Transcend Wireless

10 Industrial Avenue,
Suite 3
Mahwah, NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

October 7, 2020

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Notice of Exempt Modification
27 Siemon Company Drive Watertown CT
Lattitude 41.60333333
Longitude -73.11166667
T-Mobile site: CTNH354A / Anchor

Ms. Bachman:

T-Mobile currently maintains (6) antennas at the 125 foot level of the existing 140 -foot smokestack at 27 Siemon Company Drive in Watertown CT. The smokestack and property are owned by Siemon Realty Co. T-Mobile now intends to replace (3) 1900 MHz / 2100 MHz antennas and (3) 600 MHz / 700 MHz antennas, and add (3) 2500 MHz antennas at the 125 foot level of the tower as per the attached mount analysis.

Planned Modifications:

Remove
(18) 1-5/8" coax
(6) Twin Style TMA 1A
(3) Ericsson RRUS-11+B12 RRU's

Remove/Replace:
Antennas:
(3) RFS APX16DWV-16DWVS (remove) - (3) RFS APXVAALL24-43-U- 20 (replace) 600 MHz / 700 MHz
(3) Andrew LNX-6515DS (remove) - (3) Ericsson Air 32 KRD901145-1_B66_B2A (replace) 1900 MHz
RRUs:
(3) Ericsson RRUS-11 (remove) - (3) Ericsson 4449 B71 +B85 RRU (replace)

Install New:
(3) Ericsson Air 6449 Antenna / 2500 MHz
(3) Ericsson 4415 B25 RRUs
(3) 6x12 hybrid

Ground:
Remove: (1) RBS3106 Cabinet, Install (1) B160 Battery cabinet and install (1) 6160 Equipment cabinet

This facility was approved by the Town of Watertown Planning and Zoning Commission on September 7, 2011. A copy of that approval could not be found in the Watertown Planning and Zoning office as per the attached correspondence. Subsequent Exempt Modifications have been approved on this tower an there are no known conditions that would restrict exempt modifications

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 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 Thomas L. Wynn, Town Council Chair, the local Land Use Department, as well as the tower and property owner.

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 structure.

2. The proposed modifications will not require the extension of the site boundary.

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

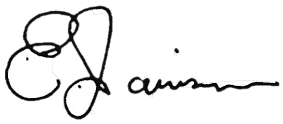
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,



Elizabeth Jamieson
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
860-605-7808
EJamieson@TranscendWireless.com

cc:
The Honorable Thomas L Winn, Chairman Town Council
Mark Massoud, Planning & Zoning Staff
Siemon Realty Co., Land and Structurer Owner

Exhibit A

Original Facility Approval

EJamieson@TranscendWireless.com

From: Roseann D'Amelio <DAmelio@watertownct.org>
Sent: Wednesday, October 7, 2020 9:48 AM
To: ejamieson@transcendwireless.com
Subject: RE: 27 Siemon Drive smokestack / T-Mobile CTNH354A

Good morning:

I have been researching for the approved permit but have been unable to locate it. If I happen to across it I will let you know.

Roseann

From: ejamieson@transcendwireless.com [mailto:ejamieson@transcendwireless.com]
Sent: Tuesday, October 06, 2020 6:37 PM
To: Mark Massoud <Massoud@watertownct.org>; Roseann D'Amelio <DAmelio@watertownct.org>
Subject: 27 Siemon Drive smokestack / T-Mobile CTNH354A

Hello
I was hoping someone could help me find a copy of the original approval for antennas a this smokestack? The CT Siting Council now requires copies of original approvals accompany filings. There was some correspondence that it was approved September 7, 2011 by the P&Z Commission. Is that something you can share with me so I can provide a copy to the Council?

I very much appreciate your help with this.

Elizabeth Jamieson
Real Estate Specialist
Transcend Wireless
10 Industrial Ave, Ste 3
Mahwah, NJ 07430
(M) 860-605-7808
EJamieson@TranscendWireless.com

Transcend Wireless

Exhibit B

Property card

27 SIEMON COMPANY DR

Location	27 SIEMON COMPANY DR	**Mblu**	110/ 78B/ 32/ /
Acct#	7322	**Owner**	SIEMON REALTY COMPANY
PBN		**Assessment**	$4,576,200
Appraisal	$6,537,400	**PID**	7322
Building Count	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$5,460,400	$1,077,000	$6,537,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$3,822,300	$753,900	$4,576,200

Owner of Record

Owner	SIEMON REALTY COMPANY	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	27 SIEMON COMPANY DR WATERTOWN, CT 06795	**Book & Page**	1358/ 124
		Sale Date	12/27/2004

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
SIEMON REALTY COMPANY	$0		1358/ 124	12/27/2004
SIEMON COMPANY THE	$0		363/ 199	

Building Information

Building 1 : Section 1

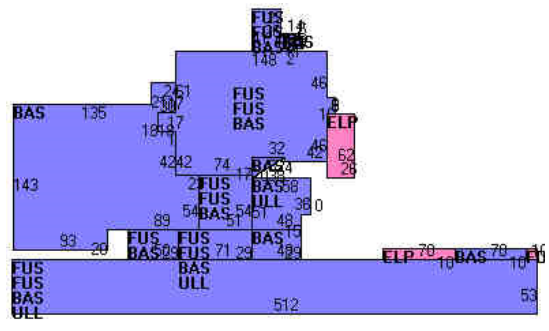
Year Built:	1900
Living Area:	182,765
Replacement Cost:	$18,307,911
Building Percent Good:	28
Replacement Cost Less Depreciation:	$5,126,200

Building Attributes	
Field	**Description**
STYLE	Office Bldg
MODEL	Comm/Ind
Grade	C-
Stories:	3
Occupancy	91
Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Industrial MDL-94
Total Rooms	
Total Bedrms	None
Total Baths	0
Fixtures	
1st Floor Use:	400C
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Walls
Rooms/Prtns	Average

Building Photo

(http://images.vgsi.com/photos/WatertownCTPhotos//\00\00\28/69.JPG)

Building Layout



(http://images.vgsi.com/photos/WatertownCTPhotos//Sketche

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
FUS	Upper Story, Finished	102,618	102,618
BAS	First Floor	80,147	80,147
ELP	Enclosed Loading Platform	2,312	0
FOP	Porch, Open	100	0
ULL	Unfinished Lower Level	32,003	0
		217,180	182,765

Wall Height	10
% Comn Wall	

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
SPR1	Sprinkler-Wet	214068 S.F.	$48,000	1
ELV3	Elevator Com 2	1 UNITS	$25,400	1
LDL1	Load Lv Power	3 UNITS	$2,400	1
ELV4	Elevator Com 3	1 UNITS	$27,200	1
ELV5	Elevator Com 4	2 UNITS	$57,900	1

Land

Land Use

Use Code	400C
Description	Industrial MDL-94
Zone	IG20F
Neighborhood	120
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	9.08
Frontage	
Depth	
Assessed Value	$753,900
Appraised Value	$1,077,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Asphalt Paving			160000 S.F.	$160,000	1
LT1	Lights 1			5 UNITS	$2,800	1
CAN1	Canopy			192 S.F.	$1,500	1
LT2	Lights 2			6 UNITS	$3,700	1
LT3	Lights 3			2 UNITS	$1,300	1
OP	OpenPorchFrm			504 S.F.	$4,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$4,923,000	$1,077,000	$6,000,000
2015	$4,923,000	$1,077,000	$6,000,000
2014	$7,590,000	$1,077,000	$8,667,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$3,446,100	$753,900	$4,200,000
2015	$3,446,100	$753,900	$4,200,000
2014	$5,313,100	$753,900	$6,067,000

Town of Watertown			
Parcel: 7322 Acres: 9.08			
Name:	SIEMON REALTY COMPANY	Land Value:	1077000
Site:	27 SIEMON COMPANY DR	Improvement Value:	4441000
Sale:	$0 on 2004-12-27 Reason= Qual=U	Accessory Value:	312700
Mail:	27 SIEMON COMPANY DR WATERTOWN, CT 06795	Total Value:	6000000

Date printed: 01/27/17 : 14:46:38

Exhibit C

Construction Drawings

T-Mobile

WIRELESS COMMUNICATIONS FACILITY

CTNH354/SIEMON CO DRIVE

SITE ID: CTNH354A

27 SIEMON COMPANY DRIVE

WATERTOWN, CT 06795

T-MOBILE RF CONFIGURATION

67D5997DB_2xAIR+1OP

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. 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.
3. 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.
4. 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.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTON, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION 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.
7. 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.
8. 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.
9. 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.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE 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.
13. 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.
14. 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.
15. 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.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. 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.
18. 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. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

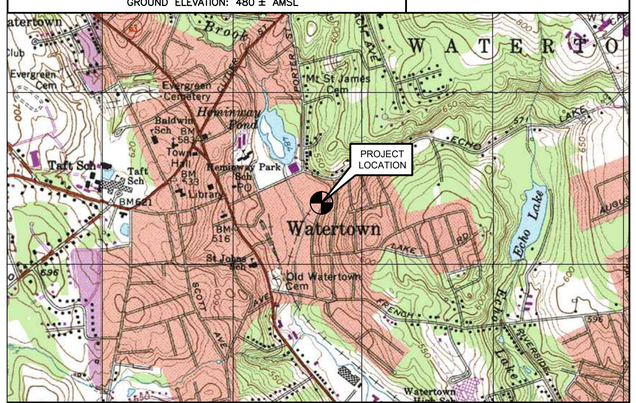
FROM: 35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

TO: 27 SIEMON COMPANY DRIVE
WATERTOWN, CT 06795

1.	HEAD NORTH ON GRIFFIN ROAD S. TOWARD HARTMAN RD.	0.30 MI.
2.	TAKE THE 2ND RIGHT ONTO DAY HILL RD.	3.64 MI.
3.	MERGE ONTO I-91 S TOWARD HARTFORD.	7.27 MI.
4.	MERGE ONTO I-84 W VIA EXIT 32A TOWARD WATERBURY.	13.29 MI.
5.	KEEP LEFT TO TAKE I-84 W TOWARD WATERBURY.	17.29 MI.
6.	MERGE ONTO CT-8 N/JAMES H DARCEY MEMORIAL HWY N VIA EXIT 20 TOWARD TORRINGTON.	3.97 MI.
7.	TAKE THE CT-262 EXIT, EXIT 37, TOWARD WATERTOWN.	0.27 MI.
8.	TURN LEFT ONTO FROST BRIDGE RD/CT-262. CONTINUE TO FOLLOW CT-262.	1.60 MI.
9.	STAY STRAIGHT TO GO ONTO ECHO LAKE RD.	1.24 MI.
10.	TURN LEFT ONTO SIEMON COMPANY DR.	0.10 MI.

SITE COORDINATES: LATITUDE: 41°-36'-12.17" N
LONGITUDE: 73°-06'-41.98" W
GROUND ELEVATION: 480'± AMSL

COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH



VICINITY MAP — NORTH

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. REMOVE EXISTING RBS 3106
2. ADD (1) BBU
3. ADD (1) BATTERY B160 CABINET
4. ADD (1) ENCLOSURE 6160 CABINET
5. ADD (1) iXRe ROUTER
6. ADD (1) BB6630 FOR L2500
7. ADD (1) BB6648 FOR N2500
8. ADD (1) PSU 4813
9. REMOVE (6) ANTENNAS, (2) PER SECTOR
10. REMOVE (6) TMA'S, (2) PER SECTOR
11. ADD (3) AIR32 ANTENNAS, (1) PER SECTOR
12. ADD (3) APXVAALL24 ANTENNAS, (1) PER SECTOR
13. ADD (3) AIR6449 ANTENNAS, (1) PER SECTOR
14. ADD (3) RADIO 4449 B71+B85, (1) PER SECTOR AND (3) RADIO 4415 B25, (1) PER SECTOR
15. INSTALL 100A BREAKER
16. REMOVE ALL EXISTING COAX, INSTALL (3) 6x12 HYBRIDS
17. REMOVE ALL EXISTING ANTENNAS MOUNTS

PROJECT SUMMARY (STRUCTURAL)

FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 FOR ADDITIONAL DETAILS. CHIMNEY MOUNT KIT AND V-FRAME ASSEMBLY KIT WITH STIFF ARM NEEDED.

