Victoria Masse
Northeast Site Solutions
5 Melrose Drive, Farmington CT 06032
860-306-2326
victoria@northeastsitesolutions.com

February 26, 2024

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Exempt Modification Application
Station Drive, Line #1750 - Pole#1280, Greenwich CT 06807
Latitude: 41.02998600
Longitude: -73.597948400
T-Mobile Site#: CT11241A_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 153-foot and 161-foot level of the existing 140-foot transmission pole at Station Drive, Line# 1750, Greenwich CT 06807. The electric transmission pole is owned by CL&P d/b/a Eversource, the property is owned by State of Connecticut Department of Transportation. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700 MHz 5G antenna. The new antennas would be installed at the 161-foot level of the transmission pole.
T-Mobile Planned Modifications:
Remove: NONE

Remove and Replace:
(3) Andrew LNX-6512DS (Remove) - (3) RFS APXVAARR18 600/700 MHz Antenna (Replace)

Install New:
(3) Smart Bias-T
(6) Coax
6’ Pipe Mast

Existing to Remain:
(3) Andrew TMBXX-6516 1900/2100 MHz Antenna
(3) Smart Bias-T
(18) Coax

Ground work:
(3) RRU (Remove)
(3) Radio 4449 B71+B85 (Replace)

This facility was approved by the CT Siting Council. Petition No.466 on June 20, 2000, T-Mobile Northeast LLC and Eversource received permission to modify a transmission structure for telecommunication use (pole #1280). Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Fred Camillo, First Selectman and Patrick LaRow, AICP, Director for the Town of Greenwich, as well as State of Connecticut Department of Transportation the property owner and CL&P d/b/a Eversource the tower 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,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 5 Melrose Drive, Farmington CT 06032
Email: victoria@northeastsitesolutions.com

Attachments

C: The Honorable Fred Camillo – First Selectman- Fred.Camillo@greenwichct.org
101 Field Point Road
Greenwich, CT 06830

Patrick LaRow, AICP, Director
101 Field Point Road
Greenwich, CT 06830

Eversource Energy- as tower owner
107 Selden Street
Berlin, CT 06037

John A. Vital, Transportation Rail Officer II – as property owner
Connecticut Department of Transportation
Bureau of Public Transportation
Office of Rails-Property Management Unit
4 Brewery Street, 4th Floor
New Haven, Connecticut 06511

Exhibit A

Original Facility Approval

Petition No. 466
Voicestream Wireless
Greenwich, Connecticut
Staff Report
June 20, 2000

On June 16, 2000, Connecticut Siting Council (Council) member Edward S. Wilensky, and Fred Cunliffe of Council staff met Voicestream Wireless (Voicestream) representatives J. Brendan Sharkey, Esq., Chetan Dharduk, and Haider Syed for inspection of a Connecticut Light & Power Company (CL&P) electric transmission line structure (no. 1280) located off Sound Shore Drive in Greenwich. Voicestream, with the agreement of CL&P, proposes to modify the transmission structure for telecommunications use and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

Voicestream proposes to attach a 7-inch diameter pipe extending the existing lattice structure height of 140 feet by 23 feet four inches for a total height of approximately 164 feet. A structural analysis concludes no additional reinforcement is necessary. Voicestream proposes to install two low profile antenna cluster mounts with centers of radiation at 161 feet and 152 feet 4 inches on the pipe and a 2-foot by 2-foot microwave antenna at the approximate 140-foot level of the structure. Voicestream proposes to place associated equipment cabinets on a concrete foundation within a 10.5-foot by 11.5-foot compound secured by a six-foot chain link fence. Since CL&P transmission line easement is limited to an aerial right-of-way, Voicestream will need to obtain a lease agreement with the Connecticut Department of Rail Transportation (ConnDOT) for underlying land use. Access to the CL&P structure would be from Sound Shore Drive over a ConnDOT easement. Utilities would be placed underground within this easement from an existing distribution pole located approximately 350 feet west of the proposed site.

Surrounding land uses include a CL&P substation and transmission lines, Town-owned water tank and abandoned power station, railroad right-of-way, and Interstate 95. Other existing transmission line structures in the area range in height from 95 feet to 140 feet AGL.

The Council approved Petition No. 399 on July 23, 1998 for Sprint to use structure no. 1281 just west of the proposed site and approved Petition No. 443 on February 2, 2000 for AT&T to use structure no. 1292 adjacent to the Cos Cob Substation. The zoning of the proposed site is Residential R-6. The nearest home is approximately 350 north across the railroad right-of-way of the site.

The worst case power density for the telecommunications operations at the site has been calculated to be less than 1.8% of the applicable standard for uncontrolled environments.

Voicestream contends that the proposed installation will not cause a substantial adverse environmental effect, and for this reason would not require a Certificate.

Exhibit B

Property Card

345

369

This map was produced from the Town of Greenwich Geographic Information System. The Town expressly disclaims any liability that may result from the use of this map. Aerial: 4/2/08. Data: 10/1/10. Map: 4/4/11.

TOWN OF GREENWICH TAX MAP 368

ADMINISTRATIVE INFORMATION

PARCEL NUMBER
02-1708/S

Parent Parcel Number

Property Address
SOUND SHORE DRIVE 0012

Neighborhood
2300 EAST PUTNAM

Property Class
402 Electical Transformer Station

TAXING DISTRICT INFORMATION

Jurisdiction	57	Greenwich, CT
Area	001	
Corporation	057	
District	02	
Section & Plat	236	
Routing Number	7890S0004Z	

Site Description

Topography:

Public Utilities:
Electric

Street or Road:

Neighborhood:

Zoning:
WB Waterfront Business

Legal Acres:
1.5000

OWNERSHIP

CONNECTICUT LIGHT & POWER CO
PO BOX 270
HARTFORD, CT 06101

LOT NO 15 & 18A SOUND SHORE DR S4Z

Tax ID 368/039 Printed 04/27/2022 Card No. 1 of 1

TRANSFER OF OWNERSHIP

Date		
12/29/1959	NA	$0
	Bk/Pg: 626, 322	

UTILITY

VALUATION RECORD

Assessment Year		10/01/2016	10/01/2017	10/01/2018	10/01/2019	10/01/2020	10/01/2021	10/01/2021
Reason for Change		2016 List	2017 List	2018 List	2019 List	2020 List	2021 Prelim	2021 Final
VALUATION	L	2383100	2383100	2383100	2383100	2383100	2383100	2383100
Market	B	93500	93500	93500	93500	93500	94700	94700
	T	2476600	2476600	2476600	2476600	2476600	2477800	2477800
VALUATION	L	1668170	1668170	1668170	1668170	1668170	1668170	1668170
70% Assessed	B	65450	65450	65450	65450	65450	66290	66290
	T	1733620	1733620	1733620	1733620	1733620	1734460	1734460

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table 100 Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value
1 Primary Commercial				65340.00	104.21	104.21	6808900 1	-65%	2383100

