Traffic Pattern Airspace

The proposed structure is not located within a VFR Traffic Pattern Airspace or is below the allowable height. It will not impact aircraft circling to land.

FCC Licensed AM Broadcast Station Proof-of-Performance

The proposed structure is not located within the specified range of an FCC Licensed AM radio and will not require Proof-of-Performance analysis.

Date Printed: 05-22-2020

****
* Federal Airways & Airspace *
* Summary Report: Alteration Of Existing Structure *
* Non-Antenna Structure *
****

Airspace User:

File: 2020-APS-3708-OE

Location: New Haven, CT

Latitude: 41°-17'-59.54" Longitude: 72°-55'-35.57"

SITE ELEVATION AMSL.....11 ft.
STRUCTURE HEIGHT.....160 ft.
OVERALL HEIGHT AMSL.....171 ft.

NOTICE CRITERIA
FAR 77.9(a): NNR (DNE 200 ft AGL)
FAR 77.9(b): NR (Exceeds Notice Slope, Maximum: 162 ft.)
NNR See below regarding Notice Criteria Exemption under 77.9(e)(4).
FAR 77.9(c): NNR (Not a Traverse Way)
FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for HVN
FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for 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.

If the proposed construction is an alteration to an existing structure, notice requirements may be superceded by the item exemptions listed below.

The location and analysis were based upon an existing structure. However, no existing aeronautical study number was identified. If the 'existing' structure penetrates an obstruction surface defined by CFR 77.17, 77.19, 77.21 or 77.23 (see below) it is strongly recommended the FAA be notified of the 'existing' structure to determine obstruction marking or lighting requirements. It is not uncommon for the FAA to issue a Determination of No Hazard (DNH) for an existing structure and modify the airspace to accommodate the structure, should that be required. If the FAA issues a DNH enter the aeronautical study number (ASN) in the space provided on the Airspace Analysis Window Form and re-run Airspace.

No frequencies were identified in this alteration are included in the FAA's Co-Location Policy published in the Federal Register November 15, 2007. Therefore, application of the Co-Location Policy notice exemption rule can not be applied.

Title 14 CFR Part 77.9(e), Notice Criteria Exception:
The location and analysis were based upon an existing structure with the alteration limited to the addition of an antenna with a height no greater than 20 feet. Title 14 CFR Part 77.9(e)(4) exempts the requirement for notice to the FAA; "Any antenna structure of 20 feet or less in height except one that would increase the height of another antenna structure." If the addition of an antenna of 20 feet or less to an existing structure increase the height of the structure to exceed 200 feet AGL or penetrate an obstruction surface defined by Title 14 CFR 77.17, 77.19, 77.21 or 77.23 notice is recommended. This will allow the FAA to determine the level of obstruction lighting required and any aeronautical impacts, if any, to aircraft operations. Notice of an existing structure almost always receives a No Hazard Determination. Please see Summary Report below plus the Airport and Part 77 Reports for application of the above listed CFRs.

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: 14983.55   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: 72131.77   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	300.93	.53	-48	

  No Impact to Private Landing Facility
  Structure 48 ft below heliport.

CT40	HEL	BOB THOMAS FORD	5.74	4.21	+91	

  No Impact to Private Landing Facility
  Structure is beyond notice limit by 20580 feet.

CT84	HEL	PARTYKA CHEVROLET	10.38	4.5	+121	

  No Impact to Private Landing Facility
  Structure is beyond notice limit by 22342 feet.

AIR NAVIGATION ELECTRONIC FACILITIES

FAC IDNT	TYPE	ST AT	FREQ	VECTOR	DIST (ft)	DELTA ELEVA	ST	LOCATION	GRND ANGLE	APCH BEAR
HVN	LOCALIZER	I	109.1	131.00	14388	+154	CT	RWY 02 TWEED-NEW	.61	16
HVN	ATCT	I	A/G	137.35	16907	+80	CT	TWEED-NEW HAVEN	.27	
JWE	NDB	D	36	300.55	59247	-400	CT	CLERA	-.39	
MAD	VOR/DME	R	110.4	85.4	64591	-45	CT	MADISON	-.04	
BDR	VOR/DME	R	108.8	226.96	74409	+162	CT	BRIDGEPORT	.12	

CCC	VOR/DME	R	117.2	165.42	139419	+86	NY	CALVERTON .04
KOKX	RADAR WXL	I		173.79	159182	-24	NY	NEW YORK -.01
HFD	VOR/DME	R	114.9	39.76	162031	-678	CT	HARTFORD -.24
QVH	RADAR ARSR	I	1326.9	156.82	167033	-180	NY	RIVERHEAD -.06
CMK	VOR/DME	R	116.6	267.49	180089	-523	NY	CARMEL -.17
ISP	RADAR	I	2735.	194.47	185780	-11	NY	LONG ISLAND MacAR 0.00
FOK	TACAN	R	111.0	154.33	186959	+121	NY	SUFFOLK CO .04
DPK	VOR/DME	R	117.7	209.21	212362	+48	NY	DEER PARK .01
HPN	RADAR	I	2735.	248.88	232364	-339	NY	WESTCHESTER COUNT -.08
BDL	RADAR	I		15.92	242105	-65	CT	BRADLEY INTL -.02

CFR Title 47, §1.30000-§1.30004
AM STUDY NOT REQUIRED: Structure is near a licensed AM radio station. However, Movement Method Proof is not required because only antenna structures fall within the jurisdiction of the FCC. Please review AM Station Report for details.

Airspace® Summary Version 20.5.565

05-22-2020
14:12:20

****
* F.A.R. 77 OBSTRUCTION ANALYSIS *
****

FILE: 2020-APS-3708-OE

LATITUDE: 41°-17'-59.54" LONGITUDE: 72°-55'-35.57"

SITE ELEVATION AMSL..... 11 ft.
STRUCTURE HEIGHT..... 160 ft.
OVERALL HEIGHT AMSL..... 171 ft.

77.17(a)(1) A height more than 499 ft. Above Ground Level (AGL).

********** DOES NOT EXCEED **********

THE MAXIMUM ALLOWABLE HEIGHT IS:..... 510 ft. AMSL

THE GROUND ELEVATION AT THE SITE IS:... 11 ft. AMSL

THE OVERALL CASE ELEVATION IS:..... 171 ft. AMSL

THE CASE IS BELOW THE ALLOWABLE BY:.... 339 ft.

****
BEGIN AIRPORT ANALYSIS FOR HVN
****

77.17(a)(2) A height AGL or airport elevation, whichever is higher.

********** DOES NOT EXCEED **********

BECAUSE: Proposed height does not exceed 200 feet Above Ground Level.

THE REFERENCE AIRPORT IDENT IS:..... HVN

THE AIRPORT ELEVATION IS:..... 13 ft. AMSL

THE DISTANCE FROM THE CASE TO ARP IS:.. 2.8126 NAUTICAL MILES

THE BEARING AIRPORT TO CASE IS:..... 320.115 DEGREES

THE CASE HEIGHT AGL IS:..... 160 ft.

ALLOWABLE HEIGHT..... 213 ft. AMSL

77.19(a) A height exceeding a horizontal surface 150 ft. above airport elevation within a radius of >> HVN <<.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED HORIZONTAL SURFACE AREA

77.19(b) A height exceeding a conical surface (a slope outward 4000 ft. from the horizontal surface at 20/1 ratio).

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED CONICAL SURFACE AREA

****
* BEGIN RUNWAY ANALYSIS *
****

RUNWAY 02/20

EXISTING RUNWAY 02/20

77.19(c) A height exceeding runway primary surface.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED RUNWAY PRIMARY SURFACE

77.19(e) A height exceeding a transitional surface abeam runway.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED RUNWAY ABEAM TRANSITIONAL SURFACE

77.19(d) A height exceeding an approach surface of RUNWAY 20.