PROJECT INFORMATION

SITE NAME:	CTNH354/SIEMON CO DRIVE
SITE ID:	CTNH354A
SITE ADDRESS:	27 SIEMON COMPANY DRIVE WATERTOWN, CT 06795
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	DAN REID (PROJECT MANAGER) TRANSCEND WIRELESS, LLC (203) 592-8291
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
PROJECT COORDINATES:	LATITUDE: 41°-36'-12.17" N LONGITUDE: 73°-06'-41.98" W GROUND ELEVATION: 480'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	09/16/20	ANC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

T-Mobile

Transcend Wireless

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

T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY
CTNH354/SIEMON CO DRIVE
SITE ID: CTNH354A
27 SIEMON COMPANY DRIVE
WATERTOWN, CT 06795

DATE: 09/14/20
SCALE: AS NOTED
JOB NO. 20074.94

TITLE SHEET

T-1

Sheet No. 1 of 8

NOTES AND SPECIFICATIONS

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- ULTIMATE DESIGN SPEED (OTHER STRUCTURE): 120 MPH (Vasd) (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

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14. 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.
15. 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.
16. 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.
17. 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.
18. 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. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
18. CONTRACTOR SHALL COMPLY WITH OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
19. THE COUNTY/CITY/TOWN WILL MAKE PERIODIC FIELD OBSERVATION AND INSPECTIONS TO MONITOR THE INSTALLATION, MATERIALS, WORKMANSHIP AND EQUIPMENT INCORPORATED INTO THE PROJECT TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS.
20. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.

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.

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WATERTOWN, CT 06795

DATE: 09/14/20
SCALE: AS NOTED
JOB NO. 20074.94

GENERAL NOTES AND SPECIFICATIONS

N-1

NOTE:
ALL COAX LENGTHS TO BE MEASURED
AND VERIFIED IN FIELD BEFORE ORDERING

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	ANTENNA	SIZE (INCHES) (L x W x H)	ANTENNA ¢ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA (QTY)	(QTY) PROPOSED COAX (LENGTH)
A1	PROPOSED	ERICSSON - AIR32 KRD901146-1_B66A_B2A	56.6 x 12.9 x 8.70	124	60			(1) 6X12 HCS (±120FT)
A2	PROPOSED	RFS - APXVAALL24_43-U-NA20	95.9 x 24.0 x 8.50	124	60	(P) RRU 4449 B71+B85 (1), (P) RRUS 4415 B25 (1)		
A3	PROPOSED	ERICSSON - AIR6449 B41	33.1 x 20.6 x 8.60	124	60			
B1	PROPOSED	ERICSSON - AIR32 KRD901146-1_B66A_B2A	56.6 x 12.9 x 8.70	124	180			(1) 6X12 HCS (±120FT)
B2	PROPOSED	RFS - APXVAALL24_43-U-NA20	95.9 x 24.0 x 8.50	124	180	(P) RRU 4449 B71+B85 (1), (P) RRUS 4415 B25 (1)		
B3	PROPOSED	ERICSSON - AIR6449 B41	33.1 x 20.6 x 8.60	124	180			
C1	PROPOSED	ERICSSON - AIR32 KRD901146-1_B66A_B2A	56.6 x 12.9 x 8.70	124	300			(1) 6X12 HCS (±120FT)
C2	PROPOSED	RFS - APXVAALL24_43-U-NA20	95.9 x 24.0 x 8.50	124	300	(P) RRU 4449 B71+B85 (1), (P) RRUS 4415 B25 (1)		
C3	PROPOSED	ERICSSON - AIR6449 B41	33.1 x 20.6 x 8.60	124	300			

1 / C-1 SITE LOCATION PLAN
SCALE: NOT TO SCALE

TRUE NORTH

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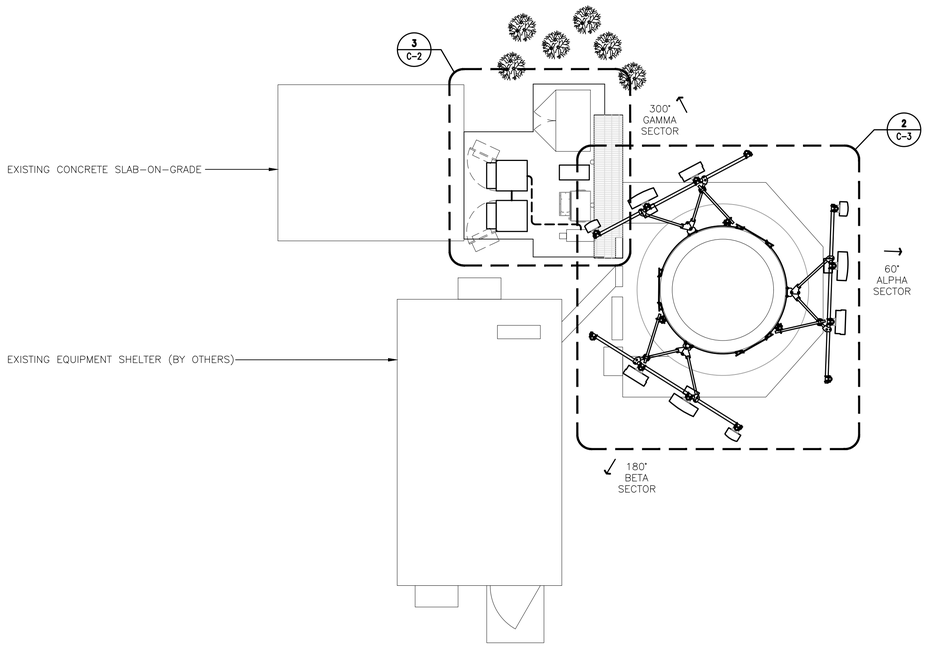
SITE LOCATION PLAN

C-1

Sheet No. 3 of 8



1 C-2 PARTIAL COMPOUND PLAN - PROPOSED

SCALE: 1" = 5'

TRUE NORTH

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY DEFICIENT AND WARRANTING MODIFICATION PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT. FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 FOR ADDITIONAL DETAILS.

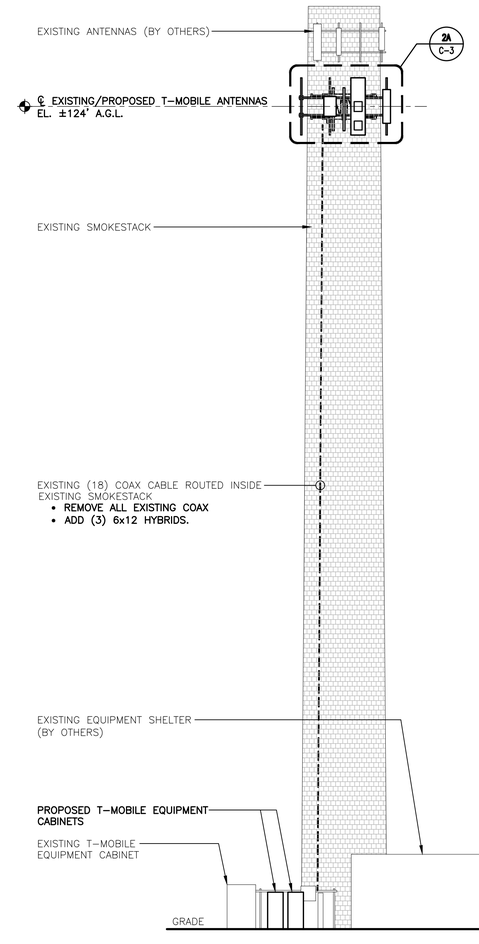
REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 20074.94) DATED 09/04/20 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

SMOKESTACK

A STRUCTURAL ANALYSIS OF THE SMOKESTACK WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 20074.94) DATED 09/04/20 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

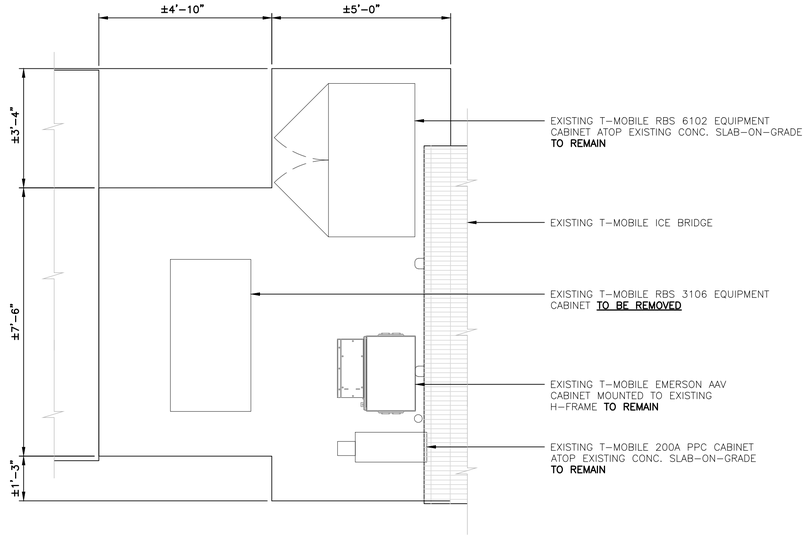


4 C-2 SMOKESTACK ELEVATION - PROPOSED

SCALE: 1" = 10'

LEGEND

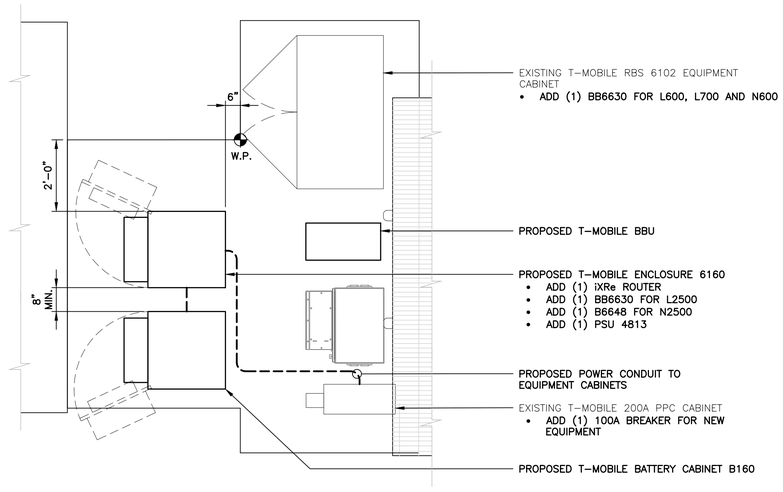
W.P. DENOTES WORKING POINT.