BP18: 15-3958: $55,000 Verizon Replace Antennas
GEN: CL&P Transformer Station.
Improved w/ Jet Generators owned by CT Jet Power
PP Acnt # 01-27287.
added 's' 2/27/14 per e-mail from c mandras
O/O: Owner-Occupied Commercial

Permit Number / Type	FilingDate	Est. Cost / Est. SqFt	Field Visit

Supplemental Cards

TRUE TAX VALUE 2383100

Supplemental Cards
TOTAL LAND VALUE 2383100

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

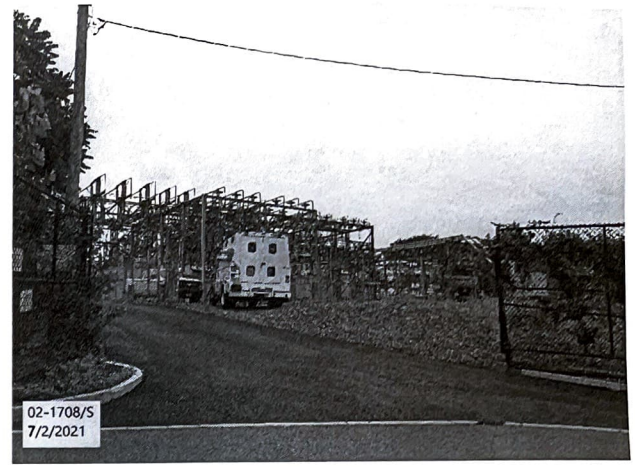
	B	1	2	U
Frame				
Brick				
Metal				
Guard				

FRAMING

	B	1	2	U
F Res	0	240	0	0

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	0	240	0	0



1 s Mas / Slab (240)

12 20

03

01

02

(LCM: 150.00)

SPECIAL FEATURES

Description	Value
03 : BW	

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	HUTLSTOR	0.00		Good	2006	2006	GD	0.00	N	0.00	240	0	0	0	150	100	40500
01	UTLSHED	1.00	1	Fair	1980	1985	AV	44.50	N	53.40	20x 40	42720	45	0	100	100	23500
02	UTLSHED	1.00	1	Fair	1970	1985	AV	44.50	N	53.40	20x 36	38450	45	0	100	100	21200
03	FENCECL	6.00	51C	Avg	1970	1985	AV	19.20	Y	28.80	520	17220	45	0	100	100	9500

Data Collector/Date
TD 07/02/2021

Appraiser/Date
TOG 10/01/2021

Neighborhood
Neigh 2300 AV

Supplemental Cards

TOTAL IMPROVEMENT VALUE 94700

Exhibit C

Construction Drawings

GREENWICH/COS COB/1-95
SITE ID: CT11241A
STATION DRIVE
(LINE# 1750-POLE# 1280)
GREENWICH, CT 06830

T-MOBILE A&L TEMPLATE (PROVIDED BY RFDS)
67D94B_1DP+1QP+1OP

RAN TEMPLATE (PROVIDED BY RFDS)
67D94B OUTDOOR

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. 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.
5. 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 AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. 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.
7. 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.
8. 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.
9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. 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.
17. 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.
18. 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.
19. 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.
20. 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.
21. 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 AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
22. 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.
23. 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.
24. 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.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. 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.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

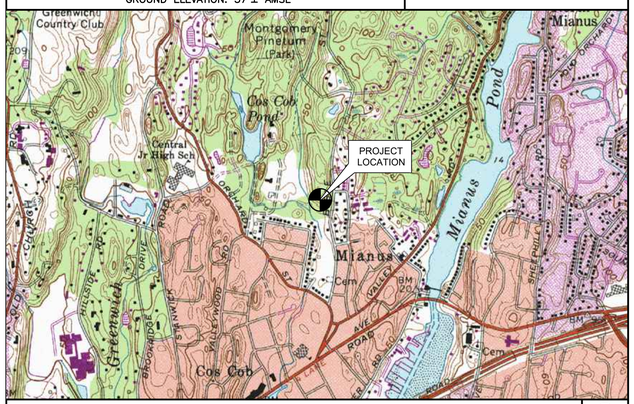
SITE DIRECTIONS

FROM: 35 GRIFFIN ROAD SOUTH, BLOOMFIELD, CT 06002 **TO:** STATION DRIVE, GREENWICH, CT 06830

1.	HEAD NORTH ON GRIFFIN ROAD S. TOWARD HARTMAN RD.	0.30 MI.
2.	TAKE THE 2ND RIGHT ONTO DAY HILL RD.	0.14 MI.
3.	TAKE THE 1ST RIGHT ONTO BLUE HILLS AVENUE EXT/CT-187	1.89 MI.
4.	TURN LEFT ONTO CT-305/OLD WINDSOR RD.	2.32 MI.
5.	STAY STRAIGHT TO GO ONTO BLOOMFIELD AVE/CT-305.	0.01 MI.
6.	MERGE ONTO I-91 S TOWARD HARTFORD	44.03 MI.
7.	KEEP RIGHT TOWARD NY CITY	0.21 MI.
8.	MERGE ONTO I-95 S VIA THE EXIT ON THE LEFT TOWARD NY CITY	43.94 MI.
9.	TAKE THE INDIAN FIELD RD EXIT, EXIT 4 TOWARD COS COB	0.19 MI.
10.	TURN RIGHT ONTO INDIAN FIELD RD	0.02 MI.
11.	TURN RIGHT ONTO SOUND SHORE RD	0.21 MI.
12.	TAKE 1ST LEFT ONTO SACHEM RD	0.04 MI.
13.	TURN RIGHT ONTO STATION DRIVE	0.01 MI.
14.	STATION DRIVE LINE# 1750-POLE# 1280 GREENWICH, CT 06830	

SITE COORDINATES: LATITUDE: 41°-01'-48.19" N
LONGITUDE: 73°-35'-50.78" W
GROUND ELEVATION: 37'± 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 (3) ANDREW – LNX-6513DS ANTENNAS
2. REMOVE (3) EXISTING T-MOBILE RADIOS
3. INSTALL (6) NEW COAX TO THE EXISTING (18) COAX CABLES
4. INSTALL (3) RFS – APXVAAR18_43-U-NA20
5. INSTALL (3) RADIO 4449 B71+B85 MOUNTED TO EXISTING H-FRAME AT CABINETS
6. INSTALL (3) ANDREW SMART BIAS T DEVICES AT ANTENNAS

PROJECT INFORMATION

SITE NAME:	GREENWICH/COS COB/1-95
SITE ID:	CT11241A
SITE ADDRESS:	STATION DRIVE GREENWICH, CT 06830
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	SHELDON FREINCLE (PROJECT MANAGER) NORTHEAST SITE SOLUTIONS (203) 776-8521
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-01'-48.19" N LONGITUDE: 73°-35'-50.78" W GROUND ELEVATION: 37'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

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C-2	COMPOUND PLAN, EQUIPMENT PLAN, AND ELEVATION	2
C-3	ANTENNA PLANS AND ELEVATIONS	2
C-4	TYPICAL EQUIPMENT DETAILS	2
E-1	TYPICAL ELECTRICAL DETAILS	2
E-2	ELECTRICAL SPECIFICATIONS	2

