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May 11, 2021

Via Electronic Mail

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

Re: **Notice of Exempt Modification – Facility Modification**
20 Alexander Drive, Wallingford, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains an existing wireless telecommunications facility at the above-referenced property address (the "Property"). The facility consists of antennas and remote radio heads attached to the roof of the building and related equipment inside the building. Cellco's use of the building was approved by the Council in August of 1992 (Petition No. 288). A copy of the Council's Staff Report in Petition No. 288 is included in Attachment 1.

Cellco now intends to modify its facility by removing eleven (11) antennas and installing fifteen (15) antennas with four (4) Samsung 64T64RMMU antennas, one (1) AT1K01 antenna, eight (8) JAHH-65B-R3B antennas, and two (2) CBRS antennas and installing two (2) remote radio heads ("RRHs") on Cellco's new mounting existing antenna pipe masts and new pip masts (Delta Sector). A set of project plans showing Cellco's proposed facility modifications and new antennas and RRHs specifications are included in Attachment 2.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Wallingford's Chief Elected Official and Land Use Officer.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed on Cellco's existing pipe masts and new pipe masts at same heights on the roof.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The installation of Cellco's new antennas and RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A Radio Frequency Emissions Analysis Report for the modified facility is included in Attachment 3. The modified facility will be capable of providing Cellco's 5G wireless service.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. According to the attached Structural Analysis (SA), which also includes analysis of the existing pipe masts, new masts and hose building, states that the existing building, antenna masts, and antenna mounting devices can support Cellco's proposed modifications. A copy of the SA is included in Attachment 4. Also included in Attachment 4 is a separate letter prepared by the consulting engineer responsible for the preparation of the SA verifying that the antenna model described in the SA, as a Licensed-Sub6 Antenna or VZS01 Antenna, is the Samsung 64T64R model antenna and RRH that will be installed on the tower.

A copy of the parcel map and Property owner information is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials is included in Attachment 6.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
William W. Dickinson, Jr., Wallingford Mayor
Tom Talbot, Wallingford Interim Town Planner
Aleksey Tyurin

ATTACHMENT 1

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL
136 Main Street, Suite 401
New Britain, Connecticut 06051-4225
Phone: 827-7682

FILE COPY

Petition No. 288
Staff Report
August 18, 1992

RE: PETITION NO. 288 - Metro Mobile CTS of New Haven, Inc., petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the installation of telecommunications antennas and associated equipment to a building at 20 Alexander Drive, Wallingford, Connecticut.

On August 7, 1992, Chairman Mortimer A. Gelston of the Connecticut Siting Council, and Joel Rinebold of the Council's staff met David S. Malko of Metro Mobile CTS of New Haven County, Inc. (Metro Mobile) for a field review of this petition. Metro Mobile is petitioning the Council under the Regulations of State Agencies 16-50j-38 through 40 for a declaratory ruling that the installation of two cellular telecommunications antennas on the top of an existing building located in Wallingford and the placement of equipment associated with this installation, located inside the same building, will not have a substantial adverse environmental effect and, therefore, does not require a Certificate of Environmental Compatibility and Public Need from the Council.

Metro Mobile proposes to install two whip antennas on the top of the Company's office building located at 20 Alexander Drive in Wallingford, Connecticut. No towers or other structures will be necessary to support these antennas. The antennas will be attached to the building which stands approximately 35 feet above ground level. The ground elevation of the site is 243 feet AMSL. The tops of the antennas will rise about six feet above the top of the building. The building is one of several which is part of a relatively new office/industrial park in Wallingford.

The building permit for this installation will be obtained following a favorable ruling by the Council. No federal or other State approvals are necessary.

Metro Mobile contends that this project will not have a substantial environmental effect, non-ionizing radiation will be far below the DEP State standard, the proposed installation will not increase noise levels at the site boundary by six decibels or more, and the site boundaries will not be expanded by the project.

In conclusion, Metro Mobile requests that the Council issue a determination that the proposed project will not have a substantial adverse environmental effect and, therefore, does not require a Certificate from the Council.

6335E

ATTACHMENT 2

verizon

WIRELESS COMMUNICATIONS FACILITY UPGRADE

WALLINGFORD CT

20 ALEXANDER DRIVE,

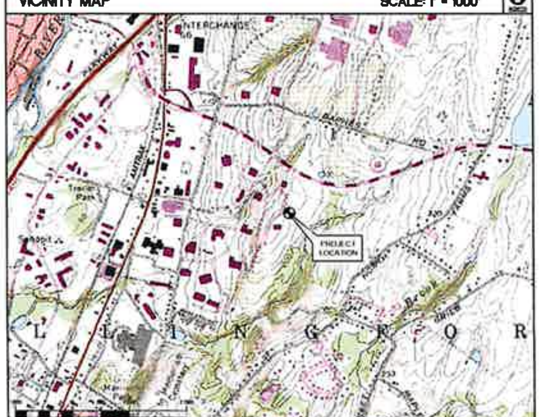
WALLINGFORD, CT 06492

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2017 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.

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

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

A. AT THE EXISTING ROOFTOP ANTENNA SECTORS:

- RELOCATION OF THE GAMMA SECTOR INCLUDING THE REMOVAL OF THE EXISTING GAMMA SECTOR ANTENNA MOUNTS.
- MODIFICATIONS TO (3) OF THE EXISTING ALPHA SECTOR ANTENNA MOUNTS AND (3) OF THE EXISTING BETA SECTOR MOUNTS. MODIFICATIONS WILL RESULT IN AN INCREASE OF (3) FEET IN ANTENNA CENTERLINE ELEVATION.
- ADDITION OF A NEW DELTA SECTOR AND ASSOCIATED ANTENNA MOUNTS WITH ANTENNA CENTERLINE ELEVATION MATCHING THE MODIFIED ALPHA AND BETA SECTOR ANTENNAS.
- REMOVAL OF A TOTAL OF (11) EXISTING ANTENNAS.
- INSTALLATION OF A TOTAL OF (15) ANTENNAS.
- INSTALLATION OF A TOTAL OF (4) DIPLEXERS.
- INSTALLATION OF A TOTAL OF (2) OVP BOXES.
- INSTALLATION OF A TOTAL OF (9) RRUs.
- INSTALLATION OF A TOTAL OF (2) HYBRID ANTENNA CABLES.

PROJECT INFORMATION

SITE NAME:	WALLINGFORD CT
SITE ADDRESS:	20 ALEXANDER DRIVE, WALLINGFORD, CT 06492
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°-28'-45.1078"N LONGITUDE: 72°-48'-3.396"W GROUND ELEVATION: 240'± AMSL (REFERENCED FROM VERIZON WIRELESS RF DATA SHEET DATED DECEMBER 9, 2020)

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C-3	GAMMA & DELTA SECTOR CONFIGURATION DETAILS	0
C-4	RF DETAILS	0
C-5	ANTENNA MOUNTING DETAILS	0
S-1	STRUCTURAL DETAILS	0
E-1	ELECTRICAL SPECIFICATIONS AND DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/22/21	DWD	TJL	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
C	04/13/21	TJL	DWD	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED ANTENNA MOUNT DETAILS
B	03/25/21	DWD	TJR	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
A	03/18/21	ASC	DWD	PRELIMINARY CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

verizon

CENTEK engineering
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Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless

WALLINGFORD CT

20 ALEXANDER DRIVE,
WALLINGFORD, CT 06492

DATE:	03/18/21
SCALE:	AS NOTED
JOB NO.	20150.14

TITLE SHEET

T-1

Sheet No. 1 of 10

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- RISK CATEGORY: II (BASED ON TABLE 1604.5 OF THE 2015 IBC)
- ULTIMATE DESIGN SPEED (BUILDING): 125 MPH (Vult) (EXPOSURE C/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2015 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. 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.
3. 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.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. 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.
7. 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.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
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 SITE OPERATIONS. COORDINATE WORK WITH NORTHEAST UTILITIES
10. 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.
11. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ANTENNA AND APPURTENANCE SCHEDULE

SECTOR	EXISTING/ PROPOSED	ANTENNA	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) TMA/DIPLEXER/TRIPLEXER (QTY)	(E/P) RRU (QTY)	(E/P) RAYCAP (QTY)
A1	PROPOSED	COMMSCOPE (JAHH-65B-R3B)	31'	0°	(P) COMMSCOPE DIPLEX: TCBC78T-DS-43-2X (1)	(E) B5/B13 RRH-BR04C (1), (E) B2/B66A RRH-BR049 (1)	(E) RAYCAP OVP-8 (1)
A2	PROPOSED	SAMSUNG (VZS01)	31'	0°			
A3	EXISTING	SAMSUNG (VZ-AT1KD1)	31'	0°			
A4	EXISTING	SAMSUNG (CBRS-XXDWMM-12.5-65-8T)	31'	0°		(E) CBRS RRH-RT4401-48A (1)	
B1	PROPOSED	COMMSCOPE (JAHH-65B-R3B)	31'	90°	(P) COMMSCOPE DIPLEX: TCBC78T-DS-43-2X (1)	(E) B5/B13 RRH-BR04C (1), (E) B2/B66A RRH-BR049 (1)	(E) RAYCAP OVP-8 (1)
B2	PROPOSED	SAMSUNG (VZS01)	31'	90°			
B3	EXISTING	SAMSUNG (VZ-AT1KD1)	31'	90°			
B4	EXISTING	SAMSUNG (CBRS-XXDWMM-12.5-65-8T)	31'	90°		(E) CBRS RRH-RT4401-48A (1)	
C1	PROPOSED	COMMSCOPE (JAHH-65B-R3B)	31'	180°	(P) COMMSCOPE DIPLEX: TCBC78T-DS-43-2X (1)	(P) B5/B13 RRH-BR04C (1), (P) B2/B66A RRH-BR049 (1)	(E) RAYCAP OVP-8 (1)
C2	PROPOSED	SAMSUNG (VZS01)	31'	180°			
C3	EXISTING	SAMSUNG (VZ-AT1KD1)	31'	180°			
C4	PROPOSED	SAMSUNG (CBRS-XXDWMM-12.5-65-8T)	31'	180°		(P) CBRS RRH-RT4401-48A (1)	
D1	PROPOSED	COMMSCOPE (JAHH-65B-R3B)	31'	270°	(P) COMMSCOPE DIPLEX: TCBC78T-DS-43-2X (1)	(P) B5/B13 RRH-BR04C (1), (P) B2/B66A RRH-BR049 (1)	(P) RAYCAP OVP-8 (1)
D2	PROPOSED	SAMSUNG (VZS01)	31'	270°			
D3	PROPOSED	SAMSUNG (VZ-AT1KD1)	31'	270°			
D4	PROPOSED	SAMSUNG (CBRS-XXDWMM-12.5-65-8T)	31'	270°		(P) CBRS RRH-RT4401-48A (1)	

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	04/22/21	DMD	TJL	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
C	[illegible]	TJL	DMD	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED ANTENNA MOUNT DETAILS
B	[illegible]	DMD	TJR	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
A	03/18/21	ASC	DMD	PRELIMINARY CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

verizon

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Centered on Solutions
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(203) 488-8587 Fax
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Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless

WALLINGFORD CT

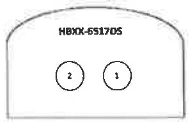
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

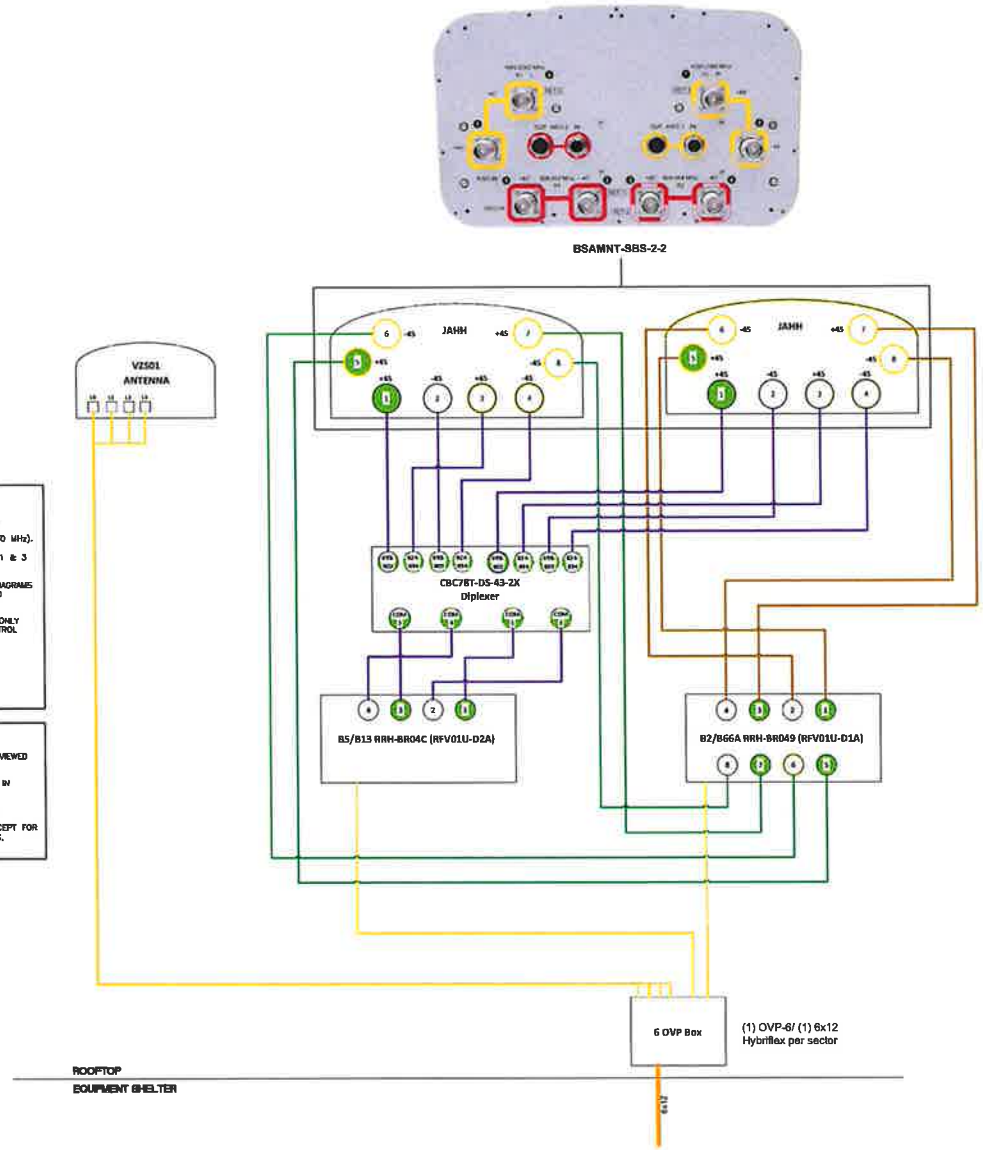
DATE: 03/18/21
SCALE: AS NOTED
JOB NO. 20150.14

NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE

N-1

Sheet No. 2 of 10





PLUMBING DIAGRAM NOTES:

1. PORTS 1 & 2 ARE FOR LOW BAND (698–896 MHz).
2. PORTS 3, 4, 5 & 5 ARE FOR HIGH BAND (1695–2360 MHz).
3. SMART BIAS TEE (SBT) IS THROUGH ANTENNA PORTS 1 & 3 (1 FOR LOW BAND AND 3 FOR HIGH BAND).
4. AISG CABLE IS ONLY NEEDED WHEN DRAWN IN THE DIAGRAMS ABOVE. IF IT IS NOT DRAWN THEN SBT IS ENOUGH TO CONTROL ALL RET MOTORS.
5. NOT ALL SBT PORTS ARE NEEDED TO CONTROL RET. ONLY GREEN PORT CONNECTION TO GREEN PORT WILL CONTROL RET.

RET DC SIGNAL PASS FOR RET (PORT THAT WILL CONTROL RET)

PLUMBING DIAGRAM COMMENTS:

A. DIAGRAMS SHOW ANTENNA PORT CONFIGURATIONS AS VIEWED FROM BELOW ANTENNAS.
B. ANTENNA POSITIONS ARE INDICATED AS VIEWED FROM IN FRONT OF ANTENNAS.
C. CAP AND WEATHERPROOF UNUSED ANTENNA PORTS.
D. ALL PLUMBING DIAGRAM COLORS ARE IRRELEVANT EXCEPT FOR AISG AND HYBRIFLEX CABLE. (FOR THE COAX COLORS, FOLLOW COAX COLORS GUIDE ABOVE)

DC SIGNAL CAPABLE PORT
AISG CABLE
RET DC SIGNAL PASS FOR RET (PORT THAT WILL CONTROL RET)

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.C DATED: 04.13.21), & VERIZON WIRELESS RF ANTENNA EQUIPMENT RECOMMENDATION (DATED 12.09.20).

BILL OF MATERIALS		
TECHNOLOGY	QUANTITY	ANTENNA
LTE 700 LTE 850 LTE PCS 1900 LTE AWS 2100	8	COMMSCOPE ANTENNA MODEL: JAHH-65B-R3B
5G	4	SAMSUNG ANTENNA MODEL: VZ501
28 GHZ	1	SAMSUNG ANTENNA MODEL: VZ-AT1K01
CBRS	2	SAMSUNG ANTENNA MODEL: XXDWMM-12.5-65-8T-CBRS

CABLES	QUANTITY	LENGTH	COMMENTS
6x12 U HYBRID CABLE	1	±440 FT	ROUTE FROM EQUIPMENT ROOM TO DELTA
6x12 U HYBRID CABLE	1	±580 FT	ROUTE FROM EQUIPMENT ROOM TO GAMMA

RADIOS	QUANTITY	COMMENTS
LTE 700 LTE 850	1	SAMSUNG MODEL: B5/B13 RRH-BR04C
LTE PCS 1900 LTE AWS 2100	1	SAMSUNG MODEL: B2/B66A RRH-BR049
5G	4	INTEGRATED INTO VZ501 ANTENNA
5G	1	SAMSUNG MODEL: AT1K01DC
5G	4	SAMSUNG MODEL: CBRS RRH-RT4401-48A

DIPLEXERS	QUANTITY	COMMENTS
FOR LTE 700 ANTENNA FOR LTE 850 ANTENNA	4 TOTAL	MODEL: CBC78T-DS-43-2X

OVP BOXES	QUANTITY	COMMENTS
ROOFTOP OVP	2	RAYCAP OVP-6

ANTENNA MOUNT	QUANTITY	COMMENTS
SIDE-BY-SIDE MOUNTING KIT	4	COMMSCOPE MODEL: BSAMNT-SBS-2-2

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D	04/22/21	DMD	TJL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
C	04/13/21	TJL	DMD	PRELIMINARY CONSTRUCTION DRAWINGS – REVISED ANTENNA MOUNT DETAILS
B	03/23/21	DMD	CJR	PRELIMINARY CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
A	03/18/21	ASC	DMD	PRELIMINARY CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW

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DATE: 03/18/21
SCALE: AS NOTED
JOB NO. 20150.14

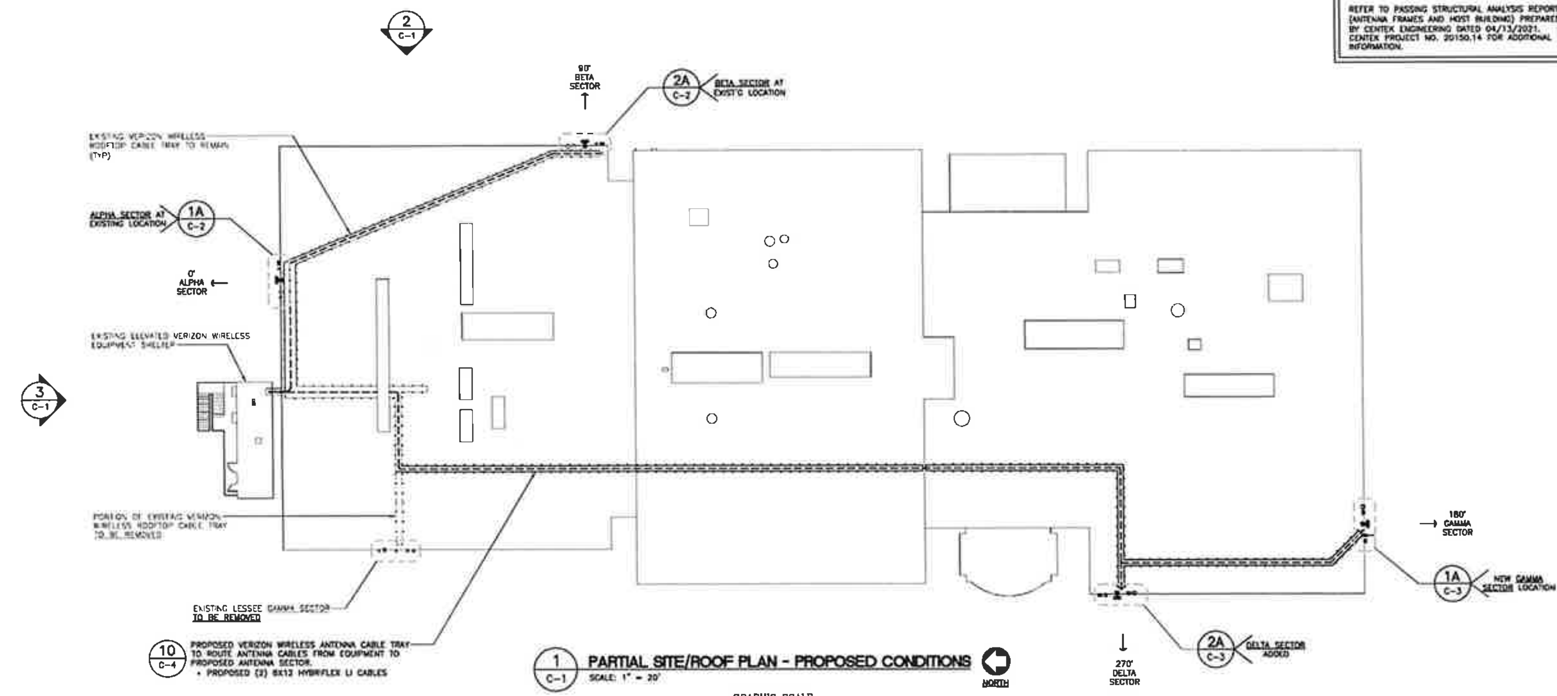
RF BILL OF MATERIALS

B-1

Sheet No. 3 of 10

STRUCTURAL ANALYSIS REFERENCE NOTE:

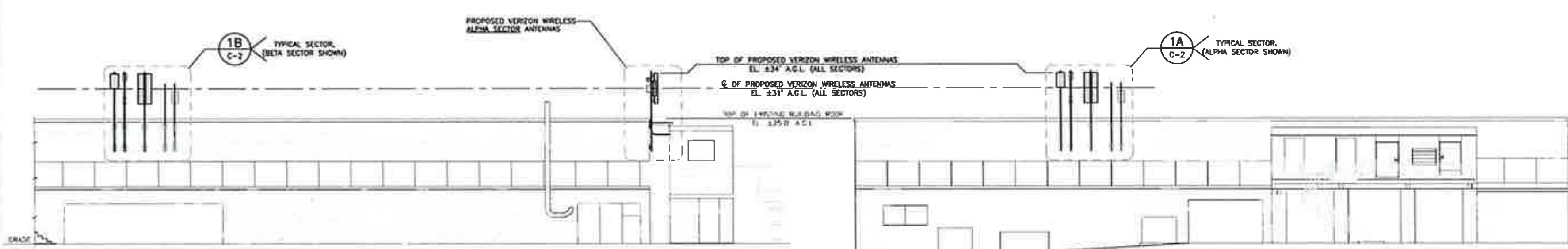
REFER TO PASSING STRUCTURAL ANALYSIS REPORT (ANTENNA FRAMES AND HOST BUILDING) PREPARED BY CENTEK ENGINEERING DATED 04/13/2021. CENTEK PROJECT NO. 20150.14 FOR ADDITIONAL INFORMATION.