2 C-2 EXISTING EQUIPMENT PLAN

SCALE: 1/2" = 1'

TRUE NORTH



3 C-2 PROPOSED EQUIPMENT PLAN

SCALE: 1/2" = 1'

TRUE NORTH

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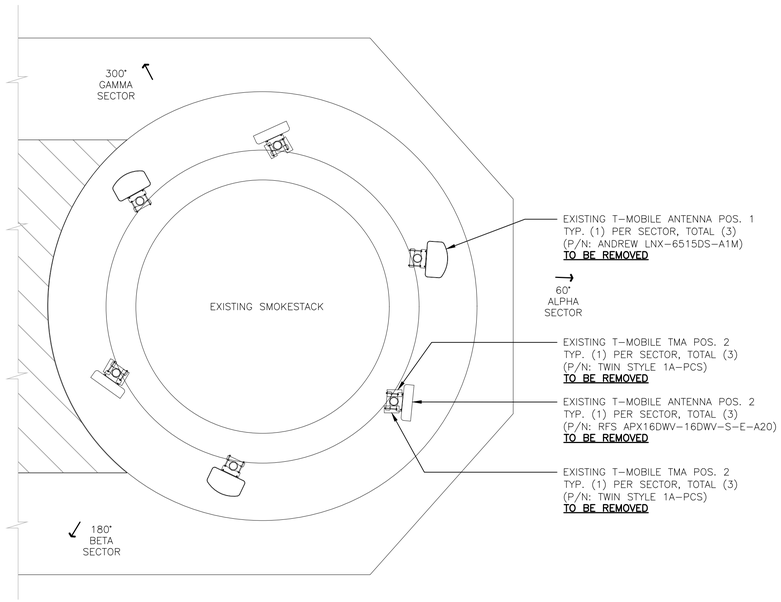
COMPOUND PLAN, EQUIPMENT PLAN, AND ELEVATION

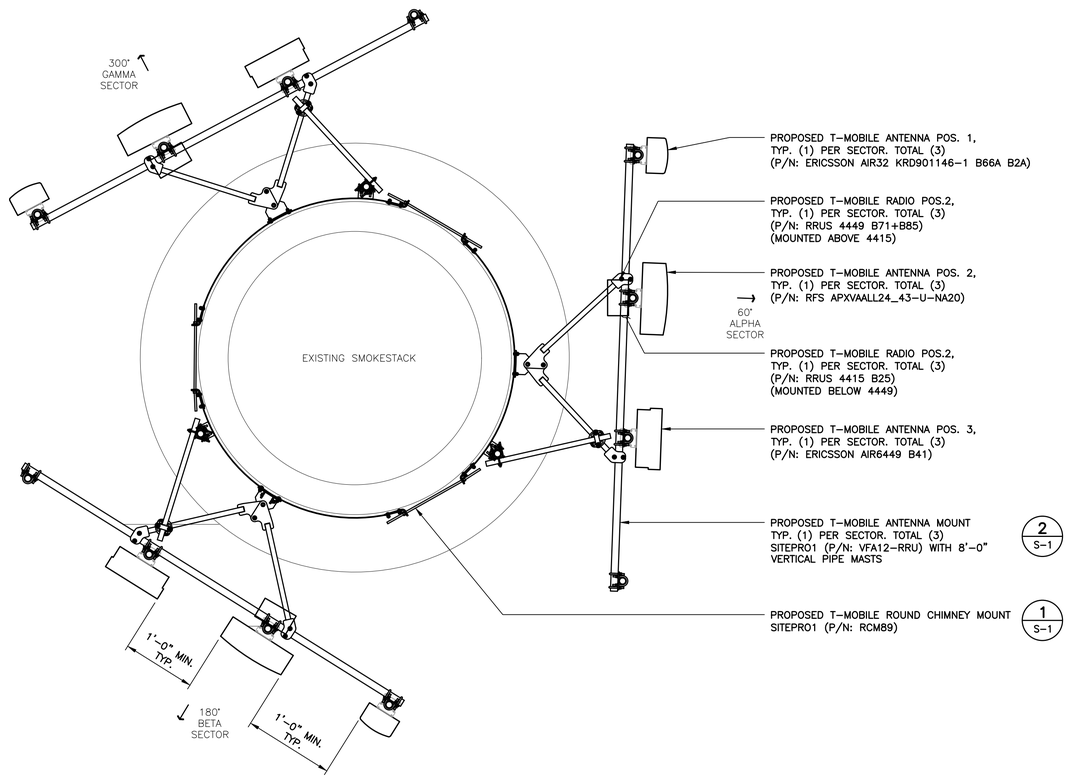
C-2

Sheet No. 4 of 8



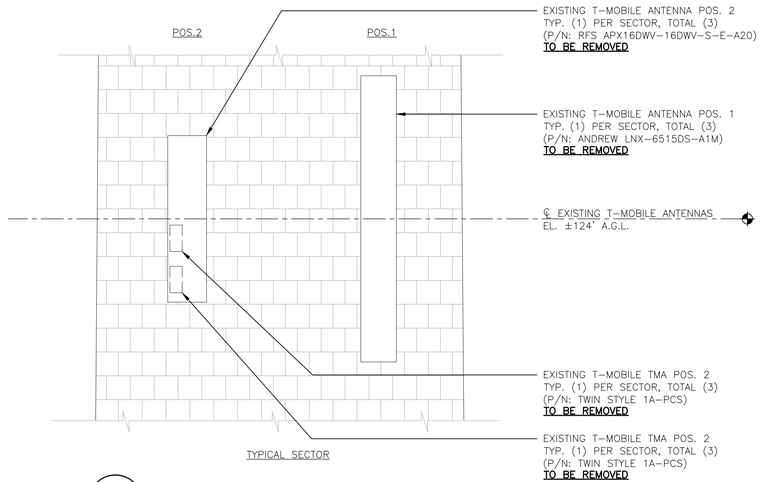
1 C-3 **ANTENNA PLAN - EXISTING**
SCALE: 1/2" = 1'

TRUE NORTH

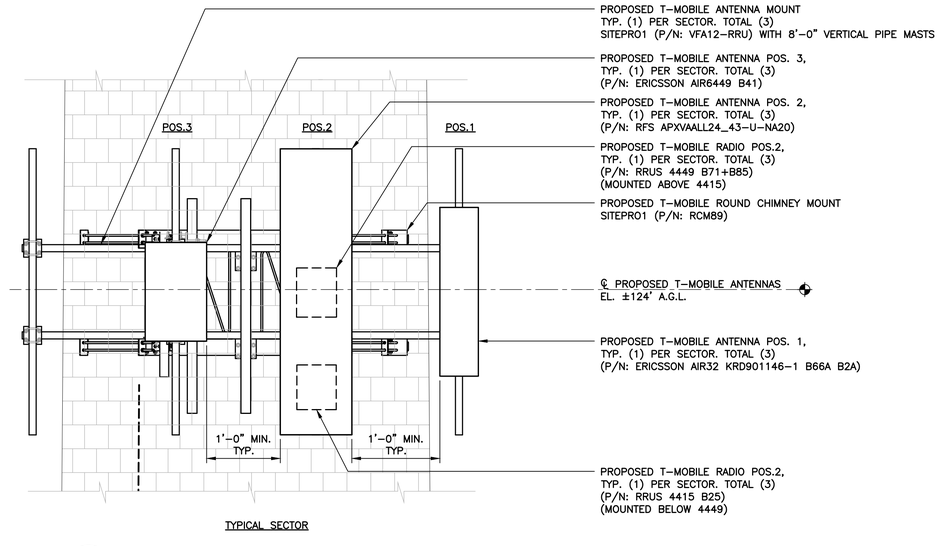


2 C-3 **ANTENNA PLAN - PROPOSED**
SCALE: 1/2" = 1'

TRUE NORTH



1A C-3 **ANTENNA ELEVATION - EXISTING**
SCALE: 1/2" = 1'



2A C-3 **ANTENNA ELEVATION - PROPOSED**
SCALE: 1/2" = 1'

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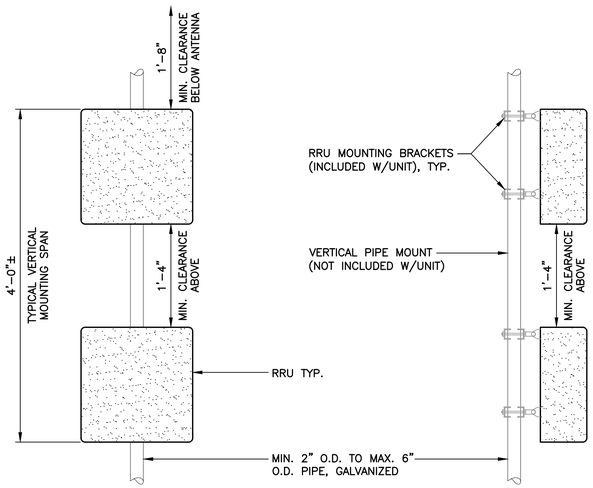
ANTENNA PLANS AND ELEVATIONS

C-3

Sheet No. 5 of 8



NOTES:

1. T–MOBILE SHALL SUPPLY RRU, AND RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 C–4 TYPICAL RRU MOUNTING DETAIL

SCALE: NOT TO SCALE

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: AIR6449 B41	33.1"L x 20.6"W x 8.6"D	±104 LBS.
MAKE: RFS MODEL: APXVAALL24_43–U–NA20	95.9"L x 24.0"W x 8.5"D	±150 LBS.
MAKE: ERICSSON MODEL: AIR32 KRD901146–1 B66A B2A	56.6"L x 12.9"W x 8.7"D	±132 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.		

2 C–4 PROPOSED ANTENNA DETAIL

SCALE: NOT TO SCALE

RADIO 4415 B25

RADIO 4449 B71+B85

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4415 B25	16.5"L x 13.4"W x 5.9"D	±46 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
MAKE: ERICSSON MODEL: RADIO 4449 B71+B85	14.9"L x 13.2"W x 5.4"D	±74 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.			

3 C–4 PROPOSED RRU DETAIL

SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: ENCLOSURE 6160 CABINET	62.0"H x 26.0"W x 26.0"D	±1200 LBS

4 C–4 ENCLOSURE 6160 CABINET DETAIL

SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: BATTERY B160 CABINET	62.0"H x 26.0"W x 26.0"D	±1883 LBS

5 C–4 BATTERY B160 CABINET DETAIL

SCALE: NOT TO SCALE

Specifications

Maximum Battery Size	190Ah
Maximum Number of Batteries	4
Internal Circuit Breaker Rating (Optional)	200 Amperes Max
Input Circuit Breaker Rating	200 Amperes Max
Input Connections	1/4" inch 2 hole 5/8 inch Spacing
Expansion	Modular / Stringable
Temp Control	Direct Contact Heater Mat Convection Cooled
Local Safety Ground Connection	1/4" inch 2 hole 5/8 inch Spacing
Enclosure Rating	Outdoor
Access Restriction	Front Hatch 5/32 Allen
Dimensions Height Width Depth	Body 32.245" 14.040" 26.395"
Unit Weight / Shipping Weight	60 lbs / 65 lbs
Paint	Almond Powder Coat
Construction	Aluminum

6 C–4 BATTERY CABINET DETAIL

SCALE: NOT TO SCALE

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TYPICAL EQUIPMENT DETAILS

C-4

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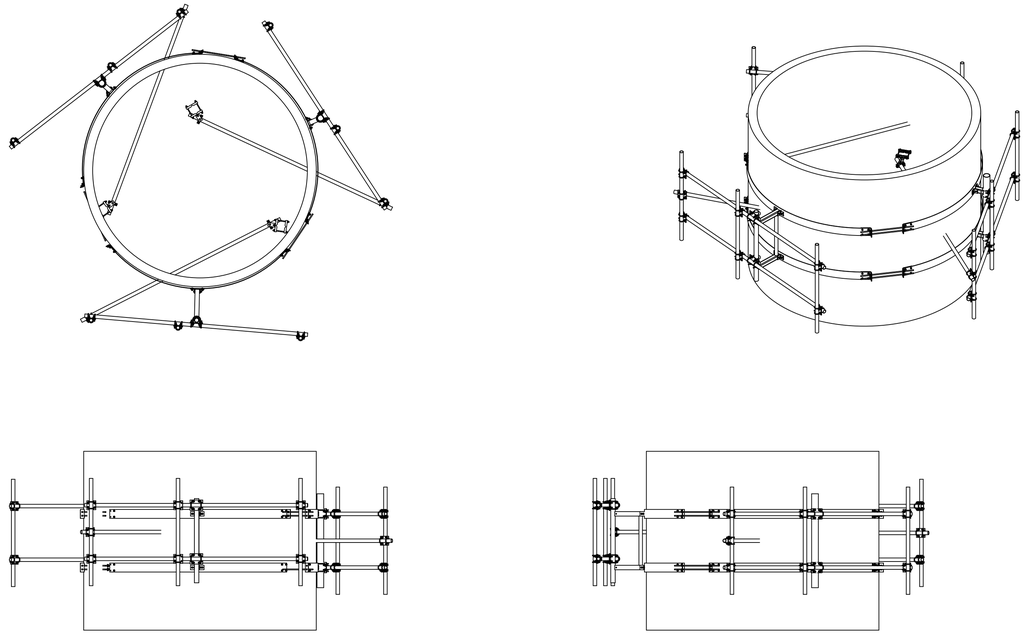
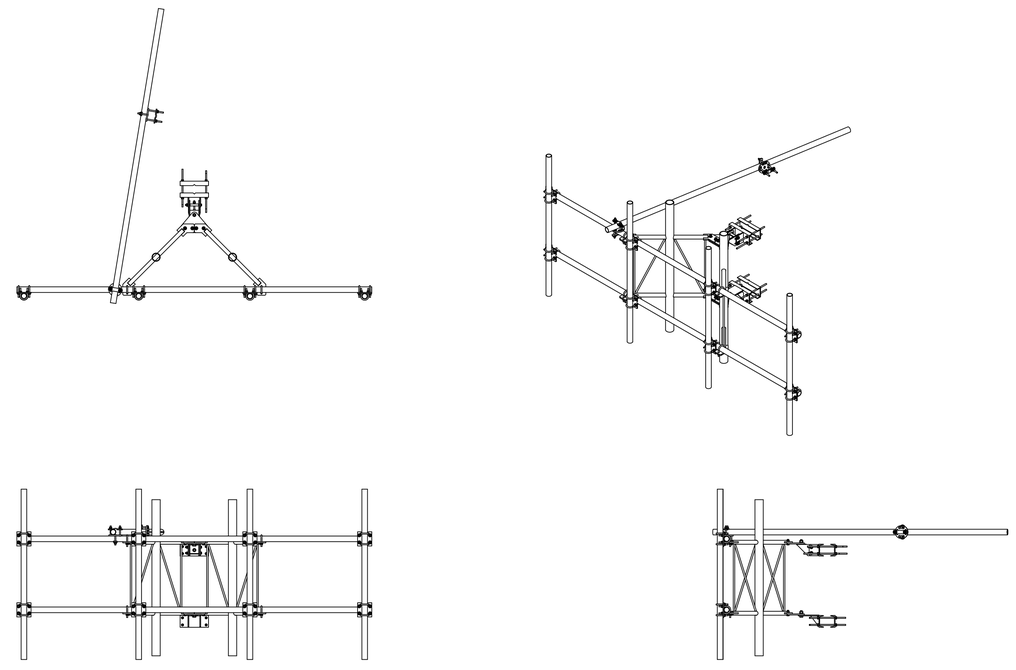