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/23/24	ASC	TJR	CONSTRUCTION DRAWINGS - REVISED PER UPDATED CODES
1	08/10/21	ANC	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
0	07/26/21	ANC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

T-Mobile

NSS NORTHEAST SITE SOLUTIONS

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

GREENWICH/COS COB/1-95
SITE ID: CT11241A
STATION DRIVE
GREENWICH, CT 06830

DATE: 06/18/21
SCALE: AS NOTED
JOB NO. 21051.06

TITLE SHEET

T-1

Sheet No. 1 of 8

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

1. GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.
2. TIA-222-H, ASCE MANUAL NO. 48-11 – "DESIGN OF STEEL TRANSMISSION POLE STRUCTURES SECOND EDITION", NESC C2-2023 AND EVERSOURCE.
3. DESIGN CRITERIA
   - WIND LOAD: (ANTENNA MAST)
     ULTIMATE DESIGN AND WIND SPEED (V) = 130 MPH (2022 CSBC: APPENDIX "P")
   - WIND LOAD: (UTILITY POLE & FOUNDATION)
     BASIC WIND SPEED (V) = 110 MPH (3 SECOND GUST)
     BASED ON NESC C2-2023, SECTION 25 RULE 250C.

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

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
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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. 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.
5. 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 AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. 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.
7. 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.
8. 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.
9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. 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.
17. 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.
18. 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.
19. 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.
20. 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.
21. 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 AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
22. 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.
23. 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.
24. 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.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. 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.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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1	08/10/21	ANC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
0	07/26/21	ANC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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SITE ID: CT11241A
STATION DRIVE
GREENWICH, CT 06830

DATE: 06/18/21
SCALE: AS NOTED
JOB NO. 21051.06

GENERAL NOTES AND SPECIFICATIONS

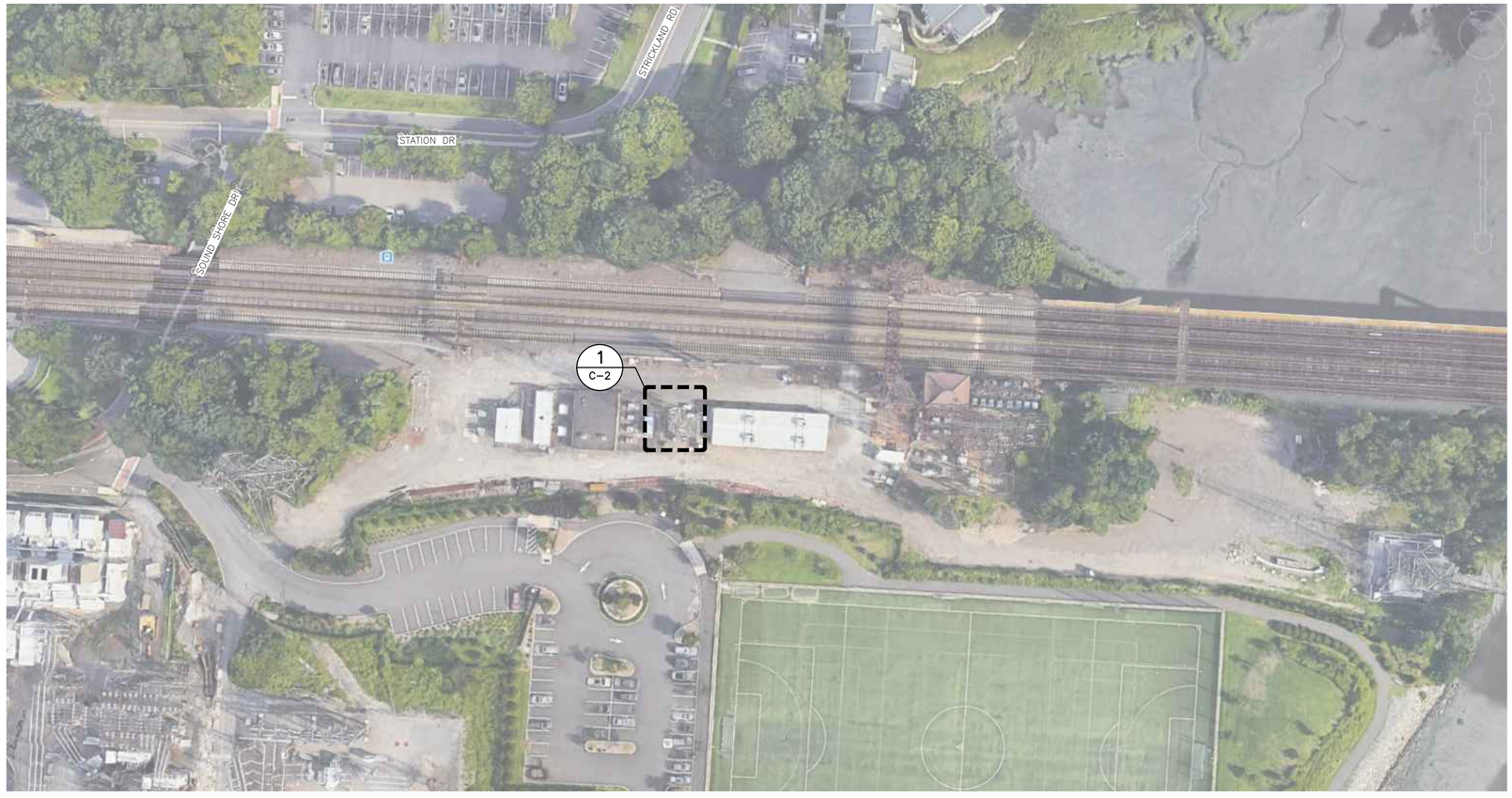
N-1

Sheet No. 2 of 8

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 D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA (QTY)	(QTY) PROPOSED COAX
A1	EXISTING	ANDREW (TMBXX-6516-A2M)	59.5 x 12 x 6.5	153'	20°		(E) GENERIC TWIN STYLE TMA (AT CABINET) (2), (P) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	(2) 1-5/8" COAX CABLES
A2	PROPOSED	RFS (APXVAARR18_43-U-NA20)	72 x 24 x 8.5	161'	20°	(P) RADIO 4449 B71+B85 (AT CABINET) (1)	(E) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	
B1	EXISTING	ANDREW (TMBXX-6516-A2M)	59.5 x 12 x 6.5	153'	140°		(E) GENERIC TWIN STYLE TMA (AT CABINET) (2), (P) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	(2) 1-5/8" COAX CABLES
B2	PROPOSED	RFS (APXVAARR18_43-U-NA20)	72 x 24 x 8.5	161'	140°	(P) RADIO 4449 B71+B85 (AT CABINET) (1)	(E) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	
C1	EXISTING	ANDREW (TMBXX-6516-A2M)	59.5 x 12 x 6.5	153'	240°		(E) GENERIC TWIN STYLE TMA (AT CABINET) (2), (P) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	(2) 1-5/8" COAX CABLES
C2	PROPOSED	RFS (APXVAARR18_43-U-NA20)	72 x 24 x 8.5	161'	240°	(P) RADIO 4449 B71+B85 (AT CABINET) (1)	(E) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	