THE BEARING TO THE CASE FROM THE THRESHOLD IS..... 313.249 degrees

THE NORMAL BEARING TO THE CENTERLINE IS..... 92.91 degrees

THE CENTERLINE OUTBOUND TRUE BEARING IS..... 2.91 degrees

THE ABEAM DISTANCE TO CENTERLINE FROM CASE IS..... 11321.31 ft.

THE RUNWAY THRESHOLD ELEVATION IS..... 12.6 ft. AMSL

THE DISTANCE FROM THRESHOLD + 200' TO THE CASE IS... 14853.313 ft.

THE DISTANCE FROM THRESHOLD + 200' TO NB IS..... 9609.94 ft.

THE CRITICAL WIDTH OF HALF THE APPROACH IS..... 1701.237 ft.

********** DOES NOT EXCEED **********

BEYOND DEFINED APPROACH & TRANSITIONAL AREAS.

RUNWAY CENTERLINE OFFSET IS..... 11321.31 ft.

DISTANCE FROM THE THRESHOLD TO OFFSET IS..... 9809.9 ft.

THE SLOPE OF RUNWAY 20 IS: 34 TO 1.

The FAA has defined this runway as a non-utility runway. It has a non-precision approach. The obstacle surface extends 10,000 feet (34:1 Slope) symmetrically centered along the runway centerline extended. Please review the US Terminal Procedures volume associated with this airport. If a procedure for this airport and/or runway exist use Terps® Professional software to determine the height limits (if any) the procedure will have on the proposed structure. Non-precision instrument procedures can extend 10 NM from the runway and a circling approach to the airport or runway can extend out up to 4.5 NM from every runway end.

****
* BEGIN RUNWAY ANALYSIS *
****

RUNWAY 14/32
EXISTING RUNWAY 14/32

77.19(c) A height exceeding runway primary surface.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED RUNWAY PRIMARY SURFACE

77.19(e) A height exceeding a transitional surface abeam runway.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED RUNWAY ABEAM TRANSITIONAL SURFACE

77.19(d) A height exceeding an approach surface of RUNWAY 14.

THE BEARING TO THE CASE FROM THE THRESHOLD IS..... 320.343 degrees

THE NORMAL BEARING TO THE CENTERLINE IS..... 221.19 degrees

THE CENTERLINE OUTBOUND TRUE BEARING IS..... 311.19 degrees

THE ABEAM DISTANCE TO CENTERLINE FROM CASE IS..... 2443.81 ft.

THE RUNWAY THRESHOLD ELEVATION IS..... 4.9 ft. AMSL

THE DISTANCE FROM THRESHOLD + 200' TO THE CASE IS... 15358.707 ft.

THE DISTANCE FROM THRESHOLD + 200' TO NB IS..... 15164.09 ft.

THE CRITICAL WIDTH OF HALF THE APPROACH IS..... 1766.404 ft.

********** DOES NOT EXCEED **********

CASE IS BEYOND APPROACH SURFACE, OUT BY..... 5164.04 ft.

THE SLOPE OF RUNWAY 14 IS: 20 TO 1.

The FAA has defined this runway as a non-utility runway. It has a visual approach. The obstacle surface extends 5000 feet (20:1 Slope) symmetrically centered along the runway centerline extended. This airport may have a circling approach. Please review the US Terminal Procedures volume associated with this airport. If a procedure for this airport and/or this runway exist use Terps® Professional software to determine the height limits (if any) the procedure will have on the proposed structure. A circling approach to the airport or any runway can extend out up to 4.5 NM from every runway end.

****
BEGIN AIRPORT ANALYSIS FOR BDR
****

77.17(a)(2) A height AGL or airport elevation, whichever is higher.

********** DOES NOT EXCEED **********

BECAUSE: Location studied is further than 5.99 nm. from ARP.

77.19(a) A height exceeding a horizontal surface 150 ft. above airport elevation within a radius of >> BDR <<.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED HORIZONTAL SURFACE AREA

77.19(b) A height exceeding a conical surface (a slope outward 4000 ft. from the horizontal surface at 20/1 ratio).

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED CONICAL SURFACE AREA

****
* BEGIN RUNWAY ANALYSIS *
****

RUNWAY 06/24
EXISTING RUNWAY 06/24

77.19(c) A height exceeding runway primary surface.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED RUNWAY PRIMARY SURFACE

77.19(e) A height exceeding a transitional surface abeam runway.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED RUNWAY ABEAM TRANSITIONAL SURFACE

77.19(d) A height exceeding an approach surface of RUNWAY 24.

THE BEARING TO THE CASE FROM THE THRESHOLD IS..... 47.451 degrees

THE NORMAL BEARING TO THE CENTERLINE IS..... 135 degrees

THE CENTERLINE OUTBOUND TRUE BEARING IS..... 45 degrees

THE ABEAM DISTANCE TO CENTERLINE FROM CASE IS..... 3070.97 ft.

********** DOES NOT EXCEED **********

CASE MEETS ANGULAR CRITERIA BUT IS LOCATED
GREATER THAN 50,000 ft. FROM THE START OF
ANY APPROACH TYPE, OUT BY 21872.7 feet

****
* BEGIN RUNWAY ANALYSIS *
****

RUNWAY 11/29
EXISTING RUNWAY 11/29

77.19(c) A height exceeding runway primary surface.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED RUNWAY PRIMARY SURFACE

77.19(e) A height exceeding a transitional surface abeam runway.

********** DOES NOT EXCEED **********

NOT WITHIN SPECIFIED RUNWAY ABEAM TRANSITIONAL SURFACE

77.19(d) A height exceeding an approach surface of RUNWAY 29.

THE BEARING TO THE CASE FROM THE THRESHOLD IS..... 46.656 degrees

THE NORMAL BEARING TO THE CENTERLINE IS..... 187.83 degrees

THE CENTERLINE OUTBOUND TRUE BEARING IS..... 97.83 degrees

THE ABEAM DISTANCE TO CENTERLINE FROM CASE IS..... 56098.88 ft.

THE RUNWAY THRESHOLD ELEVATION IS..... 6.5 ft. AMSL

THE DISTANCE FROM THRESHOLD + 200' TO THE CASE IS... 72006.221 ft.

THE DISTANCE FROM THRESHOLD + 200' TO NB IS..... 45265.32 ft.

THE CRITICAL WIDTH OF HALF THE APPROACH IS..... 7039.792 ft.

********** DOES NOT EXCEED **********

BEYOND DEFINED APPROACH & TRANSITIONAL AREAS.

RUNWAY CENTERLINE OFFSET IS..... 56098.88 ft.

DISTANCE FROM THE THRESHOLD TO OFFSET IS..... 45465.28 ft.

THE SLOPE OF RUNWAY 29 IS: 34 TO 1.

The FAA has defined this runway as a non-utility runway. It has a non-precision approach. The obstacle surface extends 10,000 feet (34:1 Slope) symmetrically centered along the runway centerline extended. Please review the US Terminal Procedures volume associated with this airport. If a procedure for this airport and/or runway exist use Terps® Professional software to determine the height limits (if any) the procedure will have on the proposed structure. Non-precision instrument procedures can extend 10 NM from the runway and a circling approach to the airport or runway can extend out up to 4.5 NM from every runway end.

Airspace Data Version: 2020.5.463

05-22-2020
12:40:38

****
* PUBLIC AIRPORTS IN PROXIMITY OF CASE *
****

File: 2020-APS-3708-OE

OVERALL ELEVATION (AMSL): 171
LATITUDE: 41°-17'-59.54"
LONGITUDE: 72°-55'-35.57"

FACIL IDENT	TYP	NAME	BEARING To FACIL	DISTANCE IN N.M.	DELTA ARP ELEVATION	FAR P77
HVN	AIR	TWEED-NEW HAVEN	140.12	2.812	+158.4	YES

This facility has at least one runway over 3,200 feet in length.