1 S-1 CHIMNEY MOUNT KIT DETAIL (P/N: RCM89)
SCALE: NOT TO SCALE



2 S-1 V-FRAME ASSEMBLY KIT DETAIL (P/N: VFA12-RRU)
SCALE: NOT TO SCALE

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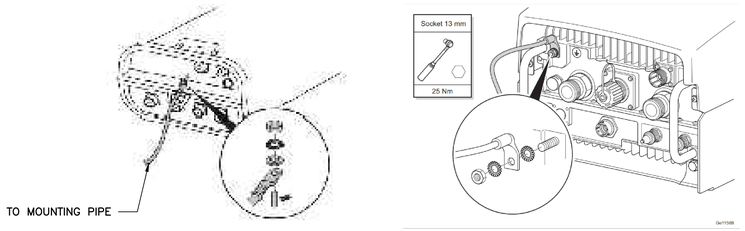
STRUCTURAL DETAILS

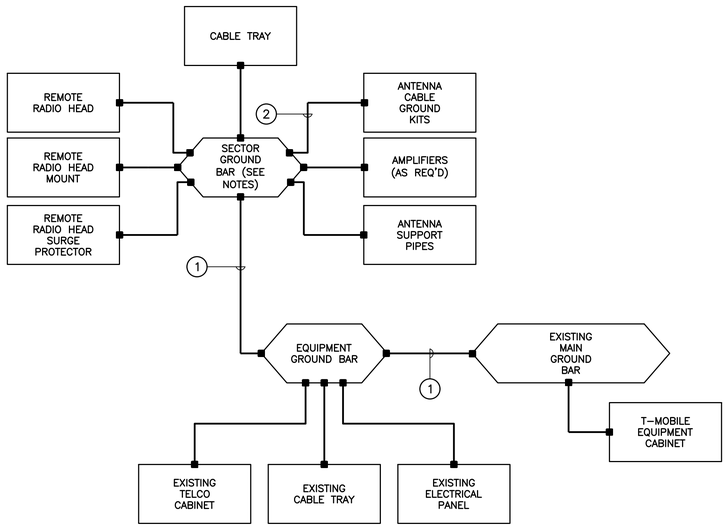
S-1

Sheet No. 7 of 8



1 E-1 TYPICAL ANTENNA/RRU GROUNDING DETAILS

SCALE: NOT TO SCALE



GROUNDING SCHEMATIC NOTES

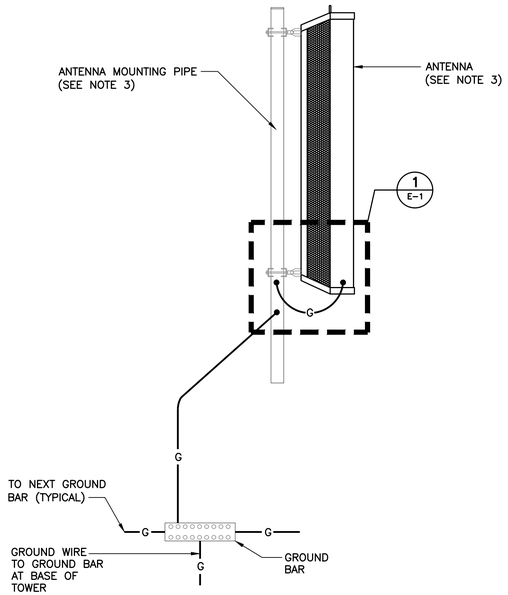
1. #2 AWG
2. #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
4. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
5. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
6. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
7. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

4 E-1 TYPICAL GROUNDING SCHEMATIC DETAIL

SCALE: NOT TO SCALE



NOTES:

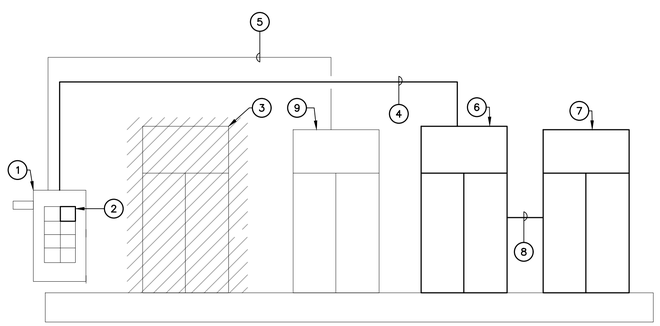
1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

2 E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE

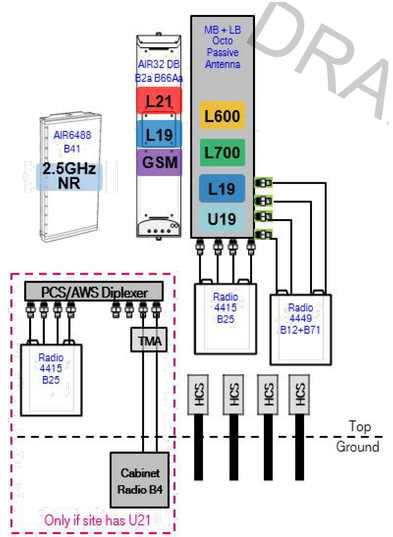
RISER DIAGRAM NOTES

1. EXISTING 200A, PPC CABINET TO REMAIN.
2. NEW 100A/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT CABINET.
3. EXISTING CABINETS AND ASSOCIATED CONDUITS AND CONDUCTORS TO BE REMOVED.
4. (3) #1 AWG, (1) #8 AWG GROUND, 1–1/2" CONDUIT.
5. EXISTING CONDUITS AND CONDUCTORS TO REMAIN.
6. NEW T–MOBILE EQUIPMENT CABINET
7. NEW T–MOBILE BATTERY CABINET
8. DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS.
9. EXISTING CABINET TO REMAIN.



5 E-1 ELECTRICAL POWER RISER DIAGRAM

SCALE: NOT TO SCALE



3 E-1 PROPOSED PLUMBING DIAGRAM

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	09/16/20	ANC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

T-Mobile

Transcend Wireless

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

T-MOBILE NORTHEAST LLC

WIRELESS COMMUNICATIONS FACILITY

CTNH354/SIEMON CO DRIVE

SITE ID: CTNH354A

27 SIEMON COMPANY DRIVE

WATERTOWN, CT 06795

DATE:	09/14/20
SCALE:	AS NOTED
JOB NO.	20074.94

TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 8 of 8

Exhibit D

Structural Analysis Report

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

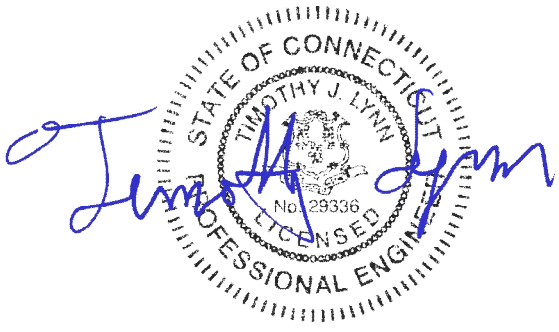
140-ft Existing Masonry Smokestack

T-Mobile Site #: CTNH354A

27 Siemon Company Drive
Watertown, CT

Centek Project No. 20074.94

Date: September 4, 2020



Prepared for:
T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

Introduction

The purpose of this report is to summarize the results of the structural analysis of the equipment upgrade proposed by T-Mobile on the existing host masonry smokestack located in Watertown, CT.

The host structure is a 140-ft tall masonry smokestack. The smokestack geometry and structural information was obtained from a structural report prepared by International Chimney Corporation dated May 16, 2011.

Equipment Installation Summary

- **T-MOBILE (Existing to Remove):**
  Antennas: Three (3) RFS APX16DWV-16DWVS panel antennas, three (3) Andrew LNX-6515DS panel antennas, three (3) Ericsson RRUS-11 remote radio units and six (6) TMAs mounted on antenna pipes attached to the smokestack with a RAD center elevation of +/- 124-ft.
  Cables: Eighteen (18) coax cables routed within the existing smokestack.
- **T-MOBILE (Proposed):**
  Antennas: Three (3) Ericsson AIR6449 panel antennas, three (3) RFS APXVAALL24-43 panel antennas, three (3) Ericsson AIR32 panel antennas, three (3) Ericsson 4449 remote radio units and three (3) Ericsson 4415 remote radio units mounted on proposed steel frames attached to the smokestack with a RAD center elevation of +/- 124-ft.
  Cables: Three (3) 6x12 hybrid cables routed within the existing smokestack.

Design Loading

Loading was determined per the requirements of the 2015 International Building Code and ASCE 7-10 “Minimum Design Loads for Buildings and Other Structures”.

Wind Speed:	Vult = 120 mph	*[Appendix N of the 2016 CT Building Code]*
Exposure Category:	B	
Risk Category	II	*[ASCE 7-10, Table 1.5-1]*

Results

Smokestack:

Component	Stress Ratio (percentage of capacity)	Result
Compression	34%	**PASS**
Tension of Mortar	57%	**PASS**

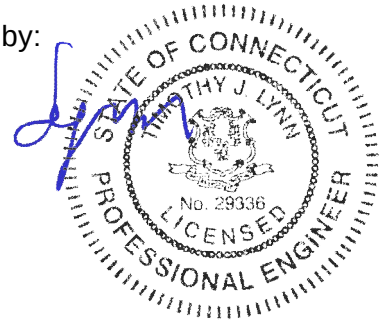
Conclusion and Recommendations

This analysis shows that the subject smokestack **is adequate** to support the proposed T-Mobile equipment upgrade.

The analysis is based, in part on the information provided to this office by T-Mobile. 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

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.