1 C-1 SITE LOCATION PLAN
SCALE: 1" = 50'

TRUE NORTH

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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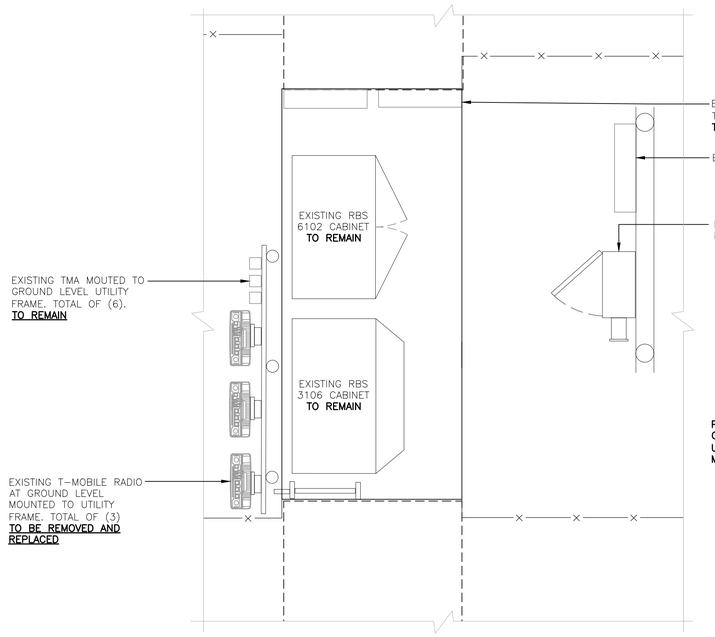
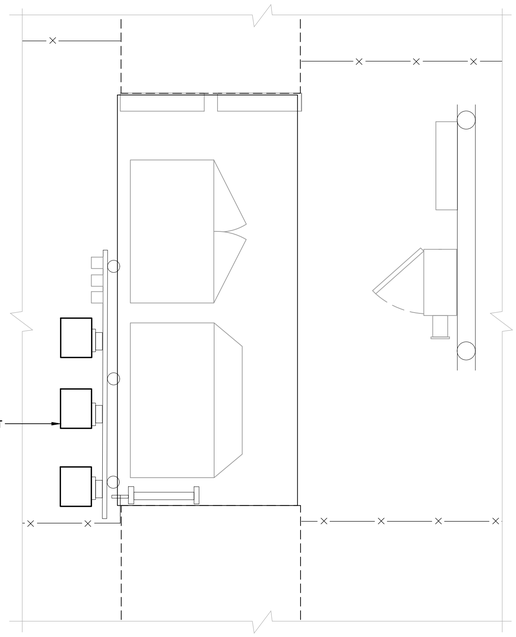
SITE LOCATION PLAN