1 C-1 **PARTIAL SITE/ROOF PLAN - PROPOSED CONDITIONS**

SCALE: 1" = 20'

GRAPHIC SCALE (IN FEET) 1 inch = 20 ft.



2 C-1 **PARTIAL WEST ELEVATION - PROPOSED**

SCALE: 1" = 10'

GRAPHIC SCALE (IN FEET) 1 inch = 10 ft.

3 C-1 **NORTH ELEVATION - PROPOSED**

SCALE: 1" = 10'

GRAPHIC SCALE (IN FEET) 1 inch = 10 ft.

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0	04/22/21	DMD	T.A.	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
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A	03/18/21	ASC	DMD	PRELIMINARY CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

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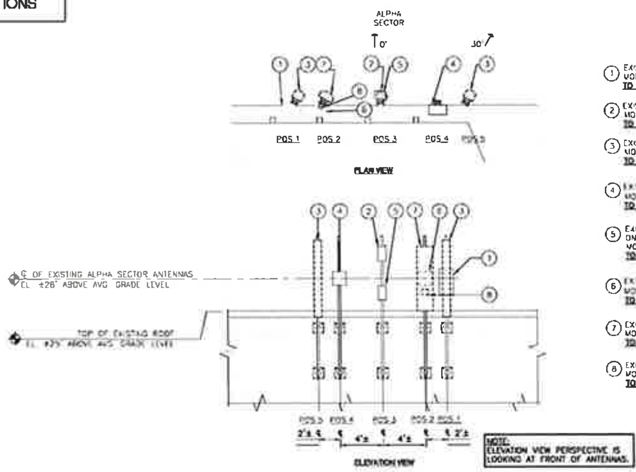
BUILDING PLAN AND ELEVATIONS

C-1

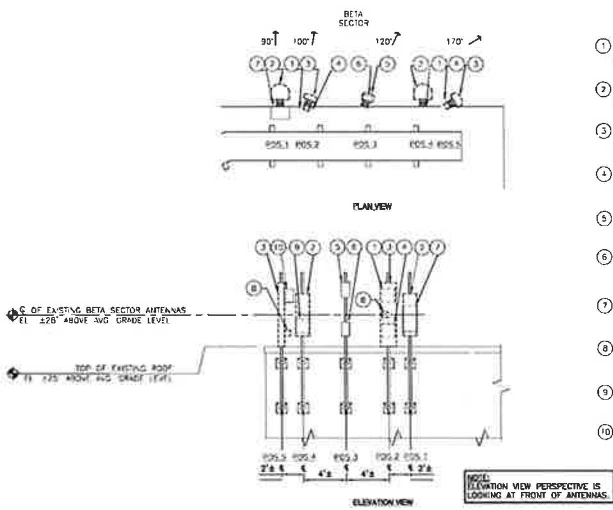
Sheet No. 4 of 10

EXISTING ANTENNA CONFIGURATIONS



1. EXISTING DVP_6 MODEL RXXDC-3315-PF-48 TO REMAIN.
2. EXISTING SAMSUNG ANTENNA MODEL VZ-ATIKD1 TO REMAIN AND BE RELOCATED TO POS.4
3. EXISTING SWEDCOM ANTENNA MODEL SC-E 6016 REV2 TO BE REMOVED AND REPLACED.
4. EXISTING SAMSUNG RRH MODEL B2/B66 PCS/AWS TO REMAIN AND BE RELOCATED TO POS.2
5. EXISTING SAMSUNG RRH W/CLIP ON ANTENNA MODEL CBRS XXDWMM-12.5-65-8T TO REMAIN AND BE RELOCATED TO POS.4
6. EXISTING SAMSUNG RRH MODEL B5/B13 850/700 TO REMAIN AND BE RELOCATED TO POS.3
7. EXISTING COMMSCOPE ANTENNA MODEL SBNHH-1D45B TO BE REMOVED AND REPLACED.
8. EXISTING COMMSCOPE DIPLEXER MODEL CBC1923Q-43 TO BE REMOVED.

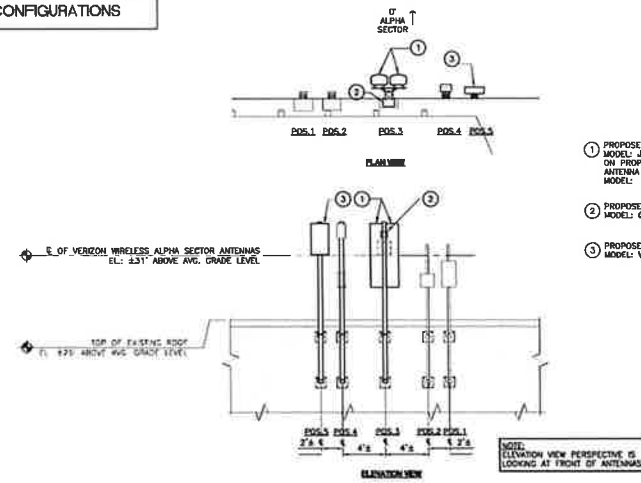
1 (C-2) EXISTING ANTENNA MOUNTING CONFIGURATION
(ALPHA SECTOR)



1. EXISTING SAMSUNG RRH MODEL B5/B13 850/700 TO REMAIN AND BE RELOCATED TO POS.3
2. EXISTING ANTEL ANTENNA MODEL LPA-80063/4CF TO BE REMOVED AND REPLACED.
3. EXISTING COMMSCOPE ANTENNA MODEL SBNHH-1D45B TO BE REMOVED AND REPLACED.
4. EXISTING SAMSUNG RRH MODEL B2/B66 PCS/AWS TO REMAIN.
5. EXISTING SAMSUNG ANTENNA MODEL VZ-ATIKD1 TO REMAIN AND BE RELOCATED TO POS.4
6. EXISTING SAMSUNG RRH W/CLIP ON ANTENNA MODEL CBRS XXDWMM-12.5-65-8T TO REMAIN AND BE RELOCATED TO POS.4
7. EXISTING DVP_6 MODEL RXXDC-3315-PF-48 TO REMAIN.
8. EXISTING COMMSCOPE DIPLEXER MODEL CBC1923Q-43 TO BE REMOVED.
9. EXISTING SAMSUNG RRH MODEL B5/B13 850/700 TO BE REMOVED.
10. EXISTING SAMSUNG RRH MODEL B2/B66 PCS/AWS TO BE REMOVED.

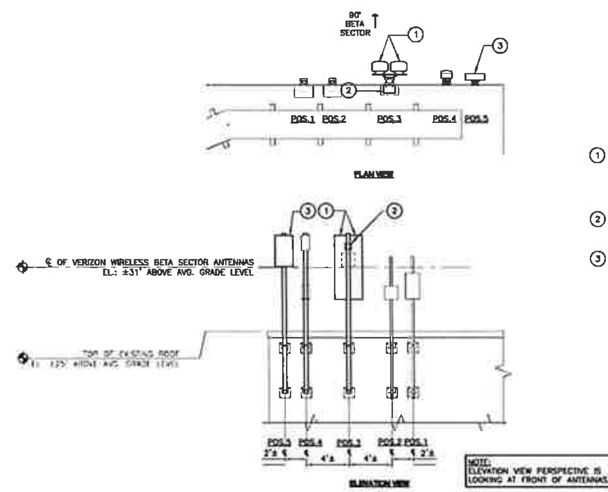
2 (C-2) EXISTING ANTENNA MOUNTING CONFIGURATION
(BETA SECTOR)

PROPOSED ANTENNA CONFIGURATIONS



1. PROPOSED COMMSCOPE ANTENNA MODEL: JAHH-65B-R3B ON PROPOSED SIDE-BY-SIDE ANTENNA MOUNT MODEL: BSAMNT-SBS-2-2
2. PROPOSED COMMSCOPE DIPLEXER MODEL: CBC78T-DS-43-2X
3. PROPOSED SAMSUNG ANTENNA MODEL: VZS01

1A (C-2) PROPOSED ANTENNA MOUNTING CONFIGURATION
(ALPHA SECTOR)



1. PROPOSED COMMSCOPE ANTENNA MODEL: JAHH-65B-R3B ON PROPOSED SIDE-BY-SIDE ANTENNA MOUNT MODEL: BSAMNT-SBS-2-2
2. PROPOSED COMMSCOPE DIPLEXER MODEL: CBC78T-DS-43-2X
3. PROPOSED SAMSUNG ANTENNA MODEL: VZS01

2A (C-2) PROPOSED ANTENNA MOUNTING CONFIGURATION
(BETA SECTOR)

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/22/21	DMD	TJL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
C	03/11/21	TJL	DMD	PRELIMINARY CONSTRUCTION DRAWINGS – REVISED ANTENNA MOUNT DETAILS
B	02/25/21	DMD	CJR	PRELIMINARY CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
A	02/18/21	ASC	DMD	PRELIMINARY CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW

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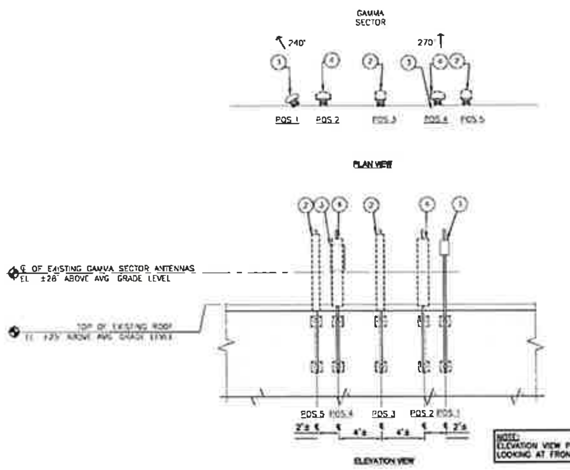
JOB NO. 20150.14

ALPHA & BETA SECTOR CONFIGURATION DETAILS

C-2

Sheet No. 5 of 10

EXISTING ANTENNA CONFIGURATIONS

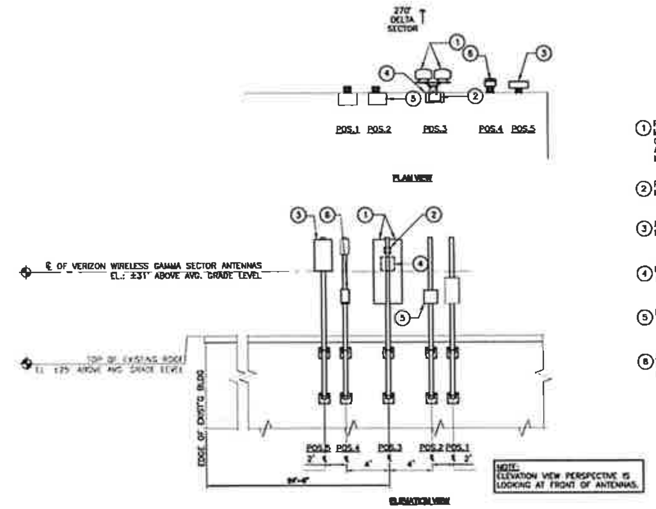


1. EXISTING SAMSUNG ANTENNA
   MODEL: VZ-AT1K01
   TO REMAIN AND BE RELOCATED TO POS.4
2. EXISTING SWEDCOM ANTENNA
   MODEL: SC-E 6016 REV2
   TO BE REMOVED AND REPLACED.
3. EXISTING OVP 6
   MODEL: RXXDC-3315-PF-48
   TO REMAIN AND BE RELOCATED TO POS.1
4. EXISTING COMMSCOPE ANTENNA
   MODEL: HBXX-6517DS-A2M
   TO BE REMOVED AND REPLACED.

NOTE:
ELEVATION VIEW PERSPECTIVE IS LOOKING AT FRONT OF ANTENNAS.

1 (C-3) EXISTING ANTENNA MOUNTING CONFIGURATION
(GAMMA SECTOR)

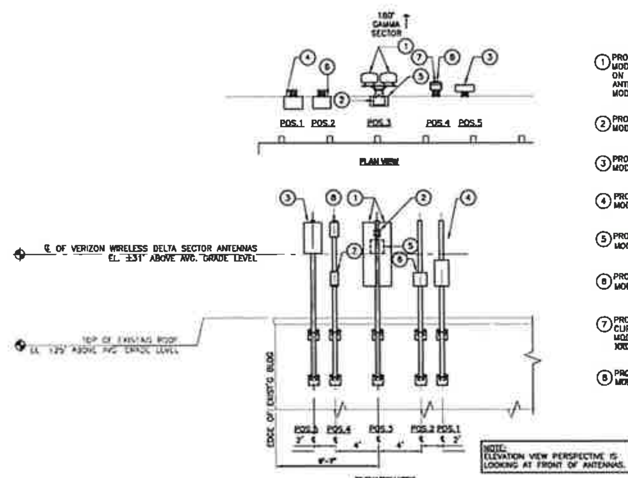
PROPOSED ANTENNA CONFIGURATIONS



1. PROPOSED COMMSCOPE ANTENNA
   MODEL: JAHH-65B-R3B
   ON PROPOSED SIDE-BY-SIDE
   ANTENNA MOUNT
   MODEL: BSAMNT-SBS-2-2
2. PROPOSED COMMSCOPE DIPLEXER
   MODEL: CBC78T-DS-43-2X
3. PROPOSED SAMSUNG ANTENNA
   MODEL: VZS01
4. PROPOSED SAMSUNG RRH
   MODEL: B2/B66 PCS/AWS
5. PROPOSED SAMSUNG RRH
   MODEL: B5/B13 850/700
6. PROPOSED SAMSUNG RRH W/ CLIP
   ON ANTENNA
   MODEL: CBRS
   XXDWMM-12.5-65-8T

NOTE:
ELEVATION VIEW PERSPECTIVE IS LOOKING AT FRONT OF ANTENNAS.

1A (C-3) PROPOSED ANTENNA MOUNTING CONFIGURATION
(GAMMA SECTOR)



1. PROPOSED COMMSCOPE ANTENNA
   MODEL: JAHH-65B-R3B
   ON PROPOSED SIDE-BY-SIDE
   ANTENNA MOUNT
   MODEL: BSAMNT-SBS-2-2
2. PROPOSED COMMSCOPE DIPLEXER
   MODEL: CBC78T-DS-43-2X
3. PROPOSED SAMSUNG ANTENNA
   MODEL: VZS01
4. PROPOSED OVP 6
   MODEL: RXXDC-3315-PF-48
5. PROPOSED SAMSUNG RRH
   MODEL: B2/B66 PCS/AWS
6. PROPOSED SAMSUNG RRH
   MODEL: B5/B13 850/700
7. PROPOSED SAMSUNG RRH W/
   CLIP ON ANTENNA
   MODEL: CBRS
   XXDWMM-12.5-65-8T
8. PROPOSED SAMSUNG ANTENNA
   MODEL: VZ-AT1K01

NOTE:
ELEVATION VIEW PERSPECTIVE IS LOOKING AT FRONT OF ANTENNAS.

2A (C-3) PROPOSED ANTENNA MOUNTING CONFIGURATION
(DELTA SECTOR)

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/22/21	DMD	T.A.	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
C	04/13/21	T.A.	DMD	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED ANTENNA MOUNT DETAILS
B	03/25/21	DMD	CJR	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
A	03/18/21	ASC	DMD	PRELIMINARY CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

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GAMMA & DELTA SECTOR CONFIGURATION DETAILS

C-3

Sheet No. 2 of 10

Sub 6 SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: VZS01	35.12"h x 16.06"W x 5.51"D NOT TO EXCEED	87.1 LBS. NOT TO EXCEED
CLEARANCES AND SERVICE AREA		
TOP & FRONT: 15.7" SIDES & BOTTOM: 15.7"	HORIZONTAL DISTANCE: 15.7" (ANT. TO ANT.) VERTICAL DISTANCE: 63.0" (ANT. TO ANT.)	

NOTES:
1. THIS ANTENNA HAS ITS OWN INTEGRATED RRH (VZS01).

1 / C-4 PROPOSED ANTENNA DETAIL
NOT TO SCALE

8-PORT SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: JAHH-65B-R3B	72.0"L x 13.8"W x 8.2"D	64.4 LBS. (W/OUT MOUNT KIT)

2 / C-4 PROPOSED ANTENNA DETAIL
NOT TO SCALE

FRONT

mmW VZ-AT1K01 SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: VZ-AT1K01	18.8"L x 9.6"W x 6.9"D	33 LBS.

3 / C-4 PROPOSED ANTENNA DETAIL
NOT TO SCALE

CBRS CLIP ON ANTENNA			CBRS RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	EQUIPMENT	BAND	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: XXDWMM-12.5-65-8T	12.3"H x 8.7"W x 1.4"D	2.9 LBS.	MAKE: SAMSUNG MODEL: CBRS RRH-RT4401-48A	CBRS	12.1"H x 8.5"W x 4.1"D	18.6 LBS.

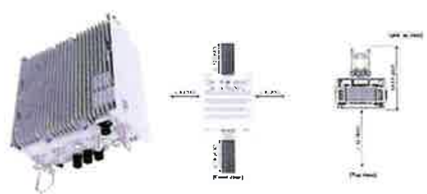
NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

4 / C-4 COMBINED RRH/CLIP-ON ANTENNA DETAIL
NOT TO SCALE

DUAL BAND RRU (REMOTE RADIO UNIT)			
EQUIPMENT	BANDS	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: B2/B66A RRH-BR049 (RFV01U-D1A)	B2: PCS (1900 MHz) B66: AWS (2100 MHz)	15.0"H x 15.0"W x 10.0"D	84.4 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

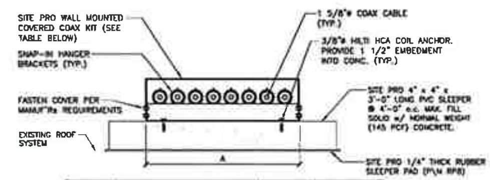
5 / C-4 DUAL-BAND AWS/PCS RADIO UNIT DETAIL
NOT TO SCALE



DUAL BAND RRU (REMOTE RADIO UNIT)			
EQUIPMENT	BANDS	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: B5/B13 RRH-BR04C (RFV01U-D2A)	B5: 850 MHz B13: 700 MHz	15.0"H x 15.0"W x 8.1"D	70.3 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

6 / C-4 DUAL-BAND 700/850 MHZ RADIO UNIT DETAIL
NOT TO SCALE



NO. CABLES	SITE PRO ROOF MOUNTED COVERED COAX KIT (P/N)	A	SITE PRO COAX 0'-45' SPLICE
4	WMC4	11 1/2"	SP1573
8	WMC8	21 1/2"	SP1574
12	WMC12	31"	SP1567

10 / C-4 ROOF MOUNTED CABLE SUPPORT
SCALE: 1 1/2" = 1'-0"

OVP BOX		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: OVP-6	29.0"H x 15.7"W x 10.3"D	32 LBS.

