STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP	:	SUB-PETITION NO. 1133
D/B/A VERIZON WIRELESS FOR	:	208 VALLEY ROAD
MODIFICATIONS TO AN EXISTING	:	NEW CANAAN, CT
WIRELESS TELECOMMUNICATIONS	:	
FACILITY AT 208 VALLEY ROAD IN	:	
NEW CANAAN, CONNECTICUT	:	NOVEMBER 25, 2024

SUB-PETITION FOR DECLARATORY RULING:
ELIGIBLE FACILITIES REQUEST FOR MODIFICATIONS
THAT WILL NOT SUBSTANTIALLY CHANGE THE
PHYSICAL DIMENSIONS OF AN EXISTING BASE STATION

I. Introduction

Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, codified at 47 U.S.C. § 1455(a) ("Section 6409(a)") and the October 21, 2014 Report and Order (FCC-14-153) issued by the Federal Communications Commission ("FCC") (the "FCC Order"), Cellco Partnership d/b/a Verizon Wireless ("Cellco") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Sub-Petition") that the installation of replacement antennas and related telecommunications equipment at the existing wireless telecommunications base station at 208 Valley Road in New Canaan, Connecticut (the "Property") constitutes an Eligible Facilities Request ("EFR") under the FCC Order. Cellco identifies this site as its "Silver Hill Facility".

II. Factual Background

On February 2, 2012, the Council approved an application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at the Property (Docket No. 401). The approved

facility consists of a 120-foot uni-pole tower within a fenced compound area. Cellco maintains six (6) antennas, located inside an RF transparent screening shroud 40-inches in diameter (three (3) antennas at the 106-foot level and three (3) antennas at the 96-foot level) on the tower. Equipment associated with Cellco's antennas is located in a ground-mounted shelter within the fenced compound. The tower is also shared by AT&T, with antennas at the 86-foot level and T-Mobile with antennas at the 117-foot level. A copy of Docket No. 401 Decision and Order is included in Attachment 1.

III. Cellco's Proposed Facility Modifications

Cellco is licensed to provide wireless telecommunications services in the 700 MHz, 800 MHz, 1900 MHz, 2100 MHz and 3700 MHz frequency ranges in New Canaan and throughout the State of Connecticut. Cellco intends to remove its six (6) existing antennas and install three (3) new model NNH4-65B-R6H4 antennas at the 105.7-foot level and three (3) model MX08FIT265-01 antennas at the 97.8-foot level on the uni-pole. Cellco will also install three (3) remote radio heads ("RRHs") below its antennas at the 97.8-foot level. To accommodate Cellco's proposed modifications, and likely future modifications by AT&T and T-Mobile, the existing antenna screening shroud will be replaced with a larger (56" diameter) shroud. There are no current modifications proposed at this time to Cellco's ground-mounted equipment.

Project Plans, antenna and RRH specifications for Cellco's Silver Hill Facility modifications are included in Attachment 2. According to the attached Structural Analysis ("SA") and Mount Analysis ("MA"), the existing tower, tower foundation and Cellco's new antenna mounts can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 3.

IV. Discussion

A. The Proposed Modification Will Not Cause a Substantial Change to the Physical Dimensions of the Existing Base Station

Section 6409(a) provides, in relevant part, that "a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station." Pursuant to the FCC Order, the proposed modification does not substantially change the physical dimensions of the base station if the following criteria are satisfied.

1. *The proposed modified facility will not increase the height of the tower by more than ten (10) percent of the height.* Cellco does not intend to increase the height of the existing uni-pole tower. Cellco's new antennas and RRHs will be located at the same heights and locations, generally, as its existing antennas.

2. *The proposed facility modification will not protrude from the edge of the structure more than six (6) feet.* Cellco's antennas and RRHs will be located inside a 56" diameter antenna screening shroud. Neither the new antennas nor the screening shroud would protrude more than six (6) feet from the face of the tower.

3. *The proposed facility does not involve installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets.* No changes in ground-mounted equipment is planned as part of these facility modifications.

4. *The proposed facility does not entail any excavation or deployment outside the current site of the base station.* Cellco's proposed facility modifications will remain within the limits of the Property and the existing fenced compound.

5. *The proposed facility does not defeat the existing concealment elements of the base station.* Following Cellco's modifications, the shroud concealing the antennas will expand to 56-inch diameter. All antennas for all carriers will remain concealed within the top portion of the uni-pole by the antenna shroud.

6. *The proposed facility complies with conditions associated with the prior approval of construction or modification of the base station.* Cellco's proposed facility modifications are consistent with the Siting Council's approval in Docket No. 401.

B. FCC Compliance

Included in Attachment 4 is a Calculated Radio Frequency Emissions Report for the proposed modified facility confirming that the modified tower site will operate well within the FCC safety standards for radio frequency emissions.

C. Notice to the Town, Property Owner and Abutting Landowners

On November 25, 2024, a copy of this Sub-Petition was sent to New Canaan's First Selectman, Dionna Carlson and Sarah Carey, New Canaan's Town Planner/Senior Enforcement Officer; and Silver Hill Hospital Inc., the owner of the Property. Copies of the letters sent to First Selectman Carlson, Sarah Carey, and Silver Hill Hospital Inc. are included in Attachment 5. A copy of this Sub-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 who were sent notice and a copy of this filing is included in Attachment 6.

V. Conclusion

Based on the information provided above, Cellco respectfully submits that the proposed modification of the existing base station at the Property constitutes an "eligible facilities request" under Section 6409(a) and the FCC Order.

Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

By 

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

ATTACHMENT 1

DOCKET NO. 401 - T-Mobile Northeast LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 208 Valley Road, New Canaan, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		February 2, 2012

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to T-Mobile Northeast LLC (T-Mobile), hereinafter referred to as the Certificate Holder, for a telecommunications facility at 208 Valley Road, New Canaan, Connecticut.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole with concealed antennas, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of T-Mobile, Verizon Wireless and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level. The height at the top of the Certificate Holder's antennas shall not exceed 120 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of New Canaan for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new state or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of New Canaan public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of New Canaan. Any proposed modifications to this Decision and Order shall likewise be so served.

9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

10. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

12. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

13. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder\transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder\transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

14. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.

15. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Stamford Advocate and The Hour.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
T-Mobile Northeast, LLC	Julie D. Kohler, Esq. Jesse A. Langer, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604
Intervenor	**Its Representative**
Cellco Partnership d/b/a Verizon Wireless	Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597

ATTACHMENT 2

verizon

SILVER HILL CT CT
208 VALLEY ROAD
NEW CANAAN, CT 06840

GENERAL NOTES AND SPECIFICATIONS

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE, AND LOCAL CODES.
2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, AND ALL TRADES AS APPLICABLE PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE VERIZON WIRELESS CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB- CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
22. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
23. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
24. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.

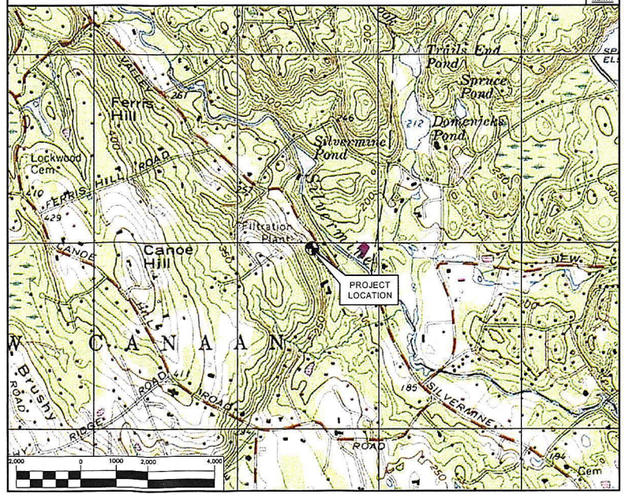
SITE DIRECTIONS

FROM: 20 ALEXANDER DRIVE, WALLINGFORD, CONNECTICUT **TO:** 208 VALLEY ROAD, NEW CANAAN, CT 06840

1.	START OUT GOING NORTH ON ALEXANDER DR TOWARD BARNES INDUSTRIAL RD.	0.18 MI
2.	TURN RIGHT ONTO BARNES INDUSTRIAL RD.	0.11 MI
3.	TAKE THE 1ST LEFT ONTO CT-68.	0.35 MI
4.	TURN RIGHT ONTO RAMP.	0.17 MI
5.	TURN RIGHT ONTO N COLONY RD/US-5 N.	0.39 MI
6.	MERGE ONTO CT-15 S VIA THE RAMP ON THE LEFT.	40.50 MI
7.	TAKE THE NEW CANAAN AVE/CT-123 EXIT, EXIT 38.	0.15 MI
8.	STAY STRAIGHT TO GO ONTO CARTER STREET.	2.04 MI
9.	TURN RIGHT ONTO SILVERMINE ROAD/CT-106.	0.64 MI
10.	TURN LEFT ONTO VALLEY ROAD/CT-106. CONTINUE TO FOLLOW VALLEY ROAD.	0.51 MI
11.	208 VALLEY ROAD IS ON THE LEFT.	

VICINITY MAP

SCALE: 1" = 1000'



DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:
   - RISK CATEGORY: II (BASED ON TABLE 1604.5 OF THE 2021 IBC)
   - NOMINAL DESIGN SPEED (TOWER): 93 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-16) PER 2021 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

PROJECT SUMMARY

1. THE PROPOSED UPGRADE SCOPE OF WORK AT THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY GENERALLY INCLUDES THE FOLLOWING:

   A. AT THE EXISTING CONCEALMENT TOWER MOUNTED ANTENNA SECTORS:
   - REMOVE ALL (5) 10' TALL x 3'-4"ø RF TRANSPARENT CONCEALMENT RADOME CANISTERS FROM THE TOWER.
   - REMOVE THE EXISTING (3) UPPER TIER AND (3) LOWER TIER ANTENNAS AND ALL ASSOCIATED MOUNTS.
   - REMOVE (6) NOKIA RRUs.
   - REMOVE (6) COMMSCOPE DIPLEXERS.
   - RETAIN THE EXISTING (12) 1 1/4" COAX CABLES.
   - INSTALL ANTENNA/APPURTENANCE REPLACEMENT MOUNTS AS DETAILED HEREIN.
   - INSTALL (3) COMMSCOPE ANTENNAS AT THE UPPER TIER CENTERLINE LOCATION, AND (3) JMA ANTENNAS AT THE LOWER TIER CENTLERLINE ELEVATION.
   - INSTALL (3) SAMSUNG RRUs.
   - INSTALL (6) COMMSCOPE TRIPLEXERS.
   - INSTALL (1) 6x12 HYBRIFLEX CABLE.
   - INSTALL (1) OVP-6 UNIT.
   - INSTALL (5) 10' TALL x 4'-8"ø RF TRANSPARENT CONCEALMENT RADOME REPLACEMENT CANISTERS AND ASSOCIATED HARDWARE. RADOME MODIFICATION DESIGN IS BY OTHERS AS REFERENCED HEREIN (SHEET C-2).

   B. AT THE EXISTING VERIZON WIRELESS EQUIPMENT SHELTER AT GRADE:
   - REMOVE (6) COMMSCOPE DIPLEXERS.
   - INSTALL A TOTAL OF (6) SAMSUNG RRUs.
   - INSTALL (6) COMMSCOPE TRIPLEXERS.

PROJECT INFORMATION

SITE NAME:	SILVER HILL CT CT
SITE ADDRESS:	208 VALLEY ROAD NEW CANAAN, CT 06840
FAA REGISTERED HEIGHT:	140' A.G.L.
LESSEE/TENANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
CONTACT PERSON:	WALTER CHARCZNSKI (CONSTRUCTION MANAGER) VERIZON WIRELESS (860) 306-1806
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405 (203) 488-0580
PROJECT COORDINATES:	LATITUDE: 41° 09' 58.4496"N LONGITUDE: 73° 28' 13.7208"W GROUND ELEVATION: ±260.9' A.M.S.L. (COORDINATES REFERENCED FROM VERIZON WIRELESS RFDS DATED 09/25/2021)

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
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REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	10/23/24	TJR	DMD	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
4	11/15/23	TJR	DMD	CONSTRUCTION DRAWINGS - REVISED PER NEWLY ISSUED RFDS
3	06/02/23	TJR	DMD	CONSTRUCTION DRAWINGS - GROUND ELEVATION ADDED
2	04/06/23	TJR	DMD	CONSTRUCTION DRAWINGS - REVISED ABUTTERS
1	04/06/23	TJR	DMD	CONSTRUCTION DRAWINGS - REVISED PER NEWLY ISSUED RFDS
0	02/14/23	TJR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

verizon

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless

SILVER HILL CT CT
208 VALLEY ROAD
NEW CANAAN, CT 06840

DATE: 01/19/22
SCALE: AS NOTED
JOB NO. 21007.79

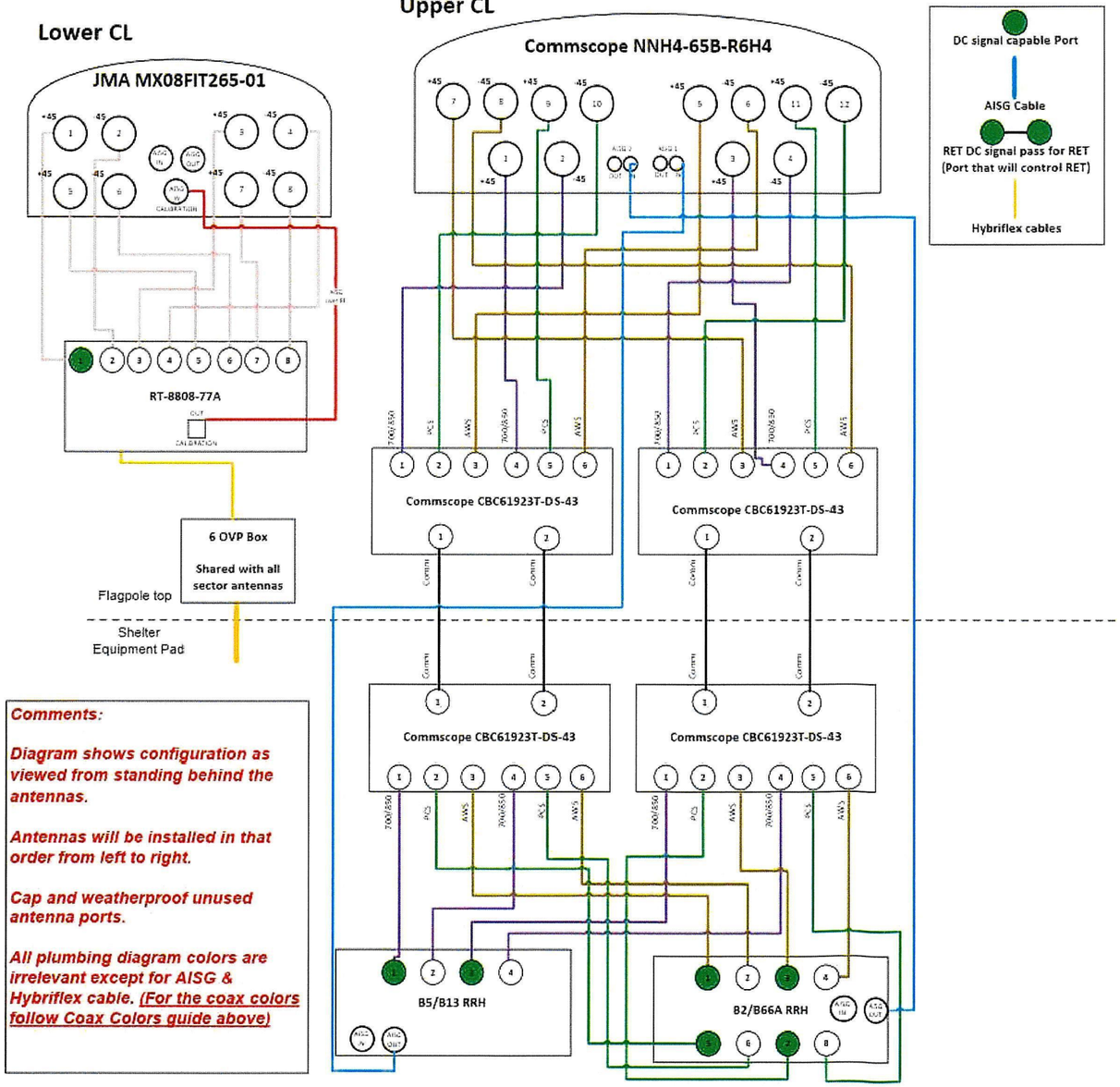
TITLE SHEET

T-1

Sheet No. 1 of 7

- Port 1,2,3 & 4 are for low band (698-896 MHz).
- Port 5,6,7,8,9,10,11 & 12 are for high band (1695-2360 MHz).
- AISG cable is only needed when drawn in the diagrams below, if it is not drawn then SBT is enough to control all RET motors.

RET DC signal pass for RET
(Port that will control RET)



Comments:

Diagram shows configuration as viewed from standing behind the antennas.

Antennas will be installed in that order from left to right.

Cap and weatherproof unused antenna ports.

All plumbing diagram colors are irrelevant except for AISG & Hybriflex cable. (For the coax colors follow Coax Colors guide above)

NOTES:

1. INFORMATION SHOWN HEREIN IS FOR USE BY VERIZON WIRELESS EQUIPMENT OPERATIONS.
2. THIS B.O.M. DRAWING IS BASED ON FACILITY UPGRADE DESIGN DRAWINGS PREPARED BY CENTEK ENGINEERING (REV.5 DATED: 10/23/24), & VERIZON WIRELESS RF ANTENNA EQUIPMENT RECOMMENDATION (DATED 11/14/2023).