Your structure DNE FAR 77.9(a) but EXCEEDS FAR 77.9(b) Notice Criteria for this airport. You must notify the Federal Aviation Administration using a FAA Form 7460-1 a minimum of 45 days prior to your construction start date. As a minimum, please review reports for FAR Part 77 Obstruction Surfaces, Air Navigation and Communication facilities.

EXCEEDS FAR 77.9(b)(2) Notice Criteria by: 9 feet.

You are 14983 feet from the nearest runway threshold and the threshold elevation is 13 feet. Please review runway analysis for remaining airport surfaces.

This airport has both Circling and Straight-In Instrument Procedures. Please review published US Terminal (TERPS®) Approach Procedures for this landing facility.

DNE FAR 77.9 IFR Notice Criteria for HVN

Category 'D' Circling Approach Area extends 3.78 NM from each runway.

FACIL IDENT	TYP	NAME	BEARING To FACIL	DISTANCE IN N.M.	DELTA ARP ELEVATION	FAR P77
BDR	AIR	IGOR I SIKORSKY MEMORIAL	227.75	12.193	+162.5	YES

This facility has at least one runway over 3,200 feet in length.

Your structure DNE FAR 77.9(a) or 77.9(b) Notice Criteria for this airport. However, you may EXCEED other Notice Standards. As a minimum, please review reports for FAR Part 77 Obstruction Surfaces, Air Navigation and Communication facilities.

You are 72131 feet from the nearest runway threshold and the threshold elevation is 7 feet. Please review runway analysis for remaining airport surfaces.

This airport has both Circling and Straight-In Instrument Procedures. Please review published US Terminal (TERPS®) Approach Procedures for this landing facility.

DNE 77.9 IFR Notice Criteria BDR

Category 'D' Circling Approach Area extends 3.78 NM from each runway.

THE NEAREST AIRPORT TO CASE COORDINATES IS: HVN

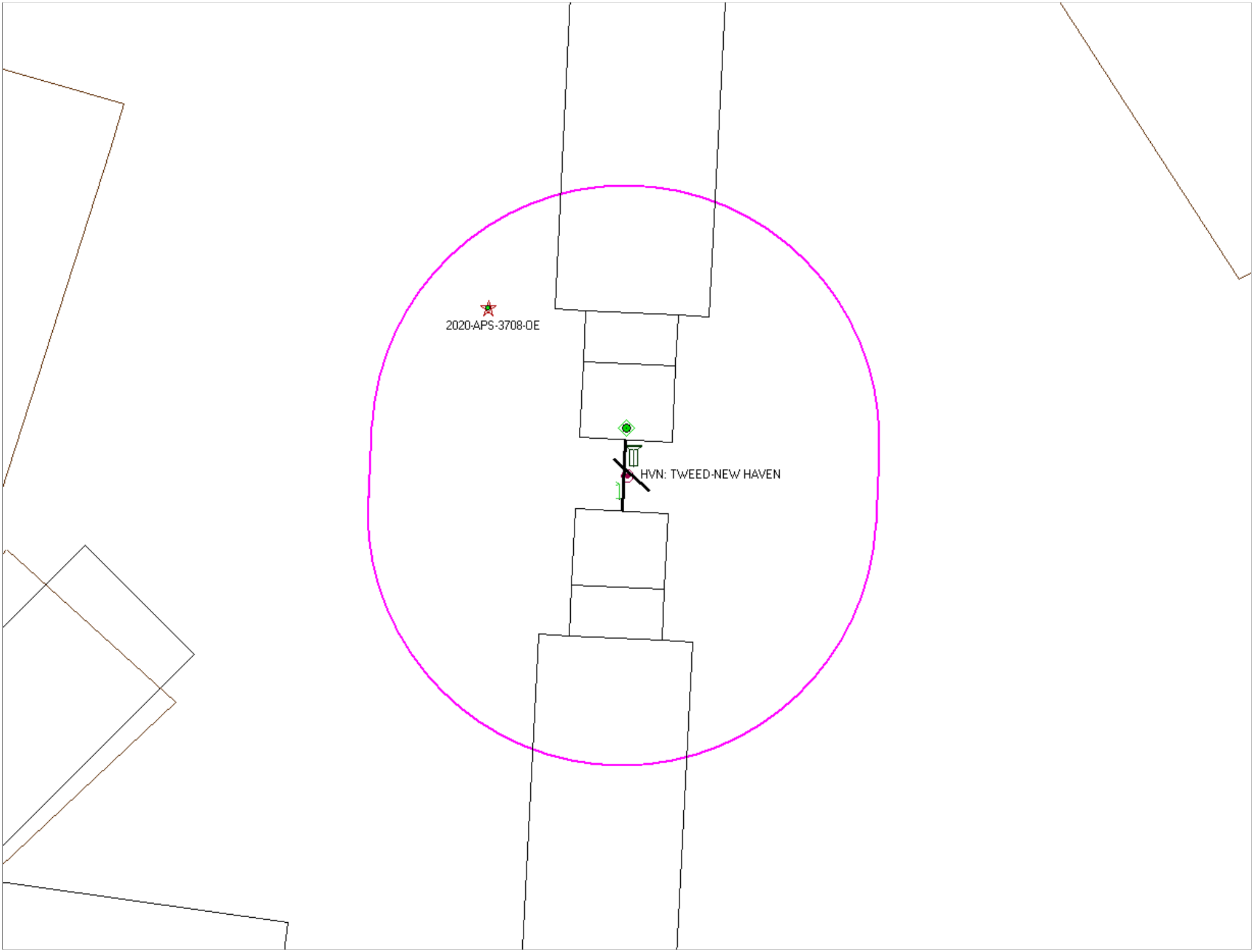
TWEED-NEW HAVEN is an Airport type landing facility and is associated with the city of NEW HAVEN, CT. The facility is eligible for Study

under FAR Part 77 sub-Part C.

Its Reference Point (ARP) elevation is: 12.6 feet AMSL and you are
locating 17089 feet from this landing facility.