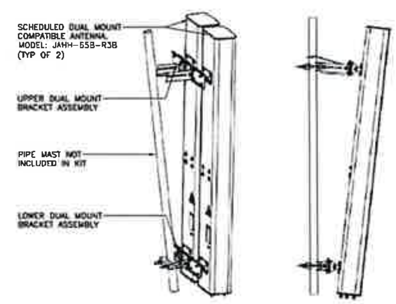
NOTES:
1. CONTRACTOR TO CONFIRM OVP BOX MAKE/MODEL AND QUANTITY WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

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

DIPLEXER			
EQUIPMENT	DESCRIPTION	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: CBC78T-DS-43-2X	4 PACK DIPLEXER 700MHz/850MHz	8.4"H x 6.9"W x 9.6"D	21.8 LBS. (W/MNTG HDWR)

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

8 / C-4 DIPLEXER DETAIL
NOT TO SCALE



DUAL ANTENNA MOUNTING KIT	
EQUIPMENT	DESCRIPTION
MOUNT MAKE: COMMSCOPE MODEL: BSAMNT-SBS-2-2	• SIDE-BY-SIDE MOUNTING KIT, ACCOMMODATES (2) COMPATABLE ANTENNAS • ACCOMMODATES MAST DIAMETERS FROM 2.375" TO 4.5" (O.D.)

9 / C-4 DUAL ANTENNA MOUNT DETAIL
NOT TO SCALE

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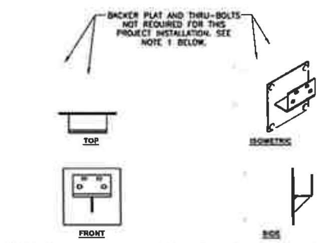
RF DETAILS

C-4

Sheet No. 7 of 10

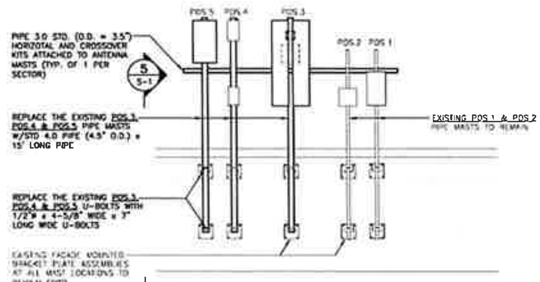


EQUIPMENT	DESCRIPTION	QTY	WEIGHT
MAKE: VALMONT MODEL: SP221	THRU-BOLTED PIPE MAST SUPPORT (4" STAND-OFF)	(2) BRACKETS PER KIT	84.01 LBS

NOTES:

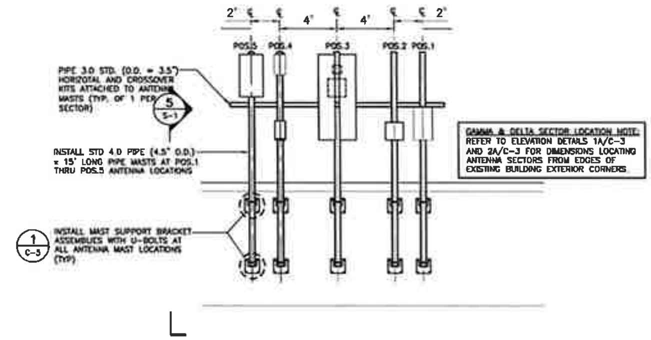
1. UTILIZE THE FRONT PLATE BRACKET ASSEMBLY PORTION OF THE BRACKET KIT. THE BACKER PLATE AND THRU-BOLTS ARE NOT REQUIRED FOR THIS PROJECT PIPE MOUNTING SYSTEM AND CAN BE DISCARDED.
2. SEE DETAIL 8/S-1 FOR REQUIRED ANCHORS TO BE USED FOR MOUNTING THE BRACKET PLATE TO THE EXISTING BRICK MASONRY BUILDING FACADE AND REQUIRED BRACKET O.C. SPACING.
3. (1) PIPE MAST SUPPORT KIT INCLUDES (2) MOUNTING BRACKETS.
4. U-BOLTS ARE NOT INCLUDED IN KITS. REFER TO DETAIL 8/S-1 FOR U-BOLT SIZES.

1/C-5 ANTENNA PIPE MAST SUPPORT BRACKET
NOT TO SCALE



TYPICAL ALPHA AND BETA SECTOR ELEVATION

2/C-5 EXISTING SECTOR ELEVATION (TYP)
SCALE: 1/4" = 1'- 0"



TYPICAL GAMMA AND DELTA SECTOR ELEVATION

3/C-5 PROPOSED SECTOR ELEVATION (TYP)
SCALE: 1/4" = 1'- 0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/22/21	DMD	T.L.	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
C	04/13/21	T.L.	DMD	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED ANTENNA MOUNT DETAILS
B	03/25/21	DMD	LJR	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
A	03/18/21	ASC	DMD	PRELIMINARY CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

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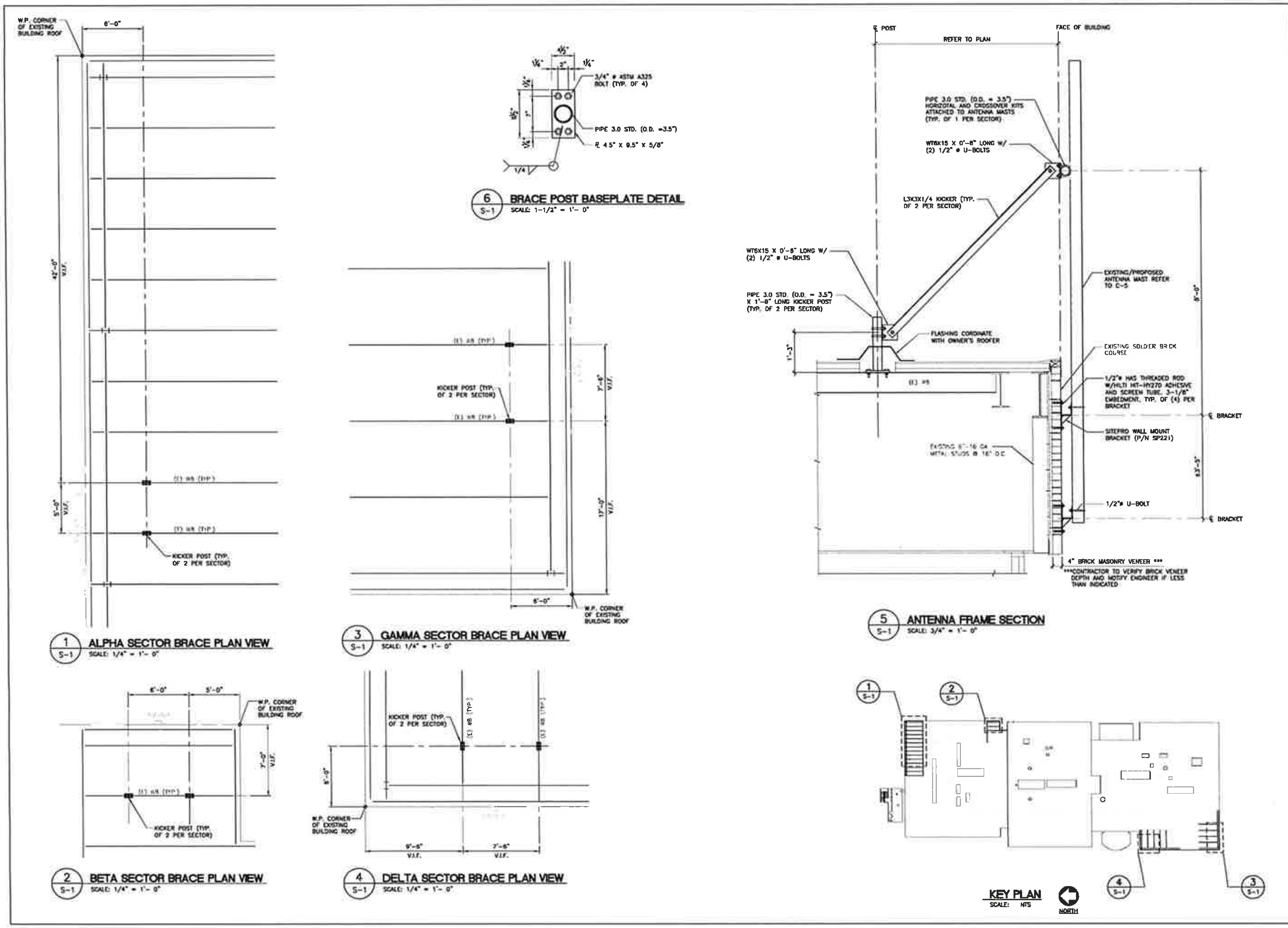
WALLINGFORD, CT 06492

DATE: 03/18/21
SCALE: AS NOTED
JOB NO. 20150.14

ANTENNA MOUNTING DETAILS

C-5
Sheet No. [illegible]



D	04/22/21	DMD	TAL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
C	04/13/21	TAL	DMD	PRELIMINARY CONSTRUCTION DRAWINGS – REVISED ANTENNA MOUNT DETAILS
B	03/25/21	DMD	CJR	PRELIMINARY CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
A	03/18/21	ADC	DMD	PRELIMINARY CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW
REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION

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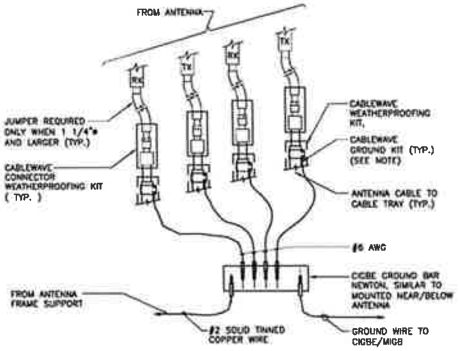
JOB NO. 20150.14

STRUCTURAL DETAILS

S-1

Sheet No. 9 of 10

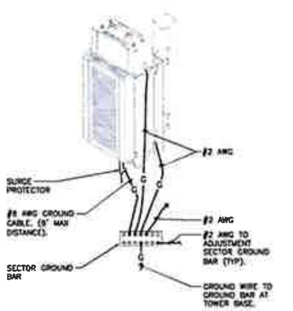


NOTES:

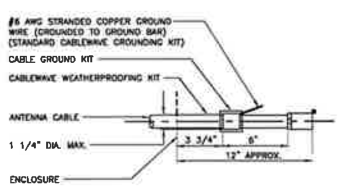
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

1 / E-1 CONNECTION OF GROUND WIRES TO GROUND BAR
NOT TO SCALE

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



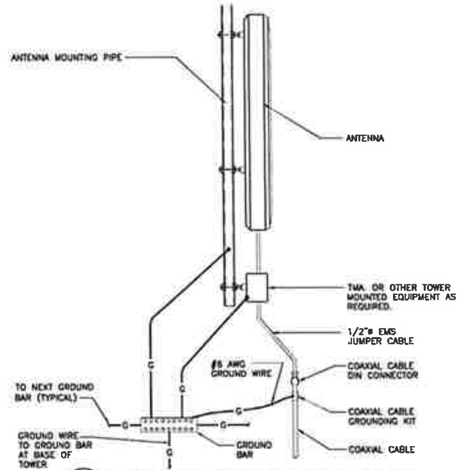
2 / E-1 RRH POLE MOUNT GROUNDING
NOT TO SCALE



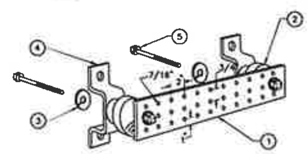
NOTES:

1. 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



4 / E-1 TYPICAL ANTENNA GROUNDING DETAIL
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

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
D	04/22/21	DMG	TJL	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
C	04/13/21	TJL	DMG	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED ANTENNA MOUNT DETAILS
B	03/26/21	DMG	LMR	PRELIMINARY CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
A	02/18/21	ADC	DMG	PRELIMINARY CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

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DATE:	03/18/21
SCALE:	AS NOTED
JOB NO.	20130.14

ELECTRICAL SPECIFICATIONS AND DETAILS

E-1

Sheet No. 13 of 15

SAMSUNG

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

RFV01U-D2A

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

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

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

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

Features and Benefits

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

Key Technical Specifications

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

SAMSUNG

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

RFV01U-D1A

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

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

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

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

Features and Benefits

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

Key Technical Specifications

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

Specifications

The table below outlines the main specifications of the AU:

Table 1. Specifications

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

[illegible]AHH-65B-R3B

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

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

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Effective Projective Area (EPA), frontal	[illegible]8 m² | 3[illegible]4 ft²
Effective Projective Area (EPA), lateral	[illegible]4 m² | [illegible]83 ft²
Grounding Type	RF connector body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-[illegible]34-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Aluminum | Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	4
RF Connector Quantity, total	8

Remote Electrical Tilt (RET) Information, General

RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male

Dimensions

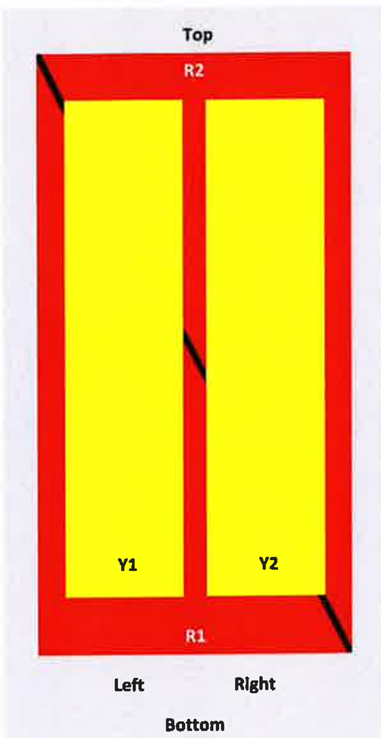
Width	3[illegible] mm | [illegible]3[illegible]8 in

JAHH-65B-R3B

Length	[illegible]8[illegible]8 mm | 7[illegible]9[illegible]9 in
Depth	[illegible]8 mm | 8[illegible]89 in

Array Layout

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



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANxxxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxxxx3
Y2	1695-2360	7-8		

View from the front of the antenna

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

Electrical Specifications

Impedance	[illegible] ohm
Operating Frequency Band	[illegible]9[illegible] – [illegible]3[illegible] MHz | [illegible]98 – 787 MHz | 8[illegible]4 – 894 MHz
Polarization	±4[illegible]°

Remote Electrical Tilt (RET) Information, Electrical

Protocol	3GPP/AISG [illegible] (Single RET)
Power Consumption, idle state, maximum	[illegible] W

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□AHH□65B□□3B

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[illegible] at Sector [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8

Mechanical Specifications

Wind Loading at Velocity, frontal	3[illegible] N @ [illegible] km/h [illegible]7[illegible] lbf @ [illegible] km/h
Wind Loading at Velocity, lateral	[illegible]4[illegible] N @ [illegible] km/h [illegible]7[illegible] lbf @ [illegible] km/h
Wind Loading at Velocity, maximum	[illegible]43[illegible] lbf @ [illegible] km/h [illegible]38[illegible] N @ [illegible] km/h
Wind Speed, maximum	[illegible]4[illegible] km/h [illegible]49[illegible] mph

Packaging and Weights

Width, packed	4[illegible] mm [illegible]7[illegible]3 in
Depth, packed	3[illegible]7 mm [illegible]4[illegible] in
Length, packed	[illegible]97[illegible] mm 77[illegible] in
Net Weight, without mounting kit	[illegible]9[illegible] kg [illegible]4[illegible]37[illegible] lb
Weight, gross	4[illegible] kg 93[illegible]9[illegible] lb

Regulatory Compliance/Certifications

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

BSA[illegible] [illegible] — Wide Profile Antenna Downtilt Mounting Kit for [illegible] [illegible]4[illegible] in ([illegible] 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

COMMSCOPE®

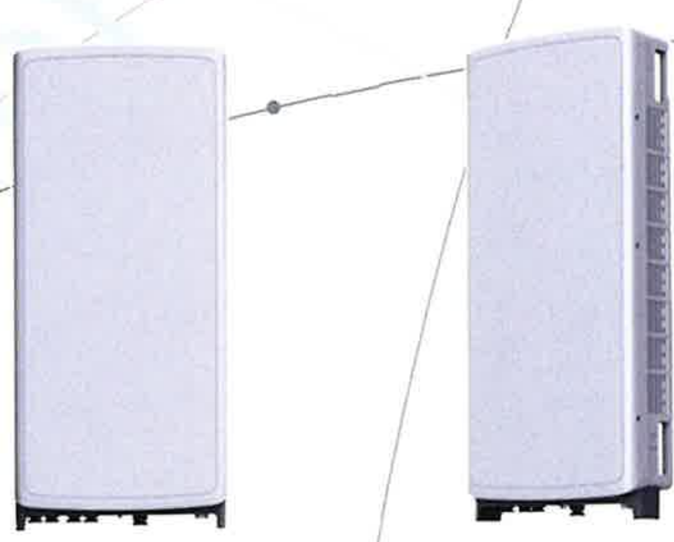
SAMSUNG

SAMSUNG C-Band 64T64R Massive MIMO

C-Band 64T64R Massive MIMO Radio for High Capacity and Wide Coverage

Samsung C-Band 64T64R Massive MIMO Radio enables mobile operators to increase coverage range, boost data speeds and ultimately offer enriched 5G experiences to users in the U.S..

Model Code : MT6407-77A

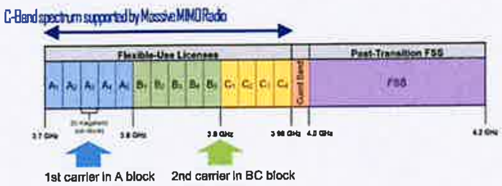


Points of Differentiation

Wide Bandwidth

Being able to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

Samsung C-Band massive MIMO Radio uses C-Band 280 MHz spectrum at the same time, so it can cover all the bands the operator can be auctioned.



Future Proof Product

Samsung C-Band Massive MIMO radio supports eCPRI interface, thus, it can be used as O-RAN Massive MIMO Radio in the future. To provide O-RAN service, operators only need to update software since the hardware is already ready.

With the support of O-RAN, operators can reduce OPEX/CAPEX by increasing compatibility between equipment and get opportunity to design and develop their network with best –in-class solution that interoperate.

Enhanced Performance

C-Band massive MIMO Radio creates sharp beams and extends networks' coverage on the critical mid-band spectrum using a large number of antenna elements and high output power to boost data speeds.

This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

Furthermore, as C-Band massive MIMO Radio supports MU-MIMO(Multi-user MIMO) , it enables increased user throughput by minimizing interference.

Well Matched Design

Samsung's C-Band Massive MIMO radio utilizes 64 antennas, supports up to 280MHz bandwidth, and delivers a 200W output power. despite the above advanced performance, the Radio has a compact size of 48L and 87.1 lbs. This makes it easy to install the Radio.

It is designed to look solid and small, and in particular, the design with wrap around has a thinly looking effect so that it can be harmonized with the surrounding environment when installed.

Technical Specifications

Item	Specification
Tech	NR
Brand	n77
Frequency Band	3700 - 3980 MHz
EIRP	78.5dBm (53.0 dBm+25.5 dBi)
IBW/OBW	280 MHz / 200 MHz
Installation	Pole/Wall
Size/ Weight	16.06 x 35.12 x 5.51 inch (50.95L)/ 87.1 lbs

SAMSUNG

About Samsung Electronics Co., Ltd.

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

129 Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, Korea

[CBRS] Clip-on Antenna Specifications

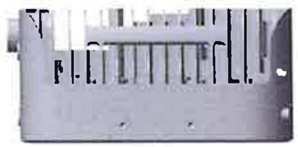
VzW accepted IP45 in FLD, but IP55 is Samsung Spec.

Items	Clip-on Antenna, BASTA**
Antenna Gain	12.5 ± 0.5 dBi (Max 13 dBi)
Horizontal BW (-3dB)	65° ± 5°
Vertical BW (-3dB)	17° ±3°
Electrical Tilt	8° (fixed) ±2°
Front-to-Back Ratio	> 25 dB
Port-to-Port Tracking	< 3 dB
VSWR	< 1.5
Isolation	> 25 dB
Ingress Protection	**IP55**
Size	220(W)×313(H)×34.3(D) mm (*) (8.7 x 12.3 x 1.4 inch.)
Weight	< **2.0** kg [Typ. 1.3 kg]
It is required that the radio should be weatherproofed properly with JMA WPS Boot with external antenna or with Weatherproof Boot for clip-on antennas.	