BILL OF MATERIALS

TECHNOLOGY	QUANTITY	ANTENNA
LTE 700	3	COMMSCOPE MODEL: NNH4-65B-R6H4
LTE 850		
LTE PCS 1900		
LTE AWS 2100		
5G	3	JMA MODEL: MX08FIT265-01

CABLES	QUANTITY	LENGTH EA	COMMENTS
HYBRID CABLE	1	±150 FT	6X12 LI HYBRID CABLE

RADIOS	QUANTITY	COMMENTS
LTE 700	3	SAMSUNG MODEL: RF4461d-13A
LTE 850		
LTE PCS 1900	3	SAMSUNG MODEL: RF4439d-25A
LTE AWS 2100		
5G	3	SAMSUNG MODEL: RT-8808-77A

TRIPLEXERS	QUANTITY	COMMENTS
TWIN TRIPLEXER	12	COMMSCOPE MODEL: CBC61923T-DS-43

OVP BOXES	QUANTITY	COMMENTS
OVP-6	1	RAYCAP OVP-6 MODEL: RHSDC-3315-PF-48

ANTENNA MOUNT	QUANTITY	COMMENTS
ANTENNA MOUNT ASSEMBLIES	2	(2) MOUNT ASSEMBLIES (UPPER AND LOWER TIER) REFER TO SHEET C-2 FOR DETAILS)

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	10/23/24	TJR	DMD	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
4	11/15/23	TJR	DMD	CONSTRUCTION DRAWINGS – REVISED PER NEWLY ISSUED RFDS
3	05/02/23	TJR	DMD	CONSTRUCTION DRAWINGS – GROUND ELEVATION ADDED
2	04/06/23	TJR	DMD	CONSTRUCTION DRAWINGS – REVISED ABUTTERS
1	04/06/23	TJR	DMD	CONSTRUCTION DRAWINGS – REVISED PER NEWLY ISSUED RFDS
0	02/14/23	TJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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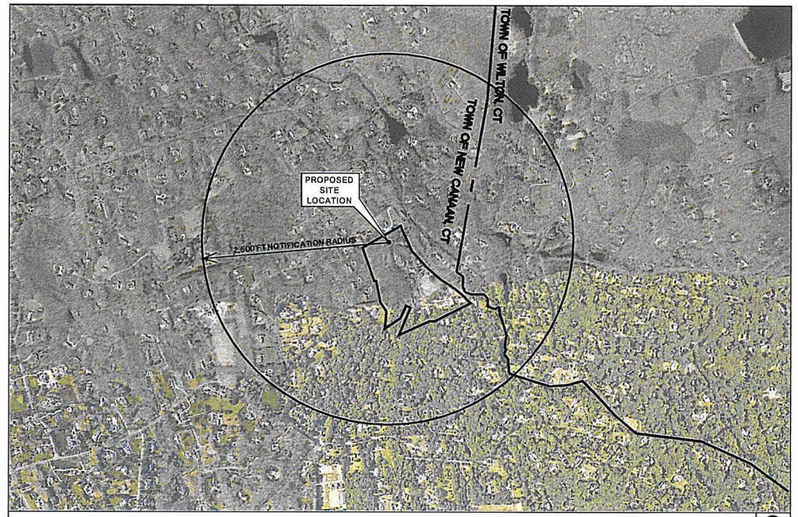
SCALE: AS NOTED
JOB NO. 21007.79

RF BILL OF MATERIALS

B-1

Sheet No. 2 of 7



MUNICIPALITY NOTIFICATION LIMIT MAP

ABUTTERS LIST

REF.	ID	ADDRESS	OWNER	OWNER ADDRESS
A	45/115/31	269 VALLEY RD	ZHANG YING	269 VALLEY RD, NEW CANAAN, CT, 06840
B	44/115/T12	253 VALLEY RD	JONES CHRISTOPHER STARR	253 VALLEY RD, NEW CANAAN, CT 06840
C	44/115/15	229 VALLEY RD	TURNER D KENT	229 VALLEY RD, NEW CANAAN, CT 06840
D	44/115/T13	225 VALLEY RD	SILVER HILL HOSPITAL INC	208 VALLEY RD, NEW CANAAN, CT 06840
E	44/115/14	143 VALLEY RD	SILVER HILL HOSPITAL INC	208 VALLEY RD, NEW CANAAN, CT 06840
F	44/108/124	134 VALLEY RD	SILVER HILL HOSPITAL INC	208 VALLEY RD, NEW CANAAN, CT 06840
G	44/108/159	95 FABLE FARM RD	HURST WENDY	95 FABLE FARM RD, NEW CANAAN, CT 06840
H	44/108/84	103 SALEM RD	GRIFFIN FRANCIS JOSEPH	103 SALEM RD, NEW CANAAN, CT 06840
I	44/108/206	64 PARKERS GLEN	CAIN SHAUN WALSH	64 OARKERS GLEN, NEW CANAAN, CT 06840
J	44/108/205	58 PARKERS GLEN	58 PARKERS GLEN LLC	C/O KAY PARKER JEX ESQ, NEW CANAAN, CT 06840
K	44/108/204	42 PARKERS GLEN	FALCONI JOHN	42 PARKERS GLEN, NEW CANAAN, CT 06480
L	44/108/50	26 PARKERS GLEN	RUSMAN JARED M	26 PARKERS GLEN, NEW CANAAN, CT 06480
M	44/108/21	270 VALLEY RD	FIRST TAXING DISTRICT	12 NEW CANAAN AVE PO BOX 27, NORWALK, CT 06852
N	44/108/31	2 WARDWLL DR	PROSEK DEBERA TRUSTEE	2 WARDWELL DR, NEW CANAAN, CT 06840

1 / C-1 **ABUTTERS MAP**
SCALE: 1"=300'

APPROXIMATE NORTH

GRAPHIC SCALE
300 0 150 300 600 1200
(IN FEET)
1 inch = 300 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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ABUTTERS MAP

C-1

Sheet No. 3 of 7

FRP ENCLOSURE NOTES

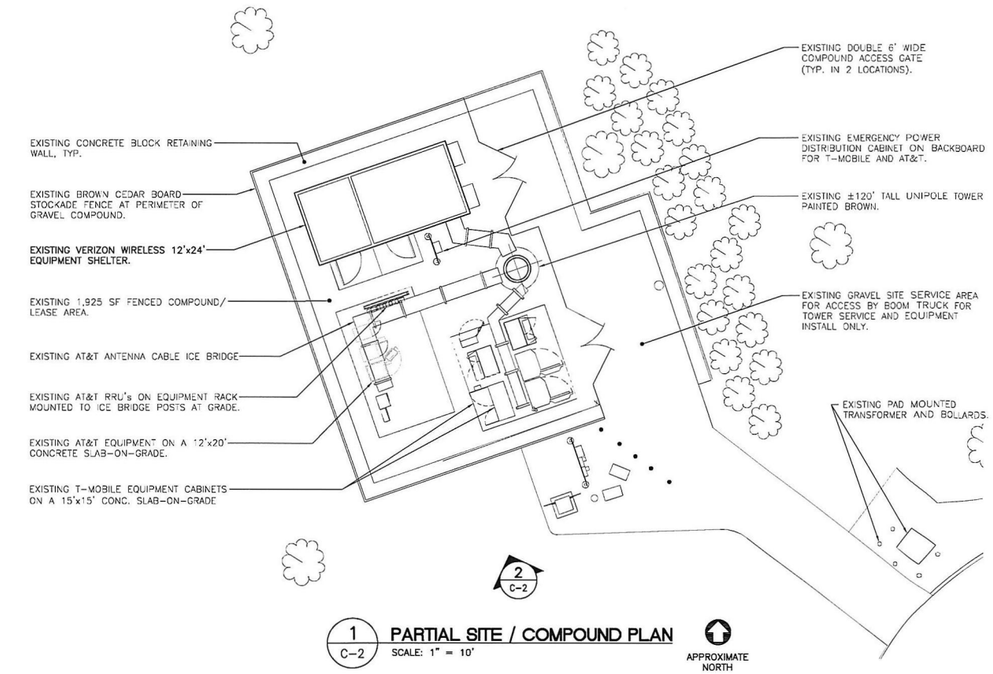
1. THE EXISTING T-MOBILE FRP CANISTER LOCATED AT THE TOP OF THE EXISTING FLAGPOLE SHALL BE REMOVED AND REPLACED IN ITS ENTIRETY.
2. THE REPLACEMENT FRP SYSTEMS INCLUDING THEIR ATTACHMENT TO THE EXISTING STEEL SUB FRAME SHALL BE ENGINEERED BY A CONNECTICUT STATE LICENSED ENGINEER EXPERIENCED IN THE DESIGN OF THESE SYSTEMS.
3. CONTRACTOR SHALL CONDUCT A DETAILED FIELD SURVEY FOR USE IN REPLICATING THE COLOR AND ARCHITECTURAL APPEARANCE OF THE EXISTING FLAGPOLE.
4. THE CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS AND CALCULATIONS BEARING THE SEAL OF THE RESPONSIBLE DESIGN PROFESSIONAL FOR REVIEW AND APPROVAL BY THE ENGINEER OF RECORD PRIOR TO FABRICATION.
5. THE FRP STRUCTURE SYSTEM SHALL BE DESIGNED TO MEET OR EXCEED THE 93 MPH (Vult) WIND SPEED FOR NEW CANAAN, CONNECTICUT AS REQUIRED IN THE CT STATE BUILDING CODE APPENDIX P.

FRP CANISTER NOTES:

1. REPLACEMENT OF THE RF TRANSPARENT CANISTER AT THE EXISTING FLAGPOLE WILL BE REQUIRED. DESIGN TO BE BY OTHERS.
2. REFER TO FRP ENCLOSURE NOTES ON SHEET C-2 FOR ADDITIONAL INFORMATION.

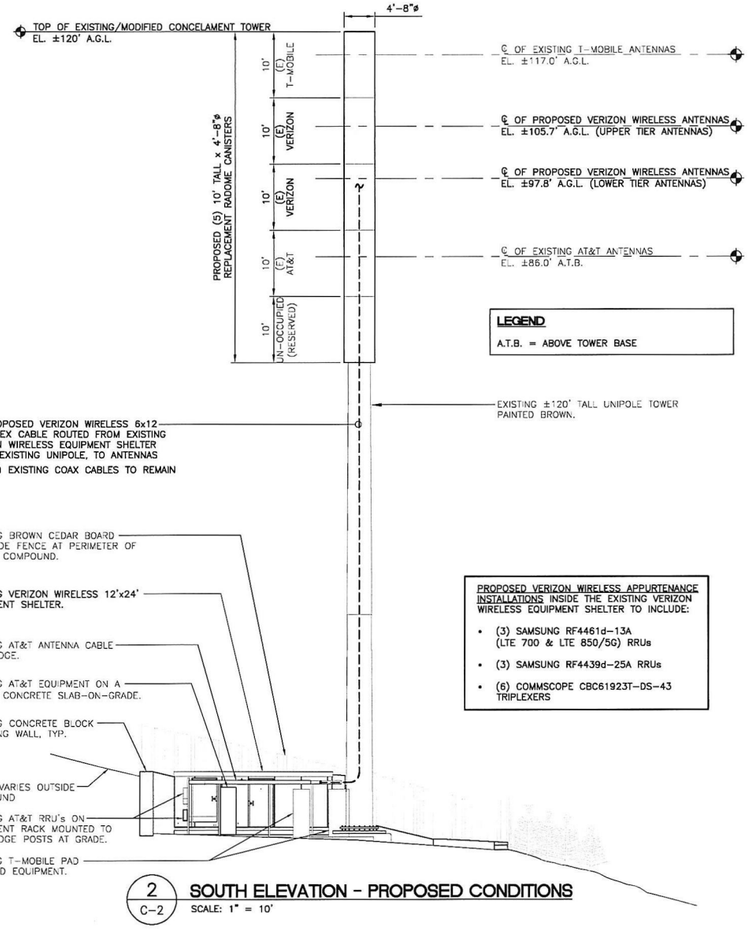
TOWER NOTES:

1. REFER TO TOWER/TOWER FOUNDATION STRUCTURAL ANALYSIS REPORT PREPARED FOR VERIZON WIRELESS BY "ENGINEERED TOWER SOLUTIONS, PLLC", DATED 10/27/2022. ETS, PLLC PROJECT NUMBER 22112671.STR.6444
2. REFER TO MOUNT ANALYSIS REPORT PREPARED FOR VERIZON WIRELESS BY CENTEK ENGINEERING, DATED 04/06/2023. CENTEK PROJECT NUMBER 21007.79
3. THE EXISTING (5) 3'-4"ø x 10' TALL ANTENNA CONCEALMENT RADOME CANISTERS TO BE REPLACED WITH (5) 4'-8"ø x 10'-0" TALL RADOME CANISTERS.
   - 3.1. REFER TO TOWER RADOME MODIFICATION DESIGN DRAWINGS ENTITLED "VERIZON SILVER HILL CT CT 50'-0" CANISTER REPLACEMENT" DATED FEBRUARY 9, 2023 AS PREPARED BY LARSON (A VALMONT COMPANY) IN CONJUNCTION WITH ISE INCORPORATED, INCLUSIVE OF DRAWING SHEETS PF1 & PF2. LARSON JOB# A550149, ISE JOB# 17956.
   - 3.2. REFER TO RADOME MODIFICATION DESIGN ANALYSIS ENTITLED "STRUCTURAL ANALYSIS REPORT-MAST POLE" DATED FEBRUARY 8, 2023 AS PREPARED BY LARSON (A VALMONT COMPANY) IN CONJUNCTION WITH ISE INCORPORATED, ISE JOB# 17956.
   - 3.3 REFER TO "SILVER HILL THERMAL ANALYSIS" DATED OCTOBER 9, 2024 AS PREPARED BY VALMONT, JOB# 550147.
4. ALL EXPOSED SURFACES OF THE PROPOSED REPLACEMENT RADOME CANISTERS SHALL BE PAINTED TO MATCH COLOR OF EXISTING RADOME. RADOME DESIGNER/MANUFACTURER SHALL EITHER PROVIDE THE REPLACEMENT RADOMES AS PAINTED (WITH CONTRACTOR-SUPPLIED MATCHING COLOR SWATCH) OR PROVIDE PAINT SPECIFICATION TO THE CONTRACTOR. CONTRACTOR IS RESPONSIBLE TOWER FOR MATCHING THE COLOR OF THE EXISTING RADOME.



1 C-2 **PARTIAL SITE / COMPOUND PLAN**
SCALE: 1" = 10'

APPROXIMATE NORTH



2 C-2 **SOUTH ELEVATION - PROPOSED CONDITIONS**
SCALE: 1" = 10'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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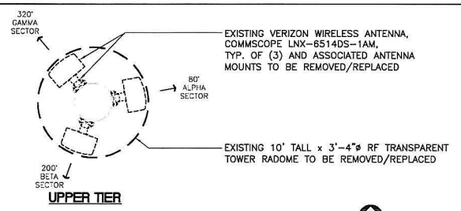
COMPOUND PLAN AND ELEVATION

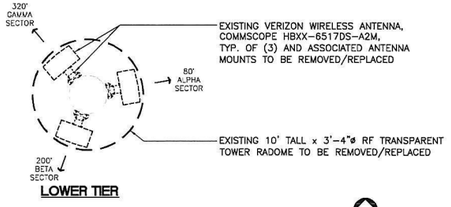
C-2

Sheet No. 4 of 7

EXISTING ANTENNA CONFIGURATIONS

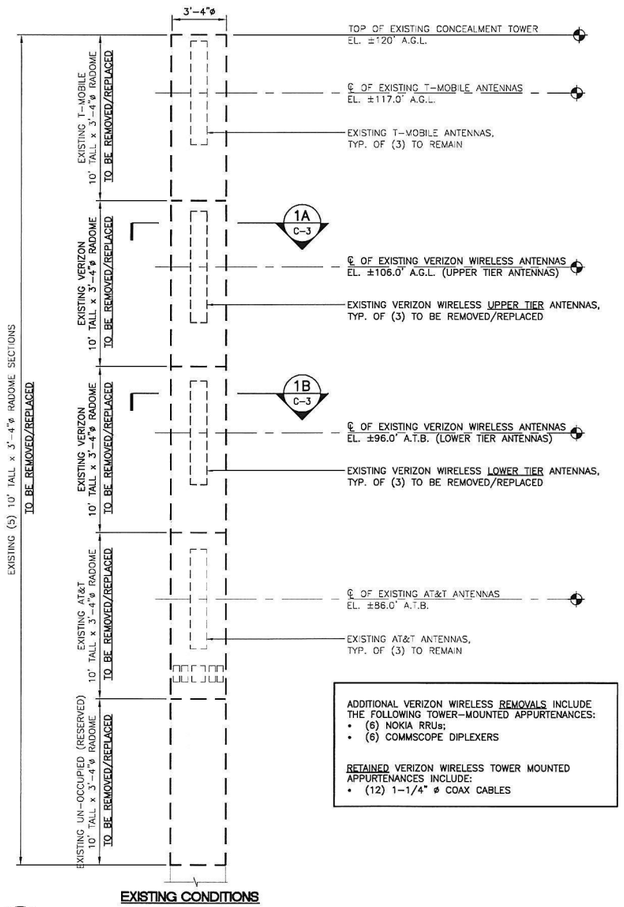


1A / C-3 **EXISTING SECTOR CONFIGURATION PLAN**
SCALE: 1/2" = 1'-0"



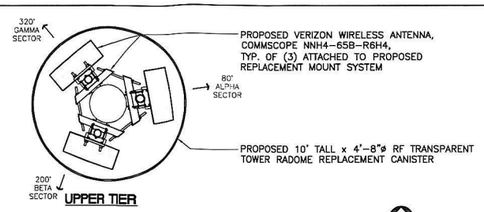
1B / C-3 **EXISTING SECTOR CONFIGURATION PLAN**
SCALE: 1/2" = 1'-0"

APPROXIMATE NORTH

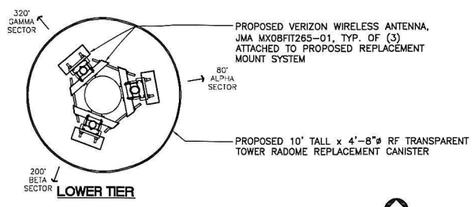


1 / C-3 **PARTIAL CONCEALMENT TOWER ELEVATION**
SCALE: 1/4" = 1'- 0"

PROPOSED ANTENNA CONFIGURATIONS

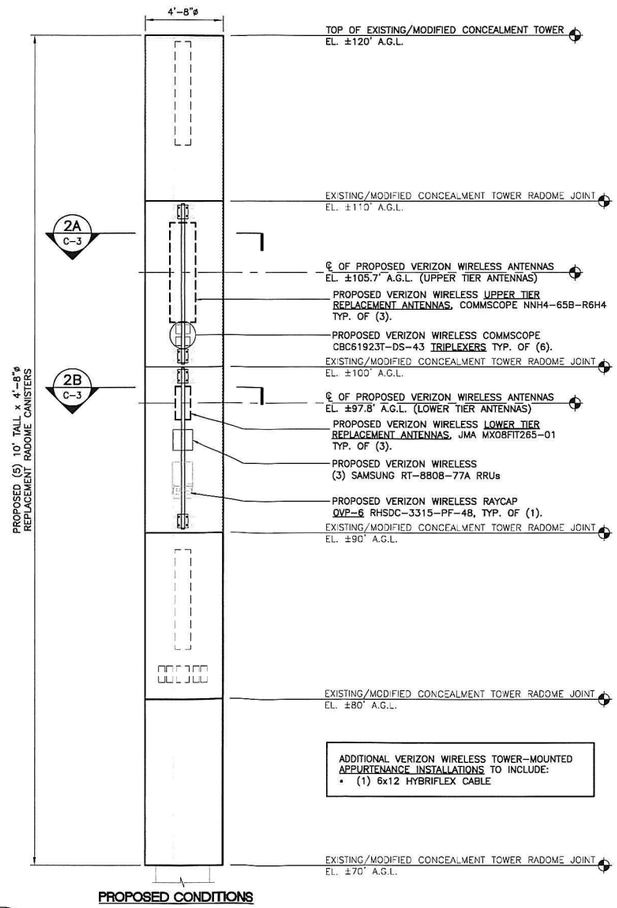


2A / C-3 **PROPOSED SECTOR CONFIGURATION PLAN**
SCALE: 1/2" = 1'-0"



2B / C-3 **PROPOSED SECTOR CONFIGURATION PLAN**
SCALE: 1/2" = 1'-0"

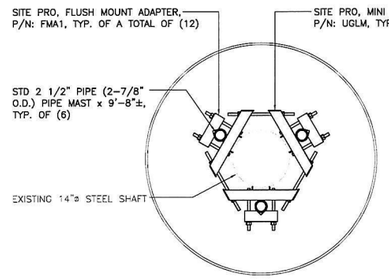
APPROXIMATE NORTH



2 / C-3 **PARTIAL CONCEALMENT TOWER ELEVATION**
SCALE: 1/4" = 1'- 0"

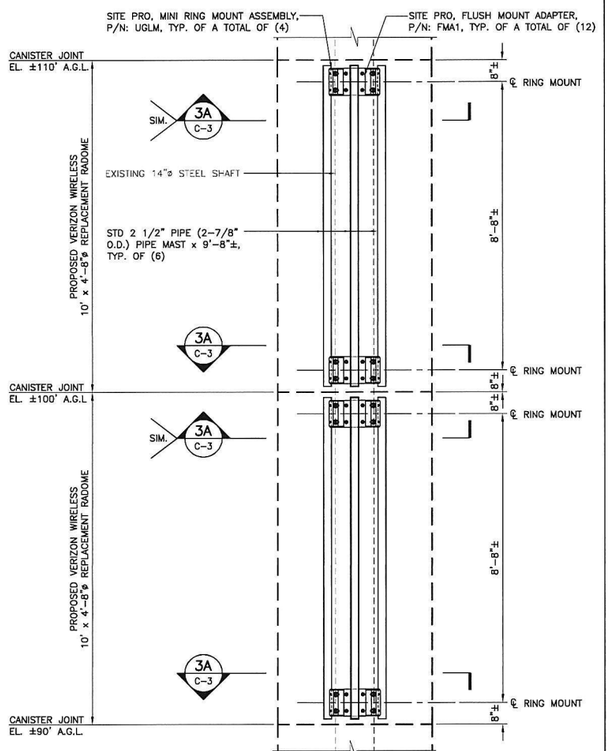
FRP CANISTER NOTES:

1. REPLACEMENT OF THE RF TRANSPARENT CANISTER AT THE EXISTING FLAGPOLE WILL BE REQUIRED. DESIGN TO BE BY OTHERS.
2. REFER TO FRP ENCLOSURE NOTES ON SHEET C-2 FOR ADDITIONAL INFORMATION.