Airspace® State Data Version 2020.5.463

05-22-2020
12:40:37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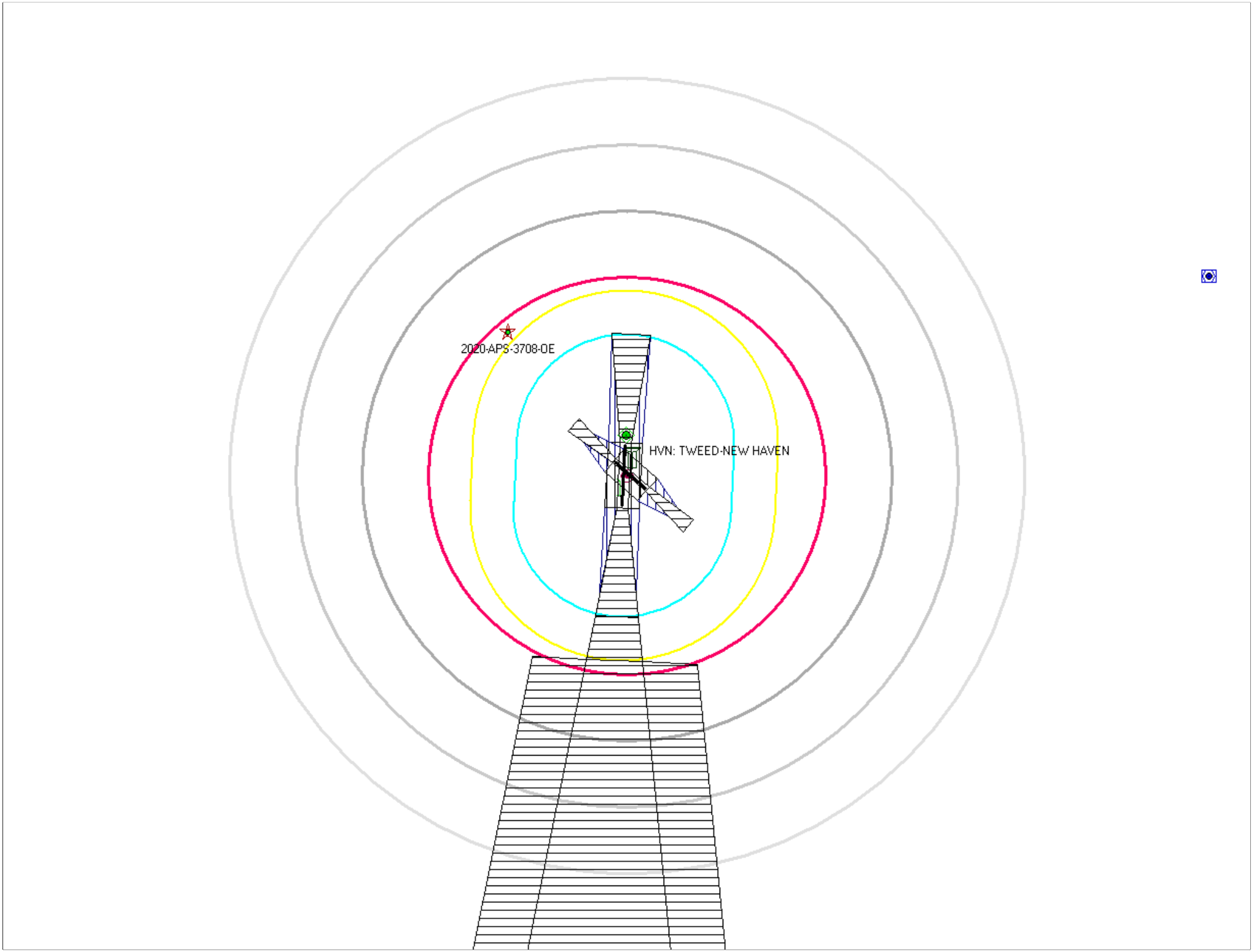
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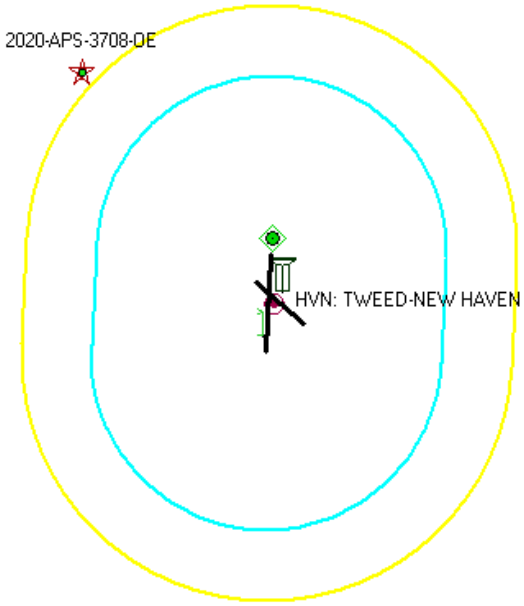