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

Subject: Wind Load on Equipment per ASCE 7-10

Location: Watertown, CT

Rev. 0: 9/3/20

Prepared by: T.J.L; Checked by: CFC
Job No. 20074.94

Design Wind Load on Other Structures: (Based on IBC 2015, CSBC 2018 and ASCE 7-10)

Wind Speed =	$V := 120$ mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := II$	(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := B$	(User Input)	
Structure Type =	$Structuretype := Round\_Chimney$	(User Input)	
Structure Height =	$Height := 140$ ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 12$ ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer = (Table 26.9-1)

$$zg := \begin{cases} 1200 \text{ if } Exp = B = 1.2 \times 10^3 \\ 900 \text{ if } Exp = C \\ 700 \text{ if } Exp = D \end{cases}$$

3-Sec Gust Speed Power Law Exponent = (Table 26.9-1)

$$\alpha := \begin{cases} 7 \text{ if } Exp = B = 7 \\ 9.5 \text{ if } Exp = C \\ 11.5 \text{ if } Exp = D \end{cases}$$

Integral Length Scale Factor = (Table 26.9-1)

$$l := \begin{cases} 320 \text{ if } Exp = B = 320 \\ 500 \text{ if } Exp = C \\ 650 \text{ if } Exp = D \end{cases}$$

Integral Length Scale Power Law Exponent = (Table 26.9-1)

$$E := \begin{cases} \frac{1}{3} \text{ if } Exp = B = 0.333 \\ \frac{1}{5} \text{ if } Exp = C \\ \frac{1}{8} \text{ if } Exp = D \end{cases}$$

Turbulence Intensity Factor = (Table 26.9-1)

$$c := \begin{cases} 0.3 \text{ if } Exp = B = 0.3 \\ 0.2 \text{ if } Exp = C \\ 0.15 \text{ if } Exp = D \end{cases}$$

Exposure Constant = (Table 26.9-1)

$$Z_{min} := \begin{cases} 30 \text{ if } Exp = B = 30 \\ 15 \text{ if } Exp = C \\ 7 \text{ if } Exp = D \end{cases}$$

Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.95$	(Table 26.6-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)

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Subject: Wind Load on Equipment per ASCE 7-10

Location: Watertown, CT

Rev. 0: 9/3/20

Prepared by: T.J.L; Checked by: CFC
Job No. 20074.94

Equivalent Height of Structure =

$$z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{otherwise} \end{cases} = 84$$

(Sec 26.9.4)

Intensity of Turbulence =

$$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.257$$

(Eq. 26.9-7)

Integral Length Scale of Turbulence =

$$L_z := l \cdot \left(\frac{z}{33}\right)^{E} = 436.923$$

(Eq. 26.9-9)

Background Response Factor =

$$Q := \sqrt{\frac{1}{1 + 0.63\left(\frac{Width + Height}{L_z}\right)^{0.63}}} = 0.869$$

(Eq. 26.9-8)

Gust Response Factor =

$$G := 0.925 \cdot \left[\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right] = 0.853$$

(Eq. 26.9-6)

Velocity Pressure =

$$q_z := 0.00256 \cdot K_{zt} \cdot K_d \cdot V^2 = 35.02$$

(Eq. 29.3-1)

Force Coefficient =

$$C_f = 0.826$$

(Fig 29.5-1 - 29.5-3)

Ultimate Wind Pressure =

$$F := q_z \cdot G \cdot C_f = 24.7 \text{ psf}$$

Height Above Grade =

$$Z := 135 \text{ ft}$$

(User Input)

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg = 1.08 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$$

(Table 29.3-1)

$$K_z = 1.077$$

Height Above Grade =

$$Z := 120 \text{ ft}$$

(User Input)

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg = 1.04 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$$

(Table 29.3-1)

$$K_z = 1.041$$

Height Above Grade = $Z := 100$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 0.99$ (Table 29.3-1)

$K_z = 0.988$

Height Above Grade = $Z := 80$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 0.93$ (Table 29.3-1)

$K_z = 0.927$

Height Above Grade = $Z := 60$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 0.85$ (Table 29.3-1)

$K_z = 0.854$

Height Above Grade = $Z := 40$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 0.76$ (Table 29.3-1)

$K_z = 0.761$

Height Above Grade = $Z := 15$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 0.57 & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 0.575$

Height Above Grade = $Z := 5$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 0.57 & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 0.575$

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

Job :	CTNH354A	Project No.	20074.94	Sheet	1 of 2
Address:	27 Siemon Company Drive Watertown, CT	Computed by	TJL	Date	9/4/20
Description:	Smokestack Evaluation	Checked by	CFC	Date	

	Wind Force (lb)	Weight (lb)	Height Above Base (ft)	Height (in)
AT&T	2200	1200	135	1620
T-Mobile	2200	1200	124	1488

Section	Top Dia (in)	Bot Dia (in)	Wall Thk (in)	Sect Height (in)	Area At Base (in^2)	Tot. Vol (ft^3)	Unit Weight (pcf)	Weight of Section (lb)	Total Weight (lb)	Axial Stress fa (psi)
1	100	103.2	8	120	2391.424	163.18556	120	19582.26767	21982.26767	9.2
2	103.2	109.4	10	240	3121.16	419.7321	120	50367.85194	72350.11961	23.2
3	109.4	115.7	12	240	3907.416	525.90732	120	63108.87866	135458.9983	34.7
4	115.7	122	14	240	4747.68	639.79725	120	76775.66964	212234.6679	44.7
5	122	128.3	16	240	5641.952	761.18394	120	91342.07334	303576.7412	53.8
6	128.3	134.6	18	240	6590.232	890.06741	120	106808.0898	410384.831	62.3
7	144	144	24	240	9043.2	1255.2736	125	156909.1961	567294.0271	62.7
8	144	144	26	120	9633.52	668.60752	125	83575.93985	650869.9669	67.6

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Job :	CTNH354A	Project No.	20074.94	Sheet	2 of 2
Address:	27 Siemon Company Drive Watertown, CT	Computed by	TJL	Date	9/4/20
Description:	Smokestack Evaluation	Checked by	CFC	Date	

Ultimate Wind Pressure (psf)	ASD Wind Pressure (psf)	KZ	Wind Area (sf)	Wind Force (lb)	Moment @ Base	Section Modulus @ Base	Bending Stress fb (psi)	Allowable Fa (psi)	Allowable Fb (psi)	fa/Fa+fb/Fb		ft	Ft	ft/Ft	
24.7	14.82	1.077	84.7	1351.4	213082.5912	52874.57002	4.0	375	500	0.03	OK	-5.2	40	-0.13	OK
24.7	14.82	1.041	177.2	2733.3	1763004.157	71184.41595	24.8	375	500	0.11	OK	1.6	40	0.04	OK
24.7	14.82	0.988	187.6	2746.6	4128911.946	92009.09306	44.9	375	500	0.18	OK	10.2	40	0.26	OK
24.7	14.82	0.927	198.1	2721.3	7150970.344	115384.1902	62.0	375	500	0.24	OK	17.3	40	0.43	OK
24.7	14.82	0.854	208.6	2639.9	10816371.02	141458.754	76.5	375	500	0.30	OK	22.7	40	0.57	OK
24.7	14.82	0.761	219.1	2470.8	14039057.53	170380.9988	82.4	375	500	0.33	OK	20.1	40	0.50	OK
24.7	14.82	0.575	240.0	2045.2	17803662.38	235123.2	75.7	375	500	0.32	OK	13.0	40	0.32	OK
24.7	14.82	0.575	120.0	1022.6	19277030.92	244182.9722	78.9	375	500	0.34	OK	11.4	40	0.28	OK

Exhibit E

Mount Analysis

CENTEK engineering

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Structural Analysis Report

Antenna Mount Analysis

T-Mobile Site #: CTNH354A

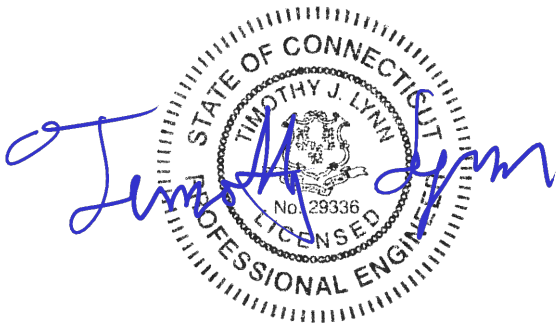
27 Siemon Company Drive
Watertown, CT

Centek Project No. 20074.94

Date: September 4, 2020

Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002



63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

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CENTEK engineering

Centered on Solutions℠

September 4, 2020

Mr. Dan Reid
Transcend Wireless
10 Industrial Ave
Mahwah, NJ 07430

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CTNH354A
27 Siemon Company Drive
Watertown, CT 06795

Centek Project No. 20074.94

Dear Mr. Reid,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the proposed mount, consisting three (3) sector frames with stiff arms (SitePro p/n USF12-396) to support the proposed/existing equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC) and ASCE 7-10.

The loads considered in this analysis consist of the following:

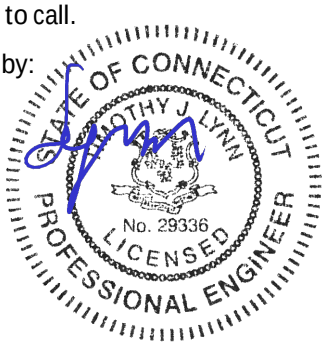
- T-Mobile:
  Sector Frames: Three (3) RFS APXVAALL24_43 panel antennas, three (3) Ericsson AIR32 panel antennas, three (3) Ericsson AIR6449 panel antennas, three (3) Ericsson 4449 remote radio units and three (3) Ericsson 4415 remote radio units mounted on three (3) Sector Frames with a RAD center elevation of 124-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering an ultimate design wind speed of 120 mph for Watertown as required in Appendix N of the 2018 Connecticut State Building Code.

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

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer



Section 2 - Calculations

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

Subject: Wind Load on Equipment per ASCE 7-10

Location: Watertown, CT

Rev. 0: 9/4/20

Prepared by: T.J.L; Checked by: C.F.C.
Job No. 20074.94

Design Wind Load on Other Structures: (Based on IBC 2015, CSBC 2018 and ASCE 7-10)

Wind Speed =	$V := 120$ 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 =	$Z := 124$ 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 = (Table 26.9-1)

$$zg := \begin{cases} 1200 \text{ if } Exp = B = 1.2 \times 10^3 \\ 900 \text{ if } Exp = C \\ 700 \text{ if } Exp = D \end{cases}$$

3-Sec Gust Speed Power Law Exponent = (Table 26.9-1)

$$\alpha := \begin{cases} 7 \text{ if } Exp = B = 7 \\ 9.5 \text{ if } Exp = C \\ 11.5 \text{ if } Exp = D \end{cases}$$

Integral Length Scale Factor = (Table 26.9-1)

$$l := \begin{cases} 320 \text{ if } Exp = B = 320 \\ 500 \text{ if } Exp = C \\ 650 \text{ if } Exp = D \end{cases}$$

Integral Length Scale Power Law Exponent = (Table 26.9-1)

$$E := \begin{cases} \frac{1}{3} \text{ if } Exp = B = 0.333 \\ \frac{1}{5} \text{ if } Exp = C \\ \frac{1}{8} \text{ if } Exp = D \end{cases}$$

Turbulence Intensity Factor = (Table 26.9-1)

$$c := \begin{cases} 0.3 \text{ if } Exp = B = 0.3 \\ 0.2 \text{ if } Exp = C \\ 0.15 \text{ if } Exp = D \end{cases}$$

Exposure Constant = (Table 26.9-1)

$$Z_{min} := \begin{cases} 30 \text{ if } Exp = B = 30 \\ 15 \text{ if } Exp = C \\ 7 \text{ if } Exp = D \end{cases}$$

Exposure Coefficient = (Table 29.3-1)

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} \text{ if } 15 \le Z \le zg = 1.05 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} \text{ if } Z < 15 \end{cases}$$

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

Subject:	Wind Load on Equipment per ASCE 7-10
Location:	Watertown, CT
Rev. 0: 9/4/20	Prepared by: T.J.L; Checked by: C.F.C. Job No. 20074.94

Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 34.87$	(Eq. 29.3-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)
Equivalent Height of Structure =	$z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{otherwise} \end{cases} = 30$	(Sec 26.9.4)
Intensity of Turbulence =	$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.305$	(Eq. 26.9-7)
Integral Length Scale of Turbulence =	$L_Z := l \cdot \left(\frac{z}{33}\right)^{E} = 309.993$	(Eq. 26.9-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63\left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.966$	(Eq. 26.9-8)
Gust Response Factor =	$G := 0.925 \cdot \left[\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right] = 0.905$	(Eq. 26.9-6)
Force Coefficient =	$C_f = 1.35$	(Fig 29.5-1 - 29.5-3)
Wind Force =	$F := q_z \cdot G \cdot C_f = 43$	psf