3 / C-3

3A / C-3 **TYP. MOUNT ASSEMBLY SECTION**
SCALE: 3/4" = 1'-0"



3 / C-3 **PARTIAL CONCEALMENT TOWER ELEVATION**
SCALE: 1/2" = 1'- 0"
VERIZON OCCUPIED

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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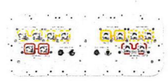
SCALE: AS NOTED
JOB NO. 21007.79

ANTENNA SECTOR CONFIGURATION DETAILS

C-3

Sheet No. 5 of 7

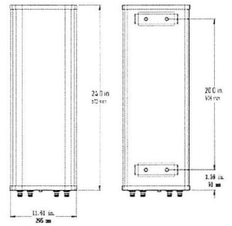
ELEVATION - ISOMETRIC



BOTTOM

12-PORT SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: NNH4-65B-R6H4	72"L x 19.6"W x 7.7"D	84.4 LBS. (W/OUT MOUNT KIT)

1 / C-4 **SECTOR ANTENNA DETAIL**
NOT TO SCALE



FRONT ELEVATION REAR ELEVATION

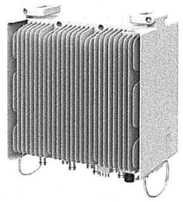
BOTTOM

8 - PORT SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: JMA MODEL: MX08FIT265-01	24.0"L x 11.6"W x 4.53"D	21.5 LBS. (W/SUPPLIED PIPE MOUNT BRACKET)

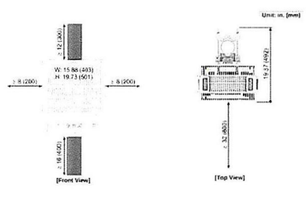
2 / C-4 **SECTOR ANTENNA DETAIL**
NOT TO SCALE

OVP- 6 BOX		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: RHSDC-4315-PF-48	19.18"H x 15.73"W x 10.25"D	32 LBS.
NOTES: 1. CONTRACTOR TO CONFIRM OVP BOX MAKE/MODEL AND QUANTITY WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING. 2. UNIT PROVIDES DC SURGE PROTECTION FOR 6 RRH UNITS.		

3 / C-4 **PROPOSED OVER-VOLTAGE PROTECTION BOX**
NOT TO SCALE



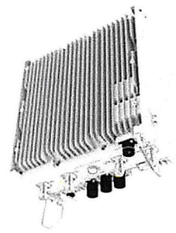
RRH - ISOMETRIC



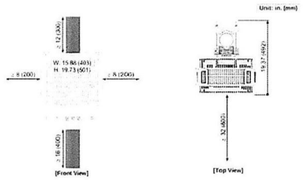
RRH CLEARANCES

DUAL BAND RRU (REMOTE RADIO UNIT)			
EQUIPMENT	BANDS	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RF4439d-25A	B25: PCS (1900 MHz) B66: AWS (2100 MHz)	15.0"H x 15.0"W x 10.0"D	74.7 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.			

4 / C-4 **DUAL-BAND AWS/PCS MACRO RADIO UNIT DETAIL**
NOT TO SCALE



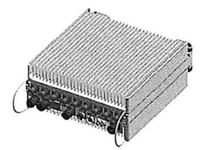
RRH - ISOMETRIC



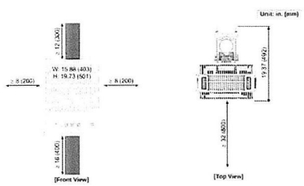
RRH CLEARANCES

DUAL BAND RRU (REMOTE RADIO UNIT)			
EQUIPMENT	BANDS	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RF44461d-13A	B5: 850 MHz B13: 700 MHz	15.0"H x 15.0"W x 10.23"D	79.1 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.			

5 / C-4 **DUAL-BAND 700/850 MHZ MACRO RADIO UNIT DETAIL**
NOT TO SCALE



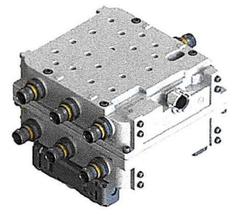
RRH - ISOMETRIC



RRH CLEARANCES

C BAND 8T8R 320W RRU (REMOTE RADIO UNIT)			
EQUIPMENT	BANDS	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RT-8808-77A	N77: 3700 MHz	15.0"H x 15.0"W x 6.8"D	59.5 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.			

6 / C-4 **C-BAND 8T8R 320W RADIO UNIT DETAIL**
NOT TO SCALE



TRIPLEXER			
EQUIPMENT	DESCRIPTION	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: CBC61923T-DS-43	TWIN TRIPLEXER, 555-894/PCS/AWS+WCS	6.929"H x 7.795"W x 4.173"D	12.8 LB (W/MOUNTING HARDWARE)
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.			

7 / C-4 **TRIPLEXER DETAIL**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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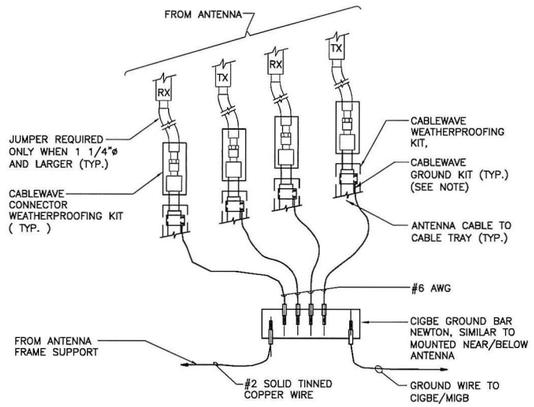
RF DETAILS

C-4

Sheet No. 6 of 7

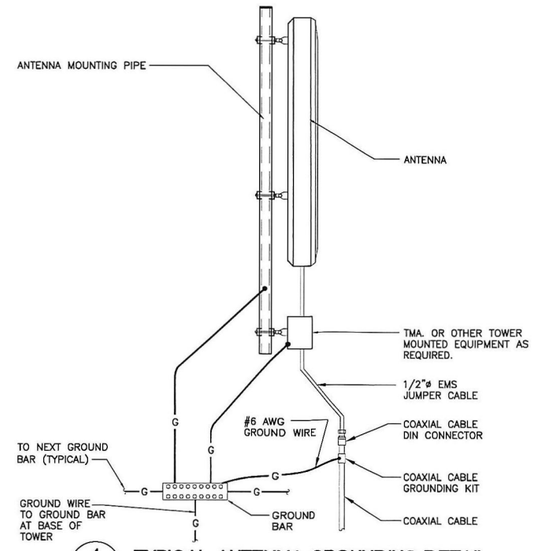


NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

1 E-1 CONNECTION OF GROUND WIRES TO GROUND BAR

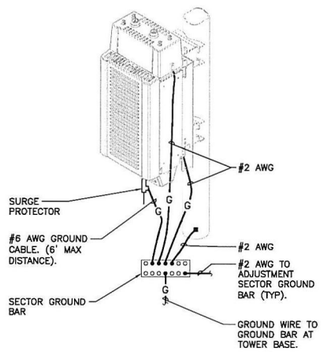
NOT TO SCALE



4 E-1 TYPICAL ANTENNA GROUNDING DETAIL

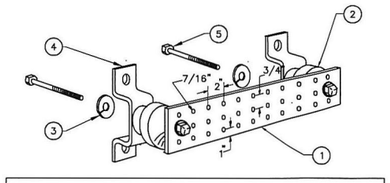
NOT TO SCALE

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



2 E-1 RRH POLE MOUNT GROUNDING

NOT TO SCALE

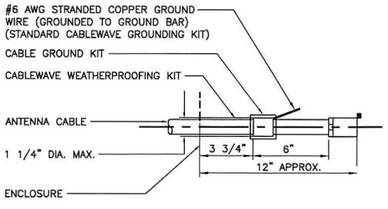


NOTES

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

5 E-1 GROUND BAR DETAIL

NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

3 E-1 ANTENNA CABLE GROUNDING DETAIL

NOT TO SCALE

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. CELLULAR GROUNDING SYSTEMS CONSISTING OF ANTENNA GROUNDING, GROUND BARS, ETC.

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

F. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

G. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

H. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.

I. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

J. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

K. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

L. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16450

1.01. GROUNDING

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.

2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.

D. CELLULAR GROUNDING SYSTEM:

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. ANTENNA GROUND CONNECTIONS AND PLATES.

E. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	10/23/24	TJR	DMD	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
4	11/15/23	TJR	DMD	CONSTRUCTION DRAWINGS – REVISED PER NEWLY ISSUED RFDS
3	08/22/23	TJR	DMD	CONSTRUCTION DRAWINGS – GROUND ELEVATION ADDED
2	04/06/23	TJR	DMD	CONSTRUCTION DRAWINGS – REVISED ABUTTERS
1	04/06/23	TJR	DMD	CONSTRUCTION DRAWINGS – REVISED PER NEWLY ISSUED RFDS
0	02/14/23	TJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

verizon

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless

SILVER HILL CT CT

208 VALLEY ROAD
NEW CANAAN, CT 06840

DATE: 01/19/22
SCALE: AS NOTED
JOB NO. 21007.79

ELECTRICAL DETAILS AND SPECIFICATIONS

E-1

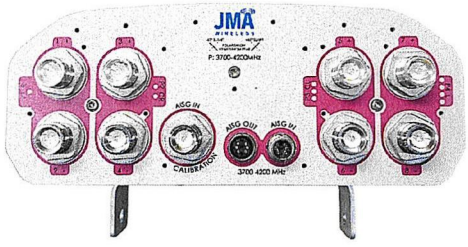
Sheet No. 7 of 7

MX08FIT265-01

NWAV™ Panel Antenna

8-Port 32 in. FIT (Form in Tighter), 3700 - 4200 MHz

- 5G C-Band 8T8R beamforming antenna
- Optimized antenna array design for all C-Band beam-forming combinations
- Excellent passive intermodulation (PIM) performance reduces harmful interference
- Integrated (internal RET) for remote electrical tilt control



nwav

Electrical specification (minimum/maximum)	Ports 1, 2, 3, 4, 5, 6, 7, 8
Frequency bands, MHz	3700-4200
Gain, dBi	17.1
Horizontal beamwidth (HBW), degrees	85
Horizontal beamwidth tolerance, degrees	±5
Front-to-back ratio, co-polar power @180°± 30°, dB	27
Vertical beamwidth (VBW), degrees[1]	5.5
Vertical beamwidth tolerance, degrees	±0.3
Remote electrical downtilt (EDT) range, degrees	2-12
First upper side lobe (USLS) suppression, dB[1]	15
Coupling level, Amp, Antenna port to Cal port, dB	26
Coupling level, max Amp Δ, Antenna port to Cal port, dB	±0.6
Coupler, max Amp Δ, Antenna port to Cal port, dB	0.65
Coupler, max Phase Δ, Antenna port to Cal port, degrees	4
Cross-polar isolation, port-to-port, dB[1]	25
Max VSWR / return loss, dB	1.5:1 / -14.0
Max passive intermodulation (PIM), 2x20W carrier, dBc	-145
Max input power per port at 50 °C, watts	75

[1] Typical value over frequency and tilt

Electrical specification, Broadcast 65°	Ports 1, 2, 3, 4, 5, 6, 7, 8
Frequency bands, MHz	3700-4200
Gain over all tilts, dBi	22.5
Horizontal beamwidth (HBW), degrees1	65
Horizontal beamwidth tolerance, degrees	±6
Vertical beamwidth (VBW), degrees[1]	5.5
Vertical beamwidth tolerance, degrees	±0.3
First upper side lobe (USLS) suppression, dB[1]	<-16

Electrical specification, Service Beam	Ports 1, 2, 3, 4, 5, 6, 7, 8
Frequency bands, MHz	3700-4200
Steered 0° gain, dBi	22.5
Steered 0° Gain tolerance, dBi	±0.6
Steered 0° Beamwidth, Horizontal, degrees	22
Steered 0° CPR at beampeak, dB	18
Steered 0° Horizontal Sidelobe, dB	12
Steered 30° Gain, dBi (max)	21.8
Steered 30° Gain tolerance, dBi	±0.6
Steered 30° Gain, dBi	21
Steered 30° Beamwidth, Horizontal, degree	22.2
Steered 30° CPR at beampeak, dB	18
Steered 30° Horizontal Sidelobe, dB	10

Electrical specification, Soft Split	Ports 1, 2, 3, 4, 5, 6, 7, 8
Frequency bands, MHz	3700-4200
Gain over all tilts, dBi	21.8
Horizontal beamwidth (HBW), degrees[1]	32
First upper side lobe (USLS) suppression, dB[1]	15

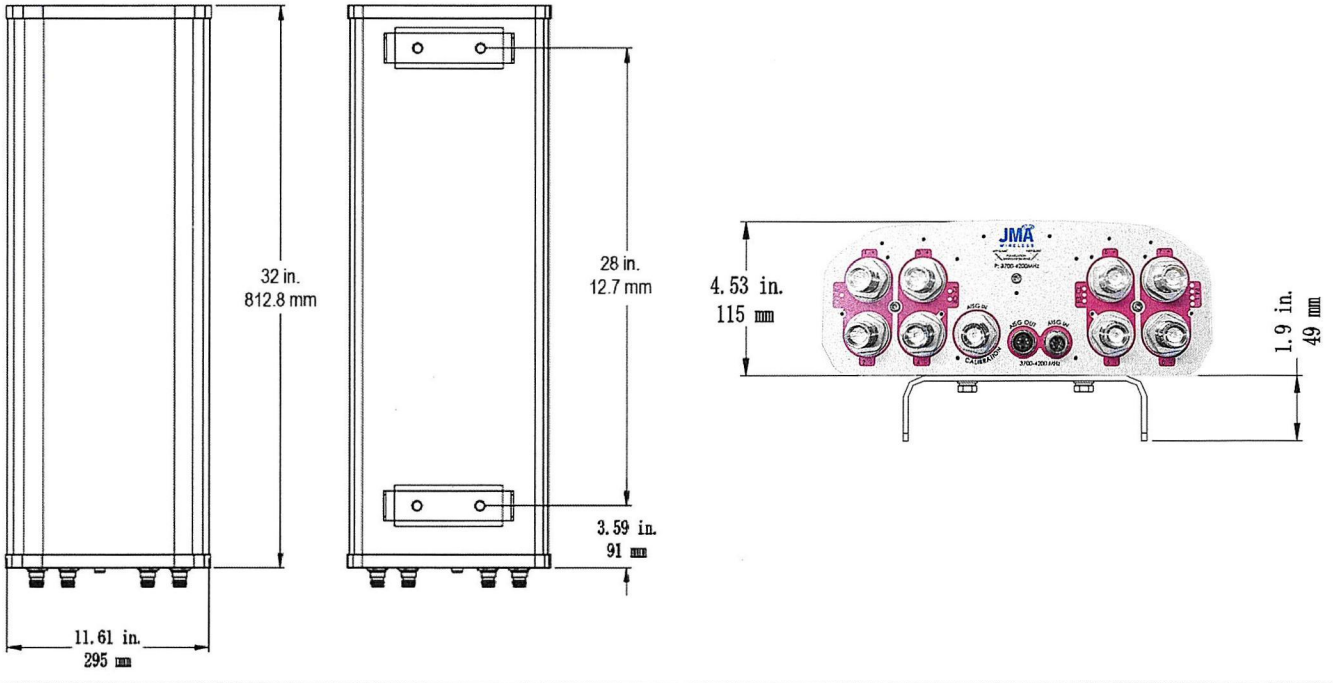
Beamforming weighting table available upon request

MX08FIT265-01

NWAV™ Panel Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	32.0/ 11.6/ 4.53 (812.8/ 295/ 115)
Shipping dimensions length/width/height, inches (mm)	37.0/ 16.9/ 11.8 (939.8/ 430/ 300)
No. of RF input ports, connector type, and location	8 x 4.3-10 female, bottom
Calibration interface port, connector type, and location	1 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)	23.2 (10.52)
Weight with supplied pipe mount bracket, lb (kg)	26.5 (12.02)
Shipping weight, lb (kg)	49.1 (22.27)
Rated wind survival speed, mph (km/h)	56.9 (253.1). 10.9 (48.5)
Frontal and lateral wind loading @ 150 km/h, lbf (N)	56.9
EPA frontal and lateral, ft^2, (m^2)	2.6 (0.24), 0.5 (0.05)

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



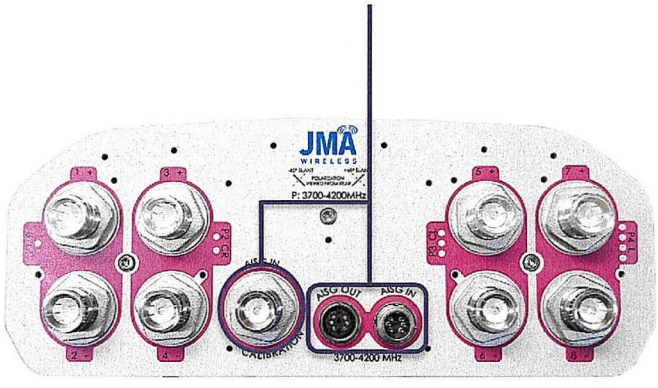
Ordering information	
Antenna model	**Description**
MX08FIT265-01	32-inch 8T8R beamforming antenna, 3700-4200 MHz with RET
Mounting kit (included)	91900330 BRACKET KIT, range of mechanical up/down tilt -2° to 12°
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations

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	1 pair of AISG male/female connectors and 1 RF port Bias-T
RET interface connector location	Bottom of the antenna
Total no. of internal RETs	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 port as shown below:

RET device	Band	RF port
1	3700-4200	1-8

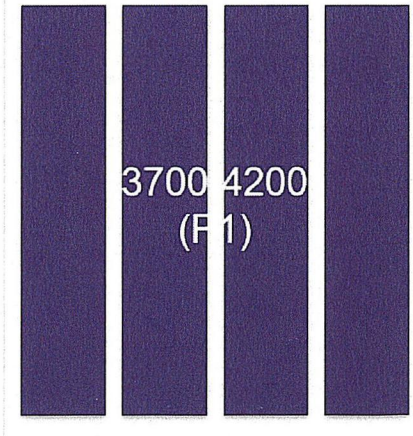


Array topology

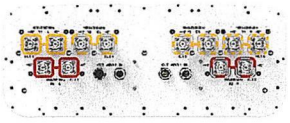
1 set of radiating arrays

P1: 3700-4200 MHz

Band	RF port
3700-4200	1-8



NNH4-65B-R6H4



12-port sector antenna, 4x 698–896 and 8x 1695–2360 MHz, 65° HPBW, 6x RET

- Features broadband Low Band (698-896 MHz) and High Band (1695-2360 MHz) arrays for 4T4R (4X MIMO) capability for Band 14, AWS, PCS and WCS applications
- Non-stacked high band array design provides higher gain and narrower vertical beamwidth than traditional antenna designs
- Independent tilt for all arrays
- Array configuration provides capability for 4T4R (4x MIMO) on Low band and Dual 4T4R (4x MIMO) on High band
- Optimized SPR performance across all operating bands
- Excellent wind loading characteristics
- Supports re-configurable antenna sharing capability enabling control of the internal RET system using up to two separate RET compatible OEM radios

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	8
RF Connector Quantity, low band	4
RF Connector Quantity, total	12

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male

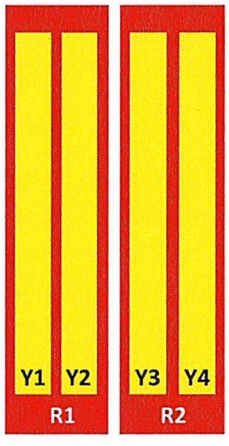
NNH4-65B-R6H4

Input Voltage	10–30 Vdc
Internal RET	High band (4) | Low band (2)
Power Consumption, active state, maximum	8 W
Power Consumption, idle state, maximum	1 W
Protocol	3GPP/AISG 2.0 (Multi-RET)

Dimensions

Width	498 mm | 19.606 in
Depth	197 mm | 7.756 in
Net Weight, antenna only	34 kg | 74.957 lb
Length	1828 mm | 71.969 in