Antenna includes integrated cable with connector
* Design is subject to minor change

** Ant. spec. follows NGMN recommendations on Base Station Antenna Standards (BASTA). For example, 'mean ± tolerance of 86.6%' is applied to double-sided specification of statistical RF parameters.

[CBRS RRH] Spec.



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

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

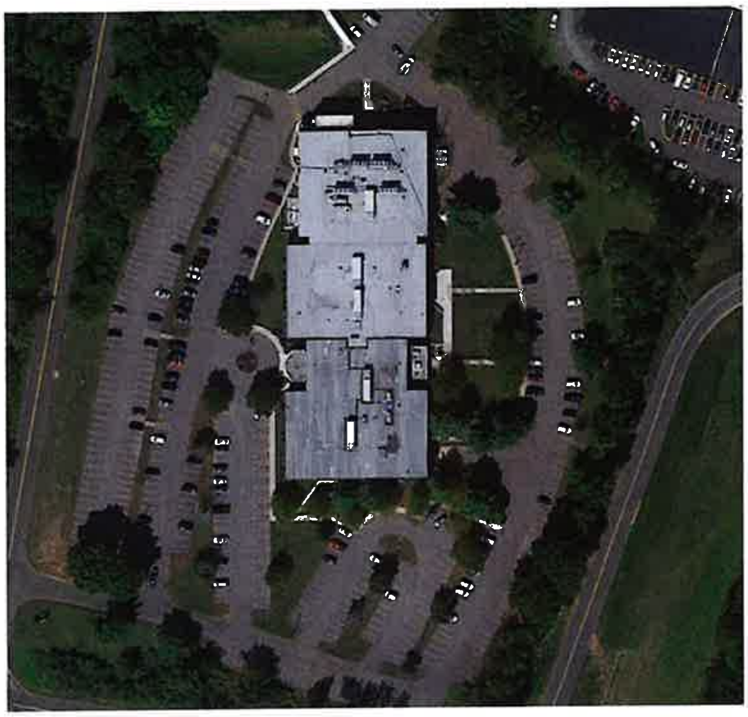
ATTACHMENT 3

Radio Frequency Emissions Analysis Report

Verizon Wireless Rooftop Facility

May 11, 2021

Analysis Format: Theoretical Calculations



Prepared For: Verizon Wireless
Site ID: 325037
Site Name: WALLINGFORD CT
Address: 20 Alexander Drive, Wallingford, CT 06492
Lat: **41.479197**
Long: **-72.800944**

Contents

Results and Conclusion

Description of MPE-Limit Exceeding Areas:
There are no areas accessible to the general public that exceed the FCC's General Population level.

At the ground level the maximum composite power density for all system operators on this facility is 21.45% of the General Public MPE limit.

Analysis Site Data

Site ID:	325037
Site Name:	WALLINGFORD CT
Site Address:	20 Alexander Drive, Wallingford, CT 06492
Site Latitude:	41.479197
Site Longitude:	-72.80094
Facility Type:	Rooftop

Compliance Summary

Status:	• Compliant
Site Modeled Composite MPE% (General Public Limit):	21.45 % @ Ground Level
Verizon Max Modeled MPE% (General Public Limit):	21.45 % @ Ground Level
Is Access Locked or Controlled? :	Unknown
Lock or Control Measures if Present :	Uncontrolled*

There are no additional system operators located on this facility or considered as part of this analysis.

FCC Compliance Analysis Summary

All power density values used in this report were analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

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

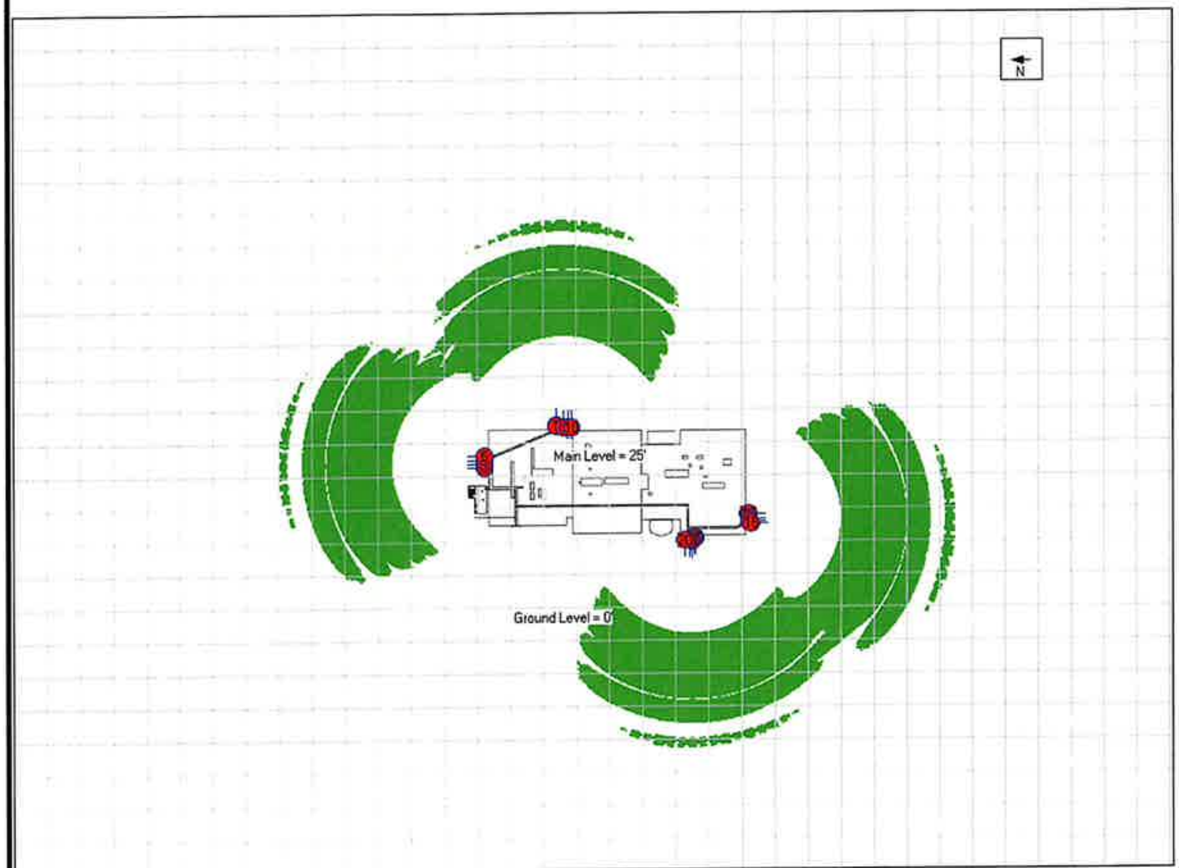
Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 600, 700, and 800 MHz Bands is approximately 400 $\mu W/cm^2$, 467 $\mu W/cm^2$, and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS, 2100 MHz AWS, 2500 MHz, 3500 MHz CBRS, 5000 MHz LAA, 28GHz, and 39GHz bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density. Reference the Site Antenna Data Table for list of frequencies in operation at this site.

Additional details can be found in FCC OET 65.

APPENDIX A: Roofmaster Simulations

325037 / WALLINGFORD CT

Ground Level 0'



20' grid size

Carrier Color Code
- Verizon
- AT&T Mobility
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown

Existing Marker
Existing Barrier
Proposed Marker
Proposed Barrier

Percent MPE Legend
- 0% - 5%
- 5% - 100%
- 100% - 500%
- 500% - 5000%
- 5000% +

Public Limits

The reported RF exposure level on the ground level while all antennas are operating simultaneously is 21.45% of the MPE limit for the General public. Table 3 summarizes the results.

Level Simulated	Cumulative MPE %
Ground Level	21.45%

Compliance status and recommendations:

Based on simulations and calculations demonstrated above, the site WALLINGFORD CT is compliant with the FCC rules and regulations at ground level.

APPENDIX B: FCC Emissions Threshold Limits

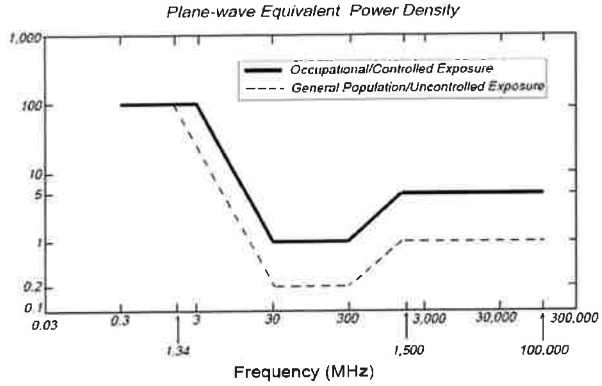
Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0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

f = Frequency in (MHz)

* Plane-wave equivalent power density

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

Plane-wave Equivalent Power Density



APPENDIX C: Certifications

I, Samuel Cosgrove, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in Verizon's FCC Regulatory Compliance Manual.

Samuel Cosgrove

5/11/2021

I, Brandon Green, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in Verizon's FCC Regulatory Compliance Manual.

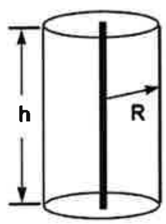
Brandon Green

5/11/2021

APPENDIX D: Calculation Methodology & Antenna Inventory

Centerline has performed theoretical calculations on all transmission equipment located on this facility. All calculations have been performed using the RoofMaster® software from Waterford Consultants LLC. This software performs calculations using a cylindrical model for very conservative power density predictions within the near-field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations the power decreases inversely with the square of the distance. This modeling technique is accurate with low antenna centerlines, such as rooftops, where persons can get close to the antennas and pass through fields in close proximity.

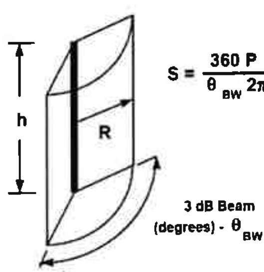
The below calculation in Figure 1 shows the theoretical distribution of power over an imaginary cylinder with equal power distribution in all directions.



$$S = \frac{P}{2\pi Rh}$$

Figure 1: Distribution of power over an imaginary cylinder in all directions

This model can be modified for directional antennas to show directionality of power distribution. This formula will tend to be conservative as it assumes that all power is focused between the 3 dB power roll off points as shown in Figure 2.



$$S = \frac{360\,P}{\theta_{BW}\,2\pi Rh}$$

Figure 2: Distribution of power over an imaginary cylinder in all directions inside the half power roll off points (HBW).

RoofMaster features described below are used in our simulations:

RoofMaster™ Sula9 Mode provides a top down view of the RF are for the specified vertical space a human body can occupy.
Data used in our analysis was provided by Verizon and depicted in table 1 below:

Antennas:

Ant ID	Carrier	Ant Model	Power (ERP Watts)	Power (EiRP Watts)	Frequency (MHz)	Height (Ft.)	Azimuth
Ant:1 EMT:1	Verizon	SAMSUNG AT1K01 28GHz	239.78	393.39	28000	31.00	0
Ant:2 EMT:1	Verizon	SAMSUNG XXDWMM-12.5-65-8T CBRS	227.00	372.42	3550	31.00	0
Ant:3 EMT:1	Verizon	SAMSUNG MT6407 TB 03.24.21	43154.89	70799.47	3700	31.00	0
Ant:4 EMT:1	Verizon	COMMSCOPE JAHH-65B-R3B	1300.44	2133.49	700	31.00	0
Ant:4 EMT:2	Verizon	COMMSCOPE JAHH-65B-R3B	1527.88	2506.63	850	31.00	0
Ant:4 EMT:3	Verizon	COMMSCOPE JAHH-65B-R3B	5972.00	9797.61	1900	31.00	0
Ant:5 EMT:1	Verizon	COMMSCOPE JAHH-65B-R3B	1300.44	2133.49	700	31.00	0
Ant:5 EMT:2	Verizon	COMMSCOPE JAHH-65B-R3B	1527.88	2506.63	850	31.00	0
Ant:5 EMT:3	Verizon	COMMSCOPE JAHH-65B-R3B	5958.27	9775.07	2100	31.00	0
Ant:6 EMT:1	Verizon	SAMSUNG AT1K01 28GHz	239.78	393.39	28000	31.00	90
Ant:7 EMT:1	Verizon	SAMSUNG XXDWMM-12.5-65-8T CBRS	227.00	372.42	3550	31.00	90
Ant:8 EMT:1	Verizon	SAMSUNG MT6407 TB 03.24.21	43154.89	70799.47	3700	31.00	90
Ant:9 EMT:1	Verizon	COMMSCOPE JAHH-65B-R3B	1300.44	2133.49	700	31.00	90
Ant:9 EMT:2	Verizon	COMMSCOPE JAHH-65B-R3B	1527.88	2506.63	850	31.00	90
Ant:9 EMT:3	Verizon	COMMSCOPE JAHH-65B-R3B	5972.00	9797.61	1900	31.00	90
Ant:10 EMT:1	Verizon	COMMSCOPE JAHH-65B-R3B	1300.44	2133.49	700	31.00	90
Ant:10 EMT:2	Verizon	COMMSCOPE JAHH-65B-R3B	1527.88	2506.63	850	31.00	90
Ant:10 EMT:3	Verizon	COMMSCOPE JAHH-65B-R3B	5958.27	9775.07	2100	31.00	90
Ant:11 EMT:1	Verizon	SAMSUNG AT1K01 28GHz	239.78	393.39	28000	31.00	180
Ant:12 EMT:1	Verizon	SAMSUNG XXDWMM-12.5-65-8T CBRS	227.00	372.42	3550	31.00	180
Ant:13 EMT:1	Verizon	SAMSUNG MT6407 TB 03.24.21	43154.89	70799.47	3700	31.00	180
Ant:14 EMT:1	Verizon	COMMSCOPE JAHH-65B-R3B	1300.44	2133.49	700	31.00	180
Ant:14 EMT:2	Verizon	COMMSCOPE JAHH-65B-R3B	1527.88	2506.63	850	31.00	180
Ant:14 EMT:3	Verizon	COMMSCOPE JAHH-65B-R3B	5972.00	9797.61	1900	31.00	180
Ant:15 EMT:1	Verizon	COMMSCOPE JAHH-65B-R3B	1300.44	2133.49	700	31.00	180
Ant:15 EMT:2	Verizon	COMMSCOPE JAHH-65B-R3B	1527.88	2506.63	850	31.00	180
Ant:15 EMT:3	Verizon	COMMSCOPE JAHH-65B-R3B	5958.27	9775.07	2100	31.00	180
Ant:16 EMT:1	Verizon	SAMSUNG AT1K01 28GHz	239.78	393.39	28000	31.00	270
Ant:17 EMT:1	Verizon	SAMSUNG XXDWMM-12.5-65-8T CBRS	227.00	372.42	3550	31.00	270
Ant:18 EMT:1	Verizon	SAMSUNG MT6407 TB 03.24.21	43154.89	70799.47	3700	31.00	270
Ant:19 EMT:1	Verizon	COMMSCOPE JAHH-65B-R3B	1300.44	2133.49	700	31.00	270
Ant:19 EMT:2	Verizon	COMMSCOPE JAHH-65B-R3B	1527.88	2506.63	850	31.00	270
Ant:19 EMT:3	Verizon	COMMSCOPE JAHH-65B-R3B	5972.00	9797.61	1900	31.00	270
Ant:20 EMT:1	Verizon	COMMSCOPE JAHH-65B-R3B	1300.44	2133.49	700	31.00	270
Ant:20 EMT:2	Verizon	COMMSCOPE JAHH-65B-R3B	1527.88	2506.63	850	31.00	270
Ant:20 EMT:3	Verizon	COMMSCOPE JAHH-65B-R3B	5958.27	9775.07	2100	31.00	270

ATTACHMENT 4

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Frames & Host Building

Proposed Verizon
Antenna Upgrade

Site Ref: Wallingford

20 Alexander Drive
Wallingford, CT

CENTEK Project No. 20150.14

~~Date: March 11, 2021~~
Rev 1: April 13, 2021

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

Prepared for:

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Table of Contents

Introduction

The purpose of this structural analysis report (SAR) is to summarize the results, of the impacted structural components, by the equipment upgrade proposed by Verizon Wireless on the existing host building located in Wallingford, CT.

The antennas are mounted on structural steel pipe masts attached to the façade of the hosting structure. The mounts member sizes information were obtained from an antenna mount mapping report as prepared by Centek Engineering, dated February, 15 2021 and antenna mount structural certification letter as prepared by All-Points Technology Corporations, dated September, 25 2019. Proposed/existing antenna and appurtenance information was taken from a RF data sheet dated 12/09/2020 provided by Verizon Wireless.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The existing elevated steel antenna frames carry the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Proposed reinforcement and support steel will be properly installed and maintained.
- Structure is in plumb condition.
- Loading for equipment and enclosure as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as observed during roof framing mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.

Antenna and Equipment Summary

Location	Appurtenance / Equipment	Rad Center Elevation (AGL)	Mount Type
Alpha Sector	~~(1) Commscope SBNHH-1D45B Antenna~~ ~~(2) Swedcom SC-E 6016 REV2 Antennas~~ (1) CBRS - XXDWMM-12.5-65-8T Antenna (1) Samsung VZ -AT1K01 Antenna **(2) Commscope JAHH-65B-R3B Antennas** **(1) Samsung VZS01 Antenna** (1) Samsung B5/B13 RRH – BR04C (1) Samsung B2/B66A RRH – BR049 (1) Raycap OVP Box ~~(1) Commscope CBC 1923Q-43 Diplexer~~ **(1) Commscope CBC78T-DS-43 Diplexer**	±31-ft	Antenna pipe masts attached to building façade
Beta Sector	~~(2) Commscope SBNHH-1D45B Antennas~~ ~~(2) Antel LPA-80063/4CF Antennas~~ (1) CBRS - XXDWMM-12.5-65-8T Antenna (1) Samsung VZ -AT1K01 Antenna **(2) Commscope JAHH-65B-R3B Antennas** **(1) Samsung VZS01 Antenna** (1) Samsung B5/B13 RRH – BR04C (1) Samsung B2/B66A RRH – BR049 (1) Raycap OVP Box ~~(1) Commscope CBC 1923Q-43 Diplexers~~ **(1) Commscope CBC78T-DS-43 Diplexers**	±31-ft	Antenna pipe masts attached to building façade
Gamma Sector	~~(2) Commscope HBXX-6517DS Antennas~~ ~~(2) Swedcom SC-E 6016 REV2 Antennas~~ **(1) Samsung VZ -AT1K01 Antenna** **(2) Commscope JAHH-65B-R3B Antennas** **(1) Samsung VZS01 Antenna** **(1) CBRS - XXDWMM-12.5-65-8T Antenna** **(1) Samsung B5/B13 RRH – BR04C** **(1) Samsung B2/B66A RRH – BR049** (1) Raycap OVP Box **(1) Commscope CBC78T-DS-43 Diplexer**	±31-ft	Antenna pipe masts attached to building façade
Delta Sector	**(2) Commscope JAHH-65B-R3B Antennas** **(1) Samsung VZS01 Antenna** **(1) CBRS - XXDWMM-12.5-65-8T Antenna** **(1) Samsung B5/B13 RRH – BR04C** **(1) Samsung B2/B66A RRH – BR049** **(1) Raycap OVP Box** **(1) Commscope CBC78T-DS-43 Diplexer**	±31-ft	Antenna pipe masts attached to building façade

~~Equipment~~ – Indicates equipment to be removed.
Equipment – Indicates equipment to be installed.

Analysis

The existing antenna frames were analyzed using a comprehensive computer program titled Risa3D. The program analyzes the antenna mounts considering the worst case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2015 International Building Code amended by the 2018 CSBC and ASCE 7-10 "Minimum Design Loads for Buildings and Other Structures".

Wind Speed:	V_{ult} = 125 mph	Appendix N of the 2018 CT State Building Code
Risk Category:	II	2015 IBC; Table 1604.05
Exposure Category:	Surface Roughness B	ASCE 7-10; Section 26.7.2
Dead Load	Equipment and framing self-weight	Identified within SAR design calculations

Reference Standards

2015 International Building Code:

1. ACI 318-14, *Building Code Requirements for Structural Concrete.*
2. ACI 530-13, *Building Code Requirements for Masonry Structures.*
3. AISC 360-10, *Specification for Structural Steel Buildings*
4. AWS D1.1 – 00, *Structural Welding Code – Steel.*
5. AF&PA-12, *Span Tables for Joists and Rafters.*

Results

Structure stresses were calculated utilizing the structural analysis software RISA 3D. The stresses were determined based on the AISC standard.

- Calculated stresses for the antenna mount and host building were found to **be within allowable** limits.