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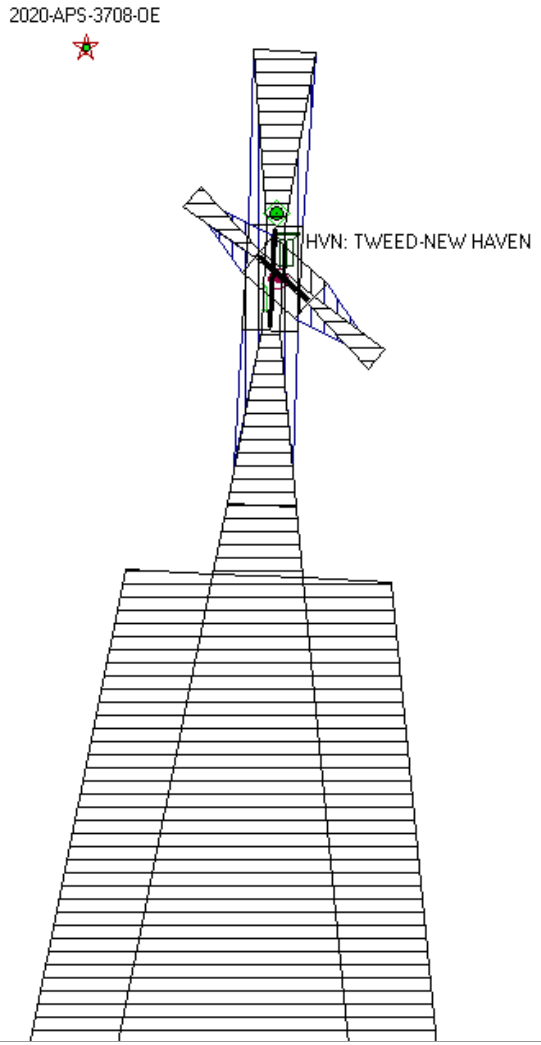
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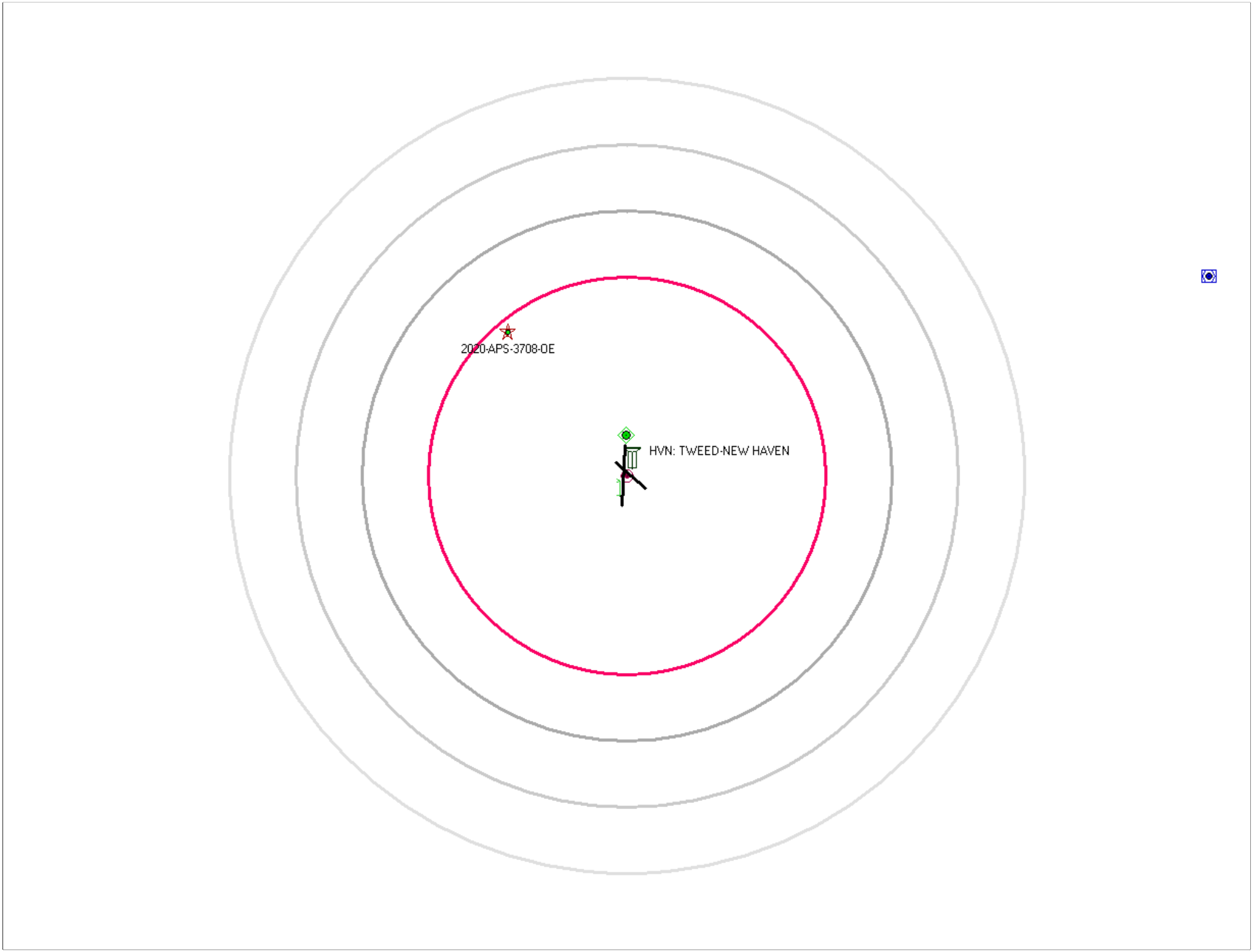
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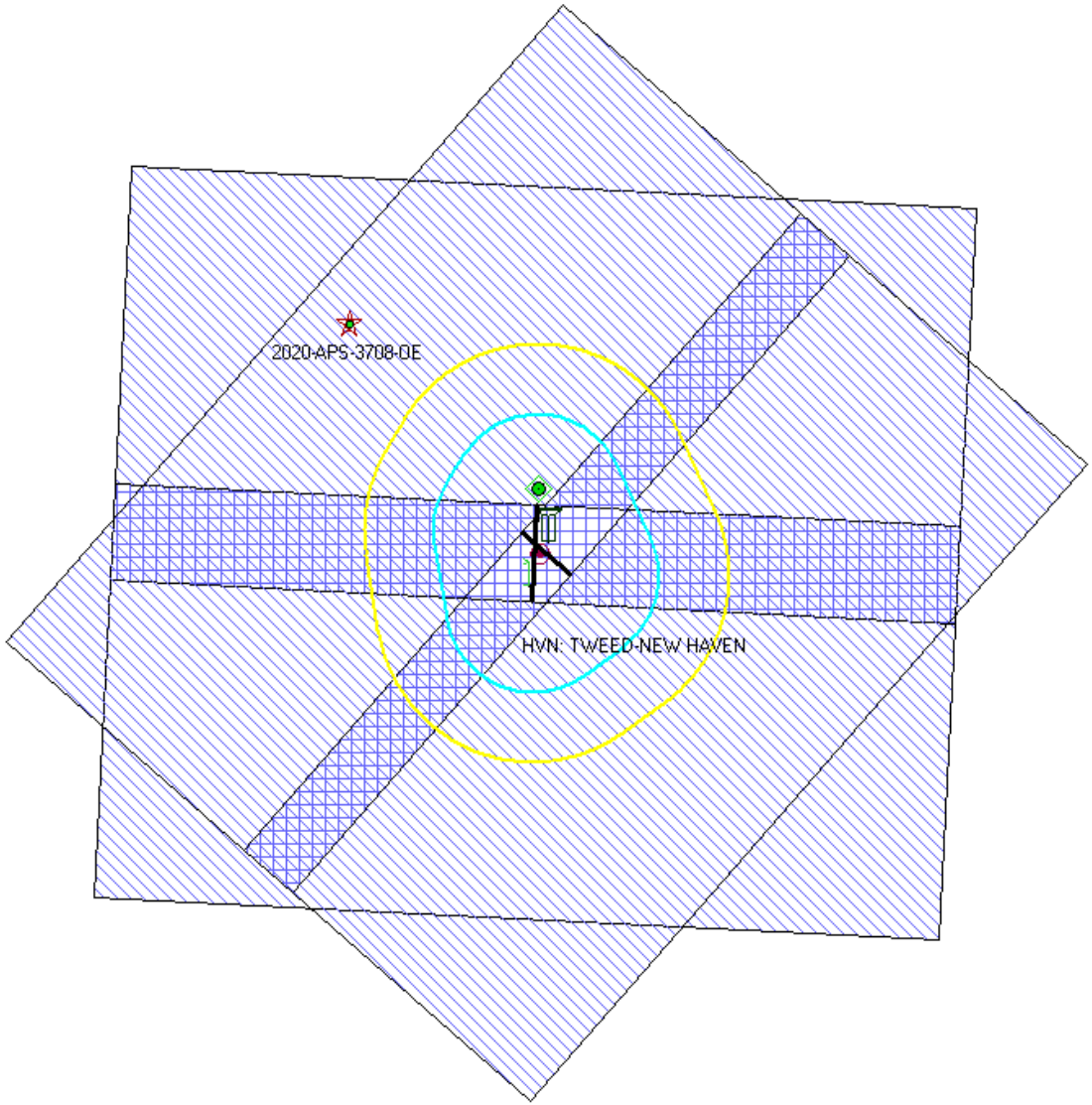