Array Layout

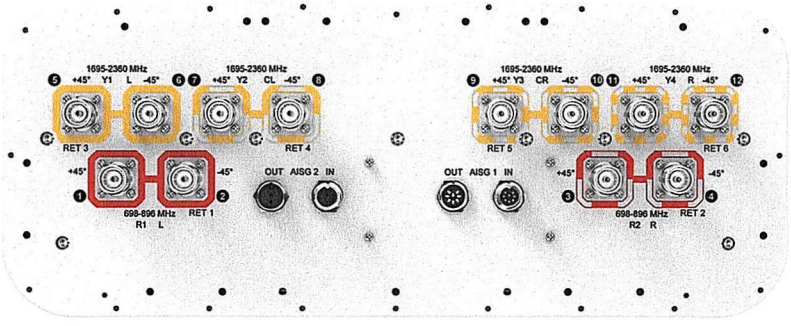


Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	CPxxxxxxxxxxxxxxxxmm.1
R2	698-896	3-4	2	CPxxxxxxxxxxxxxxxxmm.2
Y1	1695-2360	5-6	3	CPxxxxxxxxxxxxxxxxmm.3
Y2	1695-2360	7-8	4	CPxxxxxxxxxxxxxxxxmm.4
Y3	1695-2360	9-10	5	CPxxxxxxxxxxxxxxxxmm.5
Y4	1695-2360	11-12	6	CPxxxxxxxxxxxxxxxxmm.6

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

Port Configuration

NNH4-65B-R6H4



Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Polarization	±45°
Total Input Power, maximum	900 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2180**	**2300–2360**
Gain, dBi	14.2	14.8	16.7	17.3	17.9	18.4
Beamwidth, Horizontal, degrees	68	64	70	67	61	59
Beamwidth, Vertical, degrees	11.5	10.2	6.9	6.5	6	5.4
Beam Tilt, degrees	2–14	2–14	2–12	2–12	2–12	2–12
USLS (First Lobe), dB	16	18	16	19	19	19
Front-to-Back Ratio at 180°, dB	30	30	33	34	34	34
Isolation, Cross Polarization, dB	25	25	25	25	25	25
Isolation, Inter-band, dB	25	25	25	25	25	25
VSWR | Return loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0

PIM, 3rd Order, 2 x 20 W, dBc	-150	-150	-150	-150	-150	-150
Input Power per Port at 50°C, maximum, watts	300	300	250	250	250	200

Electrical Specifications, BASTA

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2180**	**2300–2360**
Gain by all Beam Tilts, average, dBi	13.8	14.5	16.1	16.9	17.5	18
Gain by all Beam Tilts Tolerance, dB	±0.6	±0.5	±0.7	±0.6	±0.6	±0.5
Beamwidth, Horizontal Tolerance, degrees	±5.7	±3.2	±6.4	±7.5	±5.9	±3.6
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.7	±0.5	±0.3	±0.4	±0.2
USLS, beampeak to 20° above beampeak, dB	16	15	12	15	15	16
Front-to-Back Total Power at 180° ± 30°, dB	20	21	27	26	27	28
CPR at Boresight, dB	24	23	19	19	20	17
CPR at Sector, dB	12	10	7	5	6	8

Mechanical Specifications

Effective Projective Area (EPA), frontal	0.65 m² | 6.997 ft²
Effective Projective Area (EPA), lateral	0.22 m² | 2.368 ft²
Wind Loading @ Velocity, frontal	694.0 N @ 150 km/h (156.0 lbf @ 150 km/h)
Wind Loading @ Velocity, lateral	235.0 N @ 150 km/h (52.8 lbf @ 150 km/h)
Wind Loading @ Velocity, maximum	900.0 N @ 150 km/h (202.3 lbf @ 150 km/h)
Wind Loading @ Velocity, rear	571.0 N @ 150 km/h (128.4 lbf @ 150 km/h)
Wind Speed, maximum	241.402 km/h | 150 mph

Packaging and Weights

Width, packed	565 mm | 22.244 in
Depth, packed	309 mm | 12.165 in
Length, packed	2035 mm | 80.118 in
Weight, gross	47.6 kg | 104.94 lb

Regulatory Compliance/Certifications

NNH4-65B-R6H4

Agency	Classification
CHINA-ROHS	Above maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
ROHS	Compliant/Exempted

Included Products

BSAMNT-3	–	Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

Specifications

The following table outlines the main specifications of RT8808-77A.

Table 2. Specifications (RT8808-77A)

Item	RT8808-77A
Radio Technology	5G NR
Operating Frequency	3700 to 3980 MHz
Channel Bandwidth	20/40/60/80/100 MHz
RF Chain	• 8T8R, 4T4R+4T4R Bi-sector • 2T2R+2T2R+2T2R Tri-sector • 4T8R+4T8R split mode
RF Output Power	Max. 320W (8 x 40W)
Capacity	Total Max 2C
CPRI interface	15km, 2 ports (25Gbps x 2), SFP28, single mode, Bi-di (Option: Duplex)
Input Voltage	-48 V DC (-38 V DC to -57 V DC)
Power Consumption (Max.)	1,192 W (100% load, 25°C) (w/o RET)
Operating Humidity	5% to 100%RH (Condensing, not to exceed 30g/m3 absolute humidity)
Operating Temperature	-40°C to 55°C (without solar load)
Dimension (in./mm)	14.96/380 (W) × 6.82/173.3(D) × 14.96/380 (H)
Weight (kg)	27 or less than
Cooling	Natural convection
Waterproof/Dustproof	IP65
Wind Resistance	Telcordia GR-487-CORE Issue5 • Wind Resistance (Section 3.36)
Earthquake Specification	Telcordia GR-63-CORE, Issue5, □ Earthquake (Section 4.4.1)
Vibration Specification	Telcordia GR-63-CORE, Issue5, • Office Vibration (Section 4.4.4) • Transportation Vibration (Section 4.4.5)
Altitude	Telcordia GR-63-CORE, Issue5, • Altitude (Section 4.1.3)
EMC	FCC Title 47 CFR Part 15
RF	FCC Title 47 CFR Part 27, 24
Safety	UL 62368-1, 2nd Edition
Installation	Pole, Wall, Tower

The power consumption is predicted with a simulation and the measured value is subject to change by ±10%

ATTACHMENT 3

ISE, Incorporated
Structural Engineers ***Telecommunications & Industrial Design***

PO Box 50039 • Phoenix, Arizona • 85076 • Office: (602) 403-8614 • Fax: (623) 321-1283 • www.ISE-INC.biz

Date: February 8, 2023

Larson Valmont
1501 S. Euclid Ave.
Tucson, AZ 85713

ISE Job #: 17956

Structural Analysis Report – Mast Pole

Carrier Designation: Verizon
Site Number/Name: Silver Hill CT CT
Site Data: 108 Valley Road
New Canaan, CT 06840
41° 09' 58.4496", -73° 28' 13.7208"

Analysis Criterion: Connecticut State Building Code 2022, IBC 2021, TIA-222-H
117 mph (3-Sec Gust)
Exposure C, Topographic Category 1, Risk Category II
S_s = 0.247, S_1 = 0.057, S_{DS} =0.263, S_{D1} = 0.092

ISE has completed a Structural Analysis to evaluate the structural integrity of the existing mast pole structure for the proposed carrier load configuration as detailed in this report.

Per our analysis:

1. *Structure Stress Level with proposed Equipment:* *88.4%* *PASS*

Customer shall review the antenna and equipment listing presented herein and confirm that the tower is accurately represented by our assumptions.

We are pleased to have been of service for this project. If you have any questions please feel free to give us a call.

Sincerely,

STATE OF CONNECTICUT STEVEN M. SCHAUB PEN. 23316 LICENSED PROFESSIONAL ENGINEER

FEB 09 2023

Prepared By: Glen L. Hunt III Approved By: Steven Schaub, PE

PROJECT INFORMATION

DOCUMENTATION PROVIDED:

Source	Description	Date
Verizon	Construction Drawings	01/19/2022
TransAmerican Power Products Inc	Fabrications Drawings 12359-RA	04/11/2014
TransAmerican Power Products Inc	Structural Design 23514-0110	04/05/2014

PROPOSED LOADING

@70'-0" AFG to 120'-0" AFG-
- (5) (N) 56" Dia. x 10'-0" Dia. Canister

@105.7' AFG Elevation-
- (3) (N) CommScope NNH4-65B-R6H4 Antenna
- (6) (N) CommScope CBC61923T-DS-43 Triplexers

@97.8' AFG Elevation-
- (3) (N) JMA MX08FIT265-01 Antenna
- (1) (N) Raycap RHSDC-3315-PF-48
- (3) (N) Samsung RT-8808-774A

Existing Loads per below-

@117' AFG Elevation-
T-Mobile Carrier Loading (Assumed 400lbs)

@86' AFG Elevation-
ATT Carrier Loading (Assumed 400lbs)

@75' AFG Elevation-
Reserve Carrier Loading (Assumed 400lbs)

ANALYSIS METHOD

tnxTower (v. 8.1.1.0), a commercially available software program designed for the analysis of telecommunications towers was used to create a three-dimensional mathematical model of the tower and to calculate primary member stresses for load conditions defined by the TIA-222 Specification. tnxTower results are attached to this report.

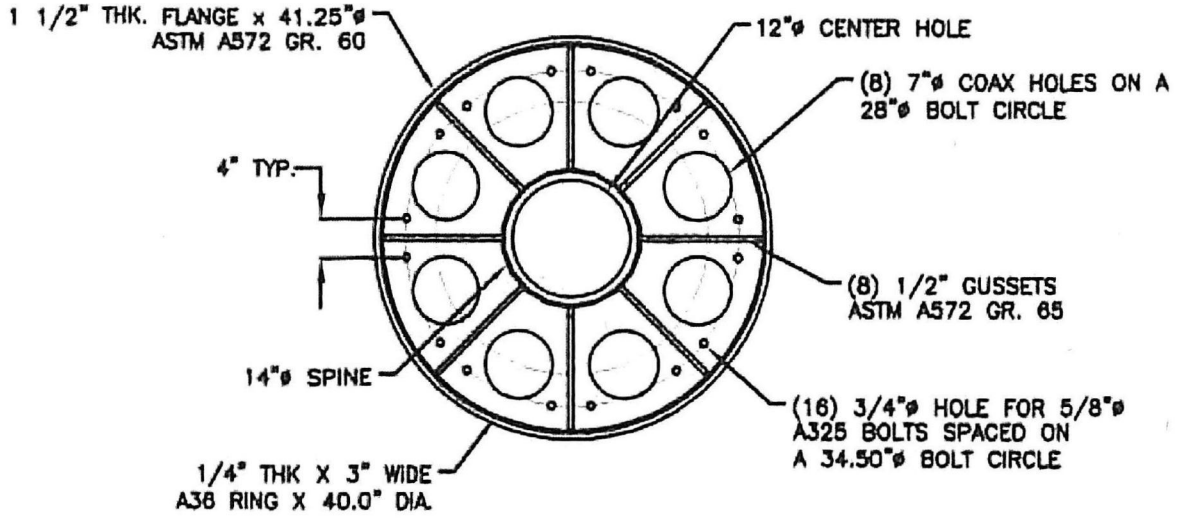
ANALYSIS RESULTS

MONOPOLE RESULTS

Monopole Component/Section	Capacity[1]	Pass/Fail
Mast Pole Section L1	88.4%	Pass

1. Capacity usage at 105% or less is considered acceptable per industry standards for rigorous structural analyses prepared as described herein. Customer/Tower owner acceptance criterion may exclude values in excess of 100%.

Connection to Base Pole –



Refer Appendix for Flange Plate and Bolts check

CONCLUSIONS/RECOMMENDATIONS

The existing mast pole structure, flange plate and bolts have adequate capacity for the specified proposed loads.

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ANALYSIS ASSUMPTIONS AND LIMITATIONS

1. The Structural Analysis Report (report) is the property of ISE Services and must not be reproduced, modified or copied in whole or in part without our written permission.

2. The customer must accept all liability and responsibility for the use and application of ISE's review. Additional services of other Professional Engineering Specialists may be required.

3. The subject tower/Self-Support Tower (structure) is assumed to be installed in accordance with the drawing/s and documents referenced in the report unless otherwise noted. ISE assumes that the structure has been properly maintained and that no portions of the structure have corroded or have been mishandled, overloaded, damaged or substituted with other members. No reduction in capacity has been considered to account for the effects of cyclic loading over the life of the structure. Unless noted otherwise in the report ISE has not inspected or surveyed the loading currently supported by the structure. Unless otherwise indicated in the reviewer's comments, the structure review has been solely based on information listed or referenced in the report.

4. Assumptions made by ISE concerning antenna and appurtenance loading were based on ISE's understanding of the information provided by the customer for the review. Only the antennas and appurtenances listed or referenced in the report were considered for the review unless otherwise noted. The results of the review are not intended nor represented to be applicable to any other loading conditions. ISE has not investigated possible interference between existing and proposed antennas, mounts, appurtenances, etc., unless otherwise indicated in the reviewer's comments.

5. ISE has not reviewed the load carrying capability of existing or proposed mounts supplied by others, or of mounts not identified in the report. ISE also has not evaluated members of the structure for local stresses resulting from the attachment of such mounts. ISE can provide this service if requested by the customer.

6. ISE does not accept responsibility for the accuracy or completeness of the information supplied to ISE or for the assumptions made for this review. ISE assumes thorough field investigations have or will be performed by others to verify all information and assumptions used for ISE's review.

7. ISE's review has been based on the wind and ice loading as specified in the ANSI/TIA/EIA-222-H, "Structural Standard for Antenna Supporting Structures and Antennas". The review is limited to the load carrying capacity of the structure for the wind and ice load indicated. Unless otherwise noted in the report, ISE assumes the structure is installed on level grade. Unless otherwise noted in the report, ISE has not reviewed the structure for conformance to local, state, or federal requirements or for site specific requirements concerning wind load, ice load, grounding, obstruction lighting requirements, obstruction marking, climbing or working facilities, etc.

8. Foundation designs have not been reviewed unless reactions exceed the original structure design reactions. Unless otherwise indicated, ISE has assumed that foundations have been installed in accordance with the original foundation drawings and that the original soil parameters provided and/or assumed were adequate based on the conditions encountered at the site. ISE assumes these parameters were verified by geotechnical investigations at the time of installation.

9. ISE's structure and/or foundation review has been performed utilizing ISE's current review methods. ISE does not accept responsibility to provide a new or revised report due to revisions of standards, codes or review methods.

10. ISE does not accept responsibility for work performed on the structure, for persons doing the work, or for the safety and adequacy of the procedures, equipment, temporary guying, scaffolding, or other work aids. ISE has assumed that all work performed will be by competent and qualified personnel.

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11. Materials for proposed additions/alterations are assumed to be manufactured or supplied by reputable manufacturers or as specified in the report. Bolts, nuts, and palnuts for all new/replacement materials must be new. ISE shall be held harmless of any liability when other materials are substituted.

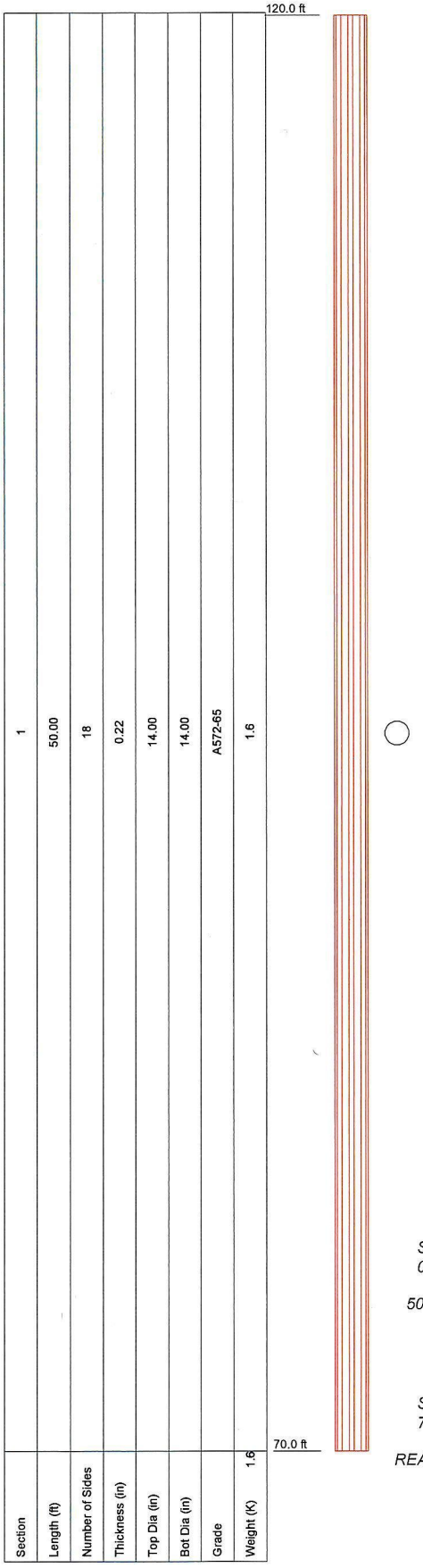
12. If proposed additions/alterations to the structure are implemented, it shall be the responsibility of others to maintain the stability of the structure and to prevent overloading of any component. ISE's review has not considered stresses due to erection since erection conditions were unknown.

13. ISE does not accept responsibility for informing insurance carriers, regulatory officials or other concerned parties of the results of this review or for any proposed alterations.

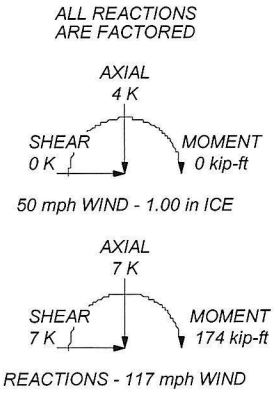
14. If any of the above assumptions are not valid or have been made in error, this analysis may be affected, and ISE should review any new information to determine its effect on the tower's structural capacity.