Sector	Component	Stress Ratio (percentage of capacity)	Result
All Sectors	Antenna Mast	15%	**PASS**
	Connection	21%	**PASS**

Conclusion

This analysis shows that the subject antenna mounts and host building **HAVE SUFFICIENT CAPACITY** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Verizon. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

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

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Design Wind Load on Other Structures:

(Based on IBC 2015, CSBC 2018 and ASCE 7-10)

Wind Speed =	$V := 125$	mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := II$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := B$		(User Input)	
Height Above Grade =	$Z := 34$	ft	(User Input)	
Structure Type =	$Structuretype := Square\_Chimney$			
			(User Input)	
Structure Height =	$Height := 8$	ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 2$	ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer = $zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 1.2 \cdot 10^3$ (Table 26.9-1)

3-Sec Gust Speed Power Law Exponent = $\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 7$ (Table 26.9-1)

Exposure Coefficient = $K_z := \begin{cases} 2.01 \cdot \left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01 \cdot \left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 0.72$ (Table 29.3-1)

Topographic Factor = $K_{zt} := 1$ (Eq. 26.8-2)

Wind Directionality Factor = $K_d = 0.9$ (Table 26.6-1)

Velocity Pressure = $q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 25.92$ (Eq. 29.3-1)

Force Coefficient = $GC_r := 1.9$ (Section 29.5-1-29.5-3)

Wind Force = $F := q_z \cdot GC_r = 49$ psf

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Branford, CT 06405 F: (203) 488-8587

Development of Wind on Antennas

Antenna Data:

Antenna Model =	Raycap OVP -6		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 29.0$	in	(User Input)
Antenna Width =	$W_{ant} := 15.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10.3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 32.0$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.2$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.2$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 156$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 2.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 2.1$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 102$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 32$	lbs

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Development of Wind on Antennas

Antenna Data:

Antenna Model =	Samsung VZS01		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 35.1$	in	(User Input)
Antenna Width =	$W_{ant} := 16.1$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 87.1$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.9$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.9$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 193$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.3$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.3$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 66$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 87$	lbs

Development of Wind on Antennas

Antenna Data:

Antenna Model =	Commscope JAHH-65B-R3B		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 13.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.2$	in	(User Input)
Antenna Weight =	$WT_{ant} := 64.4$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6.9$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 6.9$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 340$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 4.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 4.1$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 202$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 64$	lbs

Development of Wind on Antennas

Antenna Data:

Antenna Model =	CBRS - XXDWMM-12.5-65-8T		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 12.3$	in	(User Input)
Antenna Width =	$W_{ant} := 8.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 21.8$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.7$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 37$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 0.4$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.4$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 17$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 22$	lbs

Development of Wind on Antennas

Antenna Data:

Antenna Model =	Samsung VZ -AT1K01		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 16.8$	in	(User Input)
Antenna Width =	$W_{ant} := 9.6$	in	(User Input)
Antenna Thickness =	$T_{ant} := 6.9$	in	(User Input)
Antenna Weight =	$WT_{ant} := 33$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.1$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 55$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 0.8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.8$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 40$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 33$	lbs

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Subject: Wind Load on Equipment per ASCE 7-10

Location: Wallingford, CT

Rev. 0: 02/11/2021

Prepared by: F.J.P; Checked by: T.J.L.
Job No. 20150.14

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Samsung B5/B13 RRH-BR04C		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 15.0$	in	(User Input)
RRH Width =	$W_{RRH} := 15.0$	in	(User Input)
RRH Thickness =	$T_{RRH} := 8.1$	in	(User Input)
RRH Weight =	$WT_{RRH} := 70.3$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.6$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.6$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 77$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 0.8$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 0.8$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 42$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 70$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Samsung B2/B66A RRH-BR049		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 15.0$	in	(User Input)
RRH Width =	$W_{RRH} := 15.0$	in	(User Input)
RRH Thickness =	$T_{RRH} := 10.0$	in	(User Input)
RRH Weight =	$WT_{RRH} := 84.4$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.6$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.6$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 77$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 51$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 84$	lbs

Development of Wind & Ice Load on Diplexer's

Diplexer Data:

Diplexer Model =	Commscope -CBC78T-DS-43-2X(4 pack)		
Diplexer Shape =	Flat		(User Input)
Diplexer Height =	$L_{Dpl} := 6.4$	in	(User Input)
Diplexer Width =	$W_{Dpl} := 6.9$	in	(User Input)
Diplexer Thickness =	$T_{Dpl} := 9.6$	in	(User Input)
Diplexer Weight =	$WT_{Dpl} := 21.8$	lbs	(User Input)
Number of Diplexer's=	$N_{Dpl} := 1$		(User Input)

Wind Load (Front)

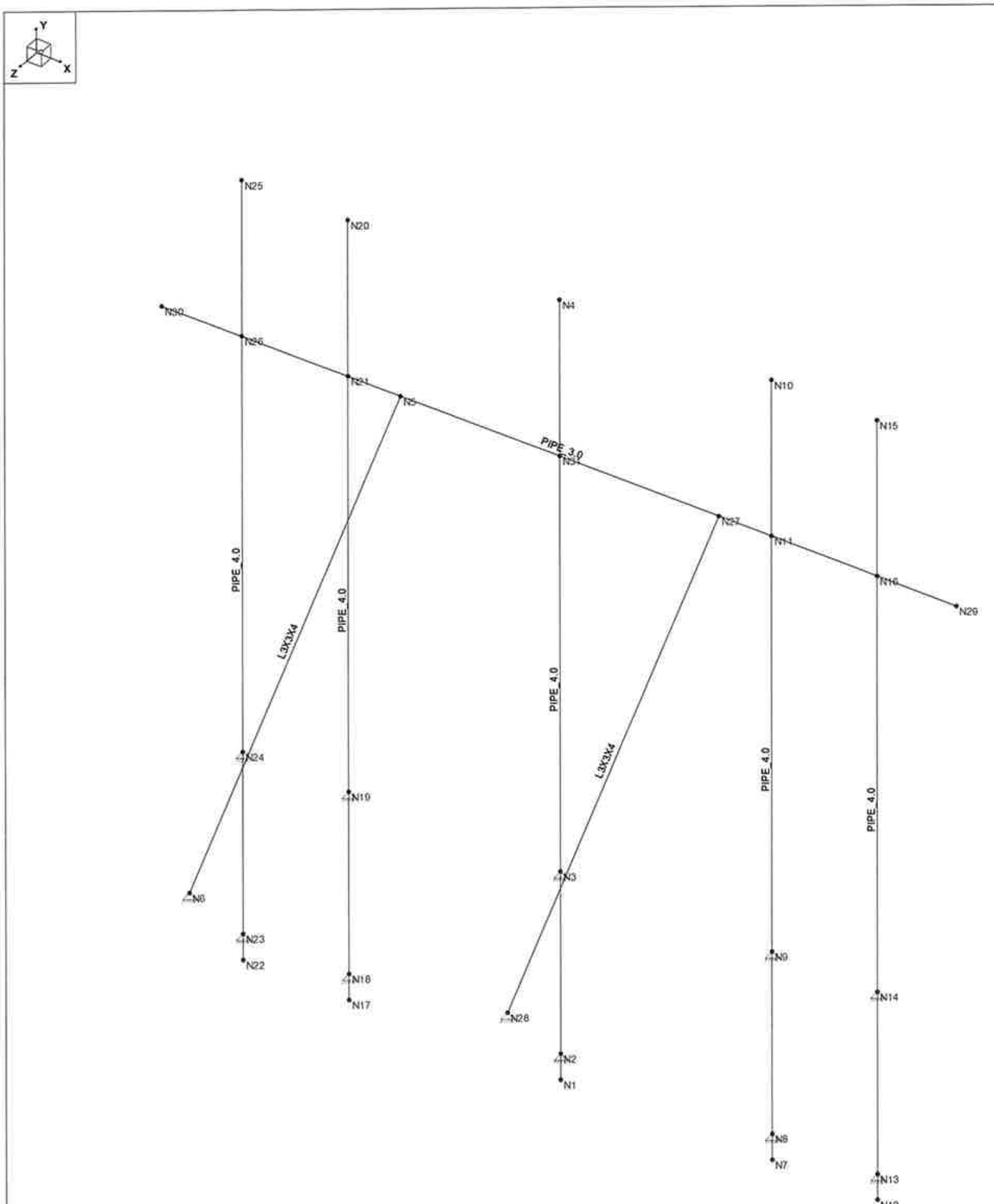
Surface Area for One Diplexer =	$SA_{Dpl} := \frac{L_{Dpl} \cdot W_{Dpl}}{144} = 0.3$	sf
Diplexer Projected Surface Area =	$A_{Dpl} := SA_{Dpl} \cdot N_{Dpl} = 0.3$	sf
Total Diplexer Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 51$	lbs

Wind Load (Side)

Surface Area for One Diplexer =	$SA_{RRH} := \frac{L_{Dpl} \cdot T_{Dpl}}{144} = 0.4$	sf
Diplexer Projected Surface Area =	$A_{Dpl} := SA_{Dpl} \cdot N_{Dpl} = 0.3$	sf
Total Diplexer Wind Force =	$F_{RRH} := F \cdot A_{Dpl} = 15$	lbs

Gravity Load (without ice)

Weight of All Diplexer's=	$WT_{Dpl} \cdot N_{Dpl} = 22$	lbs



Envelope Only Solution

Centek Engineering		
FJP	Wallingford	Apr 13, 2021 at 11:21 AM
20150.14	Member Framing	Wallingford_AMA Rev1.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 15th(360-16): ASD
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	4
Cd X	4
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 Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	(P) Antenna Mast	PIPE_4.0	Column	Pipe	A53 Grade B	Typical	2.96	6.82	6.82	13.6
2	HOrz	PIPE_3.0	Beam	Wide Flange	A53 Grade B	Typical	2.07	2.85	2.85	5.69
3	Brace	L3X3X4	HBrace	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031

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	15	Segment	Segment	Lbyy						Lateral
2	M2	Brace	8.485									Lateral
3	M3	(P) Antenna Mast	15	Segment	Segment	Lbyy						Lateral
4	M4	(P) Antenna Mast	15	Segment	Segment	Lbyy						Lateral
5	M5	(P) Antenna Mast	15	Segment	Segment	Lbyy						Lateral
6	M6	(P) Antenna Mast	15	Segment	Segment	Lbyy						Lateral
7	M7	Brace	8.485									Lateral
8	M8	HOrz	15			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N4	N1			(P) Antenna Mast	Column	Pipe	A53 Grade B	Typical
2	M2	N5	N6			Brace	HBrace	Single Angle	A36 Gr.36	Typical
3	M3	N10	N7			(P) Antenna Mast	Column	Pipe	A53 Grade B	Typical
4	M4	N15	N12			(P) Antenna Mast	Column	Pipe	A53 Grade B	Typical
5	M5	N20	N17			(P) Antenna Mast	Column	Pipe	A53 Grade B	Typical
6	M6	N25	N22			(P) Antenna Mast	Column	Pipe	A53 Grade B	Typical
7	M7	N27	N28			Brace	HBrace	Single Angle	A36 Gr.36	Typical
8	M8	N30	N29			HOrz	Beam	Wide Flange	A53 Grade B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	6	0	0	0	
2	N2	6	.5	0	0	
3	N3	6	4	0	0	
4	N4	6	15	0	0	
5	N5	3	12	0	0	
6	N6	3	6	6	0	
7	N7	10	0	0	0	
8	N8	10	.5	0	0	
9	N9	10	4	0	0	
10	N10	10	15	0	0	
11	N11	10	12	0	0	
12	N12	12	0	0	0	
13	N13	12	.5	0	0	
14	N14	12	4	0	0	
15	N15	12	15	0	0	
16	N16	12	12	0	0	
17	N17	2	0	0	0	
18	N18	2	.5	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
19	N19	2	4	0	0	
20	N20	2	15	0	0	
21	N21	2	12	0	0	
22	N22	0	0	0	0	
23	N23	0	.5	0	0	
24	N24	0	4	0	0	
25	N25	0	15	0	0	
26	N26	0	12	0	0	
27	N27	9	12	0	0	
28	N28	9	6	6	0	
29	N29	13.5	12	0	0	
30	N30	-1.5	12	0	0	
31	N31	6	12	0	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			
2	N3	Reaction	Reaction	Reaction			
3	N5						
4	N6	Reaction	Reaction	Reaction			
5	N8	Reaction	Reaction	Reaction			
6	N9	Reaction	Reaction	Reaction			
7	N11						
8	N13	Reaction	Reaction	Reaction			
9	N14	Reaction	Reaction	Reaction			
10	N16						
11	N18	Reaction	Reaction	Reaction			
12	N19	Reaction	Reaction	Reaction			
13	N21						
14	N23	Reaction	Reaction	Reaction			
15	N24	Reaction	Reaction	Reaction			
16	N26						
17	N27						
18	N28	Reaction	Reaction	Reaction			
19	N22						

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.032	.5
2	M1	Y	-.032	5.5
3	M1	Y	-.032	.5
4	M1	Y	-.032	5.5
5	M1	Y	-.022	1.5
6	M1	Y	-.084	3.5
7	M4	Y	-.044	.5
8	M4	Y	-.044	2.5
9	M3	Y	-.022	.5
10	M3	Y	-.033	4
11	M5	Y	-.07	4

Member Point Loads (BLC 2 : Weight of Equipment) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
12	M6	Y	-.032	4

Member Point Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.101	.5
2	M1	X	.101	5.5
3	M1	X	.101	.5
4	M1	X	.101	5.5
5	M1	X	.015	1.5
6	M1	X	.051	3.5
7	M4	X	.033	.5
8	M4	X	.033	2.5
9	M3	X	.017	.5
10	M3	X	.04	4
11	M5	X	.042	4
12	M6	X	.102	4

Member Point Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.17	.5
2	M1	Z	.17	5.5
3	M1	Z	.17	.5
4	M1	Z	.17	5.5
5	M4	Z	.097	.5
6	M4	Z	.097	2.5
7	M3	Z	.037	.5
8	M3	Z	.055	4
9	M5	Z	.077	4
10	M6	Z	.156	4

Member Distributed Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.016	.016	0	0
2	M6	X	.016	.016	0	0
3	M5	X	.016	.016	0	0
4	M3	X	.016	.016	0	0
5	M4	X	.016	.016	0	0

Member Distributed Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.016	.016	7	0
2	M6	Z	.016	.016	0	0
3	M5	Z	.016	.016	0	0
4	M3	Z	.016	.016	5	15
5	M4	Z	.016	.016	5	15
6	M8	Z	.016	.016	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	DL		-1						
2	Weight of Equipment	DL					12			
3	Wind X-Direction	WLX					12	5		
4	Wind Z-Direction	WLZ					10	6		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																		
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1														
3	IBC 16-10 (a)	Yes	Y		DL	1	RLL	1																
4	IBC 16-10 (b)	Yes	Y		DL	1	SL	1	SLN	1														
5	IBC 16-10 (c)	Yes	Y		DL	1	RL	1																
6	IBC 16-11 (a)	Yes	Y		DL	1	LL	.75	LLS	.75	RLL	.75												
7	IBC 16-11 (b)	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	SLN	.75										
8	IBC 16-11 (c)	Yes	Y		DL	1	LL	.75	LLS	.75	RL	.75												
9	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																
10	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																
11	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																
12	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																
13	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	RLL	.75										
14	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	RLL	.75										
15	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	RLL	.75										
16	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	RLL	.75										
17	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
18	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
19	IBC 16-13 (b) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
20	IBC 16-13 (b) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
21	IBC 16-13 (c) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	RL	.75										
22	IBC 16-13 (c) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	RL	.75										
23	IBC 16-13 (c) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	RL	.75										
24	IBC 16-13 (c) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	RL	.75										
25	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																
26	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																
27	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6																
28	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6																

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	.161	9	.023	24	.011	28	0	28	0	28	0	28
2		min	-.16	11	.014	25	-.014	10	0	1	0	1	0	1
3	N3	max	.4	27	.594	12	.067	12	0	28	0	28	0	28
4		min	-.401	9	.044	26	-.06	26	0	1	0	1	0	1
5	N6	max	.009	11	.517	10	.494	28	0	28	0	28	0	28
6		min	-.009	25	-.483	28	-.502	10	0	1	0	1	0	1
7	N8	max	.163	9	.023	24	0	26	0	28	0	28	0	28
8		min	-.162	27	.014	25	-.003	12	0	1	0	1	0	1
9	N9	max	.398	27	.659	12	.076	12	0	28	0	28	0	28
10		min	-.404	9	-.3	26	-.069	26	0	1	0	1	0	1

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
11	N13	max	.146	9	.023	24	.052	26	0	28	0	28	0	28
12		min	-.146	11	.014	25	-.052	12	0	1	0	1	0	1
13	N14	max	.359	11	.744	9	.154	12	0	28	0	28	0	28
14		min	-.355	25	-.374	27	-.152	26	0	1	0	1	0	1
15	N18	max	.162	25	.023	24	.006	26	0	28	0	28	0	28
16		min	-.163	11	.014	25	-.008	12	0	1	0	1	0	1
17	N19	max	.403	11	.689	12	.09	12	0	28	0	28	0	28
18		min	-.399	25	-.307	26	-.083	26	0	1	0	1	0	1
19	N23	max	.152	9	.023	24	.072	10	0	28	0	28	0	28
20		min	-.151	27	.014	25	-.072	12	0	1	0	1	0	1
21	N24	max	.37	27	.643	11	.207	12	0	28	0	28	0	28
22		min	-.374	9	-.362	25	-.206	26	0	1	0	1	0	1
23	N28	max	.009	11	.495	10	.463	28	0	28	0	28	0	28
24		min	-.009	25	-.462	28	-.47	10	0	1	0	1	0	1
25	Totals:	max	1.165	27	1.423	24	1.422	28						
26		min	-1.165	9	.854	25	-1.422	10						