C-1

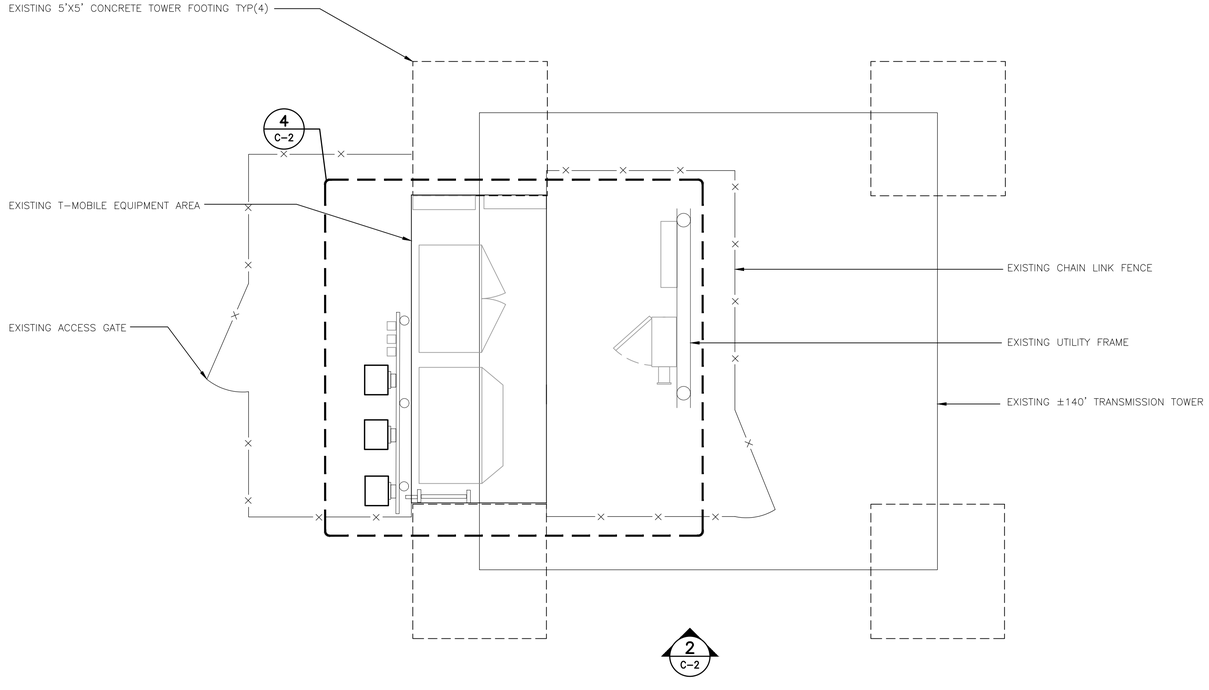
Sheet No. 3 of 8



3 C-2 **EQUIPMENT PLAN - EXISTING**
SCALE: 1/2" = 1'
TRUE NORTH



4 C-2 **EQUIPMENT PLAN - PROPOSED**
SCALE: 3/8" = 1'
TRUE NORTH



1 C-2 **COMPOUND PLAN - PROPOSED**
SCALE: 3/8" = 1'
TRUE NORTH

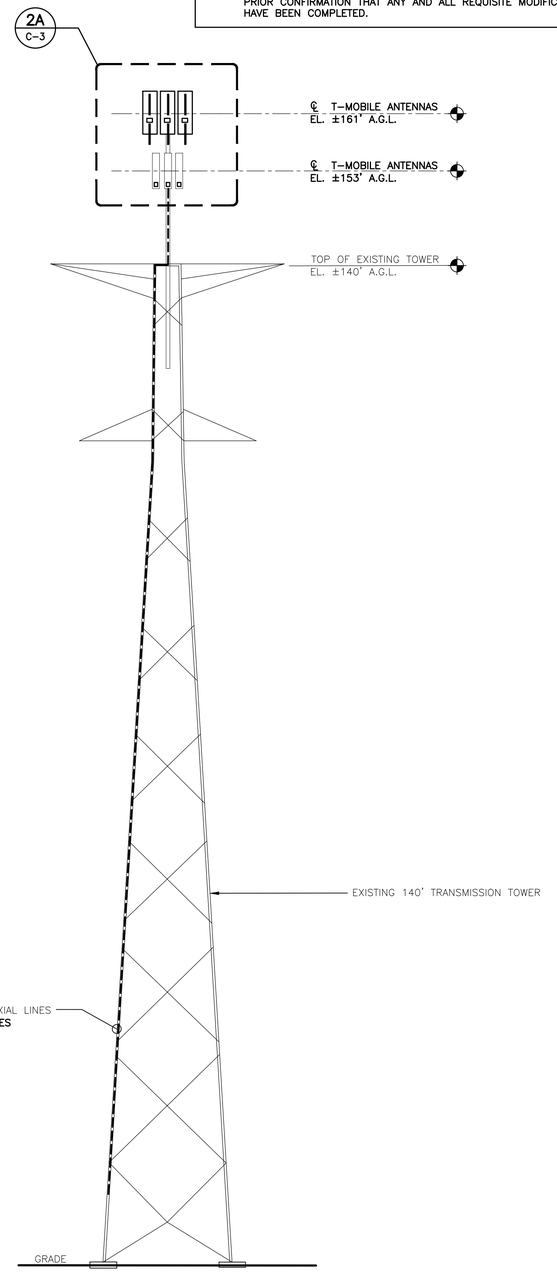
STRUCTURAL COMPLIANCE

UTILITY STRUCTURE (EVERSOURCE STRUCTURE NO. 1280) AND ANTENNA MAST

A STRUCTURAL ANALYSIS OF THE UTILITY STRUCTURE AND ANTENNA MAST 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 # 23058.11) DATED 01/22/24 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.



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

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

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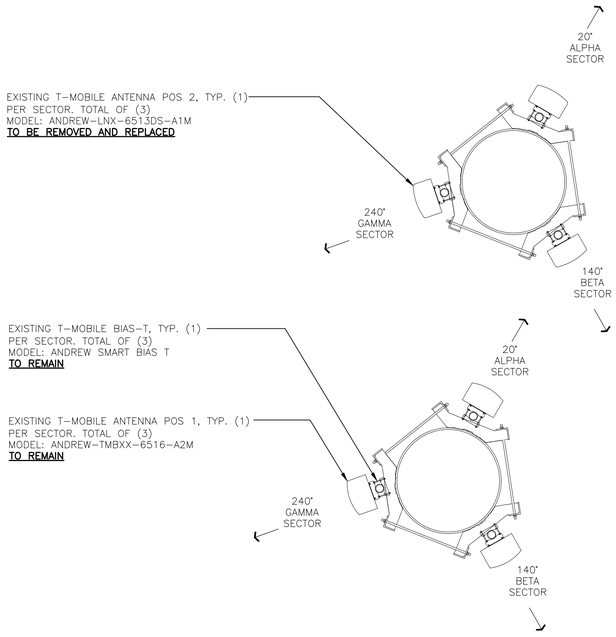
COMPOUND PLAN, EQUIPMENT PLANS, AND ELEVATION