APPENDICES

TNXTOWER ANALYSIS RESULTS



Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	50.00	18	0.22	14.00	14.00	A572-65	1.6
							1.6



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
56" Canister Top	120	56" Canister Joint	100
T-Mobile Carrier	117	JMA MX08FIT265-01 Antenna	97.8
56" Canister Joint	110	JMA MX08FIT265-01 Antenna	97.8
CommScope NNH4-65B-R6H4 Antenna	105.7	JMA MX08FIT265-01 Antenna	97.8
		Samsung RT-8808-774A RRU	96
CommScope NNH4-65B-R6H4 Antenna	105.7	Samsung RT-8808-774A RRU	96
		Samsung RT-8808-774A RRU	96
CommScope NNH4-65B-R6H4 Antenna	105.7	Raycap RHSDC-3315-PF-48	95
		56" Canister Joint	90
(2) CommScope CBC61923T-DS-43 Triplexer	101	ATT Carrier	86
		56" Canister Joint	80
(2) CommScope CBC61923T-DS-43 Triplexer	101	Reserve Carrier	75
		56" Canister Bottom	70
(2) CommScope CBC61923T-DS-43 Triplexer	101		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft

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FAX: (623) 321-1283

Job: *VZW Silver Hill CT CT*			
Project: *ISE Job No. 17956*			
Client: Larson Valmont	Drawn by: PB	App'd:	
Code: TIA-222-H	Date: 02/08/23	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower base elevation above sea level: 252.00 ft.
- Basic wind speed of 117 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.00 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	120.00-70.00	50.00		18	14.00	14.00	0.22	0.88	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	14.18	9.57	229.59	4.89	7.11	32.28	459.49	4.79	2.08	9.504
	14.18	9.57	229.59	4.89	7.11	32.28	459.49	4.79	2.08	9.504

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
AVA7-50 (1-5/8 LOW DENSI. FOAM)	C	No	No	Inside Pole	120.00 - 70.00	12	No Ice	0.00	0.001
							1/2" Ice	0.00	0.001
							1" Ice	0.00	0.001
Hybrid Cable	C	No	No	Inside Pole	120.00 - 70.00	1	No Ice	0.00	0.001
							1/2" Ice	0.00	0.001

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight klf
							1" Ice	0.00	0.001

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	120.00-70.00	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.504

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	120.00-70.00	A	1.112	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.504

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight K
**									
56" Canister Top	A	None		0.00	120.00	No Ice	14.50	14.50	0.000
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
56" Canister Joint	A	None		0.00	110.00	No Ice	29.00	29.00	0.380
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
56" Canister Joint	A	None		0.00	100.00	No Ice	29.00	29.00	0.380
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
56" Canister Joint	A	None		0.00	90.00	No Ice	29.00	29.00	0.380
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
56" Canister Joint	A	None		0.00	80.00	No Ice	29.00	29.00	0.380
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
56" Canister Bottom	A	None		0.00	70.00	No Ice	14.50	14.50	0.380
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
**									
CommScope NNH4-65B-R6H4 Antenna	A	None		0.00	105.70	No Ice	0.00	0.00	0.085
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
CommScope NNH4-65B-R6H4 Antenna	B	None		0.00	105.70	No Ice	0.00	0.00	0.085
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
CommScope NNH4-65B-R6H4 Antenna	C	None		0.00	105.70	No Ice	0.00	0.00	0.085
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
(2) CommScope CBC61923T-DS-43 Triplexer	A	None		0.00	101.00	No Ice	0.00	0.00	0.000
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
(2) CommScope CBC61923T-DS-43 Triplexer	B	None		0.00	101.00	No Ice	0.00	0.00	0.000
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
(2) CommScope CBC61923T-DS-43 Triplexer	C	None		0.00	101.00	No Ice	0.00	0.00	0.000
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
JMA MX08FIT265-01 Antenna	A	None		0.00	97.80	No Ice	0.00	0.00	0.030
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
JMA MX08FIT265-01 Antenna	B	None		0.00	97.80	No Ice	0.00	0.00	0.030
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
JMA MX08FIT265-01 Antenna	C	None		0.00	97.80	No Ice	0.00	0.00	0.030
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
Samsung RT-8808-774A RRU	A	None		0.00	96.00	No Ice	0.00	0.00	0.075
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
Samsung RT-8808-774A RRU	B	None		0.00	96.00	No Ice	0.00	0.00	0.075
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
Samsung RT-8808-774A RRU	C	None		0.00	96.00	No Ice	0.00	0.00	0.075
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
Raycap RHSDC-3315-PF-48	C	None		0.00	95.00	No Ice	0.00	0.00	0.035
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
**									
T-Mobile Carrier	C	None		0.00	117.00	No Ice	0.00	0.00	0.400
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
ATT Carrier	C	None		0.00	86.00	No Ice	0.00	0.00	0.400
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
Reserve Carrier	C	None		0.00	75.00	No Ice	0.00	0.00	0.400
						1/2" Ice	0.00	0.00	0.000
						1" Ice	0.00	0.00	0.000
**									

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-70.00	95.35	1.253	0.041	59.093	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-70.00	95.35	1.253	0.008	1.11	68.359	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-70.00	95.35	1.253	0.010	59.093	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1 120.00-70.00	0.504	1.628	A	0	0.73	0.041	1	1	0.000	0.000	0.000	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.504	1.628						OTM	0.00 kip-ft	0.000		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.504	1.628	A	0	0.73	0.041	1	1	0.000	0.000	0.000	C
120.00-70.00			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.504	1.628						OTM	0.00 kip-ft	0.000		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.504	1.628	A	0	0.73	0.041	1	1	0.000	0.000	0.000	C
120.00-70.00			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.504	1.628						OTM	0.00 kip-ft	0.000		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.504	2.665	A	0	1.2	0.008	1	1	0.000	0.000	0.000	C
120.00-70.00			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
Sum Weight:	0.504	2.665						OTM	0.00 kip-ft	0.000		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.504	2.665	A	0	1.2	0.008	1	1	0.000	0.000	0.000	C
120.00-70.00			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
Sum Weight:	0.504	2.665						OTM	0.00 kip-ft	0.000		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.504	2.665	A	0	1.2	0.008	1	1	0.000	0.000	0.000	C
120.00-70.00			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
Sum Weight:	0.504	2.665						OTM	0.00 kip-ft	0.000		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.504	1.628	A	0	0.73	0.010	1	1	0.000	0.000	0.000	C
120.00-70.00			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.504	1.628						OTM	0.00 kip-ft	0.000		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.504	1.628	A	0	0.73	0.010	1	1	0.000	0.000	0.000	C
120.00-70.00			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.504	1.628						OTM	0.00 kip-ft	0.000		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.504	1.628	A	0	0.73	0.010	1	1	0.000	0.000	0.000	C
120.00-70.00			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.504	1.628						OTM	0.00 kip-ft	0.000		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	1.628					
Bracing Weight	0.000					
Total Member Self-Weight	1.628			0.00	0.00	
Total Weight	5.837			0.00	0.00	
Wind 0 deg - No Ice		0.000	-6.591	-168.10	0.00	0.00
Wind 90 deg - No Ice		6.591	0.000	0.00	-168.10	0.00
Wind 180 deg - No Ice		0.000	6.591	168.10	0.00	0.00
Member Ice	1.037					
Total Weight Ice	3.169			0.00	0.00	
Wind 0 deg - Ice		0.000	0.000	0.00	0.00	0.00
Wind 90 deg - Ice		0.000	0.000	0.00	0.00	0.00
Wind 180 deg - Ice		0.000	0.000	0.00	0.00	0.00
Total Weight	5.837			0.00	0.00	
Wind 0 deg - Service		0.000	-1.551	-39.55	0.00	0.00
Wind 90 deg - Service		1.551	0.000	0.00	-39.55	0.00
Wind 180 deg - Service		0.000	1.551	39.55	0.00	0.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 90 deg - No Ice
5	0.9 Dead+1.0 Wind 90 deg - No Ice
6	1.2 Dead+1.0 Wind 180 deg - No Ice
7	0.9 Dead+1.0 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	120 - 70	Pole	Max Tension	2	0.000	0.00	-0.00
			Max. Compression	4	-6.974	-174.20	0.00
			Max. Mx	4	-6.974	-174.20	0.00
			Max. My	2	-6.974	0.00	174.20
			Max. Vy	4	6.622	-174.20	0.00
			Max. Vx	2	-6.622	0.00	174.20

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	4	7.004	-6.590	0.000
	Max. H_x	14	5.837	0.000	-1.551
	Max. H_z	3	5.253	0.000	6.590
	Max. M_x	2	174.20	0.000	6.590
	Max. M_z	4	174.20	-6.590	0.000
	Max. Torsion	1	0.00	0.000	0.000
	Min. Vert	8	4.336	0.000	0.000
	Min. H_x	5	5.253	-6.590	0.000
	Min. H_z	7	5.253	0.000	-6.590
	Min. M_x	6	-174.20	0.000	-6.590
	Min. M_z	1	0.00	0.000	0.000
	Min. Torsion	1	0.00	0.000	0.000

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	5.837	0.000	0.000	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	7.004	0.000	-6.590	-174.20	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	5.253	0.000	-6.590	-172.58	0.00	0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	7.004	6.590	0.000	0.00	-174.20	0.00
0.9 Dead+1.0 Wind 90 deg - No Ice	5.253	6.590	0.000	0.00	-172.58	0.00
1.2 Dead+1.0 Wind 180 deg - No Ice	7.004	0.000	6.590	174.20	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	5.253	0.000	6.590	172.58	0.00	0.00
1.2 Dead+1.0 Ice+1.0 Temp	4.336	0.000	0.000	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	4.336	0.000	0.000	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	4.336	0.000	0.000	0.00	0.00	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	4.336	0.000	0.000	0.00	0.00	0.00
Dead+Wind 0 deg - Service	5.837	0.000	-1.551	-40.77	0.00	0.00
Dead+Wind 90 deg - Service	5.837	1.551	0.000	0.00	-40.77	0.00
Dead+Wind 180 deg - Service	5.837	0.000	1.551	40.77	0.00	0.00

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 70	6.80	12	0.87	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.00	56" Canister Top	12	6.80	0.87	0.00	Inf
117.00	T-Mobile Carrier	12	6.39	0.82	0.00	Inf
110.00	56" Canister Joint	12	5.44	0.70	0.00	Inf
105.70	CommScope NNH4-65B-R6H4 Antenna	12	4.85	0.62	0.00	Inf
101.00	(2) CommScope CBC61923T-DS-43 Triplexer	12	4.21	0.54	0.00	Inf
100.00	56" Canister Joint	12	4.08	0.52	0.00	Inf
97.80	JMA MX08FIT265-01 Antenna	12	3.78	0.49	0.00	Inf
96.00	Samsung RT-8808-774A RRU	12	3.53	0.45	0.00	Inf
95.00	Raycap RHSDC-3315-PF-48	12	3.40	0.44	0.00	Inf
90.00	56" Canister Joint	12	2.72	0.35	0.00	Inf
86.00	ATT Carrier	12	2.18	0.28	0.00	Inf
80.00	56" Canister Joint	12	1.36	0.17	0.00	Inf
75.00	Reserve Carrier	12	0.68	0.09	0.00	Inf
70.00	56" Canister Bottom	0	0.00	0.00	0.00	Inf

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 70	29.06	2	3.74	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.00	56" Canister Top	2	29.06	3.74	0.00	Inf
117.00	T-Mobile Carrier	2	27.32	3.51	0.00	Inf
110.00	56" Canister Joint	2	23.25	2.99	0.00	Inf
105.70	CommScope NNH4-65B-R6H4 Antenna	2	20.75	2.67	0.00	Inf
101.00	(2) CommScope CBC61923T-DS-43 Triplexer	2	18.02	2.32	0.00	Inf
100.00	56" Canister Joint	2	17.44	2.24	0.00	Inf
97.80	JMA MX08FIT265-01 Antenna	2	16.16	2.08	0.00	Inf
96.00	Samsung RT-8808-774A RRU	2	15.11	1.94	0.00	Inf
95.00	Raycap RHSDC-3315-PF-48	2	14.53	1.87	0.00	Inf
90.00	56" Canister Joint	2	11.63	1.50	0.00	Inf
86.00	ATT Carrier	2	9.30	1.20	0.00	Inf

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
80.00	56" Canister Joint	2	5.81	0.75	0.00	Inf
75.00	Reserve Carrier	2	2.91	0.37	0.00	Inf
70.00	56" Canister Bottom	0	0.00	0.00	0.00	Inf

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	120 - 70 (1)	TP14x14x0.22	50.00	0.00	0.0	9.57	-6.521	559.757	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	120 - 70 (1)	TP14x14x0.22	174.20	199.87	0.872	0.00	199.87	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	120 - 70 (1)	TP14x14x0.22	6.001	167.927	0.036	0.00	202.67	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 70 (1)	0.012	0.872	0.000	0.036	0.000	0.884 ✔	1.000	4.8.2 ✔

Section Capacity Table

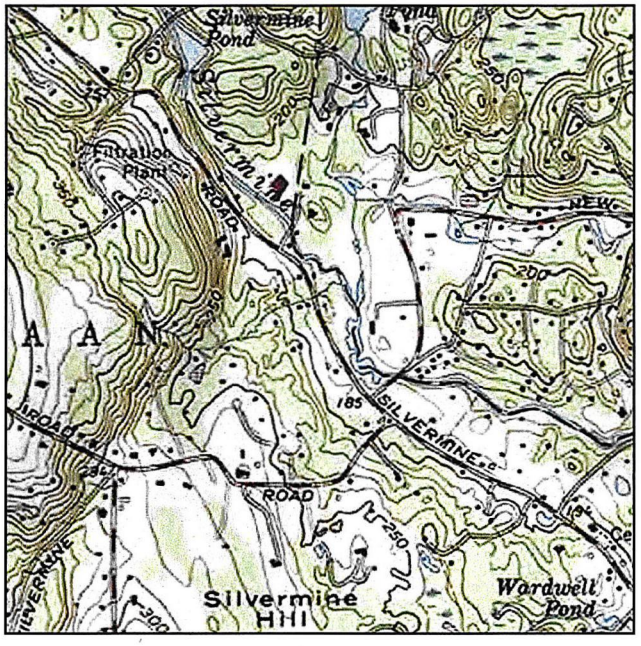
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	120 - 70	Pole	TP14x14x0.22	1	-6.521	559.757	88.4	Pass
							Summary	
						Pole (L1)	88.4	Pass
						RATING =	**88.4**	**Pass**

ASCE 7 Hazards Report

Address:
108 Valley Rd
New Canaan, Connecticut
06840

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 41.162591
Longitude: -73.465598
Elevation: 181.73 ft (NAVD 88)



Wind

Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Feb 08 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

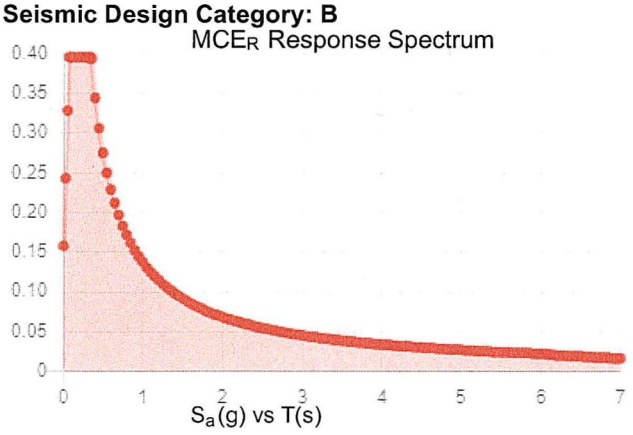
D - Stiff Soil

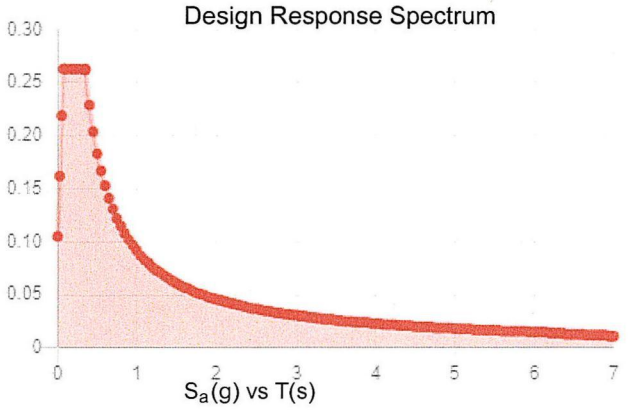
Site Soil Class:

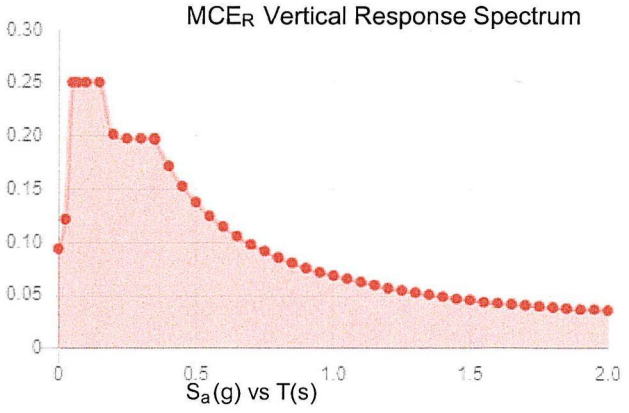
Results:

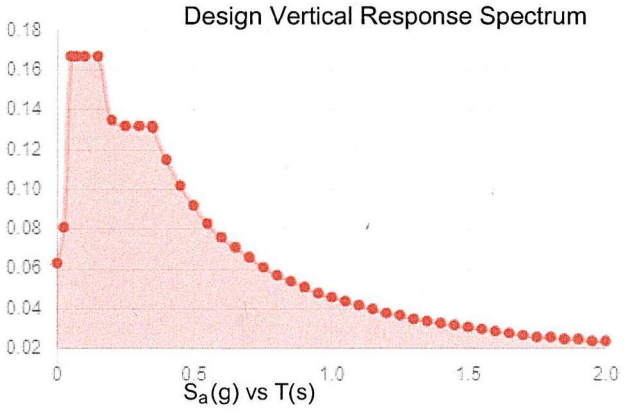
S_S :	0.247	S_{D1} :	0.092
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.146
F_v :	2.4	PGA_M :	0.221
S_{MS} :	0.395	F_{PGA} :	1.507
S_{M1} :	0.138	I_e :	1
S_{DS} :	0.263	C_v :	0.794

Seismic Design Category: B









Data Accessed: **Wed Feb 08 2023**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

verizon

VERIZON SILVER HILL CT CT
50'-0" CANISTER REPLACEMENT

108 VALLEY ROAD, NEW CANAAN, CT 06840
LATITUDE: 41° 09' 58.4496" LONGITUDE: -73° 28' 13.7208"

SHEET INDEX	
GSN	GENERAL NOTES
PF1	CANISTER DETAILS
PF2	DETAILS

FIBERGLASS PANEL NOTES:

FABRICATE PANELS TO FIT PER DIMENSIONS SHOWN IN PLAN.
PANELS TO BE MINIMUM 1/4" THICKNESS.

1. PANELS ARE TO BE FABRICATED IN A CONTIGUOUS LAYUP PER PLANS USING RF TRANSPARENT MATERIALS.
2. ARCHITECT SHALL SPECIFY ANY REQUIRED FINISHES OR TREATMENTS TO ACHIEVE DESIRED APPEARANCE.
3. FABRICATOR SHALL USE A GLASS-RESIN RATIO OF 35% ± 3%: REINFORCEMENT BY WEIGHT.
4. EACH SKIN SHALL BE FABRICATED WITH GENERAL PURPOSE RESIN OR POLYESTER VINYL RESIN WHERE REQUIRED FOR FIRE TREATMENT, CHOPPED STRAND MAT.
5 CORNER FLANGES MAY BE FASTENED WITH ⅝"Ø NON-METALLIC THREADED ROD AND NUTS: STRONGWELL FIBREBOLT STUDS AND NUTS OR EQUIVALENT. A TORQUE WRENCH MUST BE USED TO TIGHTEN FASTENERS TO A MAXIMUM 16 FT-LBS.
6. FRP PANELS AND SHAPES SHALL BE COATED WITH A FLAT GEL-COAT FINISH TO PROVIDE ULTRAVILOET PROTECTION.
7. ALL CUT AND DRILLED EDGES SHALL BE COATED WITH RESIN.
8. FABRICATOR AND INSTALLER SHALL TEST FIT ALL PANELS PRIOR TO FINAL ASSEMBLY/INSTALLATION TO ASSURE SQUARENESS AND CORNER FITS.

GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY DIMENSIONS, CONDITIONS, AND ELEVATIONS BEFORE STARTING WORK. SEE SPECIAL CONSTRUCTION NOTES THIS PAGE. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY IF ANY DISCREPANCIES ARE FOUND.
2. THE TYPICAL NOTES AND DETAILS SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY DETAILED ELSEWHERE. WHERE NO DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE AS SHOWN FOR OTHER SIMILAR WORK AND AS REQUIRED BY THE BUILDING CODE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH LOCAL CONSTRUCTION SAFETY ORDERS. APPROVAL OF SHOP DRAWINGS BY THE ARCHITECT OR STRUCTURAL ENGINEER SHALL NOT BE CONSTRUED AS ACCEPTING THIS RESPONSIBILITY.
4. ALL STRUCTURAL FRAMING MEMBERS SHALL BE ADEQUATELY SHORED AND BRACED DURING ERECTION AND UNTIL FULL LATERAL AND VERTICAL SUPPORT IS PROVIDED BY ADJOINING MEMBERS.

STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL CODE CHECKS BASED ON THE AISC, 14TH EDITION PER THE ASCE 7 STANDARD
2. ALL STEEL PIPE TO BE PER API 5LX - GR 42 (42 KSI), U.N.O.
3. ALL STEEL SQUARE TUBES (HSS) TO BE PER ASTM A500 GR. B (46 KSI), U.N.O
4. ALL OTHER STRUCTURAL STEEL SHAPES & PLATES SHALL BE PER ASTM A36 (36 KSI), U.N.O.
5. ALL BOLTS FOR STEEL-TO-STEEL CONNECTIONS SHALL BE GRADE 2, U.N.O.
6. ALL BOLTED CONNECTIONS SHALL BE TIGHTENED TO "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
7. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY (AWS) D1.1
8. ALL STEEL SURFACES SHALL BE GALVANIZED IN ACCORDANCE WITH THE ASTM A123 AND ASTM A153 STANDARDS, U.N.O.

CONSTRUCTION NOTES:

1. IF EXISTING CONDITIONS ARE NOT AS INDICATED ON DRAWINGS, THE CONTRACTOR SHALL CONTACT THE STRUCTURAL ENGINEER (GLEN HUNT) AT ISE INCORPORATED, FOR IN FIELD ADJUSTMENT(S), PRIOR TO PROCEEDING WITH ANY CONSTRUCTION.
2. CONTRACTOR TO FIELD VERIFY AND/OR FIELD LOCATE ALL ITEMS LABELED AS FIELD VERIFY OR FIELD LOCATE.