Envelope Joint Displacements

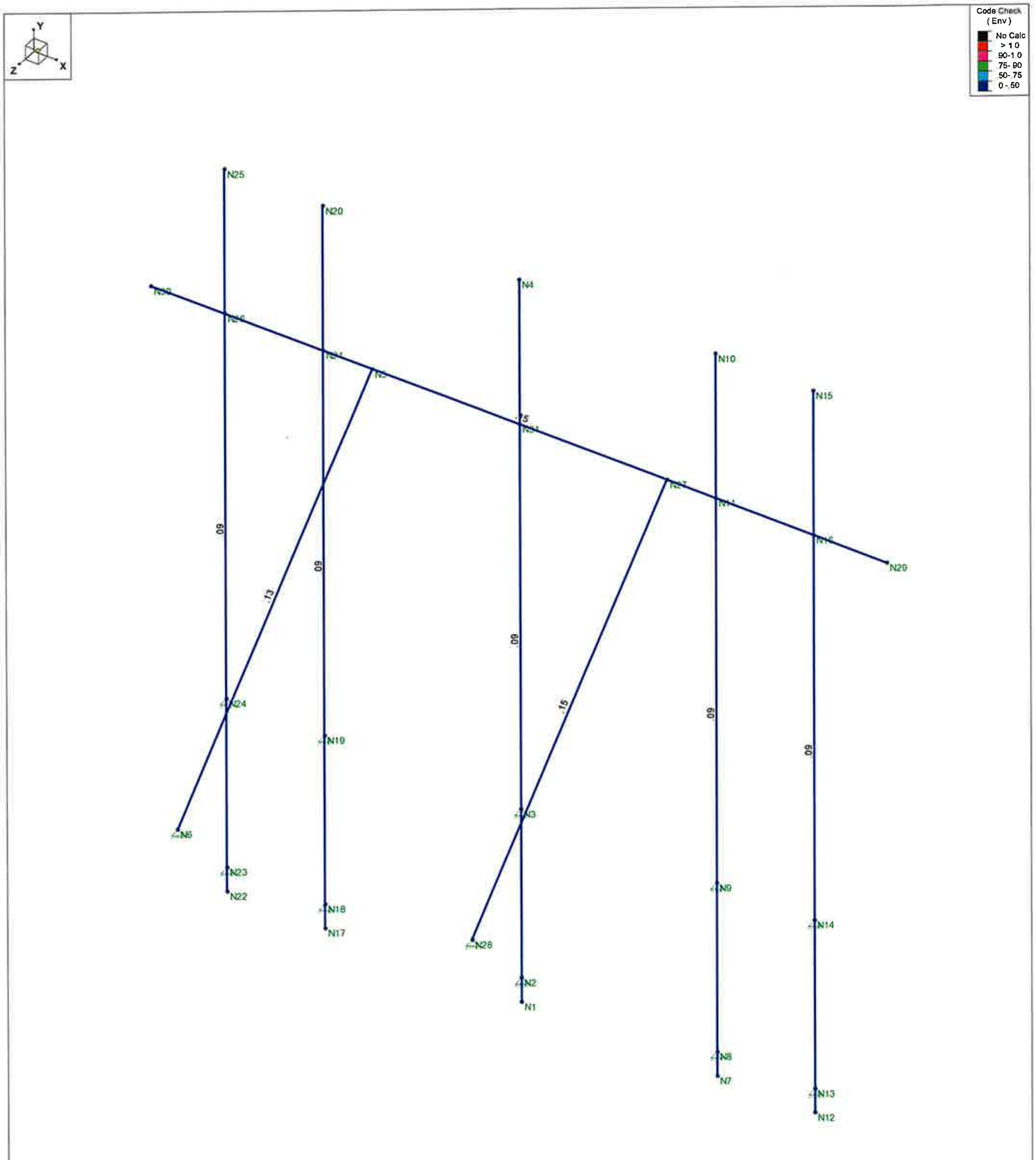
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
1	N1	max	.002	9	0	28	0	27	7.782e-06	9	6.666e-06	25	3.154e-04	9
2		min	-.002	11	0	1	0	9	-1.87e-06	27	-9.4e-06	11	-3.146e-04	11
3	N2	max	0	28	0	28	0	28	7.782e-06	9	6.666e-06	25	3.152e-04	9
4		min	0	1	0	1	0	1	-1.87e-06	27	-9.4e-06	11	-3.145e-04	11
5	N3	max	0	28	0	28	0	28	1.761e-05	26	6.666e-06	25	6.74e-04	11
6		min	0	1	0	1	0	1	-2.982e-05	12	-9.4e-06	11	-6.755e-04	9
7	N4	max	.155	9	0	26	.036	26	1.075e-03	10	6.666e-06	25	9.681e-04	11
8		min	-.154	11	0	12	-.036	28	-1.044e-03	28	-9.4e-06	11	-9.71e-04	9
9	N5	max	.123	9	.004	26	.007	26	5.123e-04	10	9.837e-04	10	1.452e-04	26
10		min	-.123	11	-.004	12	-.007	12	-4.011e-04	28	-9.521e-04	28	-1.761e-04	12
11	N6	max	0	28	0	28	0	28	-1.265e-04	28	1.288e-03	27	1.068e-03	27
12		min	0	1	0	1	0	1	-5.033e-04	10	-1.497e-03	9	-1.339e-03	9
13	N7	max	.002	9	0	28	0	26	3.069e-05	12	1.75e-03	28	3.195e-04	9
14		min	-.002	27	0	1	0	12	-2.553e-05	26	-1.779e-03	10	-3.165e-04	27
15	N8	max	0	28	0	28	0	28	3.051e-05	12	1.75e-03	28	3.193e-04	9
16		min	0	1	0	1	0	1	-2.535e-05	26	-1.779e-03	10	-3.163e-04	27
17	N9	max	0	28	0	28	0	28	6.809e-05	26	1.75e-03	28	6.776e-04	27
18		min	0	1	0	1	0	1	-7.889e-05	12	-1.779e-03	10	-6.838e-04	9
19	N10	max	.136	25	0	26	.043	10	5.646e-04	10	1.75e-03	28	3.863e-04	11
20		min	-.136	11	0	12	-.042	28	-5.225e-04	28	-1.779e-03	10	-3.644e-04	25
21	N11	max	.123	9	0	26	.023	26	5.014e-04	10	1.75e-03	28	3.179e-04	11
22		min	-.123	11	0	12	-.023	12	-4.593e-04	28	-1.779e-03	10	-2.96e-04	25
23	N12	max	.002	9	0	28	0	26	1.197e-04	12	2.371e-03	28	2.884e-04	9
24		min	-.002	11	0	1	0	12	-1.189e-04	26	-2.406e-03	10	-2.891e-04	11
25	N13	max	0	28	0	28	0	28	1.195e-04	12	2.371e-03	28	2.883e-04	9
26		min	0	1	0	1	0	1	-1.187e-04	26	-2.406e-03	10	-2.889e-04	11
27	N14	max	0	28	0	28	0	28	2.636e-04	26	2.371e-03	28	6.202e-04	11
28		min	0	1	0	1	0	1	-2.653e-04	12	-2.406e-03	10	-6.188e-04	9
29	N15	max	.149	9	0	27	.119	10	1.242e-03	10	2.371e-03	28	7.175e-04	27
30		min	-.148	27	0	9	-.118	28	-1.226e-03	28	-2.406e-03	10	-7.335e-04	9
31	N16	max	.123	9	0	27	.076	10	1.07e-03	10	2.371e-03	28	6.195e-04	27

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
32		min	-.123	11	0	9	-.075	12	-1.054e-03	28	-2.406e-03	10	-6.353e-04	9
33	N17	max	.002	25	0	28	0	26	4.06e-05	12	1.845e-03	10	3.17e-04	25
34		min	-.002	11	0	1	0	12	-3.57e-05	26	-1.804e-03	28	-3.186e-04	11
35	N18	max	0	28	0	28	0	28	4.042e-05	12	1.845e-03	10	3.168e-04	25
36		min	0	1	0	1	0	1	-3.552e-05	26	-1.804e-03	28	-3.184e-04	11
37	N19	max	0	28	0	28	0	28	8.94e-05	26	1.845e-03	10	6.82e-04	11
38		min	0	1	0	1	0	1	-9.966e-05	12	-1.804e-03	28	-6.786e-04	25
39	N20	max	.136	9	0	26	.041	10	4.816e-04	10	1.845e-03	10	3.353e-04	27
40		min	-.135	27	0	12	-.04	28	-4.376e-04	28	-1.804e-03	28	-3.601e-04	9
41	N21	max	.123	9	0	26	.024	26	4.422e-04	10	1.845e-03	10	2.959e-04	27
42		min	-.123	11	0	12	-.025	12	-3.983e-04	28	-1.804e-03	28	-3.208e-04	9
43	N22	max	.002	9	0	28	0	10	1.558e-04	12	2.437e-03	10	2.993e-04	9
44		min	-.002	27	0	1	0	12	-1.558e-04	10	-2.393e-03	28	-2.976e-04	27
45	N23	max	0	28	0	28	0	28	1.557e-04	12	2.437e-03	10	2.991e-04	9
46		min	0	1	0	1	0	1	-1.557e-04	10	-2.393e-03	28	-2.974e-04	27
47	N24	max	0	28	0	28	0	28	3.41e-04	10	2.437e-03	10	6.381e-04	27
48		min	0	1	0	1	0	1	-3.411e-04	12	-2.393e-03	28	-6.416e-04	9
49	N25	max	.144	9	0	25	.107	10	8.077e-04	10	2.437e-03	10	5.845e-04	11
50		min	-.144	11	0	11	-.105	28	-7.878e-04	28	-2.393e-03	28	-5.767e-04	25
51	N26	max	.123	9	0	25	.078	10	7.683e-04	10	2.437e-03	10	5.452e-04	11
52		min	-.123	11	0	11	-.077	28	-7.484e-04	28	-2.393e-03	28	-5.373e-04	25
53	N27	max	.123	9	.003	26	.006	26	4.551e-04	10	8.903e-04	28	1.539e-04	12
54		min	-.123	11	-.004	12	-.007	12	-3.443e-04	28	-9.096e-04	10	-1.166e-04	26
55	N28	max	0	28	0	28	0	28	-1.488e-04	28	1.274e-03	27	1.066e-03	27
56		min	0	1	0	1	0	1	-4.809e-04	10	-1.546e-03	9	-1.281e-03	9
57	N29	max	.123	9	.012	27	.119	10	1.07e-03	10	2.383e-03	28	6.143e-04	27
58		min	-.123	11	-.013	9	-.118	28	-1.054e-03	28	-2.418e-03	10	-6.44e-04	9
59	N30	max	.123	9	.01	25	.122	10	7.683e-04	10	2.449e-03	10	5.538e-04	11
60		min	-.123	11	-.011	11	-.121	28	-7.484e-04	28	-2.405e-03	28	-5.321e-04	25
61	N31	max	.123	9	0	26	.003	26	4.945e-04	10	6.666e-06	25	5.738e-04	27
62		min	-.123	11	0	12	-.004	12	-4.631e-04	28	-9.4e-06	11	-5.766e-04	9

Envelope AISC 15th(360-16): ASD Steel Code Checks

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	Dir	...	Pnc/...	Pnt/o...	Mny...	Mnz...	Cb	Eqn
1	M7	L3X3X4	.150	0	10	.002	0	y	...	7.144	31.042	1.123	1.961	1.2...	H2-1
2	M8	PIPE_3.0	.147	13...	9	.053	11...		...	13.221	43.383	3.825	3.825	1.6...	H1-...
3	M2	L3X3X4	.126	0	26	.002	0	y	9	7.144	31.042	1.123	2.339	2.5...	H2-1
4	M3	PIPE_4.0	.095	10...	11	.011	10...		9	50.551	62.036	7.073	7.073	2.1...	H1-...
5	M5	PIPE_4.0	.094	10...	9	.011	10...		...	50.551	62.036	7.073	7.073	1.5...	H1-...
6	M1	PIPE_4.0	.093	10...	9	.011	3....		...	50.551	62.036	7.073	7.073	1.7...	H1-...
7	M6	PIPE_4.0	.090	10...	11	.010	11...		9	50.551	62.036	7.073	7.073	2.2...	H1-...
8	M4	PIPE_4.0	.089	10...	9	.010	11...		...	50.551	62.036	7.073	7.073	1.6...	H1-...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering	Wallingford Unity Check	
FJP		Apr 13, 2021 at 11:21 AM
20150.14		Wallingford_AMA Rev1.r3d

CENTEK engineering
Centered on Solutions™ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Connection to Host Building

Location: Wallingford, CT

Rev. 0: 3/11/21

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 20150.14

Antenna Mast Connection - Proposed Mounts:

Anchor Data:

HAS Threaded Rod w/ Hilti HY270Adhesive =

Number of Anchor Bolts =	$N := 4$	(User Input)
Diameter of Bolts =	$D := 0.5in$	(User Input)
Embedment of Bolts =	$EM := 3.125in$	(User Input)
Bolt Spacing =	$Sp := 10in$	(User Input)
Allowable Tension =	$T_{all} := 905 \cdot lb$	(User Input)
Allowable Shear =	$V_{all} := 1685 \cdot lb$	(User Input)

Design Reactions:

Wind X-Direction

Shear X =	$Shear_x := 0.4 \cdot kips$	(User Input)
Shear Y =	$Shear_y := 0.75 \cdot kips$	(User Input)
Shear Z =	$Shear_z := 0 \cdot kips$	(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 = $$T_{Max} := \frac{Shear_z}{N} = 0$$

Max Shear Force = $$V_{Max} := \frac{Shear_y + Shear_x}{N} = 287.5lb$$

Condition 1 = $$Condition1 := if\left(\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}} \le 1.0, \text{"OK"}, \text{"NG"}\right) = \text{"OK"}$$

% of Capacity = $$max\left[\frac{T_{Max}}{T_{all}}, \frac{V_{Max}}{V_{all}}, \left(\frac{\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}}}{1.0}\right)\right] = 17.1 \cdot \%$$

Design Reactions: Wind Z-Direction

Shear X =	$Shear_x := 0 \cdot kips$	(User Input)
Shear Y =	$Shear_y := 0.7 \cdot kips$	(User Input)
Shear Z =	$Shear_z := 0.2 \cdot kips$	(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 = $T_{Max} := \frac{Shear_z}{N} = 50 lb$

Max Shear Force = $V_{Max} := \frac{Shear_y + Shear_x}{N} = 175 lb$

Condition 1 = $Condition1 := if\left(\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}} \le 1.0, \text{"OK"}, \text{"NG"}\right) = \text{"OK"}$

% of Capacity = $max\left[\frac{T_{Max}}{T_{all}}, \frac{V_{Max}}{V_{all}}, \frac{\left(\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}}\right)}{1.0}\right] = 15.9 \cdot \%$

Antenna Mast Connection - Existing Mounts:

Anchor Data:

HAS Threaded Rod w/ Hilti HY20 Adhesive =

Number of Anchor Bolts =	$N := 4$	(User Input)
Diameter of Bolts =	$D := 0.5in$	(User Input)
Embedment of Bolts =	$EM := 3.375in$	(User Input)
Bolt Spacing =	$Sp := 10in$	(User Input)
Alowable Tension =	$T_{all} := 775 \cdot lb$	(User Input)
Alowable Shear =	$V_{all} := 1375 \cdot lb$	(User Input)

Design Reactions: Wind X-Direction

Shear X =	$Shear_x := 0.4 \cdot kips$	(User Input)
Shear Y =	$Shear_y := 0.75 \cdot kips$	(User Input)
Shear Z =	$Shear_z := 0 \cdot kips$	(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 = $T_{Max} := \frac{Shear_z}{N} = 0$

Max Shear Force = $V_{Max} := \frac{Shear_y + Shear_x \cdot}{N} = 287.5 lb$

Condition 1 = $Condition1 := if\left(\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}} \le 1.0, "OK", "NG"\right) = "OK"$

% of Capacity = $max\left[\frac{T_{Max}}{T_{all}}, \frac{V_{Max}}{V_{all}}, \left(\frac{\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}}}{1.0}\right)\right] = 20.9 \cdot \%$

Design Reactions: Wind Z-Direction

Shear X =	$Shear_x := 0 \cdot kips$	(User Input)
Shear Y =	$Shear_y := 0.7 \cdot kips$	(User Input)
Shear Z =	$Shear_z := 0.2 \cdot kips$	(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 = $T_{Max} := \frac{Shear_z}{N} = 50\,lb$

Max Shear Force = $V_{Max} := \frac{Shear_y + Shear_x}{N} = 175\,lb$

Condition 1 = $Condition1 := if\left(\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}} \le 1.0, \text{"OK"}, \text{"NG"}\right) = \text{"OK"}$

% of Capacity = $\max\left[\frac{T_{Max}}{T_{all}}, \frac{V_{Max}}{V_{all}}, \left(\frac{\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}}}{1.0}\right)\right] = 19.2 \cdot \%$

verizon fuze | RFDS

NORTH EAST > North East > New England > New England West > WALLINGFORD CT

Summers, Melissa - melissa.summers@verizonwireless.com - 12/9/2020 10:47:8

Project Details

Carrier Aggregation: false
MPT Id:
eCIP-0: false
Project Name: 5G L-Sub6 - Carrier Add
FUZE Project ID: 16244087
Designed Sector Carrier 4G: 21
Designed Sector Carrier 5G: 52
Additional Sector Carrier 4G: N/A
Additional Sector Carrier 5G: N/A
SiteTraker Project Id:
FP Solution Type & Tech Type: MODIFICATION;5G_L-Sub6-Prep
Suffix: REV1

Location Information

Site ID: 325037
E-NodeB ID: 064081,0064081,0649081,0600007
PSLC: 467337
Switch Name: Wallingford 1
Tower Owner:
Tower Type: Building Side-Mounted
Site Type: MACRO
Street Address: 20 Alexander Drive
City: Wallingford
State: CT
Zip Code: 06492
County: New Haven
Latitude: 41.4791966 / 41° 28' 45.1078" N
Longitude: -72.8009439 / 72° 48' 3.398" W

RFDS Project Scope: RFDS SOW: L-Sub6/ CBRS (Gamma/ Delta) carrier add, C/L change, azimuth change, 4th sector add

REV1 (12/9/20): Adds a 4th Delta sector and removes the proposed tower on building. Gamma sector is also relocated

NOTE: An indoor DAS project should precede this L-SUb6 project. Retain the couplers/ Triplexers on the Beta sector to serve this indoor DAS (see plumbing diagram)

1- Retain 700/ 850A/ AWS/ PCS/ CBRS/ mmW carriers and add CBRS (Gamma/ Delta)/ L-Sub6 carrier
2- Decommission CDMA. Retain coax for future use
3- Remove all existing 4G/ CDMA antennas/ mounts. Add taller mounts to get 3' higher C/L. Retain all existing mmW/ CBRS antennas for relocation to the new mounts
4- Relocate existing Gamma sector to South side of building and add new Delta sector to the West side of the building (see sketch)
5- Add (8) new Commscope JAHH-65B-R3B antennas on new BSAMNT-SBS-2-2 mounts to position 3 or 4 in all sectors. Note the change in azimuth and 3' higher C/L
6- Add (2) new Samsung XXDWMM-12.5-65-8T-CBRS RRH/ antenna to position 1 (below mmW antenna) for Gamma/ Delta (according to the plumbing diagram)
7- Add (1) new mmW VZ-AT1K01 to the new Delta sector
8- Add (4) L-Sub6 All-in-One antenna/ RRHs to position 2
9- Add (4) Commscope CBC78-T-DS-43-2X diplexers at antennas

10- Add (2) OVP-6/ (2) 6x12 Hybriflex LI to allow for one per sector
11- Plumb 700/ 850/ PCS/ AWS/ CBRS/ mmW/ L-Sub6 according to the plumbing diagram
12- Use RF ports on dual band RRHs to communicate with RETs via Smart bias-T built into the antenna
13- Cap and weatherproof unused ports/connectors

Antenna Summary

Added

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
LTE	LTE	LTE	LTE								ANDREW	JAHH-65B-R3B	31	34	0(01) 90(02) 180(03) 270(04)	true	true	PHYSICAL	8
										5G	TBD	nL-Sub6 Antenna	31.9	34	0(0001) 90(0002) 180(0003) 270(0004)	false	false	PHYSICAL	4
					5G						SAMSUNG	VZ-AT1K01 (Rooftop Macro)	33.4	34	270(0006)	false	false	PHYSICAL	1
								LTE			Samsung	XXDWMM-12.5-65-8T-CBRS	31	31.5	180(21) 270(22)	false	false	PHYSICAL	2

Removed

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
LTE	LTE	LTE	LTE								ANDREW	SBNHH-1D45B	28	31	30(01) 100(02) 170(03)	false	false	PHYSICAL	3
	CDMA										ANTEL	LPA-80063/4CF	28	30	150(D2)	false	false	PHYSICAL	2
	CDMA										SWEDCOM	SCE6016REV2	28	31.6	30(D1) 270(D3)	false	false	PHYSICAL	4
											COMMSCOPE	HBXX-6517DS-A2M	28	31	170(03)	false	false	SPARE	2

Retained

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
					5G						SAMSUNG	VZ-AT1K01 (Indoor DAS)	15	15.6	0(0024) 0(0025) 0(0026) 0(0027)	false	false	PHYSICAL	4
					5G						SAMSUNG	VZ-AT1K01 (Indoor Smallcell Midhaul)	10	10.6	0(0005) 270(0004)	false	false	PHYSICAL	2
					5G						SAMSUNG	VZ-AT1K01 (Rooftop Macro)	33.4	34	0(0001) 90(0002) 180(0003)	false	false	PHYSICAL	3
								LTE			SAMSUNG	XXDWMM-12.5-65-8T-CBRS	31	31.5	0(19) 90(20)	false	false	PHYSICAL	2

Added: 15 Removed: 11 Retained: 11

Equipment Summary

Added

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GH	31 GHz	39 GH	CBRS	LAA	L-Sub	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Mount	Tower												Commscope	BSAMNT-SBS-2-2			PHYSICAL	4
Diplexer	Tower	LTE	LTE										Commscope	CBC78T-DS-43-2X			PHYSICAL	4
OVP Box	Tower	LTE	LTE	LTE	LTE		5G			LTE		5G	Raycap	OVP-6 (Gamma/ Delta)			PHYSICAL	2
RRU	Tower						5G						Samsung	AT1K01 DC (Delta)			PHYSICAL	1
RRU	Tower			LTE	LTE								Samsung	B2/B66A RRH-BR049 (RFV01U-D1A) Delta			PHYSICAL	1
RRU	Tower	LTE	LTE										Samsung	B5/B13 RRH-BR04C (RFV01U-D2A) Delta			PHYSICAL	1
RRU	Tower									LTE			Samsung	CBRS RRH - RT4401-48A (Gamma/ Delta)			PHYSICAL	2
RRU	Tower											5G	Samsung	VZS01			PHYSICAL	4
Hybrid Cable	Tower	LTE	LTE	LTE	LTE		5G			LTE		5G		6x12 Hybriflex LI (Gamma/ Delta)		15/8"	PHYSICAL	2

Removed

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GH	31 GHz	39 GH	CBRS	LAA	L-Sub	Make	Model	Cable Length	Cable Size	Install Type	Quantity

No data available.