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:	Wind Load on Equipment per ASCE 7-10
Location:	Watertown, CT
Rev. 0: 9/4/20	Prepared by: T.J.L; Checked by: C.F.C. Job No. 20074.94

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR32		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56.6$	in	(User Input)
Antenna Width =	$W_{ant} := 12.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 132$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 5.1$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 216$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.4$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.4$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 146$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 132$	lbs

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Subject: Wind Load on Equipment per ASCE 7-10

Location: Watertown, CT

Rev. 0: 9/4/20

Prepared by: T.J.L; Checked by: C.F.C.
Job No. 20074.94

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPXVAARR24_43		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 153$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 16$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 681$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 5.8$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 247$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 153$	lbs

Development of Wind & Ice Load on Antennas

Antenna Model =	Ericsson AIR6449		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 33.1$	in	(User Input)
Antenna Width =	$W_{ant} := 20.5$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 103$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 4.7$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 201$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.9$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.9$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 81$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 103$	lbs

Development of Wind & Ice Load on RRHs

RRUS Data:

RRUS Model =	Ericsson 4449 B71B12		
RRUS Shape =	Flat		(User Input)
RRUS Height =	$L_{RRH} := 14.9$	in	(User Input)
RRUS Width =	$W_{RRH} := 13.2$	in	(User Input)
RRUS Thickness =	$T_{RRH} := 10.4$	in	(User Input)
RRUS Weight =	$WT_{RRH} := 74$	lbs	(User Input)
Number of RRUS's =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.4$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.4$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 58$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.1$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.1$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 46$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 74$	lbs

Development of Wind & Ice Load on RRHs

RRUS Data:

RRUS Model =	Ericsson 4415		
RRUS Shape =	Flat		(User Input)
RRUS Height =	$L_{RRH} := 16.5$	in	(User Input)
RRUS Width =	$W_{RRH} := 13.4$	in	(User Input)
RRUS Thickness =	$T_{RRH} := 5.9$	in	(User Input)
RRUS Weight =	$WT_{RRH} := 46$	lbs	(User Input)
Number of RRUS's =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

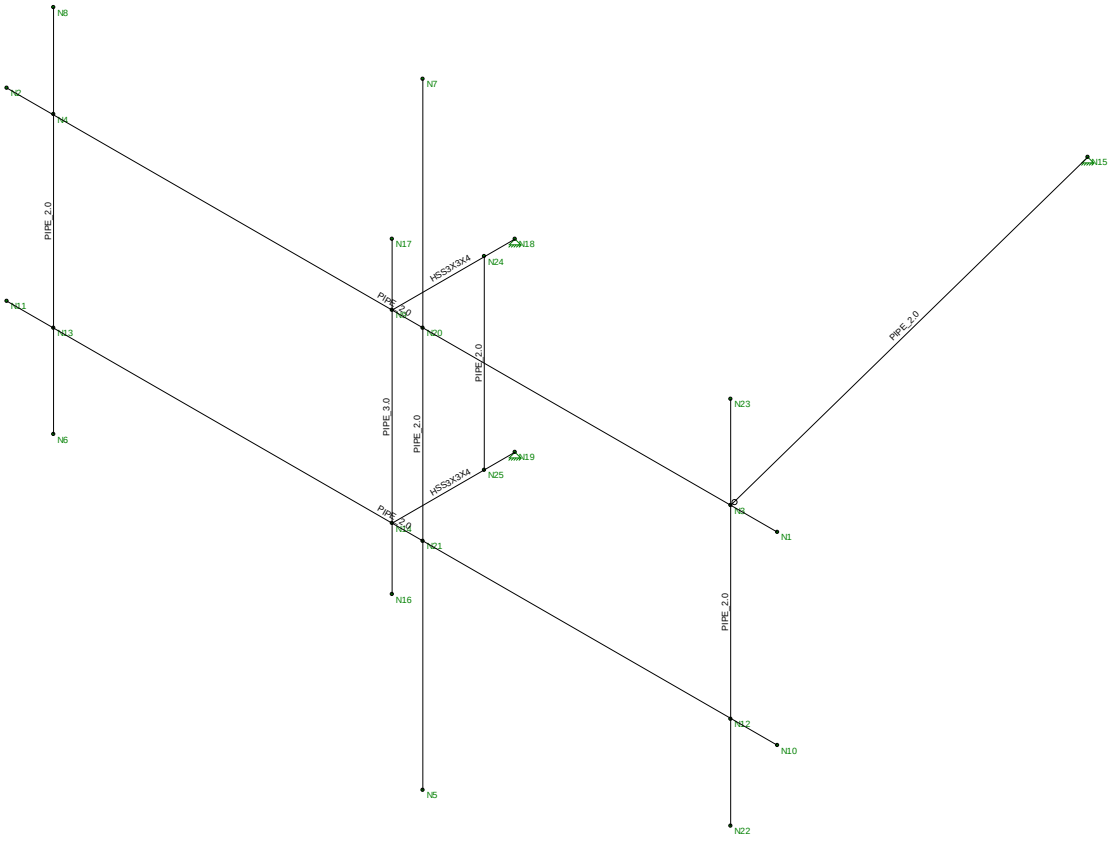
Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.5$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.5$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 65$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 0.7$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 0.7$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 29$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 46$	lbs



Envelope Only Solution

Centek		
TJL	CTNH354A - Mount	Sept 4, 2020 at 8:44 AM
20074.94	Member Framing	Antenna Mount.r3d

(Global) Model Settings

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

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-15: 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
7	A500 Gr. C	29000	11154	.3	.65	.49	50	1.5	62	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Stabilizer Arm	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
2	Antenna Mast	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
3	Horizontal	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
4	Outrigger	HSS3X3X4	Beam	Tube	A500 Gr.46	Typical	2.44	3.02	3.02	5.08
5	Pipe 3.0	PIPE_3.0	Column	Pipe	A53 Grade B	Typical	2.07	2.85	2.85	5.69

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	Horizontal	12.5			Lbyy		6				Lateral
2	M2	Antenna Mast	6			Lbyy						Lateral
3	M3	Antenna Mast	10			Lbyy						Lateral
4	M4	Horizontal	12.5			Lbyy		6				Lateral
5	M5	Stabilizer Arm	8.044			Lbyy						Lateral
6	M6	Pipe 3.0	5			Lbyy						Lateral
7	M7	Outrigger	2			Lbyy						Lateral
8	M8	Outrigger	2			Lbyy						Lateral
9	M9	Antenna Mast	6			Lbyy						Lateral
10	M10	Antenna Mast	3									Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N2	N1			Horizontal	Beam	Pipe	A53 Gra...	Typical
2	M2	N8	N6			Antenna Mast	Column	Pipe	A53 Gra...	Typical
3	M3	N7	N5			Antenna Mast	Column	Pipe	A53 Gra...	Typical
4	M4	N11	N10			Horizontal	Beam	Pipe	A53 Gra...	Typical
5	M5	N3	N15			Stabilizer Arm	Beam	Pipe	A53 Gra...	Typical
6	M6	N16	N17			Pipe 3.0	Column	Pipe	A53 Gra...	Typical
7	M7	N9	N18			Outrigger	Beam	Tube	A500 Gr...	Typical
8	M8	N14	N19			Outrigger	Beam	Tube	A500 Gr...	Typical
9	M9	N23	N22			Antenna Mast	Column	Pipe	A53 Gra...	Typical
10	M10	N24	N25			Antenna Mast	Column	Pipe	A53 Gra...	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	6.25	1.5	2	0	
2	N2	-6.25	1.5	2	0	
3	N3	5.5	1.5	2	0	
4	N4	-5.5	1.5	2	0	
5	N5	.5	-5	2	0	
6	N6	-5.5	-3	2	0	
7	N7	.5	5	2	0	
8	N8	-5.5	3	2	0	
9	N9	0	1.5	2	0	
10	N10	6.25	-1.5	2	0	
11	N11	-6.25	-1.5	2	0	
12	N12	5.5	-1.5	2	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
13	N13	-5.5	-1.5	2	0	
14	N14	0	-1.5	2	0	
15	N15	3.5	1.5	-5.791667	0	
16	N16	0	-2.5	2	0	
17	N17	0	2.5	2	0	
18	N18	0	1.5	0	0	
19	N19	0	-1.5	0	0	
20	N20	.5	1.5	2	0	
21	N21	.5	-1.5	2	0	
22	N22	5.5	-3	2	0	
23	N23	5.5	3	2	0	
24	N24	0	1.5	.5	0	
25	N25	0	-1.5	.5	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	N9						
2	N14						
3	N15	Reaction	Reaction	Reaction			
4	N18	Reaction	Reaction	Reaction			
5	N19	Reaction	Reaction	Reaction			
6	N20						
7	N21						
8	N24						
9	N25						

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Y	-.077	.5
2	M3	Y	-.077	7.5
3	M9	Y	-.067	.5
4	M9	Y	-.067	5.5
5	M2	Y	-.052	.5
6	M2	Y	-.052	3.5
7	M3	Y	-.046	%50
8	M3	Y	-.074	2

Member Point Loads (BLC 3 : Wind Load X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	X	.123	.5
2	M3	X	.123	7.5
3	M9	X	.073	.5
4	M9	X	.073	5.5
5	M2	X	.041	.5
6	M2	X	.041	3.5
7	M3	X	.029	%50
8	M3	X	.046	2

Member Point Loads (BLC 4 : Wind Load Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Z	.341	.5
2	M3	Z	.341	7.5
3	M9	Z	.108	.5
4	M9	Z	.108	5.5
5	M2	Z	.101	.5
6	M2	Z	.101	3.5
7	M3	Z	.065	%50
8	M3	Z	.058	2

Member Distributed Loads (BLC 3 : Wind Load X)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M2	X	.009	.009	0	0
2	M3	X	.009	.009	0	0
3	M5	X	.009	.009	0	0
4	M6	X	.009	.009	0	0
5	M7	X	.009	.009	0	0
6	M8	X	.009	.009	0	0
7	M9	X	.009	.009	0	0

Member Distributed Loads (BLC 4 : Wind Load Z)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.009	.009	0	0
2	M4	Z	.009	.009	0	0
3	M6	Z	.009	.009	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					8			
3	Wind Load X	WLX					8	7		
4	Wind Load Z	WLZ					8	3		

Load Combinations

	Description	Solve	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	IBC 16-8	Yes	Y		DL	1																				
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1																
3	IBC 16-12 (a) (a)	Yes	Y		DL	1	W...	.6																		
4	IBC 16-12 (a) (b)	Yes	Y		DL	1	W...	.6																		
5	IBC 16-12 (a) (c)	Yes	Y		DL	1	W...	-.6																		
6	IBC 16-12 (a) (d)	Yes	Y		DL	1	W...	-.6																		
7	IBC 16-13 (a) (a)	Yes	Y		DL	1	W...	.45	LL	.75	LLS	.75														
8	IBC 16-13 (a) (b)	Yes	Y		DL	1	W...	.45	LL	.75	LLS	.75														
9	IBC 16-13 (a) (c)	Yes	Y		DL	1	W...	-.45	LL	.75	LLS	.75														
10	IBC 16-13 (a) (d)	Yes	Y		DL	1	W...	-.45	LL	.75	LLS	.75														
11	IBC 16-15 (a)	Yes	Y		DL	.6	W...	.6																		
12	IBC 16-15 (b)	Yes	Y		DL	.6	W...	.6																		
13	IBC 16-15 (c)	Yes	Y		DL	.6	W...	-.6																		

Load Combinations (Continued)

	Description	Solve	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
14	IBC 16-15 (d)	Yes	Y		DL	.6	W...	-.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	N15	max	.032	3	.015	5	.203	11	0	14	0	14	0	14
2		min	-.03	5	.008	11	-.205	5	0	1	0	1	0	1
3	N18	max	.335	13	.454	4	.308	14	0	14	0	14	0	14
4		min	-.549	3	.162	14	-1.094	4	0	1	0	1	0	1
5	N19	max	.288	5	.453	6	.731	6	0	14	0	14	0	14
6		min	-.076	11	.161	12	.061	12	0	1	0	1	0	1
7	Totals:	max	.54	13	.782	10	.896	14						
8		min	-.54	3	.469	11	-.896	4						