CODE COMPLIANCE:

CODE: CONNECTICUT STATE BUILDING CODE 2022, IBC 2021, TIA-222-H

WIND: 117 mph (3-Sec Gust) Wind Speed
Risk Category II, Exposure C, Topographic Category 1
Ground Elevation: 181.73'

SOILS: N/A

SEISMIC: SEISMIC DESIGN CATEGORY >> B
SOIL SITE CLASS >> D
S_S = 0.247, S_1 = 0.057
S_{DS} = 0.263 S_{D1} = 0.092

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Structural Engineers
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Phoenix, Arizona 85076
PHONE: 602-403-8614
www.ise-inc.biz
ISE JOB #: 17956

VERIZON SILVER HILL CT CT
50'-0" CANISTER REPLACEMENT

GENERAL NOTES

108 VALLEY ROAD, NEW CANAAN, CT 06840
LATITUDE: 41° 09' 58.4496" LONGITUDE: -73° 28' 13.7208"

STATE OF CONNECTICUT
GLEN ALAN HUNT
No. 22516
LICENSED PROFESSIONAL ENGINEER

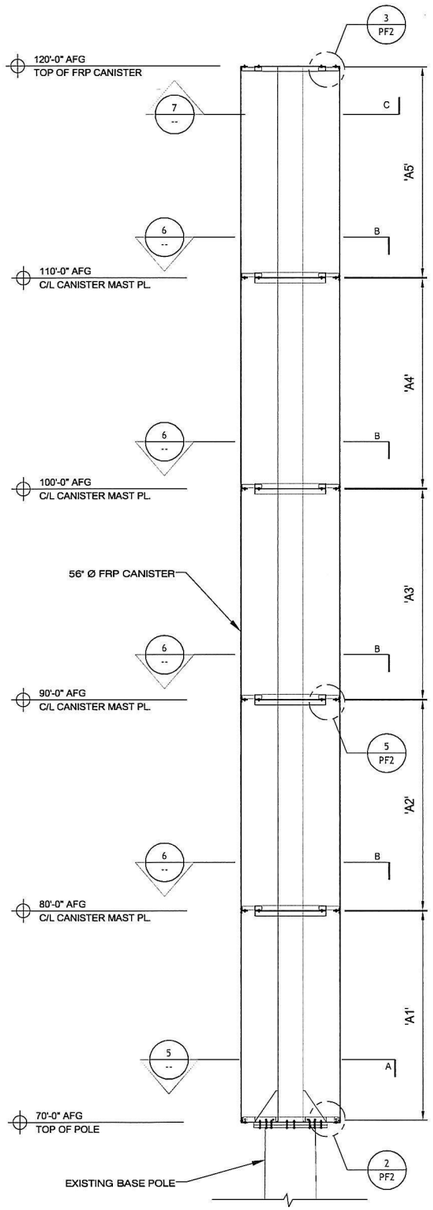
FEB 09 2023

PROGRESS LOG

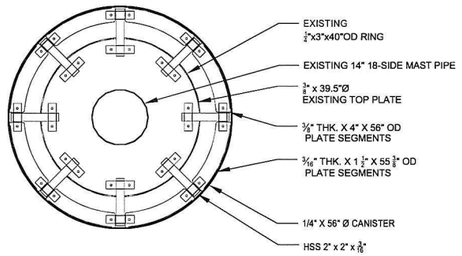
0	02/09/22	ISSUED TO CLIENT	DM

SHEET NUMBER	PROGRESS
GSN	0

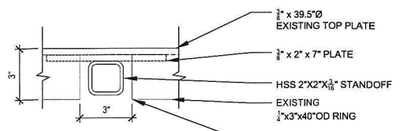
DRAWING DATE
February 09, 2023



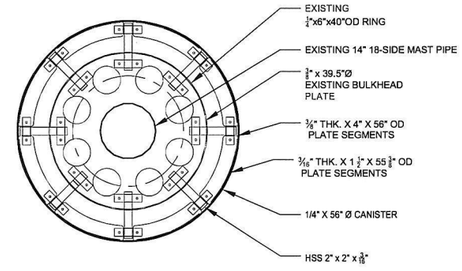
12 CANISTER MAST ELEVATION — SCALE: N.T.S.

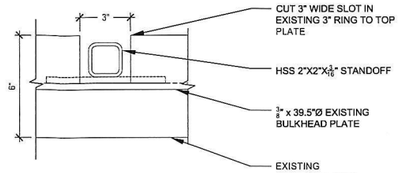


NOTE:
ALL BOLTS ARE ¾" GR2 BOLTS
W/ WASHERS AND LOCK WASHERS

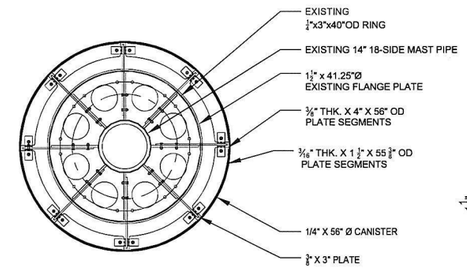


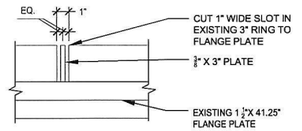
7 CANISTER MAST SECTION "C" TOP CAP PLATE — SCALE: N.T.S.





6 CANISTER MAST SECTION "B" — SCALE: N.T.S.





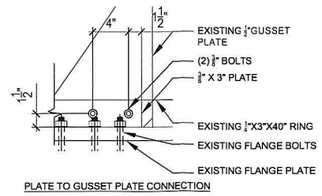


PLATE TO GUSSET PLATE CONNECTION

5 CANISTER MAST SECTION "A" FLANGE PLATE — SCALE: N.T.S.

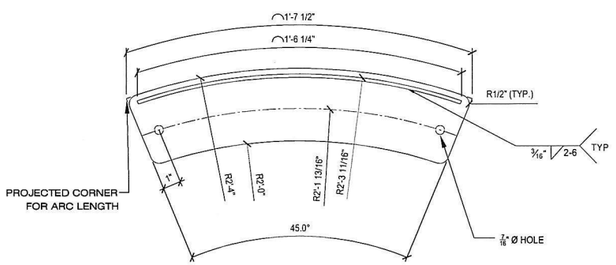
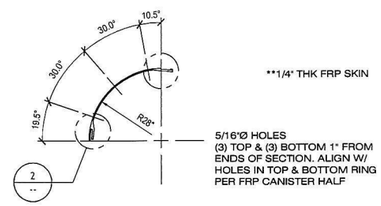


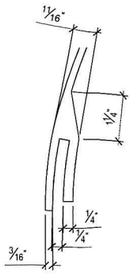
PLATE SEGMENT
AT CONNECTIONS: ¾" X 4" A36 PLATE x 40 EA

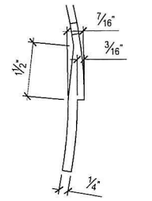
4 CANISTER MAST SECTION "B" & "C" PLATE SEGMENT DETAILS — SCALE: N.T.S.



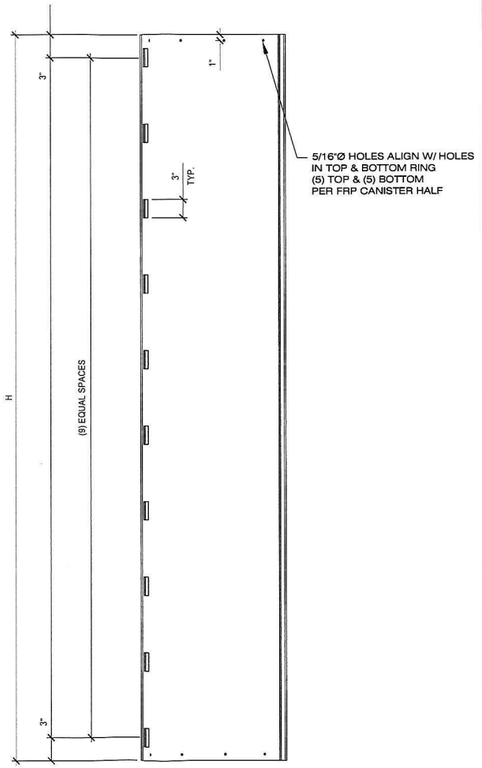
**1/4" THK FRP SKIN

3 FRP CANISTER HALF - TYPICAL SECTION — SCALE: N.T.S.





2 TYPICAL TONGUE AND GROOVE CONNECTION DETAIL — SCALE: N.T.S.



1 FRP CANISTER HALF - ELEVATION — SCALE: N.T.S.

**TRIM FRP CANISTER AS REQUIRED TO FIT

FRP CANISTER SHELL SCHEDULE		
CANISTER SHELL	H**	PANEL ELEVATION (C.L. OF PL)
A1	9'-11 ⅝"	70' to 80'
A2	9'-11 ⅝"	80' to 90'
A3	9'-11 ⅝"	90' to 100'
A4	9'-11 ⅝"	100' to 110'
A5	9'-11 ⅝"	110' to 120'

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ISE Incorporated
Structural Engineers
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Phoenix, Arizona 85076
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www.ise-inc.biz
ISE JOB #: 17956

VERIZON SILVER HILL CT CT
50'-0" CANISTER REPLACEMENT
CANISTER DETAILS

108 VALLEY ROAD, NEW CANAAN, CT 06840
LATITUDE: 41° 09' 58.496" LONGITUDE: -73° 28' 13.7208"

STATE OF CONNECTICUT
DAVID MORRIS
No. 22316
LICENSED
PROFESSIONAL ENGINEER

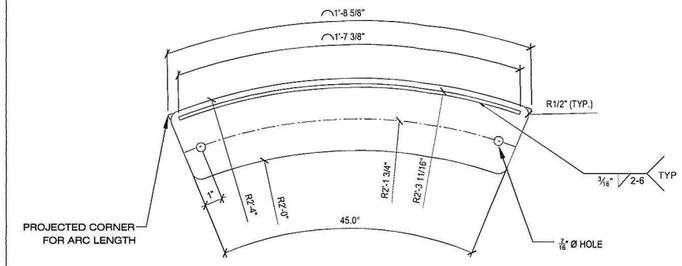
FEB 09 2023

PROGRESS LOG

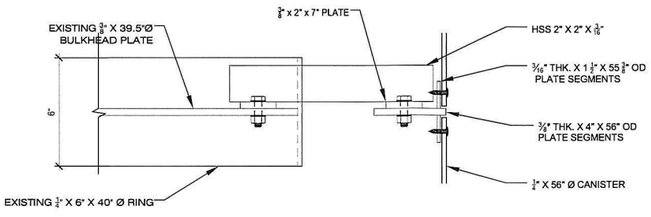
0	02/09/22	ISSUED TO CLIENT	DM

SHEET NUMBER: PF1
PROGRESS: 0
DRAWING DATE: February 09, 2023

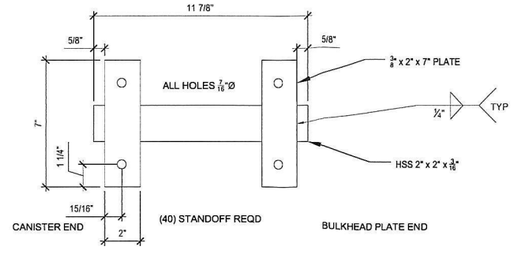
7 NOT USED — SCALE: N.T.S.



6 CANISTER MAST SECTION "A" PLATE SEGMENT DETAILS — SCALE: N.T.S.



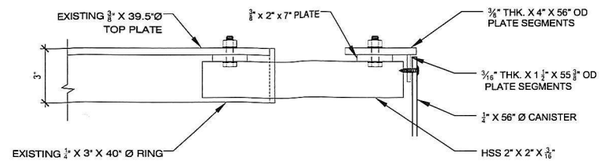
5 CANISTER MAST SECTION "B" PLATE SEGMENT TO CANISTER CONNECTION — SCALE: N.T.S.



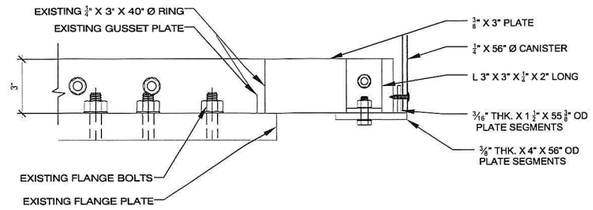
4 CANISTER MAST SECTION "B" & "C" STANDOFF PLAN VIEW — SCALE: N.T.S.

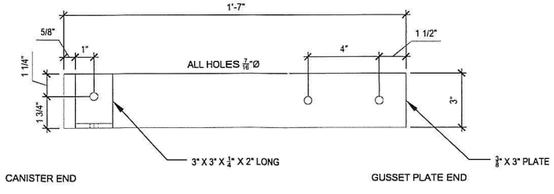
8 NOT USED — SCALE: N.T.S.

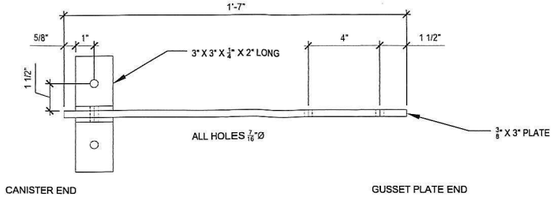
3 CANISTER MAST SECTION "C" PLATE SEGMENT TO CANISTER CONNECTION — SCALE: N.T.S.



2 CANISTER MAST SECTION "A" PLATE SEGMENT TO CANISTER CONNECTION — SCALE: N.T.S.







(8) REQD

1 CANISTER MAST SECTION "A" 3/8" PLATE PLAN VIEW — SCALE: N.T.S.

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50'-0" CANISTER REPLACEMENT
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STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER — LIC. NO. 22216

FEB 09 2023

PROGRESS LOG

0	02/09/22	ISSUED TO CLIENT	DM

SHEET NUMBER: PF2
PROGRESS: 0
DRAWING DATE: February 09, 2023

CENTEK engineering

Centered on Solutions℠

Analysis Report

Antenna Mount Analysis

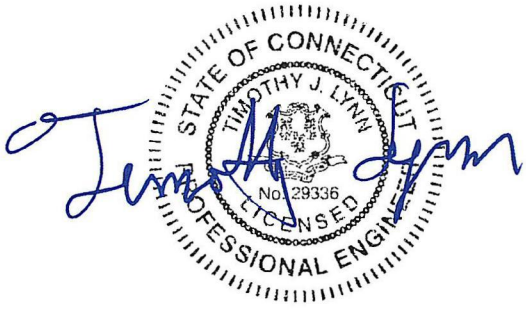
Verizon Site #: Silver Hill

108 Valley Road
New Canaan, CT

Centek Project No. 21007.79

~~Date: August 16, 2022~~
Rev 2: April 6, 2023

Max Stress Ratio = 41%



Prepared for:

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Table of Contents

CENTEK engineering

Centered on Solutions℠

April 6, 2023

Mrs. Audra Maher
SAI Group
12 Industrial Ave
Salem, NH 03079

Re: Structural Letter ~ Antenna Mount
Verizon – Site Ref: Silver Hill
108 Valley Road
New Canaan, CT 06840

Centek Project No. 21007.79

Dear Mrs. Maher,

Centek Engineering, Inc. has reviewed the Verizon antenna upgrade at the above referenced site. The purpose of the review is to determine the structural adequacy of the proposed mount, consisting of six (6) pipe masts to support the proposed/existing equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2021 International Building Code as modified by the 2022 Connecticut State Building Code (CTBC) including ASCE 7-16 and ANSI/TIA-222-H *Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures".*

The loads considered in this analysis consist of the following:

- **Verizon:**
  Pipe Masts: Three (3) Commscope NHH4-65B-R6H4 panel antennas, three (3) JMA MX08FIT265-01 panel antennas, six (6) Commscope CBC61923T-DS-43 triplexers, three (3) Samsung RT-8808-77A remote radio units and one (1) OVP-6 mounted on six (6) pipe masts within the concealment flagpole with RAD center elevations of 106 ft +/- AGL and 98 ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2021 International Building Code as modified by the 2022 Connecticut State Building Code considering a Ultimate design wind speed of 120 mph for New Canaan as required in Appendix P of the 2022 Connecticut State Building Code.

A structural analysis of tower and foundation needs to be completed prior to any work.

Based on our review of the installation, it is our opinion that the **subject antenna mount has sufficient capacity** to support the aforementioned antenna configuration. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

Section 2 - Calculations

CENTEK engineering
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Subject:	TIA-222-H Loads
Location:	New Canaan, CT
Rev. 2: 4/6/23	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21007.79

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-H

Wind Speeds

Basic Wind Speed	$V := 120$	mph	(User Input - CSBC 2022 Appendix P)
Basic Wind Speed with Ice	$V_i := 40$	mph	(User Input - TIA-222-H Annex B)
Basic Wind Speed (Mount)	$V_m := 30$	mph	(User Input - TIA-222-H Section 16.3)

Input

Structure Type =	Structure_Type := Flexible		(User Input)
Structure Category =	SC := II		(User Input)
Exposure Category =	Exp := C		(User Input)
Structure Height =	$h := 120$	ft	(User Input)
Height to Center of Antennas =	$z_{ant} := 106$	ft	(User Input)
Radial Ice Thickness =	$t_i := 1.0$	in	(User Input per Annex B of TIA-222-H)
Radial Ice Density =	$Id := 56.00$	pcf	(User Input)
Topograpic Factor =	$K_{zt} := 1$		(User Input)
Shielding Factor for Appurtenances =	$K_a := 1.0$		(User Input)
Rooftop Wind Speed-up Factor =	$K_s := 1.0$		(User Input)
Ground Elevation Factor =	$K_e = 0.996$		(User Input)
Gust Response Factor =	$G_H = 1.35$		(User Input)

Output

Wind Direction Probability Factor = $K_d := 0.95$ (Per Table 2-2 of TIA-222-H)

Importance Factors =

$$I_{ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.15 & \text{if } SC = 3 \\ 1.25 & \text{if } SC = 4 \end{cases} = 1$$

(Per Table 2-3 of TIA-222-H)

$$I_{Seismic} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \\ 1.50 & \text{if } SC = 4 \end{cases} = 1$$

$$K_{iz} := \left(\frac{z_{ant}}{33}\right)^{0.1} = 1.124$$

$$t_{iz} := t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 1.124$$

Velocity Pressure Coefficient Antennas =

$$Kz_{ant} := 2.01\left(\left(\frac{z_{ant}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.281$$

Velocity Pressure w/o Ice Antennas = $qz_{ant} := 0.00256 \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_d \cdot Kz_{ant} \cdot V^2 = 44.672$

Velocity Pressure with Ice Antennas = $qz_{ice.ant} := 0.00256 \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_d \cdot Kz_{ant} \cdot V_i^2 = 4.964$

Velocity Pressure with Ice Antennas = $qz_m := 0.00256 \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_d \cdot Kz_{ant} \cdot V_m^2 = 2.792$

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Subject:	TIA-222-H Loads
Location:	New Canaan, CT
Rev. 2: 4/6/23	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21007.79

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	Commcope NHH4-65B-R6H4		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height =	$L_{app} := 71.969$	in	(User Input)
Appurtenance Width =	$W_{app} := 19.606$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 7.756$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 120$	lbs	(User Input)
Number of Appurtenances =	$N_{app} := 1$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 3.7$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.25$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 9.8$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 740$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 3.9$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 293$	lbs

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front) =	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 11.3$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 94$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 5.2$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 43$	lbs

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 9.8$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 46$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 3.9$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 18$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 1 \times 10^4$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 5281$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 171$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 171$	lbs

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Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	JMA MK08FIT265-01		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height =	$L_{app} := 24$	in	(User Input)
Appurtenance Width =	$W_{app} := 11.6$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 4.53$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 22$	lbs	(User Input)
Number of Appurtenances =	$N_{app} := 1$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 2.1$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.2$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 1.9$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 140$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.8$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 55$	lbs

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front) =	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 2.5$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 20$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 1.2$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 10$	lbs

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 1.9$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 9$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.8$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 3$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 1261$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 1202$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 39$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 39$	lbs