Retained

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GH	31 GHz	39 GH	CBRS	LAA	L-Sub	Make	Model	Cable Length	Cable Size	Install Type	Quantity
OVP Box	Tower	LTE	LTE	LTE	LTE		5G			LTE		5G	Raycap	OVP-6 (Alpha/ Beta)			PHYSICAL	2
RRU	Tower						5G						Samsung	AT1K01 DC			PHYSICAL	3
RRU	Tower			LTE	LTE								Samsung	B2/B66A RRH-BR049 (RFV01U-D1A)			PHYSICAL	3
RRU	Tower	LTE	LTE										Samsung	B5/B13 RRH-BR04C (RFV01U-D2A)			PHYSICAL	3
RRU	Tower									LTE			Samsung	CBRS RRH - RT4401-48A			PHYSICAL	2
Splitter	Tower	LTE	LTE	LTE	LTE								Unknown	Coupler (Beta DAS)			PHYSICAL	3
Triplexer	Tower	LTE	LTE	LTE	LTE								Unknown	LB/ HB/ HB Triplexer (Beta DAS)			PHYSICAL	1
Hybrid Cable	Tower	LTE	LTE	LTE	LTE		5G			LTE		5G		6x12 Hybriflex (Alpha/ Beta)		15/8"	PHYSICAL	2
Coaxial Cables	Tower													AVA7-50		15/8"	SPARE	5
Coaxial Cables	Tower	LTE	LTE	LTE	LTE									AVA7-50 (Beta DAS)		15/8"	PHYSICAL	1

Service Info

28 GHz	0000			5GLS		
Sector	0001	0002	0003	0001	0002	0003
Azimuth	0	120	240	0	90	180
Cell / ENode B ID	0600007	0600007	0600007	0600007	0600007	0600007
Antenna Model	VZ-AT1K01	VZ-AT1K01	VZ-AT1K01	VZ-AT1K01	VZ-AT1K01	VZ-AT1K01
Antenna Make	SAMSUNG	SAMSUNG	SAMSUNG	SAMSUNG	SAMSUNG	SAMSUNG
Antenna Centerline(Ft)	28	28	28	33.4	33.4	33.4
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	0	0	0	0	0	0
Tip Height	28.6	28.6	28.6	34	34	34
Regulatory Power	2.67	2.67	2.67	2.81	2.81	2.81
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	AT1K01 DC	AT1K01 DC	AT1K01 DC	AT1K01 DC	AT1K01 DC	AT1K01 DC
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4	4,4	4,4
Position						
Transmitter Id	6060796	6060802	6060808	7938679	7938683	7938659
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API
	0004	0005		0004	0005	0006
	0	0		270	0	270
	0600007	0600007		0600007	0600007	0600007
	VZ-AT1K01	VZ-AT1K01		VZ-AT1K01	VZ-AT1K01	VZ-AT1K01
	SAMSUNG	SAMSUNG		SAMSUNG	SAMSUNG	SAMSUNG
	10	10		10	10	33.4
	0	0		0	0	0
	0	0		0	0	0
	10.6	10.6		10.6	10.6	34
	2.67	2.67		2.81	2.81	2.67
	Samsung	Samsung		Samsung	Samsung	Samsung
	AT1K01 AC	AT1K01 AC		AT1K01 AC	AT1K01 AC	AT1K01 DC
	4,4	4,4		4,4	4,4	4,4
	6060814	6060820		7938664	7938648	9478798
	ATOLL_API	ATOLL_API		ATOLL_API	ATOLL_API	ATOLL_API
				0024	0025	0026
				0	0	0
				0600007	0600007	0600007
				VZ-AT1K01	VZ-AT1K01	VZ-AT1K01
				SAMSUNG	SAMSUNG	SAMSUNG
				33.4	15	15
				0	0	0
				0	0	0
				34	15.6	15.6
				0.35	0.35	0.35
				Samsung	Samsung	Samsung
				Unknown	Unknown	Unknown
				2,2	2,2	2,2
				9447706	9447707	9447708
				ATOLL_API	ATOLL_API	ATOLL_API
				0027		
				0		
				0600007		
				VZ-AT1K01		
				SAMSUNG		
				15		
				0		
				0		
				15.6		
				0.35		

Samsung Unknown 2.2
9447709 ATOLL_API

1900 MHZ LTE

	0000			5GLS			
Sector	01	02	03	01	02	03	04
Azimuth	30	100	170	0	90	180	270
Cell / ENode B ID	064081	064081	064081	064081	064081	064081	064081
Antenna Model	SBNHH-1D45B	SBNHH-1D45B	SBNHH-1D45B	JAHH-65B-R3B	JAHH-65B-R3B	JAHH-65B-R3B	JAHH-65B-R3B
Antenna Make	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW
Antenna Centerline(Ft)	28	28	28	31	31	31	31
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0	0
Electrical Down-Tilt	2	0	0	0	0	0	0
Tip Height	31	31	31	34	34	34	34
Regulatory Power	408.09	403.42	403.42	256.36	256.36	256.36	256.36
TMA Make							
TMA Model							
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	2,2	2,2	2,2	4,4	4,4	4,4	4,4
Position							
Transmitter Id	6060835	6060836	6060837	9384207	9384208	9384209	9474786
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

2100 MHZ LTE

	0000			5GLS			
Sector	**01**	**02**	**03**	**01**	**02**	**03**	**04**
Azimuth	30	100	170	0	90	180	270
Cell / ENode B ID	064081	064081	064081	064081	064081	064081	064081
Antenna Model	SBNHH-1D45B	SBNHH-1D45B	SBNHH-1D45B	JAHH-65B-R3B	JAHH-65B-R3B	JAHH-65B-R3B	JAHH-65B-R3B
Antenna Make	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW
Antenna Centerline(Ft)	28	28	28	31	31	31	31
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0	0
Electrical Down-Tilt	2	0	0	0	0	0	0
Tip Height	31	31	31	34	34	34	34
Regulatory Power	229.47	219.14	219.14	128.92	128.92	128.92	128.92
TMA Make							
TMA Model							
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	2,2	2,2	2,2	4,4	4,4	4,4	4,4
Position							
Transmitter Id	6060827	6060830	6060833	7938641	7938643	7938645	9474865
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

850 MHZ LTE

	0000			5GLS			
Sector	01	02	03	01	02	03	04
Azimuth	30	100	170	0	90	180	270
Cell / ENode B ID	064081	064081	064081	064081	064081	064081	064081
Antenna Model	SBNHH-1D45B	SBNHH-1D45B	SBNHH-1D45B	JAHH-65B-R3B	JAHH-65B-R3B	JAHH-65B-R3B	JAHH-65B-R3B
Antenna Make	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW
Antenna Centerline(Ft)	28	28	28	31	31	31	31
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0	0
Electrical Down-Tilt	4	2	3	2	2	2	6
Tip Height	31	31	31	34	34	34	34
Regulatory Power	238.12	197.6	219.68	161.21	161.21	161.21	156.27
TMA Make							
TMA Model							
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)
Number of Tx, Rx Lines	2,2	2,2	2,2	2,2	2,2	2,2	2,2
Position							
Transmitter Id	6060828	6060831	6060834	7938654	7938655	7938656	9474866
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

700 MHZ LTE

	0000			5GLS		
Sector	**01**	**02**	**03**	**01**	**02**	**03**
Azimuth	30	100	170	0	90	180
Cell / ENode B ID	064081	064081	064081	064081	064081	064081
Antenna Model	SBNHH-1D45B	SBNHH-1D45B	SBNHH-1D45B	JAHH-65B-R3B	JAHH-65B-R3B	JAHH-65B-R3B
Antenna Make	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW	ANDREW
Antenna Centerline(Ft)	28	28	28	31	31	31
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	4	2	3	2	2	2
Tip Height	31	31	31	34	34	34
Regulatory Power	150.23	128.69	140.85	69.75	69.75	69.75
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)
Number of Tx, Rx Lines	2,2	2,2	2,2	4,4	4,4	4,4
Position						
Transmitter Id	6060826	6060829	6060832	7938640	7938642	7938644
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

	5GLS
Sector	**04**
Azimuth	270
Cell / ENode B ID	064081
Antenna Model	JAHH-65B-R3B
Antenna Make	ANDREW
Antenna Centerline(Ft)	31
Mechanical Down-Tilt(Deg.)	0
Electrical Down-Tilt	6
Tip Height	34
Regulatory Power	68.99
TMA Make	
TMA Model	
RRU Make	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)
Number of Tx, Rx Lines	4,4
Position	
Transmitter Id	9474785
Source	ATOLL_API

3_5 GHz

	0000		5GLS			
Sector	**19**	**20**	**19**	**20**	**21**	**22**
Azimuth	30	100	0	90	180	270
Cell / ENode B ID	064081	064081	0064081	0064081	0064081	0064081
Antenna Model	XXDWMM-12.5-65-8T-C	XXDWMM-12.5-65-8T-C	XXDWMM-12.5-65-8T-C	XXDWMM-12.5-65-8T-C	XXDWMM-12.5-65-8T-C	XXDWMM-12.5-65-8T-C
	BRS_Port1_3550_8DT	BRS_Port1_3550_8DT	BRS_Port1_3550_8DT	BRS_Port1_3550_8DT	BRS_Port1_3550_8DT	BRS_Port1_3550_8DT
Antenna Make	SAMSUNG	SAMSUNG	SAMSUNG	SAMSUNG	SAMSUNG	SAMSUNG
Antenna Centerline(Ft)	28	28	31	31	31	31
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	8	8	8	8	8	8
Tip Height	28.5	28.5	31.5	31.5	31.5	31.5
Regulatory Power	5.09	5.09	5.09	5.09	5.09	40.52
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4	4,4	4,4
Position						
Transmitter Id	6060794	6060795	7938646	7938647	9384210	9475135
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

850 MHZ CDMA

		0000	
Sector	D1	D2	D3
Azimuth	30	150	270
Cell / ENode B ID			
Antenna Model	SCE6016REV2 (201108)	LPA-80063/4CF (171501)	SCE6016REV2 (201108)
Antenna Make	SWEDCOM	ANTEL	SWEDCOM
Antenna Centerline(Ft)	28	28	28
Mechanical Down-Tilt(Deg.)	4	4	4
Electrical Down-Tilt	0	0	0
Tip Height	31.6	30	31.6
Regulatory Power	396.28	369.83	396.28
TMA Make			
TMA Model			
RRU Make			
RRU Model			
Number of Tx, Rx Lines			
Position			
Transmitter Id			
Source	ATOLL_API	ATOLL_API	ATOLL_API

nL-Sub6

		5GLS		
Sector	0001	0002	0003	0004
Azimuth	0	90	180	270
Cell / ENode B ID	0649081	0649081	0649081	0649081
Antenna Model	nL-Sub6 Antenna	nL-Sub6 Antenna	nL-Sub6 Antenna	nL-Sub6 Antenna
Antenna Make	TBD	TBD	TBD	TBD
Antenna Centerline(Ft)	31.9	31.9	31.9	31.9
Mechanical Down-Tilt(Deg.)	0	0	0	0
Electrical Down-Tilt	3	3	3	3
Tip Height	34	34	34	34
Regulatory Power	2711.04	2711.04	2711.04	2711.04
TMA Make				
TMA Model				
RRU Make	Samsung	Samsung	Samsung	Samsung
RRU Model	VZS01	VZS01	VZS01	VZS01
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4
Position				
Transmitter Id	7938692	7938693	7938694	9475027
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

Service Comments

Callsigns Per Antenna

Sector	Antenna Ma	Antenna Mc	Ant CL Height AGL	Tip Height	Azimuth (TI	Electrical Tilt	Mechanical Tilt	Gain	Beamwidth	Regulatory Power	Callsigns						
											700	850	1900	2100	28 GHz	31 GHz	39 GHz

No data available.

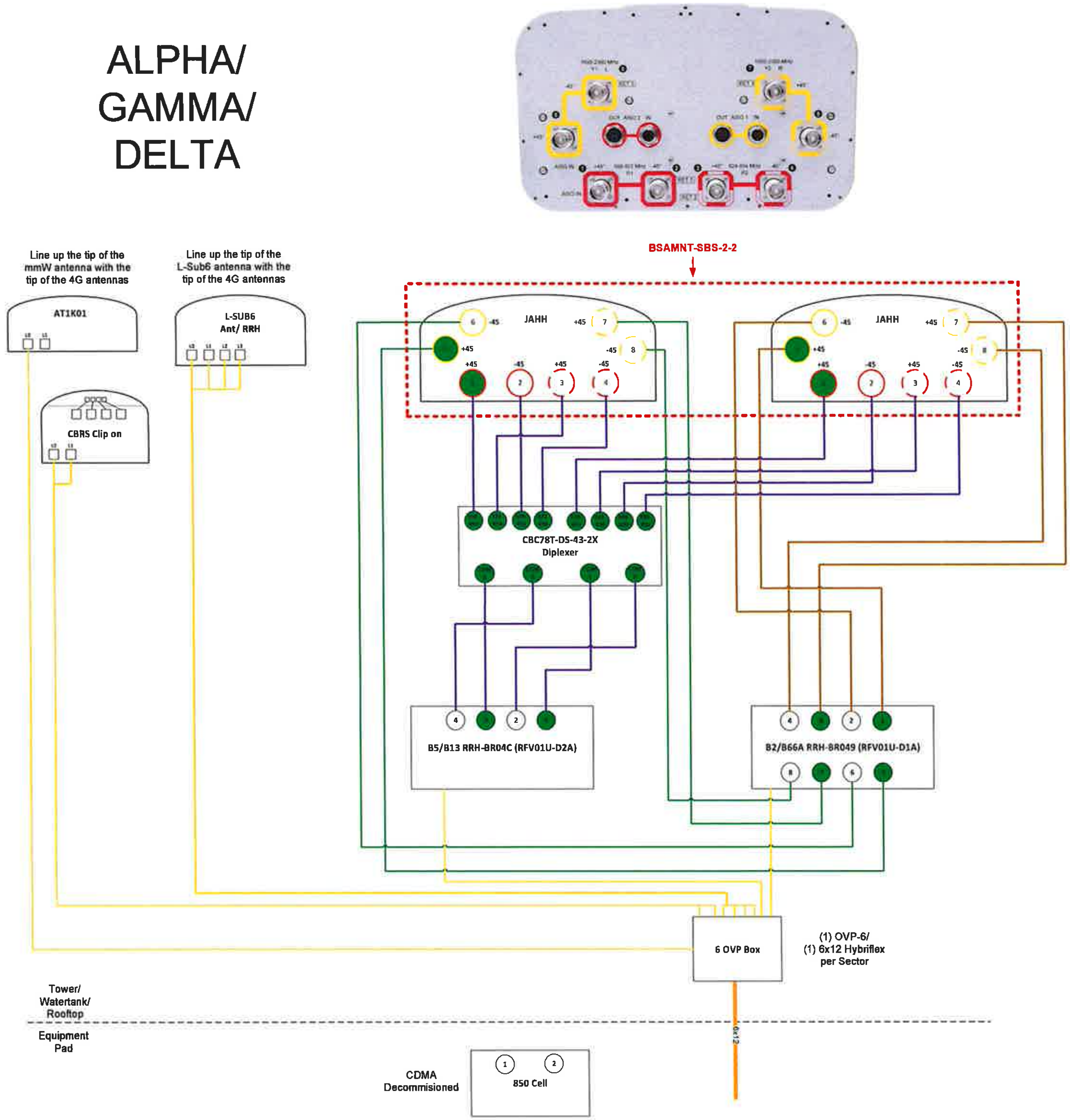
Callsigns

Callsign	Market	Radio Code	Market Number	Block	State	County	Licensee Name	Wholly Owned	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq Mi	Status	Action	Approved for Insvc
WQJQ689	Northeast	WU	REA001	C	CT	New Haven	Cellco Partnership	Yes	22.000	746.000-757.000	776.000-787.000	.000-.000	.000-.000	69.75	1000	1426.75	Active	added	Yes
KNKA313	New Haven-West H aven-Waterbury - Meriden, CT	CL	CMA049	A	CT	New Haven	Cellco Partnership	Yes	25.000	824.000-835.000	869.000-880.000	845.000-846.500	890.000-891.500	161.21	400	1426.75	Active	added	Yes
WQEM953	New Haven-Water - Meriden, CT	CW	BTA318	C	CT	New Haven	Cellco Partnership	Yes	10.000	1895.000-1900.000	1975.000 1980.000	.000-.000	.000-.000	256.36	1640	1426.75	Active	added	Yes
KNLH262	New Haven-Water - Meriden, CT	CW	BTA318	F	CT	New Haven	Cellco Partnership	Yes	10.000	1890.000-1895.000	1970.000 1975.000	.000-.000	.000-.000	256.36	1640	1426.75	Active	added	Yes
CBRS_CALL	UNLICENSE	3.5 GHz	UNLICENSE	UNLICENSE	CT	New Haven	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSED-UNLICE	UNLICENSED-UNLICE	UNLICENSED-UNLICE	UNLICENSED-UNLICE	40.52		1426.75	Active	added	No
WRBA734	New Haven-Water - Meriden, CT	UU	BTA318	L1	CT	New Haven	Cellco Partnership	Yes	325.000	27600.000-27925.00	.000-.000	.000-.000	.000-.000	2.81		1426.75	Active	added	Yes
WRBA735	New Haven-Water - Meriden, CT	UU	BTA318	L2	CT	New Haven	Cellco Partnership	Yes	325.000	27925.000-27950.00	28050.000-28350.00	.000-.000	.000-.000	2.81		1426.75	Active	added	Yes
WQGB280	New Haven-West H aven-Waterbury - Meriden, CT	AW	CMA049	A	CT	New Haven	Cellco Partnership	Yes	20.000	1710.000 1720.000	2110.000 2120.000	.000-.000	.000-.000	128.92	1640	1426.75	Active	added	Yes
WQGA906	New York-No. New Jer.-Long Island, NY-NJ-CT-PA-MA-	AW	BEA010	B	CT	New Haven	Cellco Partnership	Yes	20.000	1720.000 1730.000	2120.000 2130.000	.000-.000	.000-.000	128.92	1640	1426.75	Active	added	Yes

WQCS396	New Haven-Water Meriden, CT	CW	BTA318	C	CT	New Haven	Cellco Partnership	Yes	10.000	1905.000-1910.000	1985.000-1990.000	.000-.000	.000-.000	1640	1426.75	Active	Yes
WPOH945	New Haven-Water Meriden, CT	LD	BTA318	A	CT	New Haven	Cellco Partnership	Yes	300.000	29100.000-29250.00	31075.000-31225.000	.000-.000	.000-.000		1426.75	Active	No
WPLM399	New Haven-Water Meriden, CT	LD	BTA318	B	CT	New Haven	Cellco Partnership	Yes	150.000	31000.000-31075.00	31225.000-31300.000	.000-.000	.000-.000		1426.75	Active	No
WRHD609	New York, NY	UU	PEA001	M1	CT	New Haven	Straight Path um, LLC	Yes	100.000	37600.000-37700.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD610	New York, NY	UU	PEA001	M10	CT	New Haven	Straight Path um, LLC	Yes	100.000	38500.000-38600.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD611	New York, NY	UU	PEA001	M2	CT	New Haven	Straight Path um, LLC	Yes	100.000	37700.000-37800.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD612	New York, NY	UU	PEA001	M3	CT	New Haven	Straight Path um, LLC	Yes	100.000	37800.000-37900.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD613	New York, NY	UU	PEA001	M4	CT	New Haven	Straight Path um, LLC	Yes	100.000	37900.000-38000.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD614	New York, NY	UU	PEA001	M5	CT	New Haven	Straight Path um, LLC	Yes	100.000	38000.000-38100.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD615	New York, NY	UU	PEA001	M6	CT	New Haven	Straight Path um, LLC	Yes	100.000	38100.000-38200.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD616	New York, NY	UU	PEA001	M7	CT	New Haven	Straight Path um, LLC	Yes	100.000	38200.000-38300.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD617	New York, NY	UU	PEA001	M8	CT	New Haven	Straight Path um, LLC	Yes	100.000	38300.000-38400.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes

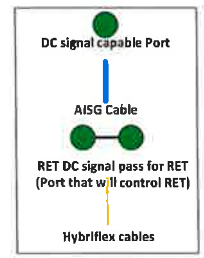
WRHD618	New York, NY	UU	PEA001	M9	CT	New Haven	Straight Path um, LLC	Yes	100.000	38400.000-38600.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes
WRHD619	New York, NY	UU	PEA001	N1	CT	New Haven	Straight Path um, LLC	Yes	100.000	38600.000-38700.00	.000-.000	.000-.000	.000-.000		1426.75	Active	No
WRDG500	New York, NY	UU	PEA001	S2	CT	New Haven	Cellco Partnership	Yes	400.000	37600.000-38200.00	.000-.000	.000-.000	.000-.000		1426.75	Active	Yes

ALPHA/ GAMMA/ DELTA



- Port 1 & 2 are for low band (698-896 MHz).
- Port 3,4,5, & 6 are for high band (1695-2360 MHz).
- Smart Bias Tee (SBT) is through port 1 & 3 for low band and port 1 for high band.
- 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.
- Not all SBT ports are needed to control RET, only green port connection to green port will control RET.