Envelope Joint Displacements

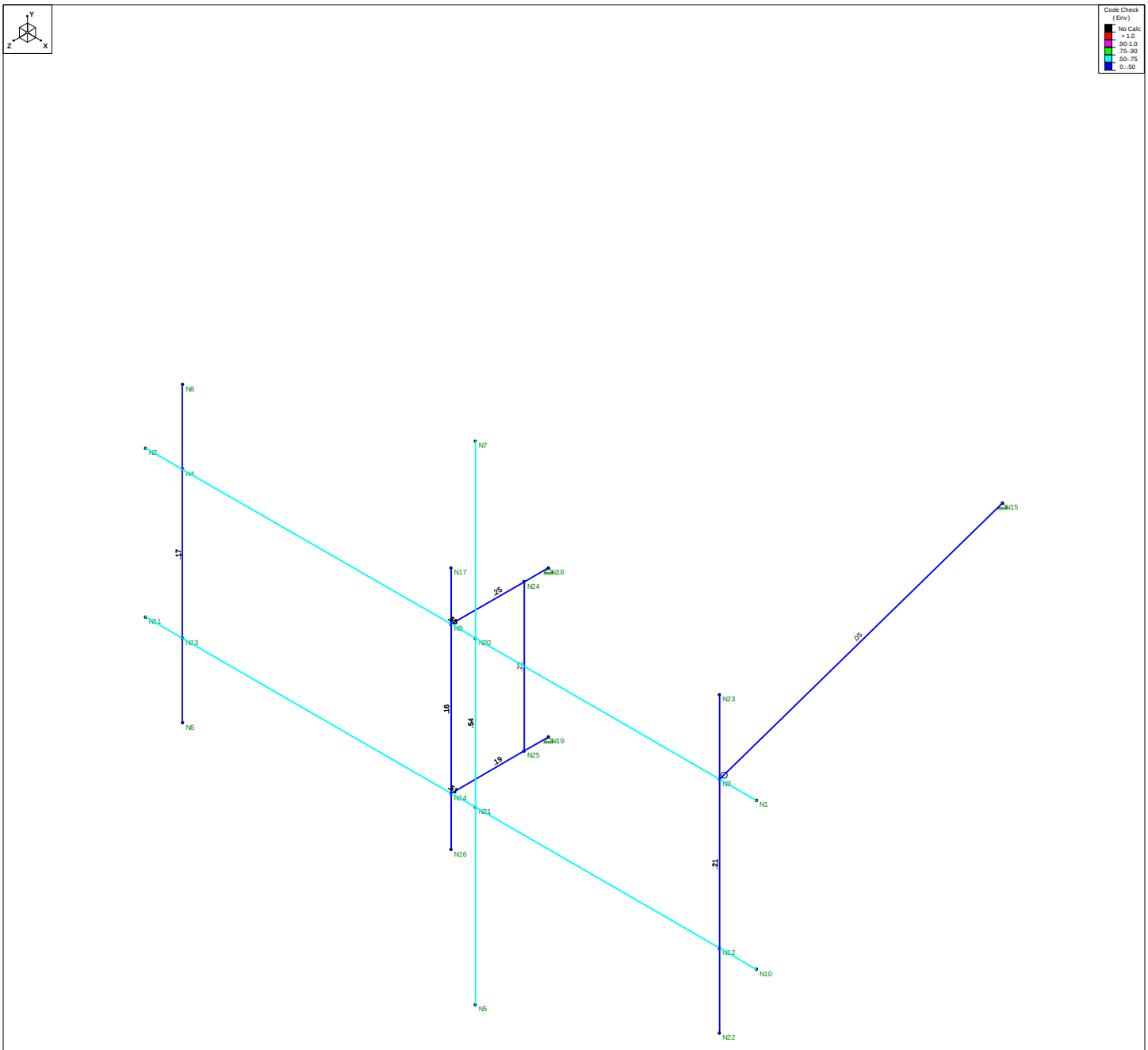
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N1	max	.356	3	-.115	13	.055	13	5.078e-03	3	3.461e-03	13	-3.938e-04	13
2		min	-.333	13	-.324	3	-.061	3	-5.241e-03	5	-3.463e-03	11	-2.692e-03	3
3	N2	max	.355	3	-.038	11	1.068	4	2.981e-03	4	1.721e-02	12	7.68e-04	5
4		min	-.334	13	-.172	5	-1.079	14	-2.029e-03	14	-1.754e-02	14	-5.411e-04	11
5	N3	max	.356	3	-.111	13	.086	13	5.078e-03	3	3.461e-03	13	-3.923e-04	13
6		min	-.333	13	-.3	3	-.092	3	-5.241e-03	5	-3.463e-03	11	-2.689e-03	3
7	N4	max	.355	3	-.043	11	.914	4	2.981e-03	4	1.721e-02	12	7.656e-04	5
8		min	-.334	13	-.166	5	-.922	14	-2.029e-03	14	-1.753e-02	14	-5.426e-04	11
9	N5	max	.283	11	-.016	13	.079	13	2.362e-03	6	1.068e-02	11	-6.108e-04	11
10		min	-.411	5	-.038	3	-.091	3	-2.054e-03	12	-1.101e-02	5	-1.878e-03	5
11	N6	max	.307	11	-.043	11	.85	11	2.644e-03	4	1.621e-02	12	6.422e-04	5
12		min	-.326	5	-.166	5	-.879	5	-1.694e-03	14	-1.664e-02	6	-4.219e-04	11
13	N7	max	.588	3	-.016	13	.369	4	1.21e-02	4	1.019e-02	3	4.131e-03	13
14		min	-.462	13	-.039	3	-.355	14	-1.175e-02	14	-9.89e-03	13	-6.623e-03	3
15	N8	max	.365	3	-.043	11	.972	4	3.282e-03	4	1.721e-02	12	9.179e-04	5
16		min	-.349	13	-.166	5	-.963	14	-2.33e-03	14	-1.753e-02	14	-6.946e-04	11
17	N9	max	.355	3	-.014	14	0	4	8.756e-04	4	1.354e-02	3	8.422e-05	13
18		min	-.333	13	-.029	4	0	14	-5.132e-05	14	-1.298e-02	13	-1.216e-03	3
19	N10	max	.314	11	-.119	13	.283	5	5.072e-03	11	2.565e-03	6	-8.392e-04	13
20		min	-.338	5	-.32	3	-.284	3	-5.232e-03	5	-2.39e-03	12	-2.248e-03	3
21	N11	max	.314	11	-.039	11	.976	11	2.644e-03	4	1.621e-02	12	6.747e-04	5
22		min	-.337	5	-.172	5	-1.01	6	-1.694e-03	14	-1.664e-02	6	-4.505e-04	11
23	N12	max	.314	11	-.111	13	.292	5	5.072e-03	11	2.561e-03	6	-8.377e-04	13
24		min	-.338	5	-.3	3	-.291	3	-5.232e-03	5	-2.386e-03	12	-2.246e-03	3
25	N13	max	.314	11	-.043	11	.858	11	2.644e-03	4	1.621e-02	12	6.723e-04	5
26		min	-.337	5	-.166	5	-.868	5	-1.694e-03	14	-1.664e-02	6	-4.519e-04	11
27	N14	max	.314	11	-.014	14	0	12	6.208e-04	6	1.268e-02	11	1.121e-04	13
28		min	-.338	5	-.029	4	0	6	2.048e-04	12	-1.329e-02	5	-1.237e-03	3
29	N15	max	0	14	0	14	0	14	3.401e-03	3	4.932e-03	3	-1.212e-03	11
30		min	0	1	0	1	0	1	1.132e-03	13	-4.692e-03	13	-3.131e-03	5
31	N16	max	.303	11	-.014	14	-.002	12	6.227e-04	6	1.268e-02	11	1.101e-04	13
32		min	-.34	5	-.029	4	-.008	6	2.028e-04	12	-1.329e-02	5	-1.235e-03	3
33	N17	max	.37	3	-.014	14	.011	4	8.776e-04	4	1.354e-02	3	8.618e-05	13
34		min	-.334	13	-.029	4	0	14	-5.328e-05	14	-1.298e-02	13	-1.218e-03	3

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
35	N18	max	0	14	0	14	0	14	1.365e-03	4	1.536e-02	3	5.824e-05	13
36		min	0	1	0	1	0	1	7.414e-04	14	-1.431e-02	13	-8.584e-04	3
37	N19	max	0	14	0	14	0	14	1.425e-03	4	1.328e-02	11	8.041e-05	13
38		min	0	1	0	1	0	1	6.82e-04	14	-1.443e-02	5	-8.746e-04	3
39	N20	max	.355	3	-.015	13	.068	13	2.528e-03	4	1.019e-02	3	1.39e-04	13
40		min	-.333	13	-.039	3	-.07	3	-2.207e-03	14	-9.89e-03	13	-2.603e-03	3
41	N21	max	.314	11	-.016	13	.073	5	1.359e-03	6	1.068e-02	11	-4.896e-04	13
42		min	-.338	5	-.038	3	-.07	11	-1.046e-03	12	-1.101e-02	5	-1.959e-03	3
43	N22	max	.291	11	-.111	13	.386	5	5.07e-03	11	2.561e-03	6	-1.084e-03	13
44		min	-.371	5	-.3	3	-.382	3	-5.228e-03	5	-2.386e-03	12	-1.997e-03	3
45	N23	max	.408	3	-.111	13	.024	14	5.081e-03	3	3.461e-03	13	-1.455e-04	13
46		min	-.33	13	-.3	3	-.032	4	-5.244e-03	5	-3.463e-03	11	-2.938e-03	3
47	N24	max	.092	3	-.004	14	0	4	1.249e-03	4	1.522e-02	3	5.824e-05	13
48		min	-.086	13	-.008	4	0	14	7.e-04	14	-1.422e-02	13	-8.584e-04	3
49	N25	max	.08	11	-.004	14	0	12	1.344e-03	4	1.326e-02	11	8.041e-05	13
50		min	-.087	5	-.009	4	0	6	6.052e-04	14	-1.435e-02	5	-8.746e-04	3

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

	Member	Shape	Code Check	Lo...	LC	She...	Lo...			Pnc/...	Pnt/o...	Mnyy...	Mnzz...	Cb	Eqn
1	M1	PIPE_2.0	.653	6.25	6	.471	6.25		6	4.189	21.377	1.245	1.245	1.9...	H3-6
2	M3	PIPE_2.0	.539	3....	4	.049	6....		5	6.545	21.377	1.245	1.245	4.9...	H1-...
3	M4	PIPE_2.0	.510	6.25	4	.291	6.25		4	4.189	21.377	1.245	1.245	1.9...	H3-6
4	M7	HSS3X3X4	.248	0	3	.049	1.5	z	3	65.138	67.21	5.693	5.693	1.88	H1-...
5	M10	PIPE_2.0	.218	3	4	.092	0		3	19.191	21.377	1.245	1.245	2.2...	H1-...
6	M9	PIPE_2.0	.214	1.5	3	.104	1.5		3	13.883	21.377	1.245	1.245	1.5...	H1-...
7	M8	HSS3X3X4	.188	0	5	.042	1.5	y	4	65.138	67.21	5.693	5.693	1.8...	H1-...
8	M2	PIPE_2.0	.169	1.5	5	.050	3.5		4	13.883	21.377	1.245	1.245	1.5...	H1-...
9	M6	PIPE_3.0	.162	3....	4	.068	1....		3	37.949	43.383	3.825	3.825	1.64	H1-...
10	M5	PIPE_2.0	.051	4....	3	.004	0		5	9.84	21.377	1.245	1.245	1.1...	H1-...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek		
TJL	CTNH354A - Mount	Sept 4, 2020 at 8:43 AM
20074.94	Unity Check	Antenna Mount.r3d

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTNH354A

CTNH354/Siemon Co Drive
27 Siemon Company Drive
Watertown, Connecticut 06795

October 6, 2020

EBI Project Number: 6220005284

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**18.29%**

October 6, 2020

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTNH354A - CTNH354/Siemon Co Drive

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **27 Siemon Company Drive** in **Watertown, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was 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 population 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 population 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 limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency 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.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 27 Siemon Company Drive in Watertown, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

8) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

9) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

10) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

12) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

13) The antenna mounting height centerline of the proposed antennas is 124 feet above ground level (AGL).