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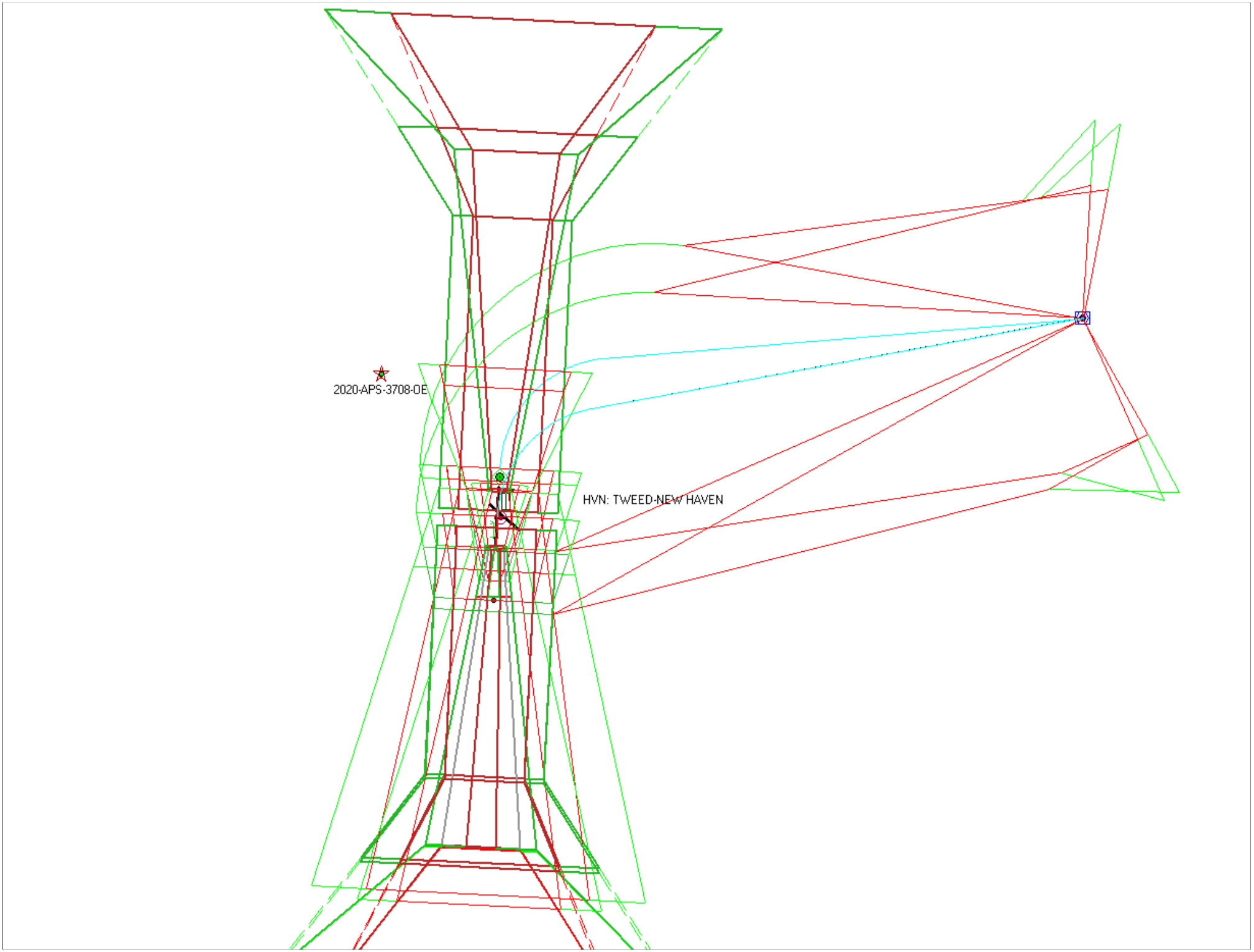
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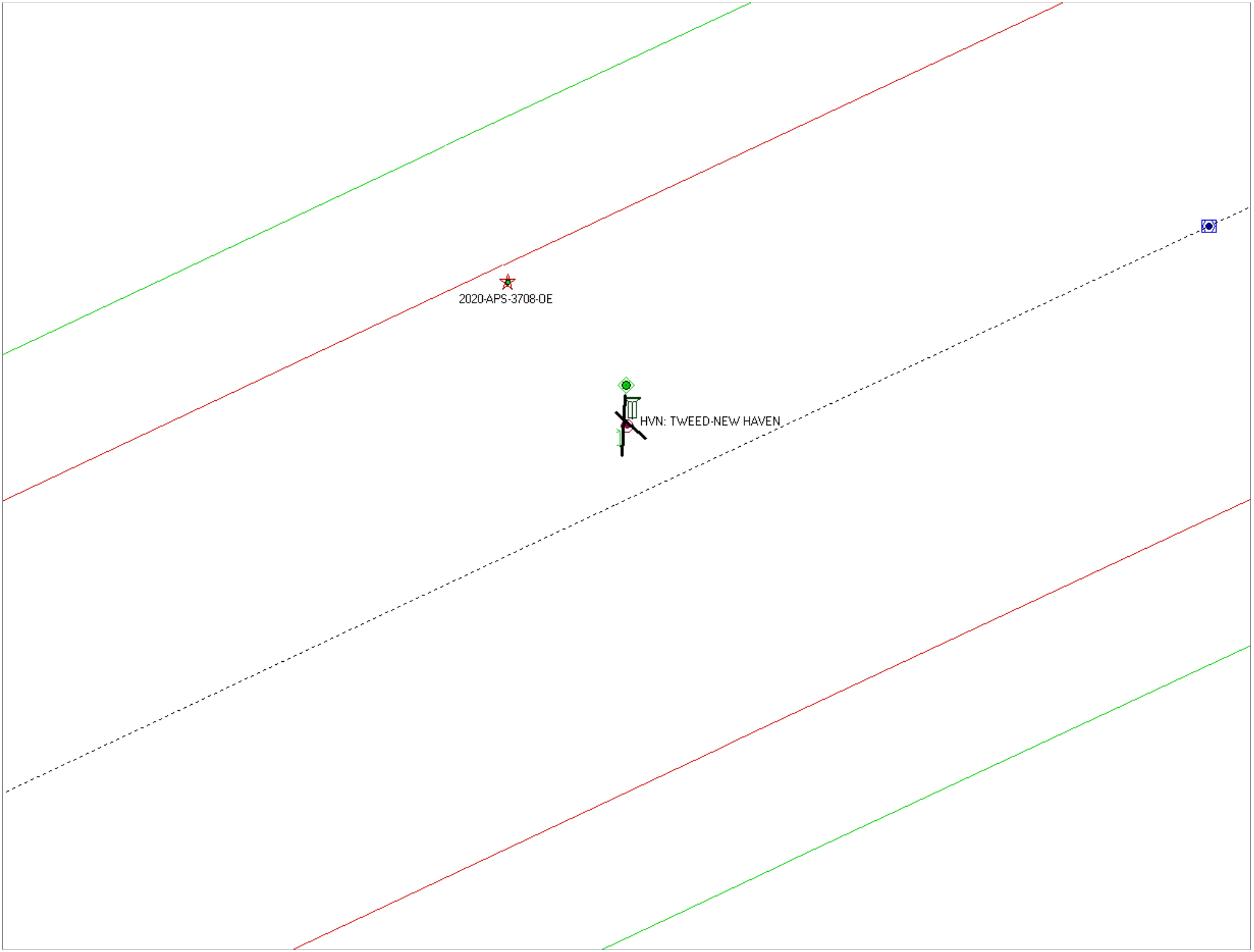
2020-APS-3708-OE
HVN: TWEED-NEW HAVEN