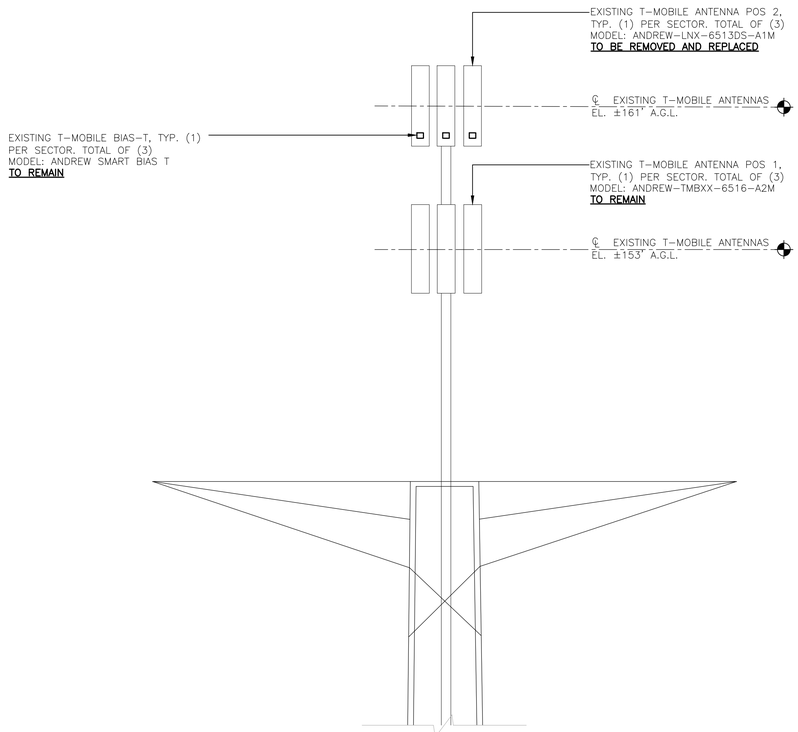
C-2

Sheet No. 4 of 8

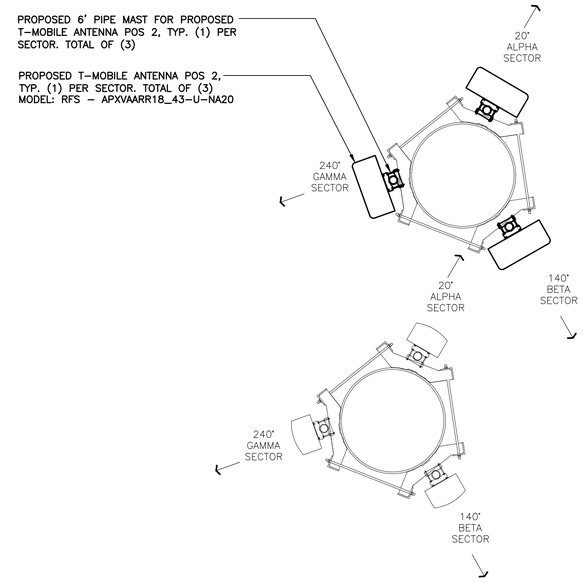


1 C-3 **EXISTING ANTENNA MOUNTING CONFIGURATION**
SCALE: 1/2" = 1'

TRUE NORTH

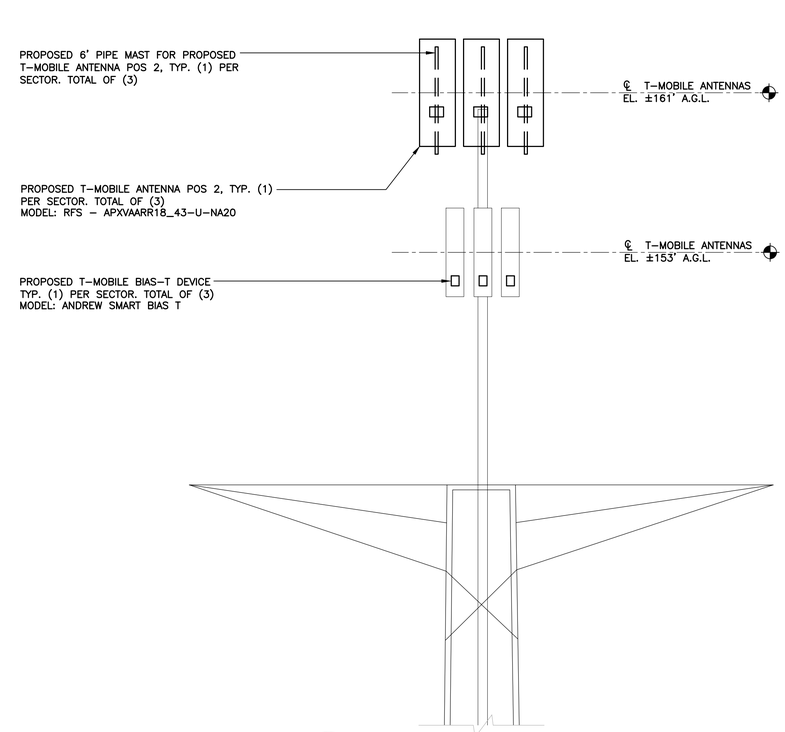


2 C-3 **EXISTING ANTENNA ELEVATION**
SCALE: 1/4" = 1'



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

TRUE NORTH



2A C-3 **PROPOSED ANTENNA ELEVATION**
SCALE: 1/4" = 1'

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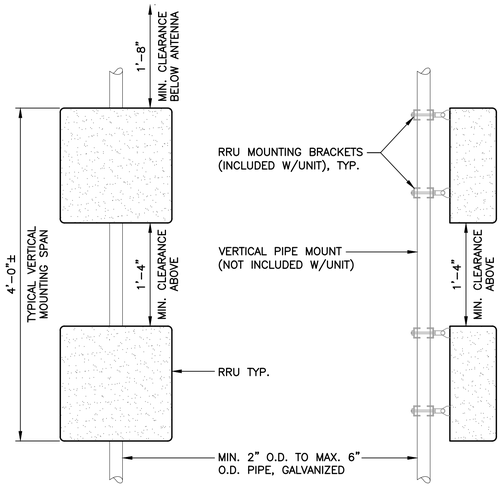
ANTENNA PLANS AND ELEVATIONS

C-3

Sheet No. 5 of 8

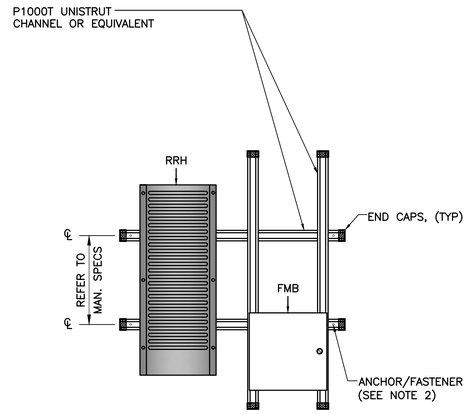


NOTES: (POLE MOUNTING)

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.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

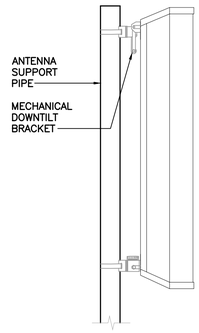
1 C-4 TYPICAL RRU MOUNTING DETAILS

SCALE: NOT TO SCALE



NOTES: (UNISTRUT MOUNTING)

1. INSTALL A MINIMUM OF (2) ANCHORS PER UNISTRUT (± 16"o/c MIN).
2. MOUNT RRU TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET.
3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.



APXVAARR18_43-U-NA20

4449_B71+B85

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: APXVAARR18_43-U-NA20	72"L x 24"W x 8.5"D	±106 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

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
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

ANDREW SMART BIAS-T		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: ATSBT-TOP-FF-4G	5.63"L x 3.7"W x 2"D	±1.7 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.		

4 C-4 PROPOSED BIAS-T DETAIL

SCALE: NOT TO SCALE

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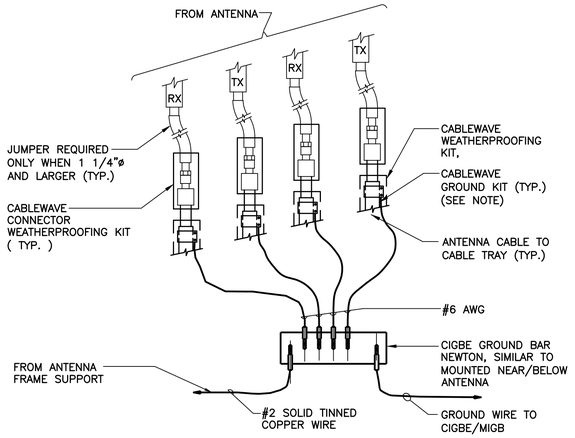
TYPICAL EQUIPMENT DETAILS

C-4

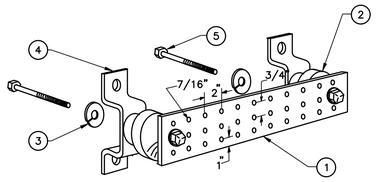


NOTES:

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

SCALE: NOT TO SCALE

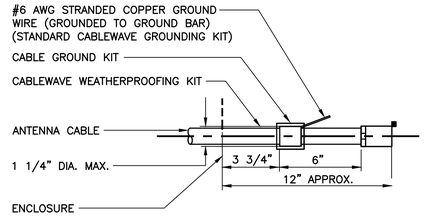


NOTES

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.