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



Comments:

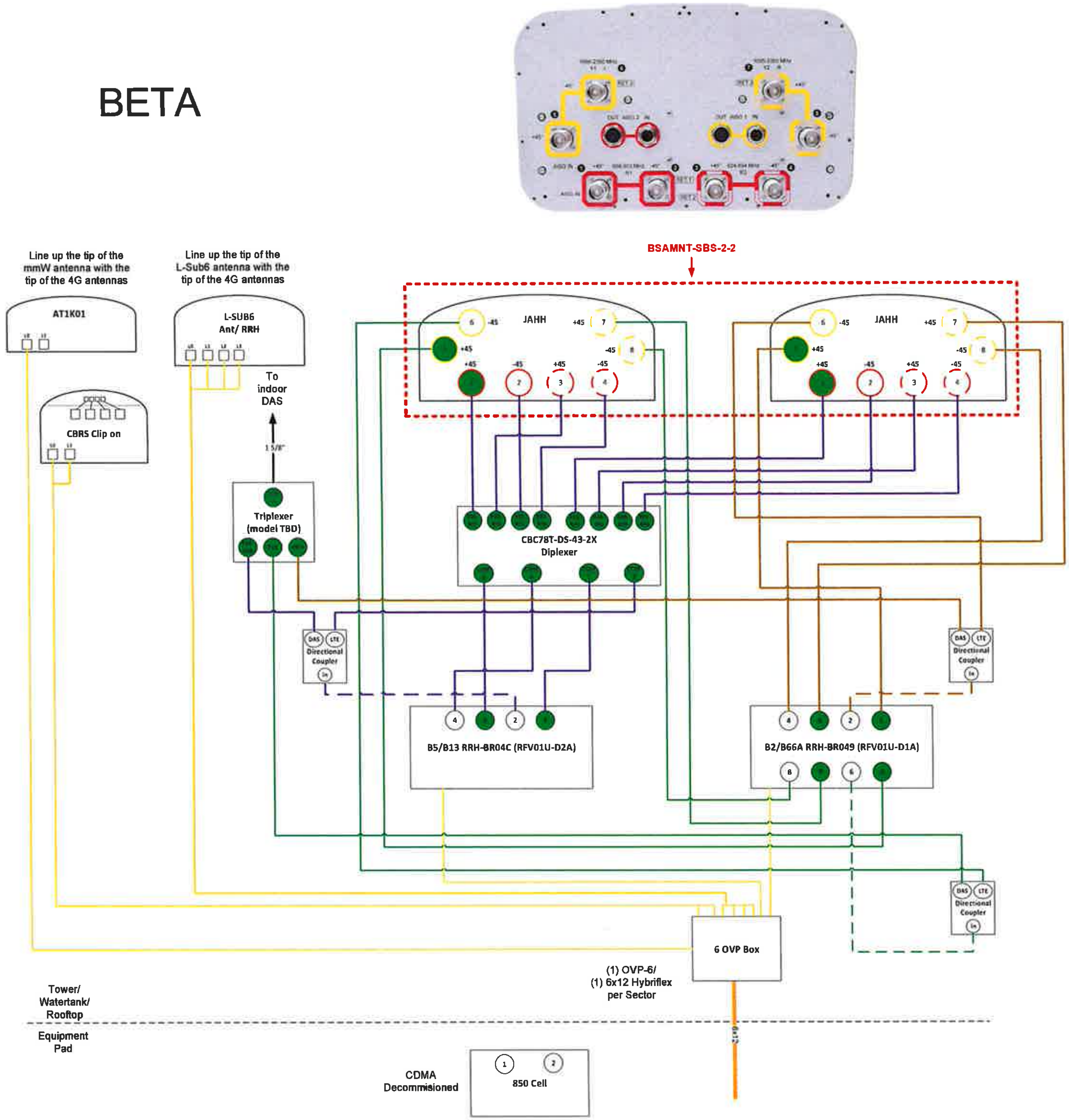
Diagram shows antenna port configuration as viewed from below antennas.

Antenna positions are indicated as viewed from IN FRONT of antennas.

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)

BETA



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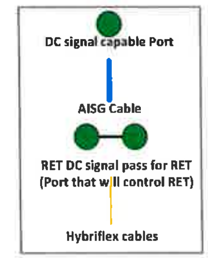
RET DC signal pass for RET (Port that will control RET)



Comments:

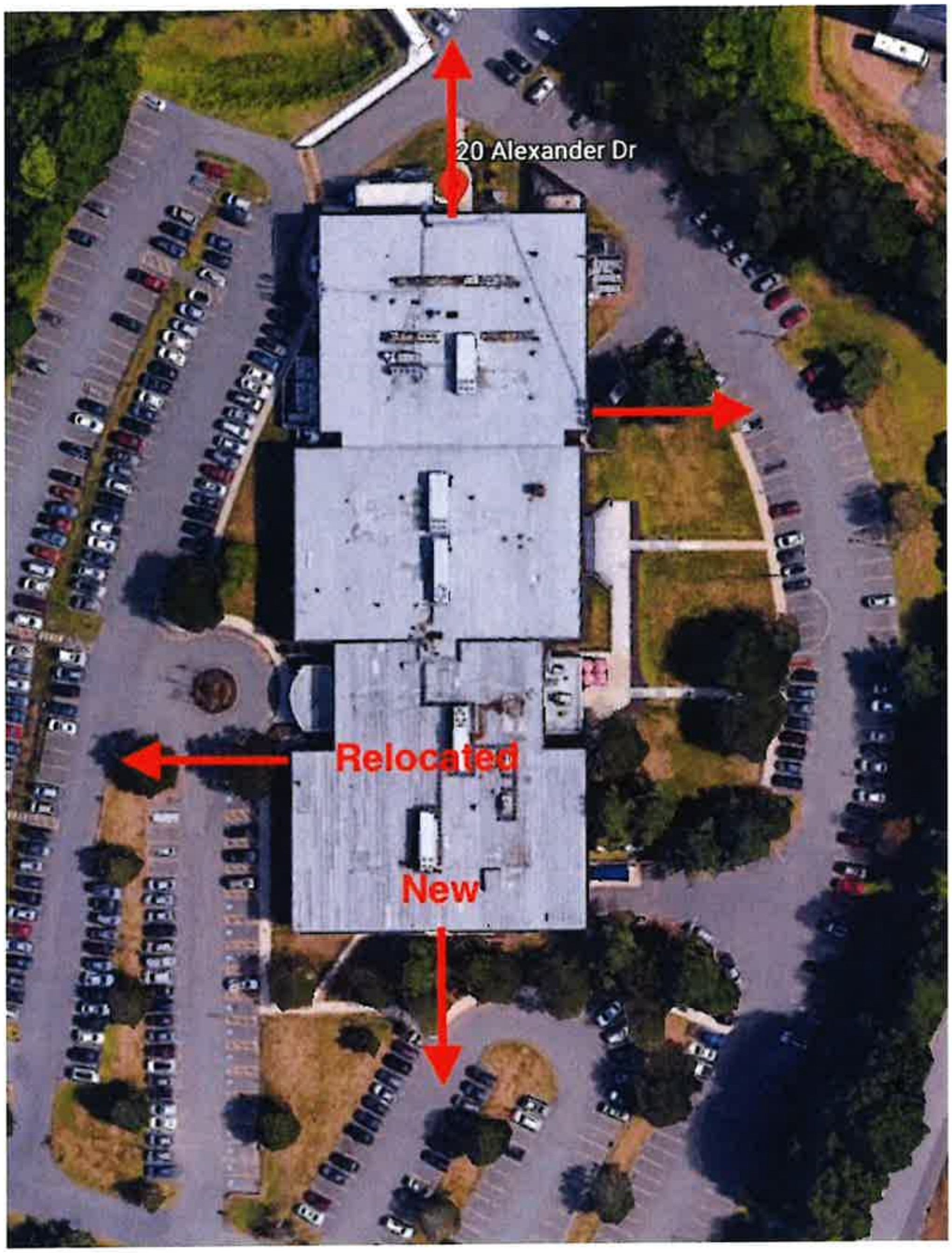
Diagram shows antenna port configuration as viewed from below antennas.

Antenna positions are indicated as viewed from IN FRONT of antennas.

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)

Sector	Antenna Desc	Base Station ID	Sector ID
Alpha	700	064081_1_1	064081_1
Alpha	850	064081_1_6	064081_1_6
Alpha	AWS	064081_1_2	064081_1_2
Alpha	PCS	064081_1_4	064081_1_4
Beta	700	064081_2_1	064081_2
Beta	850	064081_2_6	064081_2_6
Beta	AWS	064081_2_2	064081_2_2
Beta	PCS	064081_2_4	064081_2_4
Gamma	700	064081_3_1	064081_3
Gamma	850	064081_3_6	064081_3_6
Gamma	AWS	064081_3_2	064081_3_2
Gamma	PCS	064081_3_4	064081_3_4
Delta	700	064081_4_1	064081_4
Delta	850	064081_4_6	064081_4_6
Delta	AWS	064081_4_2	064081_4_2
Delta	PCS	064081_4_4	064081_4_4


20 Alexander Dr
Relocated
New

Band	Sector 1 (Alpha) Color Codes							
850 CDMA		R						
		R	R					
700		R	P					
		R	R	P				
		R	R	R	P			
		R	R	R	R	P		
850 LTE		R	P	P				
		R	R	P	P			
		R	R	R	P	P		
		R	R	R	R	P	P	
700 / 850		R	P	P	P			
		R	R	P	P	P		
		R	R	R	P	P	P	
		R	R	R	R	P	P	P
AWS		R	W					
		R	R	W				
		R	R	R	W			
		R	R	R	R	W		
PCS		R	W	W				
		R	R	W	W			
		R	R	R	W	W		
		R	R	R	R	W	W	
AWS / PCS		R	W	W	W			
		R	R	W	W	W		
		R	R	R	W	W	W	
		R	R	R	R	W	W	W
CBRS		R	Y					
		R	R	Y				
		R	R	R	Y			
		R	R	R	R	Y		
LAA		R	Y	Y				
		R	R	Y	Y			

Band	Sector 2 (Beta) Color Codes							
850 CDMA		B						
		B	B					
700		B	P					
		B	B	P				
		B	B	B	P			
		B	B	B	B	P		
850 LTE		B	P	P				
		B	B	P	P			
		B	B	B	P	P		
		B	B	B	B	P	P	
700 / 850		B	P	P	P			
		B	B	P	P	P		
		B	B	B	P	P	P	
		B	B	B	B	P	P	P
AWS		B	W					
		B	B	W				
		B	B	B	W			
		B	B	B	B	W		
PCS		B	W	W				
		B	B	W	W			
		B	B	B	W	W		
		B	B	B	B	W	W	
AWS / PCS		B	W	W	W			
		B	B	W	W	W		
		B	B	B	W	W	W	
		B	B	B	B	W	W	W
CBRS		B	Y					
		B	B	Y				
		B	B	B	Y			
		B	B	B	B	Y		
LAA		B	Y	Y				
		B	B	Y	Y			

Band	Sector 3 (Gamma) Color Codes							
850 CDMA		G						
		G	G					
700		G	P					
		G	G	P				
		G	G	G	P			
		G	G	G	G	P		
850 LTE		G	P	P				
		G	G	P	P			
		G	G	G	P	P		
		G	G	G	G	P	P	
700 / 850		G	P	P	P			
		G	G	P	P	P		
		G	G	G	P	P	P	
		G	G	G	G	P	P	P
AWS		G	W					
		G	G	W				
		G	G	G	W			
		G	G	G	G	W		
PCS		G	W	W				
		G	G	W	W			
		G	G	G	W	W		
		G	G	G	G	W	W	
AWS / PCS		G	W	W	W			
		G	G	W	W	W		
		G	G	G	W	W	W	
		G	G	G	G	W	W	W
CBRS		G	Y					
		G	G	Y				
		G	G	G	Y			
		G	G	G	G	Y		
LAA		G	Y	Y				
		G	G	Y	Y			

Band	Sector 4 (Delta) Color Codes							
850 CDMA	Gray	R						
	Gray	R	R					
700	Gray	R	P					
	Gray	R	R	P				
	Gray	R	R	R	P			
	Gray	R	R	R	R	P		
850 LTE	Gray	R	P	P				
	Gray	R	R	P	P			
	Gray	R	R	R	P	P		
	Gray	R	R	R	R	P	P	
700 / 850	Gray	R	P	P	P			
	Gray	R	R	P	P	P		
	Gray	R	R	R	P	P	P	
	Gray	R	R	R	R	P	P	P
AWS	Gray	R	W					
	Gray	R	R	W				
	Gray	R	R	R	W			
	Gray	R	R	R	R	W		
PCS	Gray	R	W	W				
	Gray	R	R	W	W			
	Gray	R	R	R	W	W		
	Gray	R	R	R	R	W	W	
AWS / PCS	Gray	R	W	W	W			
	Gray	R	R	W	W	W		
	Gray	R	R	R	W	W	W	
	Gray	R	R	R	R	W	W	W
CBRS	Gray	R	Y					
	Gray	R	R	Y				
	Gray	R	R	R	Y			
	Gray	R	R	R	R	Y		
LAA	Gray	R	Y	Y				
	Gray	R	R	Y	Y			

Band	Sector 5 (Epsilon) Color Codes							
850 CDMA	Gray	B						
	Gray	B	B					
700	Gray	B	P					
	Gray	B	B	P				
	Gray	B	B	B	P			
	Gray	B	B	B	B	P		
850 LTE	Gray	B	P	P				
	Gray	B	B	P	P			
	Gray	B	B	B	P	P		
	Gray	B	B	B	B	P	P	
700 / 850	Gray	B	P	P	P			
	Gray	B	B	P	P	P		
	Gray	B	B	B	P	P	P	
	Gray	B	B	B	B	P	P	P
AWS	Gray	B	W					
	Gray	B	B	W				
	Gray	B	B	B	W			
	Gray	B	B	B	B	W		
PCS	Gray	B	W	W				
	Gray	B	B	W	W			
	Gray	B	B	B	W	W		
	Gray	B	B	B	B	W	W	
AWS / PCS	Gray	B	W	W	W			
	Gray	B	B	W	W	W		
	Gray	B	B	B	W	W	W	
	Gray	B	B	B	B	W	W	W
CBRS	Gray	B	Y					
	Gray	B	B	Y				
	Gray	B	B	B	Y			
	Gray	B	B	B	B	Y		
LAA	Gray	B	Y	Y				
	Gray	B	B	Y	Y			

Band	Sector 6 (Zeta) Color Codes							
850 CDMA	Gray	G						
	Gray	G	G					
700	Gray	G	P					
	Gray	G	G	P				
	Gray	G	G	G	P			
	Gray	G	G	G	G	P		
850 LTE	Gray	G	P	P				
	Gray	G	G	P	P			
	Gray	G	G	G	P	P		
	Gray	G	G	G	G	P	P	
700 / 850	Gray	G	P	P	P			
	Gray	G	G	P	P	P		
	Gray	G	G	G	P	P	P	
	Gray	G	G	G	G	P	P	P
AWS	Gray	G	W					
	Gray	G	G	W				
	Gray	G	G	G	W			
	Gray	G	G	G	G	W		
PCS	Gray	G	W	W				
	Gray	G	G	W	W			
	Gray	G	G	G	W	W		
	Gray	G	G	G	G	W	W	
AWS / PCS	Gray	G	W	W	W			
	Gray	G	G	W	W	W		
	Gray	G	G	G	W	W	W	
	Gray	G	G	G	G	W	W	W
CBRS	Gray	G	Y					
	Gray	G	G	Y				
	Gray	G	G	G	Y			
	Gray	G	G	G	G	Y		
LAA	Gray	G	Y	Y				
	Gray	G	G	Y	Y			

CENTEK engineering

Centered on Solutions℠

April 14, 2021

Mr. Andrew Leone
Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Re: Letter ~ Antenna Model Clarification
Site Ref: Wallingford
20 Alexander Drive
Wallingford, CT 06492

Centek Project No. 20150.14

Dear Mr. Leone,

This letter is intended to clarify the equipment depicted in the structural analysis and CDs for the proposed Verizon Wireless equipment upgrade at the above referenced site. One of the proposed antennas is referenced by multiple interchangeable names "Licensed Sub-6", "L-Sub6", "VZS01" and "MT6407-77A" per RF information provided by Verizon.

For the purpose of the analysis a worst case design loading was used based on the following dimensions and weight per direction from Verizon.

Dimensions: 35.1" x 16.1" x 5.5"

Weight: ± 87 lbs

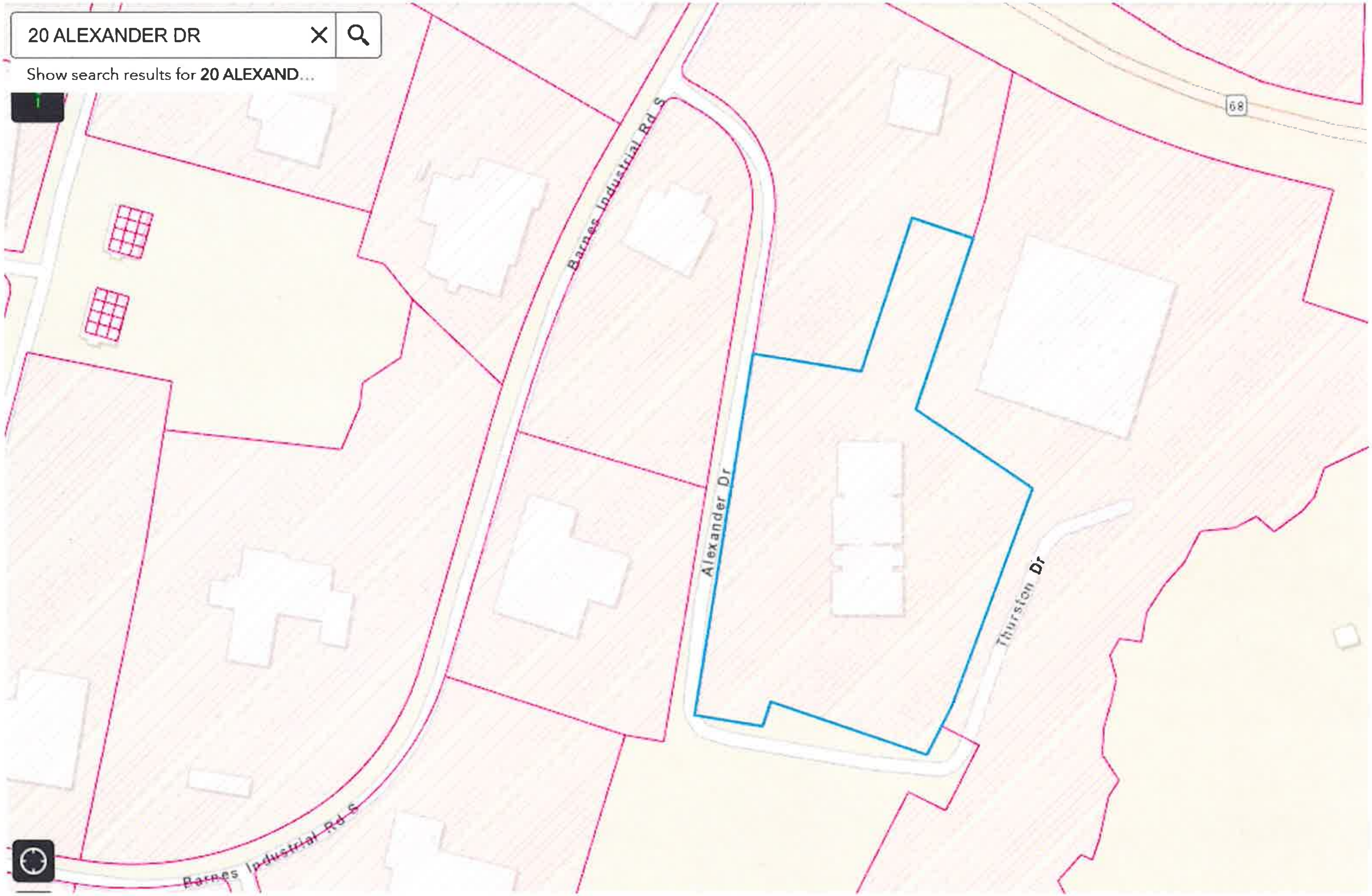
If the dimensions of weight of the final antenna exceed the above the analysis will need to be re-run.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

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

ATTACHMENT 5


20 ALEXANDER DR
Show search results for 20 ALEXAND...
Barnes Industrial Rd S
Alexander Dr
Thurston Dr
68
Barnes Industrial Rd S

Owner of Record

Owner	CELLCO PARTNERSHIP	**Sale Price**	$0
Co-Owner	C/O VINCENT GOLDEN	**Certificate**	
Address	20 ALEXANDER DR WALLINGFORD, CT 06492	**Book & Page**	0891/0358
		Sale Date	05/05/1998

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
CELLCO PARTNERSHIP	$0		0891/0358	05/05/1998
METRO MOBILE CTS OF HARTFORD INC	$0		0678/0435	02/01/1990

Building Information

Building 1 : Section 1

Year Built: 1974
Living Area: 107,845
Replacement Cost: $10,414,643
Building Percent Good: 31
Replacement Cost Less Depreciation: $3,228,500

Building Attributes	
Field	**Description**
Style:	Office
Model	Commercial
Grade	B-
Stories:	2
Occupancy	1.00
Exterior Wall 1	Brick Veneer
Exterior Wall 2	

Building Photo

Building Layout

ATTACHMENT 6

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		2	neopost 05/11/2021 US POSTAGE $002.89º ZIP 06103 041L12203937
	Postmaster, per (*name of receiving employee*)		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	William W. Dickinson, Jr., Mayor Town of Wallingford 45 South Main Street Wallingford, CT 06492				
2.	Tom Talbot, Interim Town Planner Town of Wallingford 45 South Main Street Wallingford, CT 06492				
3.					
4.					
5.					
6.					

OLD STATE HOUSE STATION 06103 MAY 11 2021 USPS