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Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	Commscope CBC61923T-DS-43		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height=	$L_{app} := 6.929$	in	(User Input)
Appurtenance Width =	$W_{app} := 7.795$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 4.173$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 13$	lbs	(User Input)
Number of Appurtenances =	$N_{app} := 2$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 0.9$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.2$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 0.4$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 27$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.2$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 15$	lbs

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front) =	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 0.6$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 5$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 0.4$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 3$	lbs

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 0.4$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 2$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.2$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 1$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 225$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 366$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 12$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 24$	lbs

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	Samsung RT-8808-77A		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height=	$L_{app} := 15$	in	(User Input)
Appurtenance Width =	$W_{app} := 15$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 6.82$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 60$	lbs	(User Input)
Number of Appurtenances =	$N_{app} := 1$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 1.0$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.2$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 1.6$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 113$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.7$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 51$	lbs

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front) =	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 2.1$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 17$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 1.1$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 9$	lbs

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 1.6$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 7$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.7$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 3$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 1535$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 1163$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 38$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 38$	lbs

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Subject:	TIA-222-H Loads
Location:	New Canaan, CT
Rev. 2: 4/6/23	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21007.79

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	Raycap RHSDC-3315-PF-48		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height =	$L_{app} := 19.18$	in	(User Input)
Appurtenance Width =	$W_{app} := 15.73$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 10.25$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 32$	lbs	(User Input)
Number of Appurtenances =	$N_{app} := 1$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 1.2$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.2$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 2.1$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 152$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 1.4$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 99$	lbs

Wind Load (with ice)

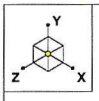
Surface Area for One Appurtenance w/ Ice (Front) =	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 2.7$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 22$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 1.9$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 15$	lbs

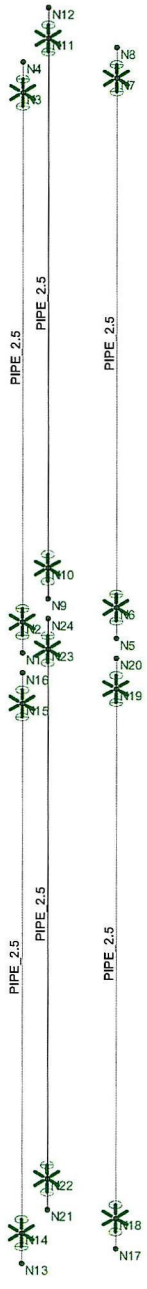
Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 2.1$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 9$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 1.4$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 6$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 3092$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 1722$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 56$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 56$	lbs





Envelope Only Solution

Centek		
TJL	Silver Hill	Jan 30, 2023 at 4:22 PM
21007.79	Member Framing	Mount.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Grade B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	(P) Antenna Mast Pip...	PIPE_2.5	Column	Wide Fla...	A53 Grade B	Typical	1.61	1.45	1.45	2.89

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	(P) Antenna Mast P...	9.67			Lbyy						Lateral
2	M2	(P) Antenna Mast P...	9.67			Lbyy						Lateral
3	M3	(P) Antenna Mast P...	9.67			Lbyy						Lateral
4	M4	(P) Antenna Mast P...	9.67			Lbyy						Lateral
5	M5	(P) Antenna Mast P...	9.67			Lbyy						Lateral
6	M6	(P) Antenna Mast P...	9.67			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
1	M1	N1	N4			(P) Antenna Mast Pipe_2...	Column	Wide Flan...	A53 Grade B	Typical
2	M2	N5	N8			(P) Antenna Mast Pipe_2...	Column	Wide Flan...	A53 Grade B	Typical
3	M3	N9	N12			(P) Antenna Mast Pipe_2...	Column	Wide Flan...	A53 Grade B	Typical
4	M4	N13	N16			(P) Antenna Mast Pipe_2...	Column	Wide Flan...	A53 Grade B	Typical
5	M5	N17	N20			(P) Antenna Mast Pipe_2...	Column	Wide Flan...	A53 Grade B	Typical
6	M6	N21	N24			(P) Antenna Mast Pipe_2...	Column	Wide Flan...	A53 Grade B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0	.75	0	
2	N2	0	.5	.75	0	
3	N3	0	9.17	.75	0	
4	N4	0	9.67	.75	0	
5	N5	0.649519	0	-.375	0	
6	N6	0.649519	.5	-.375	0	
7	N7	0.649519	9.17	-.375	0	
8	N8	0.649519	9.67	-.375	0	
9	N9	-0.649519	0	-.375	0	
10	N10	-0.649519	.5	-.375	0	
11	N11	-0.649519	9.17	-.375	0	
12	N12	-0.649519	9.67	-.375	0	
13	N13	0	-10	.75	0	
14	N14	0	-9.5	.75	0	
15	N15	0	-.83	.75	0	
16	N16	0	-.33	.75	0	
17	N17	0.649519	-10	-.375	0	
18	N18	0.649519	-9.5	-.375	0	
19	N19	0.649519	-.83	-.375	0	
20	N20	0.649519	-.33	-.375	0	
21	N21	-0.649519	-10	-.375	0	
22	N22	-0.649519	-9.5	-.375	0	
23	N23	-0.649519	-.83	-.375	0	
24	N24	-0.649519	-.33	-.375	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N2	Reaction	Reaction	Reaction		Reaction	
2	N3	Reaction	Reaction	Reaction		Reaction	
3	N6	Reaction	Reaction	Reaction		Reaction	
4	N7	Reaction	Reaction	Reaction		Reaction	
5	N10	Reaction	Reaction	Reaction		Reaction	
6	N11	Reaction	Reaction	Reaction		Reaction	
7	N14	Reaction	Reaction	Reaction		Reaction	
8	N15	Reaction	Reaction	Reaction		Reaction	
9	N18	Reaction	Reaction	Reaction		Reaction	
10	N19	Reaction	Reaction	Reaction		Reaction	
11	N22	Reaction	Reaction	Reaction		Reaction	
12	N23	Reaction	Reaction	Reaction		Reaction	

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.12	6
2	M2	Y	-.12	6
3	M3	Y	-.12	6
4	M1	Y	-.026	1.5
5	M2	Y	-.026	1.5
6	M3	Y	-.026	1.5
7	M4	Y	-.022	7.5
8	M5	Y	-.022	7.5
9	M6	Y	-.022	7.5
10	M4	Y	-.06	4.5
11	M5	Y	-.06	4.5
12	M6	Y	-.06	4.5
13	M4	Y	-.032	1.5

Member Point Loads (BLC 3 : Ice Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.171	6
2	M2	Y	-.171	6
3	M3	Y	-.171	6
4	M1	Y	-.048	1.5
5	M2	Y	-.048	1.5
6	M3	Y	-.048	1.5
7	M4	Y	-.039	7.5
8	M5	Y	-.039	7.5
9	M6	Y	-.039	7.5
10	M4	Y	-.038	4.5
11	M5	Y	-.038	4.5
12	M6	Y	-.038	4.5
13	M4	Y	-.056	1.5

Member Point Loads (BLC 4 : Lm Maintenance Load (500lb))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.5	%50

Member Point Loads (BLC 4 : Lm Maintenance Load (500lb)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M2	Y	-.5	%50
3	M3	Y	-.5	%50
4	M4	Y	-.5	%50
5	M5	Y	-.5	%50
6	M6	Y	-.5	%50

Member Point Loads (BLC 6 : Wind with Ice X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.043	6
2	M2	X	.094	6
3	M3	X	.094	6
4	M1	X	.01	1.5
5	M2	X	.01	1.5
6	M3	X	.01	1.5
7	M4	X	.01	7.5
8	M5	X	.02	7.5
9	M6	X	.02	7.5
10	M4	X	.017	4.5
11	M5	X	.017	4.5
12	M6	X	.017	4.5
13	M4	X	.022	1.5

Member Point Loads (BLC 7 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.293	6
2	M2	X	.74	6
3	M3	X	.74	6
4	M1	X	.054	1.5
5	M2	X	.054	1.5
6	M3	X	.054	1.5
7	M4	X	.055	7.5
8	M5	X	.14	7.5
9	M6	X	.14	7.5
10	M4	X	.113	4.5
11	M5	X	.113	4.5
12	M6	X	.113	4.5
13	M4	X	.152	1.5

Member Point Loads (BLC 8 : Wm Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.018	6
2	M2	X	.046	6
3	M3	X	.046	6
4	M1	X	.004	1.5
5	M2	X	.004	1.5
6	M3	X	.004	1.5
7	M4	X	.003	7.5
8	M5	X	.009	7.5
9	M6	X	.009	7.5
10	M4	X	.007	4.5

Member Point Loads (BLC 8 : Wm Wind X) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
11	M5	X	.007	4.5
12	M6	X	.007	4.5
13	M4	X	.009	1.5

Member Point Loads (BLC 9 : Wind with Ice Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.094	6
2	M2	Z	.043	6
3	M3	Z	.043	6
4	M1	Z	.01	1.5
5	M2	Z	.01	1.5
6	M3	Z	.01	1.5
7	M4	Z	.02	7.5
8	M5	Z	.01	7.5
9	M6	Z	.01	7.5
10	M4	Z	.017	4.5
11	M5	Z	.017	4.5
12	M6	Z	.017	4.5
13	M4	Z	.022	1.5

Member Point Loads (BLC 10 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.74	6
2	M2	Z	.293	6
3	M3	Z	.293	6
4	M1	Z	.054	1.5
5	M2	Z	.054	1.5
6	M3	Z	.054	1.5
7	M4	Z	.14	7.5
8	M5	Z	.055	7.5
9	M6	Z	.055	7.5
10	M4	Z	.113	4.5
11	M5	Z	.113	4.5
12	M6	Z	.113	4.5
13	M4	Z	.152	1.5

Member Point Loads (BLC 11 : Wm Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.046	6
2	M2	Z	.018	6
3	M3	Z	.018	6
4	M1	Z	.004	1.5
5	M2	Z	.004	1.5
6	M3	Z	.004	1.5
7	M4	Z	.009	7.5
8	M5	Z	.003	7.5
9	M6	Z	.003	7.5
10	M4	Z	.007	4.5
11	M5	Z	.007	4.5
12	M6	Z	.007	4.5

Member Point Loads (BLC 11 : Wm Wind Z) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
13	M4	Z	.009	1.5

Member Distributed Loads

Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
No Data to Print ...					

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	None		-1						
2	Dead Load	None					13			
3	Ice Load	None					13			
4	Lm Maintenance Load (500lb)	None					6			
5	Lv Maintenance Load (250lb)	None								
6	Wind with Ice X	None					13			
7	Wind X	None					13			
8	Wm Wind X	None					13			
9	Wind with Ice Z	None					13			
10	Wind Z	None					13			
11	Wm Wind Z	None					13			

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..
1	1.4D	Yes	Y		1	1.4	2	1.4																
2	1.2D +1.5Lv	Yes	Y		1	1.2	2	1.2	5	1.5														
3	1.2D + 1.0W (X-directi...	Yes	Y		1	1.2	2	1.2	7	1														
4	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	2	1.2	3	1	6	1												
5	1.2D +1.5Lm+ 1.0Wm ...	Yes	Y		1	1.2	2	1.2	4	1.5	8	1												
6	1.2D + 1.0W (Z-directi...	Yes	Y		1	1.2	2	1.2	10	1														
7	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	2	1.2	3	1	9	1												
8	1.2D +1.5Lm+ 1.0Wm ...	Yes	Y		1	1.2	2	1.2	4	1.5	11	1												

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N2	max	0	8	.487	8	0	5	0	8	0	8	0	8
2		min	-.155	3	.112	2	-.318	6	0	1	0	1	0	1
3	N3	max	0	8	.502	8	0	5	0	8	0	8	0	8
4		min	-.192	3	.127	2	-.476	6	0	1	0	1	0	1
5	N6	max	0	8	.487	8	0	5	0	8	0	8	0	8
6		min	-.318	3	.112	2	-.155	6	0	1	0	1	0	1
7	N7	max	0	8	.502	8	0	5	0	8	0	8	0	8
8		min	-.476	3	.127	2	-.192	6	0	1	0	1	0	1
9	N10	max	0	8	.487	8	0	5	0	8	0	8	0	8
10		min	-.318	3	.112	2	-.155	6	0	1	0	1	0	1
11	N11	max	0	8	.502	8	0	5	0	8	0	8	0	8
12		min	-.476	3	.127	2	-.192	6	0	1	0	1	0	1
13	N14	max	0	8	.485	8	0	5	0	8	0	8	0	8

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
14		min	-.206	3	.11	2	-.222	6	0	1	0	1	0	1
15	N15	max	0	8	.466	8	0	5	0	8	0	8	0	8
16		min	-.114	3	.091	2	-.183	6	0	1	0	1	0	1
17	N18	max	0	8	.451	8	0	5	0	8	0	8	0	8
18		min	-.088	3	.076	2	-.071	6	0	1	0	1	0	1
19	N19	max	0	8	.461	8	0	5	0	8	0	8	0	8
20		min	-.165	3	.086	2	-.097	6	0	1	0	1	0	1
21	N22	max	0	8	.451	8	0	5	0	8	0	8	0	8
22		min	-.088	3	.076	2	-.071	6	0	1	0	1	0	1
23	N23	max	0	8	.461	8	0	5	0	8	0	8	0	8
24		min	-.165	3	.086	2	-.097	6	0	1	0	1	0	1
25	Totals:	max	0	8	5.741	8	0	5						
26		min	-2.761	3	1.241	2	-2.229	6						

Envelope Joint Displacements

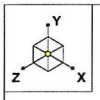
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	8	0	8	0	5	1.312e-02	6	0	8	0	8
2		min	-.033	3	0	1	-.079	6	0	1	0	1	-5.533e-03	3
3	N2	max	0	8	0	8	0	8	1.312e-02	6	0	8	0	8
4		min	0	1	0	1	0	1	0	1	0	1	-5.533e-03	3
5	N3	max	0	8	0	8	0	8	0	5	0	8	6.288e-03	3
6		min	0	1	0	1	0	1	-1.538e-02	6	0	1	0	1
7	N4	max	0	8	0	8	0	5	0	5	0	8	6.288e-03	3
8		min	-.038	3	0	1	-.092	6	-1.538e-02	6	0	1	0	1
9	N5	max	0	8	0	8	0	5	5.533e-03	6	0	8	0	8
10		min	-.079	3	0	1	-.033	6	0	1	0	1	-1.312e-02	3
11	N6	max	0	8	0	8	0	8	5.533e-03	6	0	8	0	8
12		min	0	1	0	1	0	1	0	1	0	1	-1.312e-02	3
13	N7	max	0	8	0	8	0	8	0	5	0	8	1.538e-02	3
14		min	0	1	0	1	0	1	-6.288e-03	6	0	1	0	1
15	N8	max	0	8	0	8	0	5	0	5	0	8	1.538e-02	3
16		min	-.092	3	0	1	-.038	6	-6.288e-03	6	0	1	0	1
17	N9	max	0	8	0	8	0	5	5.533e-03	6	0	8	0	8
18		min	-.079	3	0	1	-.033	6	0	1	0	1	-1.312e-02	3
19	N10	max	0	8	0	8	0	8	5.533e-03	6	0	8	0	8
20		min	0	1	0	1	0	1	0	1	0	1	-1.312e-02	3
21	N11	max	0	8	0	8	0	8	0	5	0	8	1.538e-02	3
22		min	0	1	0	1	0	1	-6.288e-03	6	0	1	0	1
23	N12	max	0	8	0	8	0	5	0	5	0	8	1.538e-02	3
24		min	-.092	3	0	1	-.038	6	-6.288e-03	6	0	1	0	1
25	N13	max	0	8	0	8	0	5	5.277e-03	6	0	8	0	8
26		min	-.027	3	0	1	-.032	6	0	1	0	1	-4.433e-03	3
27	N14	max	0	8	0	8	0	8	5.277e-03	6	0	8	0	8
28		min	0	1	0	1	0	1	0	1	0	1	-4.433e-03	3
29	N15	max	0	8	0	8	0	8	0	5	0	8	3.957e-03	3
30		min	0	1	0	1	0	1	-5.239e-03	6	0	1	0	1
31	N16	max	0	8	0	8	0	5	0	5	0	8	3.957e-03	3
32		min	-.024	3	0	1	-.031	6	-5.239e-03	6	0	1	0	1
33	N17	max	0	8	0	8	0	5	2.864e-03	6	0	8	0	8
34		min	-.022	3	0	1	-.017	6	0	1	0	1	-3.708e-03	3

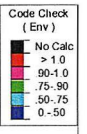
Envelope Joint Displacements (Continued)

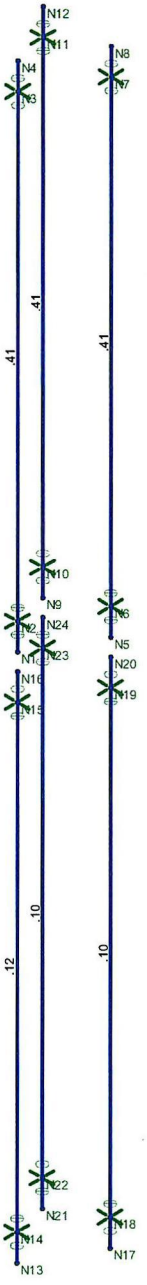
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
35	N18	max	0	8	0	8	0	8	2.864e-03	6	0	8	0	8
36		min	0	1	0	1	0	1	0	1	0	1	-3.708e-03	3
37	N19	max	0	8	0	8	0	8	0	5	0	8	4.312e-03	3
38		min	0	1	0	1	0	1	-3.03e-03	6	0	1	0	1
39	N20	max	0	8	0	8	0	5	0	5	0	8	4.312e-03	3
40		min	-.026	3	0	1	-.018	6	-3.03e-03	6	0	1	0	1
41	N21	max	0	8	0	8	0	5	2.864e-03	6	0	8	0	8
42		min	-.022	3	0	1	-.017	6	0	1	0	1	-3.708e-03	3
43	N22	max	0	8	0	8	0	8	2.864e-03	6	0	8	0	8
44		min	0	1	0	1	0	1	0	1	0	1	-3.708e-03	3
45	N23	max	0	8	0	8	0	8	0	5	0	8	4.312e-03	3
46		min	0	1	0	1	0	1	-3.03e-03	6	0	1	0	1
47	N24	max	0	8	0	8	0	5	0	5	0	8	4.312e-03	3
48		min	-.026	3	0	1	-.018	6	-3.03e-03	6	0	1	0	1

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...phi*P...	phi*Pn...	phi*Mn y-y [k-ft]	phi*...	Cb	Eqn
1	M1	PIPE_2.5	.415	5....	6	.031	6....		6 23.594	50.715	3.596	3.596	1	H1..
2	M2	PIPE_2.5	.415	5....	3	.031	6....		3 23.594	50.715	3.596	3.596	1....	H1..
3	M3	PIPE_2.5	.415	5....	3	.031	6....		3 23.594	50.715	3.596	3.596	1....	H1..
4	M4	PIPE_2.5	.120	4....	6	.015	.5..		6 23.594	50.715	3.596	3.596	1	H1..
5	M5	PIPE_2.5	.097	4....	3	.011	7....		3 23.594	50.715	3.596	3.596	1....	H1..
6	M6	PIPE_2.5	.097	4....	3	.011	7....		3 23.594	50.715	3.596	3.596	1....	H1..