2 E-1 GROUND BAR DETAIL

SCALE: NOT TO SCALE

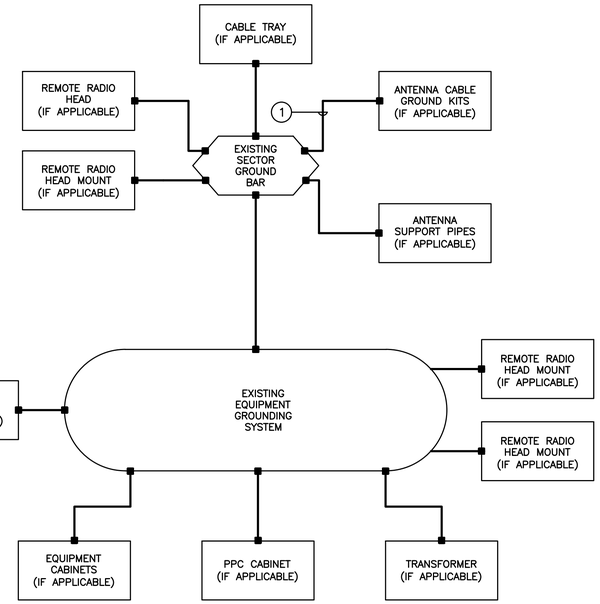


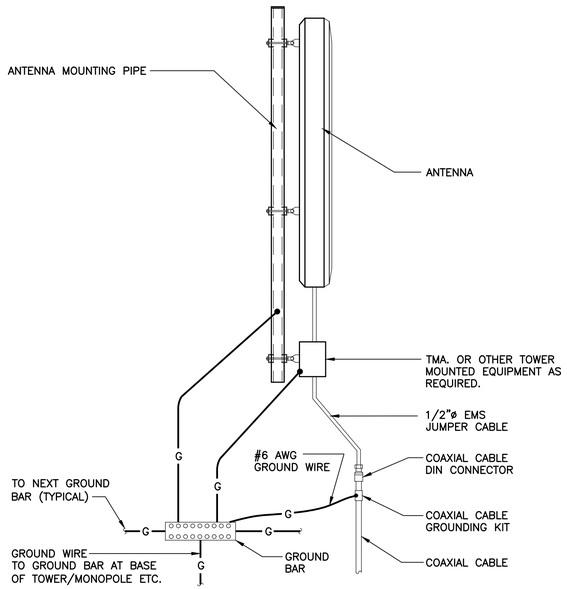
NOTES:

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

SCALE: NOT TO SCALE



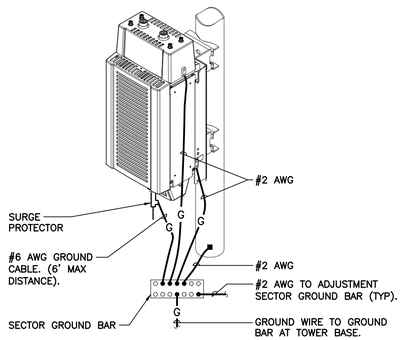


4 E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE

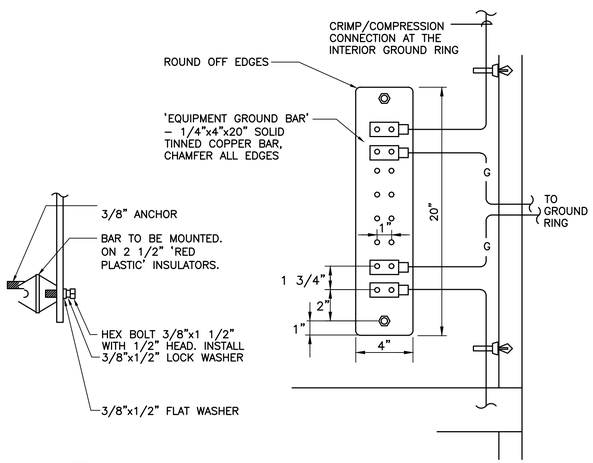
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



5 E-1 RRH POLE MOUNT GROUNDING

SCALE: NOT TO SCALE



6 E-1 EQUIPMENT GROUND BAR DETAIL

SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

(1) #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. BOND CABLE TRAY SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
4. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
5. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
6. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
7. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
8. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
9. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

7 E-1 ELECTRICAL SCHEMATIC DIAGRAM

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/23/24	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED PER UPDATED CODES
1	08/10/21	ANC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
0	07/26/21	ANC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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T-MOBILE NORTHEAST LLC

GREENWICH/COS COB/I-95
SITE ID: CT11241A
STATION DRIVE
GREENWICH, CT 06830

DATE: 06/18/21
SCALE: AS NOTED
JOB NO. 21051.06

TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 7 of 8

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. 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 THE 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. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

M. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.

2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

N. 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 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.

B. THE INTERIOR OF RACEWAYS/ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.

D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS

E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) [2][3]
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

[1] PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.

[2] UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".

[3] WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16140

1.01. WIRING DEVICES

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

1. 15 MINUTE TIMER SWITCH - INTERMATIC #FF15M (INTERIOR LIGHTS)

2. DUPLEX RECEPTACLE - P&S #2095 (GFCI) SPECIFICATION GRADE

3. SINGLE POLE SWITCH - P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE

4. DUPLEX RECEPTACLE - P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE

B. PLATES - ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

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. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.

2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. 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.

3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

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

1. GROUND BARS

2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).

3. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

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

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.

2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.

3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/26/21	ANC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
1	08/10/21	ANC	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
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T-MOBILE NORTHEAST LLC

GREENWICH/COS COB/I-95
SITE ID: CT11241A
STATION DRIVE
GREENWICH, CT 06830

DATE: 06/18/21
SCALE: AS NOTED
JOB NO. 21051.06

ELECTRICAL SPECIFICATIONS

E-2

Sheet No. 8 of 8

Exhibit D

Structural Analysis Report

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Tower

T-Mobile Site Ref: CT11241A

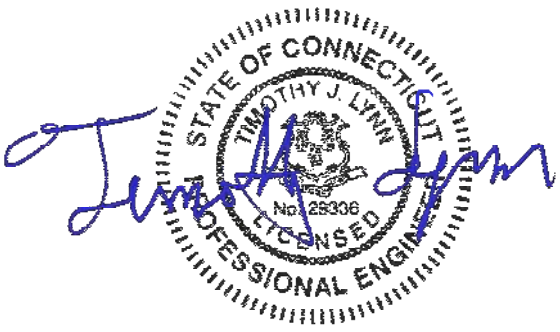
Eversource Structure No. 1280
140' Electric Transmission Lattice Tower

Station Drive
Greenwich, CT

CENTEK Project No. 23058.11

Date: January 22, 2024

Max Stress Ratio = 90%



Prepared for:
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Table of Contents

Introduction

The purpose of this report is to analyze the existing antenna mast and 140' utility tower located at Station Drive in Greenwich, CT for the proposed antenna and equipment upgrade by T-Mobile.

The existing and proposed loads consist of the following:

- T-MOBILE (Existing to Remain):
  Antennas: Three (3) Andrew TMBXX-6516 panel antennas flush mounted with a RAD center elevation of 153-ft above tower base and three (3) Andrew ATSBT-TOP-FM-4G Smart Bias Tees flush mounted with a RAD center elevation of 161-ft above tower base.
  Coax Cables: Eighteen (18) 1-5/8" ∅ coax cables running on a leg of the existing tower.
- T-MOBILE (Existing to Remove):
  Antennas: Three (3) Andrew LNX-6512DS panel antennas flush mounted with a RAD center elevation of 161-ft above tower base.
- **T-MOBILE (Proposed):**
  Antennas: Three (3) RFS APXVAARR18_43 panel antennas flush mounted with a RAD center elevation of 161-ft above tower base and three (3) Andrew ATSBT-TOP-FM-4G Smart Bias Tees flush mounted with a RAD center elevation of 153-ft above tower base.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on a leg of the existing tower.

Primary assumptions used in the analysis

- Design steel stresses are defined by AISC-LRFD 14th edition for design of the antenna Mast and antenna supporting elements.
- ASCE 48-11, "Design of Steel Transmission Pole Structures", defines steel stresses for evaluation of the utility pole.
- All utility pole members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- Pipe mast will be properly installed and maintained.
- No residual stresses exist due to incorrect pole erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Pipe mast and utility pole will be in plumb condition.
- Utility pole was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.
- For the purpose of this analysis, the existing and proposed antennas are assumed to be oriented as documented in the Introduction section of this report.