14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

15) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	124 feet	Height (AGL):	124 feet	Height (AGL):	124 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A1 MPE %:	**3.00%**	Antenna B1 MPE %:	**3.00%**	Antenna C1 MPE %:	**3.00%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd
Height (AGL):	124 feet	Height (AGL):	124 feet	Height (AGL):	124 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	10,465.36	ERP (W):	10,465.36	ERP (W):	10,465.36
Antenna A2 MPE %:	**3.79%**	Antenna B2 MPE %:	**3.79%**	Antenna C2 MPE %:	**3.79%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	124 feet	Height (AGL):	124 feet	Height (AGL):	124 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A3 MPE %:	**6.00%**	Antenna B3 MPE %:	**6.00%**	Antenna C3 MPE %:	**6.00%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	12.79%
AT&T	5.5%
Site Total MPE % :	18.29%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	12.79%
T-Mobile Sector B Total:	12.79%
T-Mobile Sector C Total:	12.79%
Site Total MPE % :	18.29%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	124.0	9.62	1900 MHz GSM	1000	0.96%
T-Mobile 1900 MHz LTE	2	2056.61	124.0	9.62	1900 MHz LTE	1000	0.96%
T-Mobile 2100 MHz LTE	2	2307.55	124.0	10.79	2100 MHz LTE	1000	1.08%
T-Mobile 600 MHz LTE	2	591.73	124.0	2.77	600 MHz LTE	400	0.69%
T-Mobile 600 MHz NR	1	1577.94	124.0	3.69	600 MHz NR	400	0.92%
T-Mobile 700 MHz LTE	2	695.22	124.0	3.25	700 MHz LTE	467	0.70%
T-Mobile 1900 MHz UMTS	2	1052.26	124.0	4.92	1900 MHz UMTS	1000	0.49%
T-Mobile 1900 MHz LTE	2	2104.51	124.0	9.84	1900 MHz LTE	1000	0.98%
T-Mobile 2500 MHz LTE	2	6412.98	124.0	29.99	2500 MHz LTE	1000	3.00%
T-Mobile 2500 MHz NR	2	6412.98	124.0	29.99	2500 MHz NR	1000	3.00%
						Total:	**12.79%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	12.79%
Sector B:	12.79%
Sector C:	12.79%
T-Mobile Maximum MPE % (Sector A):	12.79%
Site Total:	18.29%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **18.29%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Exhibit G

Mailing Receipts/Proof of Notice

View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialogue box that appears. Note: If your browser does not support this function, select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a scheduled Pickup
   - Your driver will pickup your shipment(s) as usual.

   Customers without a scheduled Pickup
   - Schedule a Pickup on ups.com to have a UPS driver pickup all of your packages.
   - Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. To find the location nearest you, please visit the 'Locations' Quick link at ups.com.

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RAMSEY NJ

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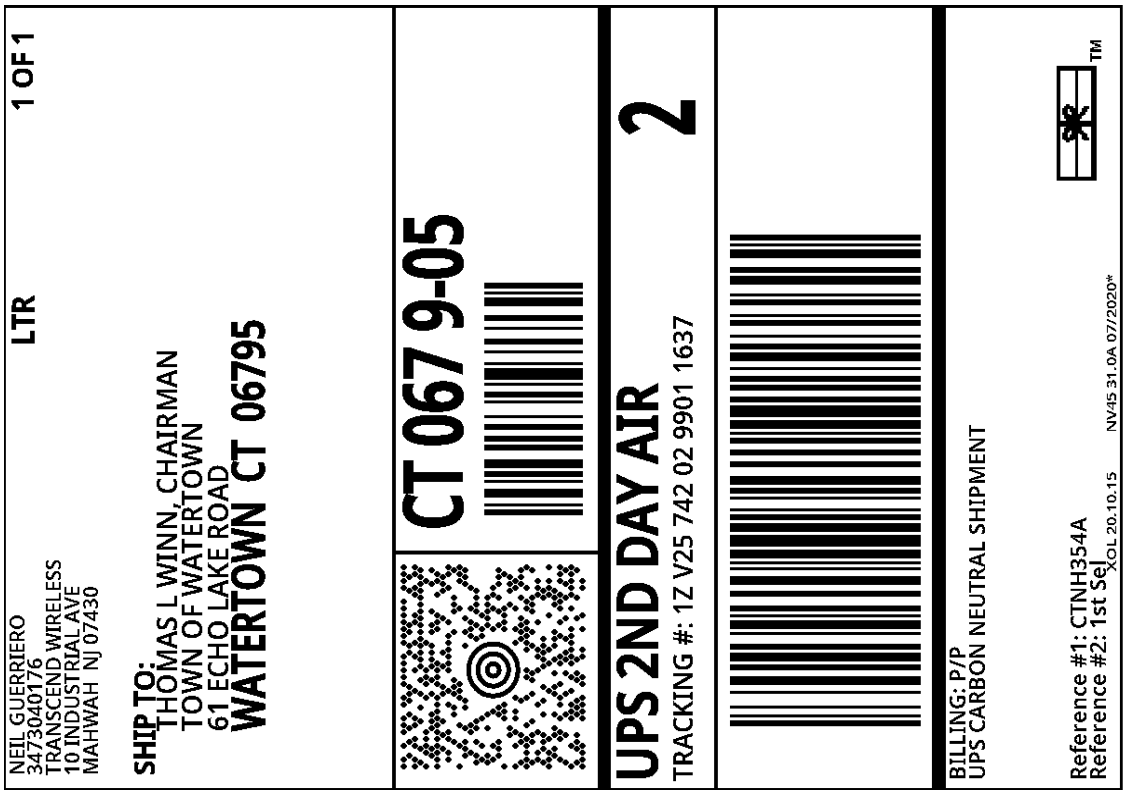
THE UPS STORE
120 E MAIN ST
RAMSEY NJ

FOLD HERE



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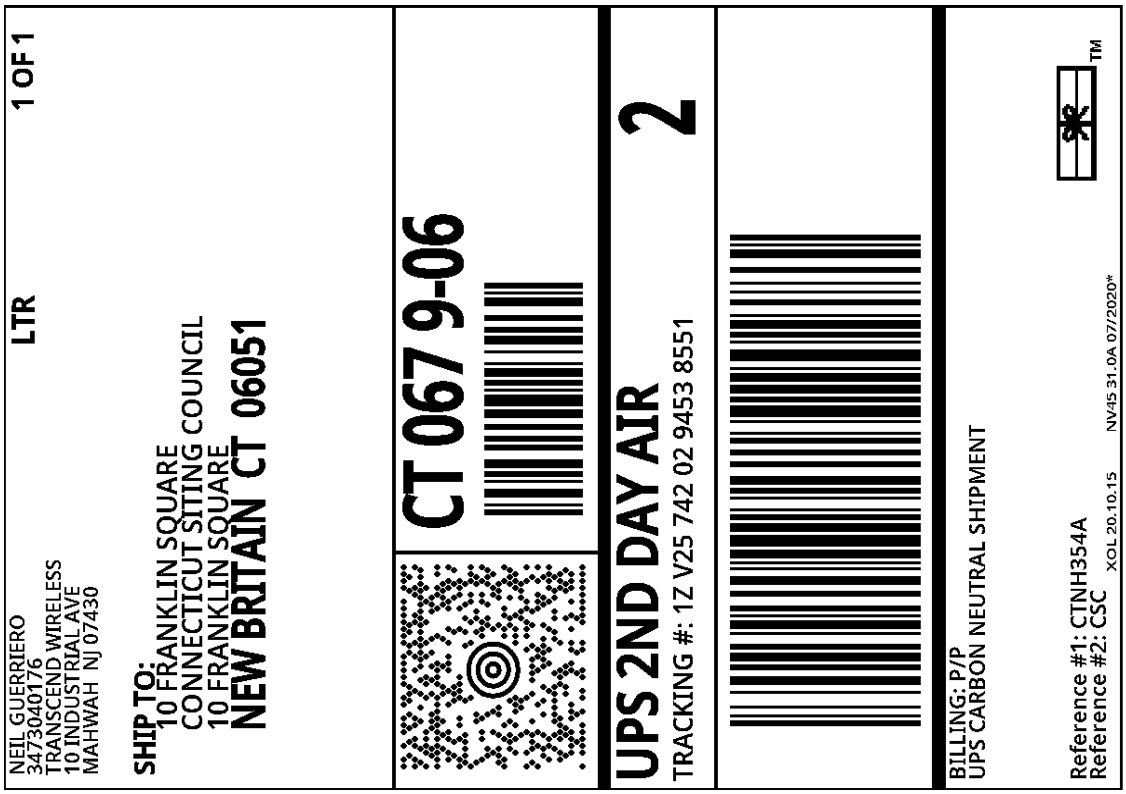

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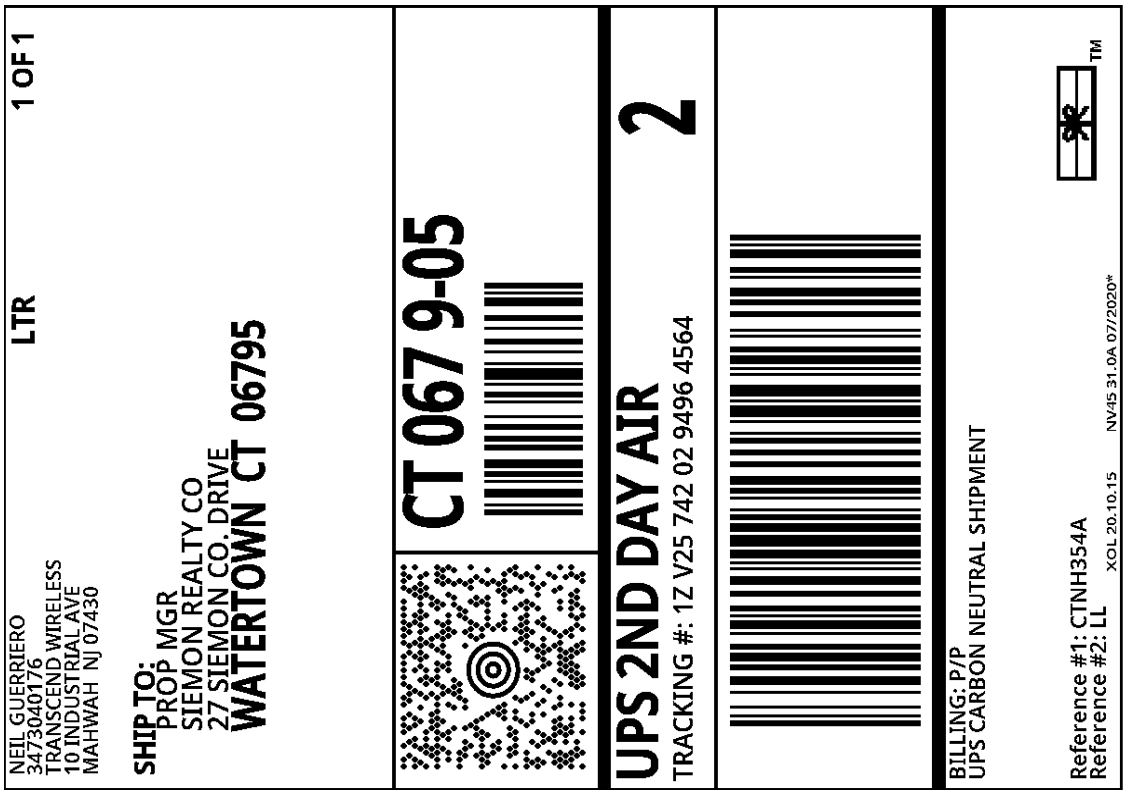

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1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialogue box that appears. Note: If your browser does not support this function, select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a scheduled Pickup
   - Your driver will pickup your shipment(s) as usual.

   Customers without a scheduled Pickup
   - Schedule a Pickup on ups.com to have a UPS driver pickup all of your packages.
   - Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. To find the location nearest you, please visit the 'Locations' Quick link at ups.com.

UPS Access Point™
MICHAELS STORE # 7773
75 INTERSTATE SHOP CTR
RAMSEY NJ

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH NJ

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY NJ

FOLD HERE