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*********************************************************
*                    AIRWAY ANALYSIS                    *
*          FAR 77.17(a)(4) (EN ROUTE CRITERIA)          *
*       MINIMUM OBSTACLE CLEARANCE ALTITUDE (MOCA)      *
*             MINIMUM ENROUTE ALTITUDE (MEA)            *
*********************************************************

FILE: 2020-APS-3708-OE

LATITUDE:  41 - 17 - 59.54         LONGITUDE:  72 - 55 - 35.57

SITE ELEVATION AMSL..... 11  ft.
STRUCTURE HEIGHT........ 160  ft.
OVERALL HEIGHT AMSL..... 171  ft.
```

FAR 77.17(a)(4) - EN ROUTE CRITERIA
MINIMUM OBSTACLE CLEARANCE ALTITUDE (MOCA)

LOW ALTITUDE AIRWAY

AIRWAY	SEQUENCE	LATITUDE	LONGITUDE	MEA	LENGTH (NM)
V188	140	41-19-35.11N	073-16-59.58W	3000	20.09
V188	150	41-23-33.74N	072-50-50.56W	3000	

Minimum Obstacle Clearance Altitude (MOCA) is: 3000 AMSL.

Proposed structure is between the above points along Airway V188. The Abeam distance from the course centerline is 4.74 NM. The proposed structure is within the width of the secondary area of this airway. The width of the primary area is 8 NM and the width of the secondary is 2 NM.

The maximum allowable height permitted by the secondary area MOCA of this airway at this location is 2684 feet AMSL.

LOW ALTITUDE AIRWAY

AIRWAY	SEQUENCE	LATITUDE	LONGITUDE	MEA	LENGTH (NM)
V229	210	41-17-58.03N	072-57-32.8W	2000	7.53
V229	220	41-23-33.74N	072-50-50.56W	2000	

Minimum Obstacle Clearance Altitude (MOCA) is: 2000 AMSL.

Proposed structure is between the above points along Airway V229. The Abeam distance from the course centerline is 1.07 NM. The proposed structure is within the width of the primary area of this airway. The width of the primary area of this airway is 8 NM. The minimum en route altitude (MEA) for this airway segment Is 2000 feet AMSL. Any Height above 1000 feet AMSL will not be approved. Your proposed structure must remain below this value.

LOW ALTITUDE AIRWAY

AIRWAY	SEQUENCE	LATITUDE	LONGITUDE	MEA	LENGTH (NM)
V374	80	41-13-59.78N	073-11-37.93W	2500	17.54
V374	90	41-11-08.77N	072-48-41.98W	2500	

Minimum Obstacle Clearance Altitude (MOCA) is: 2500 AMSL.

Proposed structure is between the above points along Airway V374. The Abeam distance from the course centerline is 5.9 NM. The proposed structure is within the width of the secondary area of this airway. The

width of the primary area is 8 NM and the width of the secondary is 2 NM.

The maximum allowable height permitted by the secondary area MOCA of this airway at this location is 2474 feet AMSL.

LOW ALTITUDE AIRWAY

AIRWAY	SEQUENCE	LATITUDE	LONGITUDE	MEA	LENGTH (NM)
V475	60	41-09-38.495N	073-07-28.188W	2000	11.72
V475	70	41-14-38.04N	072-53-25.59W	2000	

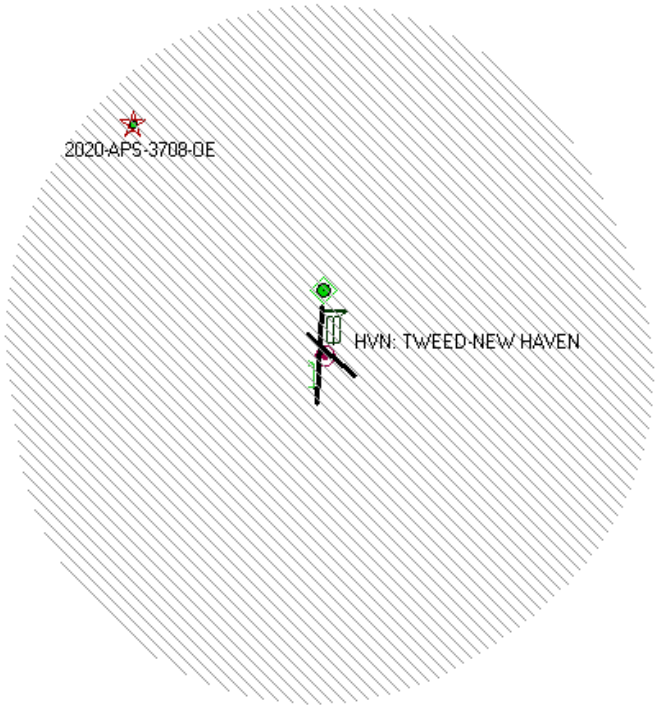
Minimum Obstacle Clearance Altitude (MOCA) is: 1500 AMSL.

Proposed structure is between the above points along Airway V475. The Abeam distance from the course centerline is 3.73 NM. The proposed structure is within the width of the primary area of this airway. The width of the primary area of this airway is 8 NM. The minimum en route altitude (MEA) for this airway segment Is 2000 feet AMSL. Any Height above 500 feet AMSL will not be approved. Your proposed structure must remain below this value.

Airspace® State Version 2020.5.463

05-22-2020
12:40:42

The mathematical algorithms used by this program are derived directly from Federal Aviation Regulations Part 77, sub-part C.


2020-APS-3708-OE
HVN: TWEED-NEW HAVEN

Circling Approach Area Analysis

***** 2020-APS-3708-OE *****

TWEED-NEW HAVEN

Date: 05-22-2020 Time: 13:17:25

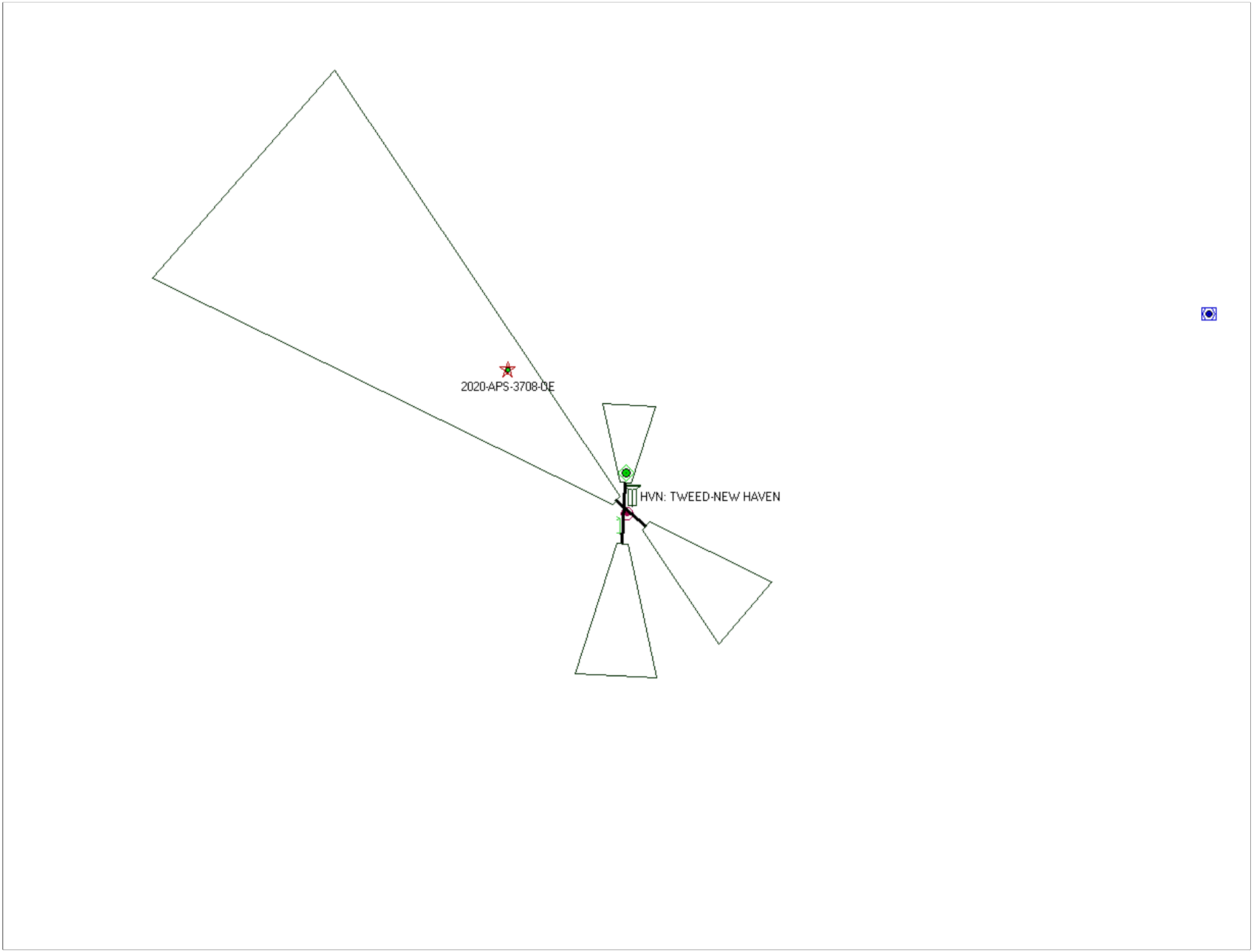
STUDY OBJECT DATA

Study Latitude:	41° 17' 59.54" N
Study Longitude:	72° 55' 35.57" W
Ground Elevation:	11' AMSL ft.
AGL Height:	160' AGL ft.
Overall Elevation:	171' AMSL ft.

INSTRUMENT APPROACH PROCEDURE (IAP) ANALYSIS

Distance:	14984 ft.
Aircraft Category:	C
Circling MDA:	780
Vkias:	140 knots
Vktas:	145.7757 knots
Bank Angle:	20°
Straight Segment:	0.5 NM
Expanded CAA:	True
Turn Radius:	2.8 NM
Maximum AMSL:	480

The mathematical algorithms used by this program are derived directly from Federal Aviation Administration (FAA) Orders on Instrument Flight Procedures.


2020-APS-3708-OE
HVN: TWEED-NEW HAVEN

Departure Runway 32

***** 2020-APS-3708-OE *****

TWEED-NEW HAVEN - Runway: 32
Date: 05-27-2020 Time: 09:54:32

STUDY OBJECT DATA

Study Latitude: 41° 17' 59.54" N
Study Longitude: 72° 55' 35.57" W
Ground Elevation: 11' AMSL ft.
AGL Height: 160' AGL ft.
Overall Elevation: 171' AMSL ft.

INSTRUMENT DEPARTURE ANALYSIS

Initial Climb Area (ICA): DNE ICA

Diverse Departure A Inside Diverse A - Max Hgt: 899 ft

Diverse Departure B Not in Diverse B - DNE Diverse B

The above analysis is in accordance with FAA Order 8260.3B Change 26. This analysis used a 465 ft/NM climb gradient (CG) and an Obstacle Clearance Surface (OCS) that provides 111 feet of obstacle clearance at 1 NM from the Departure End of Runway (DER). Some runways have published climb gradients greater than 200 ft/NM. A specified climb gradient greater than standard (200 ft/NM) is sometimes necessary to allow acceptable obstacle clearance. Should your location exceed the value indicated above you may need to determine if there is a published CG and conduct additional calculations to determine if the CG will provide proper clearance for your proposed structure.

TERPS ANALYSIS SUMMARY

***** 2020-APS-3708-OE *****

STUDY OBJECT DATA

Study Latitude: 41° 17' 59.54"
Study Longitude: 72° 55' 35.57"
Ground Elevation: 11' AMSL
AGL Height: 160' AGL
Overall Elevation: 171' AMSL

AIRSPACE/TERPS LIMIT: 363' AMSL --- VFR TRAFFIC PATTERN AIRSPACE

HVN IAP	RWY 02 ILS19 Amdt 18	10000
HVN IAP	RWY 02 LOC19 Amdt 18	10000
HVN IAP	RWY 02 LPV Amdt 1	10000
HVN IAP	RWY 02 VNAV Amdt 1	10000
HVN IAP	RWY 02 LNAV Amdt 1	10000
HVN IAP	RWY 20X LOC19 Orig-1DR	10000
HVN IAP	RWY 20X LNAV Orig -1DR	10000
HVN MRP	LOW ALTITUDE AIRWAY V475	500
HVN CIR	CATEGORY C EXPANDED	480
HVN DEP	RUNWAY 02 DIVERSE A	712
HVN DEP	RUNWAY 32 DIVERSE A	899
HVN VFR	TRAFFIC PATTERN AIRSPACE CATEGORY D CLIMB/DESCEND AREA	363