Member Code Checks Displayed (Enveloped)
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TJL	Silver Hill	Apr 6, 2023 at 8:35 AM
21007.79	Unity Check	Mount.r3d

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Branford, CT 06405
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Subject:	Connection to Host Building
Location:	New Canaan, CT
Rev. 1: 1/30/23	Prepared by: T.J.L. Checked by: C.A.G. Job No. 21007.79

Antenna Mast Connection:

Anchor Data:

A307 Threaded Rod =

Number of Anchor Bolts =	$N := 2$	(User Input)
Diameter of Bolts =	$D := 0.625in$	(User Input)
Bolt Spacing Horz =	$Sp_H := 6in$	(User Input)
Bolt Spacing Vertical =	$Sp_V := 6in$	(User Input)
Design Tension =	$T_n := 10.4 \cdot kips$	(User Input)
Design Shear =	$V_n := 6.23 \cdot kips$	(User Input)

Design Reactions:

Shear X =	$Shear_x := 0.476 \cdot kips$	(User Input)
Shear Y =	$Shear_y := 0.502 \cdot kips$	(User Input)
Shear Z =	$Shear_z := 0.476 \cdot kips$	(User Input)
Moment X =	$Mx := 0 \cdot ft \cdot kips$	(User Input)
Moment Y =	$My := 0 \cdot ft \cdot kips$	(User Input)
Moment Z =	$Mz := 0 \cdot ft \cdot kips$	(User Input)

Anchor Check:

Max Tension Force =

$$T_{Max} := \frac{Shear_x}{N} + \frac{My}{Sp_H \cdot \frac{N}{2}} + \frac{Mz}{Sp_V \cdot \frac{N}{2}} = 238lb$$

Max Shear Force =

$$V_{Max} := \frac{Shear_y + Shear_z}{N} + \frac{Mx}{Sp_H \cdot \frac{N}{2}} = 489lb$$

Condition 1 =

$$Condition1 := if\left(\frac{T_{Max}}{T_n} + \frac{V_{Max}}{V_n} \le 1.0, "OK", "NG"\right) = "OK"$$

% of Capacity =

$$\max\left[\frac{T_{Max}}{T_n}, \frac{V_{Max}}{V_n}, \left(\frac{\frac{T_{Max}}{T_n} + \frac{V_{Max}}{V_n}}{1.0}\right)\right] = 10.1 \cdot \%$$

ATTACHMENT 4

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support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

verizon

Silver Hill

208 Valley Road, New Canaan, CT 06840

February 15, 2023

Table of Contents

List of Figures

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of Verizon's antenna arrays to be mounted at 98' and 106' AGL on an existing monopole tower located at 208 Valley Road in New Canaan, CT. The coordinates of the monopole tower are 41° 09' 58.45" N, 73° 28' 13.72" W.

Verizon is proposing the following:

1) Install six (6) multi-band antennas (two (2) per sector) to support its commercial LTE network.

This report considers the planned antenna configuration for Verizon[1] to derive the resulting % MPE of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As referenced to Verizon's Radio Frequency Design Sheet updated 9/28/2022.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{PowerDensity} = \left(\frac{EIRP}{\pi \times R^2}\right) \times \text{Off BeamLoss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 80°	700	160	14.2	4208	NNH4-65B-R6H4	68	0	5.99	106
		850	160	14.8	4831		64			
		1900	160	17.3	8592		67			
		2100	240	17.9	14798		61			
		3700	320	17.1	16411	MX08FIT265-01	85	0	2.67	98
	Beta / 200°	700	160	14.2	4208	NNH4-65B-R6H4	68	0	5.99	106
		850	160	14.8	4831		64			
		1900	160	17.3	8592		67			
		2100	240	17.9	14798		61			
		3700	320	17.1	16411	MX08FIT265-01	85	0	2.67	98
	Gamma / 320°	700	160	14.2	4208	NNH4-65B-R6H4	68	0	5.99	106
		850	160	14.8	4831		64			
		1900	160	17.3	8592		67			
		2100	240	17.9	14798		61			
		3700	320	17.1	16411	MX08FIT265-01	85	0	2.67	98

Table 1: Proposed Antenna Inventory[2] [3]

[2] Antenna heights are in reference to Verizon's Radio Frequency Design Sheet updated 9/25/2021.

[3] Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

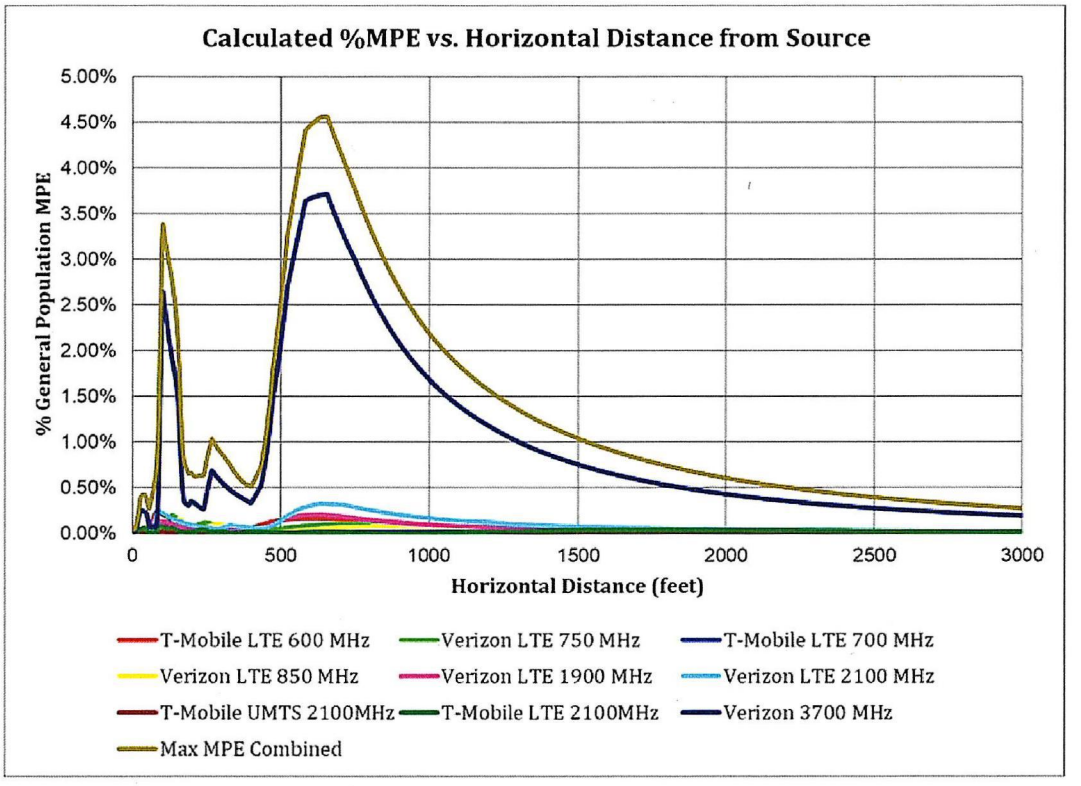


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (4.56% of the General Population limit) is calculated to occur at a horizontal distance of 650 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 650 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
T-Mobile LTE 2100MHz	1	160.0	117.0	650	0.000156	1.000	0.02%
T-Mobile LTE 600 MHz	1	80.0	117.0	650	0.000625	0.400	0.16%
T-Mobile LTE 700 MHz	1	40.0	117.0	650	0.000026	0.500	0.01%
T-Mobile UMTS 2100MHz	1	40.0	117.0	650	0.000039	1.000	0.00%
Verizon 3700 MHz	1	320.0	98.0	650	0.037099	1.000	3.71%
Verizon LTE 1900 MHz	1	160.0	106.0	650	0.001975	1.000	0.20%
Verizon LTE 2100 MHz	1	240.0	106.0	650	0.003208	1.000	0.32%
Verizon LTE 750 MHz	1	160.0	106.0	650	0.000465	0.497	0.09%
Verizon LTE 850 MHz	1	160.0	106.0	650	0.000314	0.567	0.06%
						Total	**4.56%**

Table 2: Maximum Percent of General Population Exposure Values[4]

[4] Antenna information for T-MOBILE was taken from Fox Hill Telecom, Inc, Radio Frequency Emissions Analysis Report, dated 07/12/2022

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **4.56% of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 650 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Report Prepared By: Ram Acharya
RF Engineer 1
C Squared Systems, LLC

February 14, 2023
Date

Reviewed/Approved By: Martin J. Lavin
Senior RF Engineer
C Squared Systems, LLC

February 15, 2023
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[5]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[6]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

[5] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[6] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

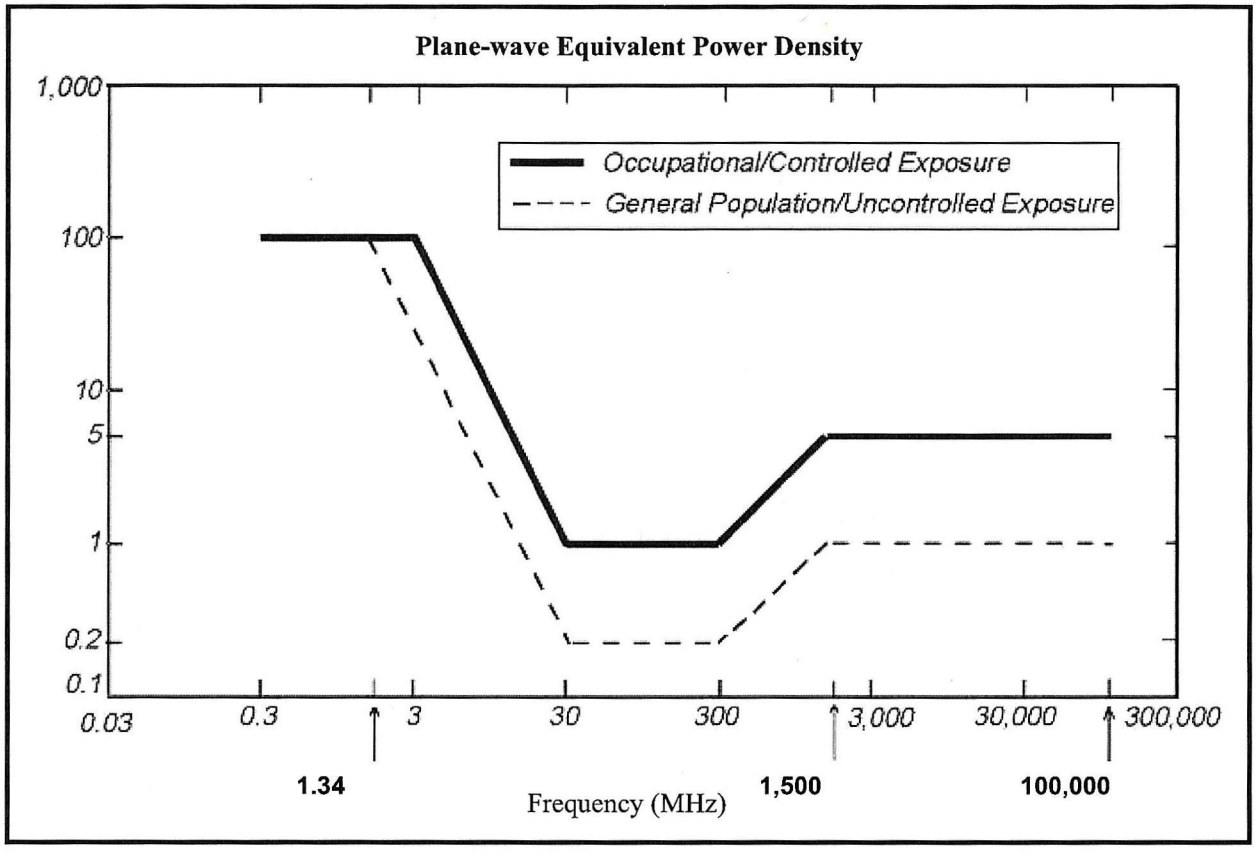
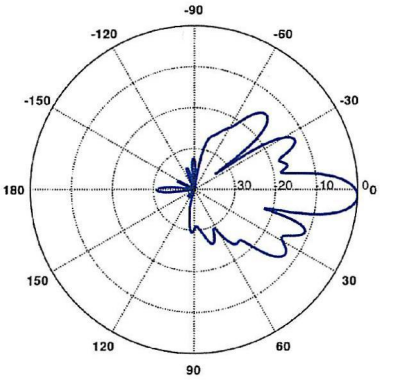


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

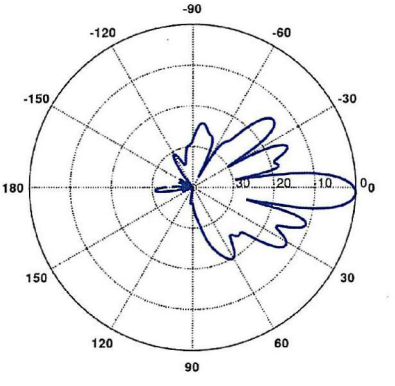
750 MHz

Manufacturer:	COMMSCOPE
Model #:	NNH4-65B-R6H4
Frequency Band:	698-806 MHz
Gain:	14.2 dBi
Vertical Beamwidth:	11.5°
Horizontal Beamwidth:	68°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 19.6" x 7.7"



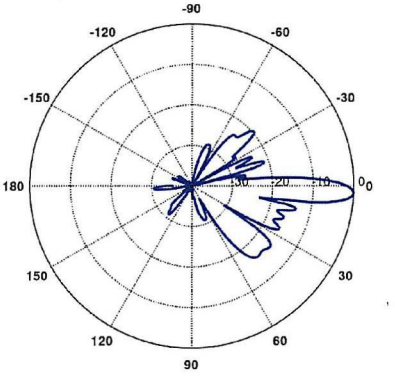
885 MHz

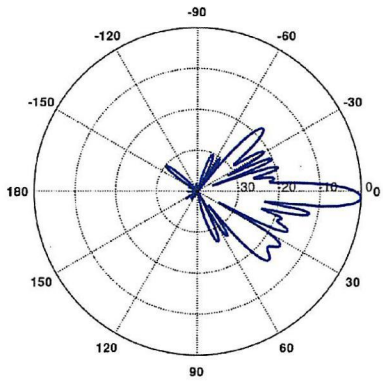
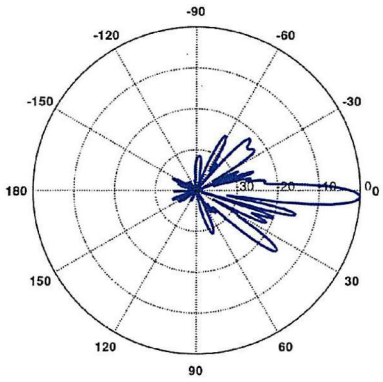
Manufacturer:	COMMSCOPE
Model #:	NNH4-65B-R6H4
Frequency Band:	806-896 MHz
Gain:	14.8 dBi
Vertical Beamwidth:	10.2°
Horizontal Beamwidth:	68°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 19.6" x 7.7"



1900 MHz

Manufacturer:	COMMSCOPE
Model #:	NNH4-65B-R6H4
Frequency Band:	1850-1990 MHz
Gain:	17.3 dBi
Vertical Beamwidth:	6.5°
Horizontal Beamwidth:	67°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 19.6" x 7.7"



2100 MHz Manufacturer: COMMSCOPE Model #: NNH4-65B-R6H4 Frequency Band: 1920-2180 MHz Gain: 17.9 dBi Vertical Beamwidth: 6° Horizontal Beamwidth: 61° Polarization: ±45° Dimensions (L x W x D): 71.9" x 19.6" x 7.7"	
3700 MHz Manufacturer: JMA Model #: MX10FIT265-01 Frequency Band: 3700-4200 MHz Gain: 17.1 dBi Vertical Beamwidth: 5.5° Horizontal Beamwidth: 85° Polarization: ±45° Dimensions (L x W x D): 32" x 11.6" x 4.53"	

ATTACHMENT 5

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November 25, 2024

Via Certificate of Mailing

Dionna Carlson, First Selectman
Town of New Canaan
77 Main Street
New Canaan, CT 06840

Re: **Proposed Modifications to an Existing Telecommunications Facility at 208 Valley Road in New Canaan, Connecticut**

Dear First Selectman Carlson:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to modify its existing wireless telecommunications facility at 208 Valley Road in New Canaan, Connecticut (the "Property"). Cellco intends to replace its existing antennas and remote radio heads ("RRHs") with new antennas and RRHs in the same general locations inside the unipole tower. In order to accommodate Cellco's antenna modifications, the upper portions of the tower's screening shroud will increase in size from 40 inch diameter (existing) to 56 inch diameter. Equipment associated with Cellco's antennas will not change as part of these facility modifications.

As presented in the Sub-Petition, the proposed facility modifications constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

Robinson+Cole

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

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

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson+Cole

KENNETH C. BALDWIN

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

Also admitted in Massachusetts
and New York

November 25, 2024

Via Certificate of Mailing

Sarah Carey, Town Planner/Senior Enforcement Officer
Town of New Canaan
77 Main Street
New Canaan, CT 06840

Re: **Proposed Modifications to an Existing Telecommunications Facility at 208 Valley Road in New Canaan, Connecticut**

Dear Ms. Carey:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to modify its existing wireless telecommunications facility at 208 Valley Road in New Canaan, Connecticut (the "Property"). Cellco intends to replace its existing antennas and remote radio heads ("RRHs") with new antennas and RRHs in the same general locations inside the unipole tower. In order to accommodate Cellco's antenna modifications, the upper portions of the tower's screening shroud will increase in size from 40 inch diameter (existing) to 56 inch diameter. Equipment associated with Cellco's antennas will not change as part of these facility modifications.

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November 25, 2024

Via Certificate of Mailing

Silver Hill Hospital Inc.
208 Valley Road
New Canaan, CT 06840

Re: **Proposed Modifications to an Existing Telecommunications Facility at 208 Valley Road in New Canaan, Connecticut**

Dear Sir or Madam:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to modify its existing wireless telecommunications facility at 208 Valley Road in New Canaan, Connecticut (the "Property"). Cellco intends to replace its existing antennas and remote radio heads ("RRHs") with new antennas and RRHs in the same general locations inside the unipole tower. In order to accommodate Cellco's antenna modifications, the upper portions of the tower's screening shroud will increase in size from 40 inch diameter (existing) to 56 inch diameter. Equipment associated with Cellco's antennas will not change as part of these facility modifications.

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Robinson+Cole

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

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

Sincerely,

Kenneth C. Baldwin

Attachment

ATTACHMENT 6

Robinson+Cole

KENNETH C. BALDWIN

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

Also admitted in Massachusetts
and New York

November 25, 2024

Via Certificate of Mailing

«Name_and_Address»

Re: **Proposed Modifications to a Telecommunications Facility at 208 Valley Road in New Canaan, Connecticut**

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to modify its existing wireless telecommunications facility at 208 Valley Road in New Canaan, Connecticut (the "Property"). Cellco intends to replace its existing antennas and remote radio heads ("RRHs") with new antennas and RRHs in the same general locations inside the unipole tower. In order to accommodate Cellco's antenna modifications, the upper portions of the tower's screening shroud will increase in size from 40 inch diameter (existing) to 56 inch diameter. Equipment associated with Cellco's antennas will not change as part of these facility modifications.

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Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the Sub-Petition.

Robinson+Cole

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

Sincerely,

Kenneth C. Baldwin

Attachment

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTING PROPERTY OWNERS

208 VALLY ROAD
NEW CANAAN, CONNECTICUT

	Property Address	Owner's and Mailing Address
1.	2 Wardwell Drive	Debera Prosek Trustee 2 Wardwell Drive New Canaan, CT 06840
2.	270 Valley Road	First Taxing District 12 New Canaan Avenue P.O. Box 27 Norwalk, CT 06852
3.	269 Valley Road	Ying Zhang and Ye Yuan 269 Valley Road New Canaan, CT 06840
4.	253 Valley Road	Christopher Starr Jones 253 Valley Road New Canaan, CT 06840
5.	229 Valley Road	D. Kent and Christina Turner 229 Valley Road New Canaan, CT 06840
6.	225 Valley Road	Silver Hill Hospital Inc. 208 Valley Road New Canaan, CT 06840
7.	143 Valley Road	Silver Hill Hospital Inc. 208 Valley Road New Canaan, CT 06840
8.	134 Valley Road	Silver Hill Hospital Inc. 208 Valley Road New Canaan, CT 06840
9.	95 Fable Farm Road	Richard and Wendy A. Hurst 95 Fable Farm Road New Canaan, CT 06840

	Property Address	Owner's and Mailing Address
10.	103 Salem Road	Francis Joseph and Christina Griffin 103 Salem Road New Canaan, CT 06840
11.	64 Parker's Glen	Shawn Walsh Cain and Shanna Cain 64 Parker's Glen New Canaan, CT 06840
12.	58 Parker's Glen	58 Parker's Glen LLC c/o Kay Parker Jex, Esq. 161 Cherry Street New Canaan, CT 06840
13.	42 Parker's Glen	John and Maureen Falconi 42 Parker's Glen New Canaan, CT 06840
14.	26 Parker's Glen	Jared M. and Jeanette Rusman 26 Parker's Glen New Canaan, CT 06840