HVN VFR	TRANSITIONAL SURFACE 77.17(A)(2)	213

Date: 05-22-2020 Time: 15:01:35


2020-APS-3708-OE
41° 17' 59.54"N
72° 55' 35.57"W
NEW HAVEN
Fair Haven
Fair Haven East
West Haven
Brightview
City Point
New Haven Harbor
East Haven
Whitneyville
Woodbridge
Quinnipiac College
Southern Connecticut State College
Albertus Magnus College
Beaver Pond Park
Yale University
Hosp.
VA Hospital
New Haven College
Tweed New Haven Airport
Momauguin
Short Beach
Morris Cove
South End
South End Point
Morgan
Sea Bluff
West Shore
Foxon
Lake Saltonstall
Lake Whitney
Mailby Lakes
Graniss Pond
Lat: 41° 19' 54" N Long: 72° 51' 43" W
DMS DD MGR UTM
Scale 1:72,224
Map Records: 108
Sunny, 70° near New Haven, CT.
1 km
3000 ft
AMTRAK
CONRAIL

POINT ELEVATION DATA

SRTM GROUND ELEVATION DATA
North American Datum 1983
North American Vertical Datum 1988 - NAVD88

2020-APS-3708-OE
MCM_CT-520

Latitude: 41° - 17' - 59.54" N **Decimal Degrees:** 41.2998722222222°
Longitude: 72° - 55' - 35.57" W **Decimal Degrees:** 72.9265472222222°

Ground Elevation: 8.18 Feet AMSL

This certifies the Digital Elevation Model (DEM) value for the specified latitude/longitude point was obtained from the SRTM Endeavour radar mission of February 2000. NASA has released the finished version edited by the National Intelligence Agency. The elevation value meets vertical accuracy criteria as specified by FAA Order 8260.19C, Appendix 2, Obstacle Accuracy Standards, Codes And Sources, paragraph 101 for Code 'C'. The elevation value for the specified latitude/longitude is accurate to within ±20 feet vertically.

Date Printed: 05-21-2020

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

August 26, 2020

Via Certificate of Mailing

Justin Elicker, Mayor
City of New Haven
165 Church Street, 2nd Floor
New Haven, CT 06510

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to its Existing Wireless Telecommunications Facility at 54 Meadow Street, 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 make certain modifications to its existing telecommunications facility on the roof of the building at 54 Meadow Street in New Haven (the "Property").

The modifications will consist of removing certain antennas and installing newer model antennas and remote radio heads at various locations on the roof. The existing facility is under the exclusive jurisdiction of the Connecticut Siting Council by virtue of its April 1, 1991 approval of Docket No. 140.

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

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kbaldwin@rc.com
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August 26, 2020

Via Certificate of Mailing

Aicha Woods, Director of City Plan
City of New Haven
165 Church Street, 5th Floor
New Haven, CT 06510

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to its Existing Wireless Telecommunications Facility at 54 Meadow Street, 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 make certain modifications to its existing telecommunications facility on the roof of the building at 54 Meadow Street in New Haven (the "Property").

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Sincerely,

Kenneth C. Baldwin

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kbaldwin@rc.com
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Also admitted in Massachusetts
and New York

August 26, 2020

Via Certificate of Mailing

Gateway Partners LLC
c/o Lexington Property Management
30 Lewis Street
Hartford, CT 06103

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to its Existing Wireless Telecommunications Facility at 54 Meadow Street, 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 make certain modifications to its existing telecommunications facility on the roof of the building at 54 Meadow Street in New Haven (the "Property").

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Sincerely,

Kenneth C. Baldwin

Attachment

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kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

August 26, 2020

Via Certificate of Mailing

MCM Holdings LLC
40 Woodland Street
Hartford, CT 06105

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to its Existing Wireless Telecommunications Facility at 54 Meadow Street, 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 make certain modifications to its existing telecommunications facility on the roof of the building at 54 Meadow Street in New Haven (the "Property").

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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

ATTACHMENT 9

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

August 26, 2020

Via Certificate of Mailing

«Owners_and_Mailing_Address»

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to an Existing Wireless Telecommunications Facility at 54 Meadow Street, 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 make certain modifications to its existing telecommunications facility on the roof of the building at 54 Meadow Street in New Haven (the "Property").

The modifications will consist of removing certain antennas and installing newer model antennas and remote radio heads at various locations on the roof. The existing facility is under the exclusive jurisdiction of the Connecticut Siting Council by virtue of its April 1, 1991 approval of Docket No. 140. A copy of the full Petition is attached for your review.

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

21048844-v1

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTING PROPERTY OWNERS

54 MEADOWN STREET
NEW HAVEN, CONNECTICUT

	Property Address	**Owner's and Mailing Address**
1.	78 Meadow Street	Knights of Columbus 1 Columbus Plaza New Haven, CT 06510
2.	1 Union Avenue	City of New Haven 1 Union Avenue New Haven, CT 06519
3.	170 Union Avenue	State of Connecticut PO Box 317546 Newington, CT 06131
4.	49 Union Avenue	City of New Haven Housing Authority 360 Orange Street New Haven, CT 06511
5.	86 South Orange Street	Church Street New Haven LLC 2150 Washington Street Newton, MA 02462
6.	90 South Orange Street	City of New Haven 165 Church Street New Haven, CT 06511