Analysis

Structural analysis of the existing antenna mast was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc. The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The existing antenna mast consisting of a 10" Sch.80 x 29'-0" long pipe flange connected to a 6" Sch.80 x 14'-0" long pipe conforming to ASTM A53 Grade B (Fy = 35ksi) connected at two points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA-222-H standard. Section 5 of this report details these gravity and lateral wind loads. Load cases and combinations used in RISA-3D for TIA/EIA loading are listed in report Section 6.

Structural analysis of the existing utility tower structure was completed using the current version of PLS-Tower computer program licensed to CENTEK Engineering, Inc. The NESC program contains a library of all AISC angle shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The existing 140-ft tall lattice tower was analyzed for its ability to resist loads prescribed by the NESC standard. Maximum usage for the tower was calculated considering the additional forces from the antenna mast and associated appurtenances. Section 7 of this report details these gravity and lateral wind loads.

Design Basis

Our analysis was performed in accordance with TIA-222-H, ASCE 48-11, "Design of Steel Transmission Pole Structures", NESC C2-2023 and Northeast Utilities Design Criteria.

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the Eversource Design Criteria Table, NESC C2-2023 ~ Construction Grade B, and ASCE 48-11.

  Load cases considered:

  Load Case 1: NESC Heavy Wind

Wind Pressure..……..	4.0 psf
Radial Ice Thickness…..…….	0.5"
Vertical Overload Capacity Factor…….	1.50
Wind Overload Capacity Factor…….	2.50
Wire Tension Overload Capacity Factor……	1.65

  Load Case 2: NESC Extreme Wind

Wind Speed..…….	110 mph (1)
Radial Ice Thickness…..…….	0"

- MAST ASSEMBLY ANALYSIS

  Mast, appurtenances and connections to the utility tower were analyzed and designed in accordance with TIA-222-H and AISC standards.

  Load cases considered:

  Load Case 1:
  Wind Speed……... 130 mph (2022 CSBC Appendix-P)
  Radial Ice Thickness…..……. 0”

  Load Case 2:
  Wind Pressure..……. 50 mph wind pressure
  Radial Ice Thickness…..…….. 1.0”

Results

- ANTENNA MAST

  The existing antenna mast was determined to be structurally **adequate**.

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
10” Pipe	Bending	67.1%	**PASS**
6” Pipe	Bending	73.1%	**PASS**
Flange Connection	Shear	57.9%	**PASS**

- UTILITY TOWER

  This analysis finds that the subject utility pole is adequate to support the proposed antenna mast and related appurtenances. The pole stresses meet the requirements set forth by the ASCE 48-11, “Design of Steel Transmission Pole Structures” for the applied NESC Heavy and Extreme load cases. The detailed analysis results are provided in Section 9 of this report. The analysis results are summarized as follows:

  Note 1: OTM denote overturning moment.
  Note 2: FS denotes Factor of Safety.

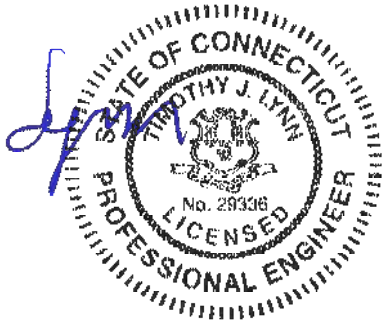
Conclusion

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

The analysis is based, in part on the information provided to this office by Eversource and 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 are performed, results obtained, and recommendations made 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.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

Modeling Features

- Comprehensive CAD-like drawing/editing environment: draw, generate, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, trim, extend, etc.
- Versatile drawing grids (orthogonal, radial, skewed, DXF underlay)
- Universal snaps and object snaps allow drawing without grids
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet based, save/recall selections with locking
- True spreadsheet editing with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and graphics
- Open multiple spreadsheets simultaneously
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability, automatic timed backup
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, geodesic domes, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection custom shape libraries
- Steel Shapes: AISC, Historic, Australian, British, Canadian, Chilean, Chinese, European, Indian, Mexican
- Light Gage Shapes: AISI, SSMA, Dale/Incor, Dietrich, Marino\WARE
- Import DXF, RISA-2D, STAAD and CIS/2 files
- Export DXF, SDNF and CIS/2 files
- Robust two-way link with Revit Structure 2019
- Link with Tekla Structures 2018

Analysis Features

- Analysis of 1D members (beams, columns, braces, etc.) using Finite Element Method
- Analysis of 2D elements (plates, walls) using Finite Element Method
- Analysis of 3D elements (solids) using Finite Element Method
- Partial fixity member end releases using rotational spring constants
- Time History Analysis
- Accelerated true sparse solver for static analysis
- Flexible modeling of P-Delta effects
- Accelerated Sparse Lanczos dynamics solver, very fast and robust
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS with automatic calc of scaling factors
- Automatic inclusion of mass offset (5% or user defined) for dynamics when integrated with RISAFloor
- Ritz vector dynamic solver
- True physical member modeling (members are aware of interior joints)
- Plate/shell elements with plane stress only option
- 8 node solid elements
- High end mesh generation — draw a polygon with any number of sides to create a mesh of well formed quadrilateral (NO triangular) elements
- Automatic rigid diaphragm modeling with detachable joints

- Area loads with one-way or two-way distributions with optional “blow through” distribution for loading open structures
- Plate thermal loads
- Simultaneous moving loads, AASHTO/custom for bridges, cranes…
- Torsional warping calculations for stiffness, stress and design of hot rolled steel
- Member end releases, rigid end offsets, analysis offsets
- Enforced joint displacements
- One Way members, for tension only bracing, slipping, etc.
- One Way springs, for modeling soils and other effects
- Euler members: Compression up to buckling load, then disable
- Stress calculations on any arbitrary shape
- Inactivate members, plates, solids and diaphragms without deleting them
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members, plates and solids

Graphics Features

- Unlimited simultaneous model view windows
- “True to scale” rendering with translucency, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamically zoom, pan, rotate, scroll, snap views
- Font and color control
- Saved views to quickly restore frequent or desired views
- Rendered or wire-frame animations of deflected model and mode shapes
- Animation of moving loads with speed control
- Distance tool for measuring between points
- Force/moment summation about any arbitrary cut line
- High quality customizable graphics printing

Design Codes

- Steel Design Codes: AISC 360-16/10/05: ASD & LRFD, AISC 2nd & 3rd: LRFD, AISC 9th: ASD, CSA S16-14/09/05/01/CSA-S16.1-94, BS 5950-1: 2000, EN 1993-1-1:2014/2005, ENV 1993-1-1:1992, IS 800: 2007/1998, AS 4100-1998, NZS 3404: 1997
- Seismic design per AISC 341-10/05, including 358 prequalified connections
- Concrete Design Codes: ACI 318-14/11/08/05/02/99, CSA A23.3-14/04/94, NTC-DF 2004, BS 8110-1: 1997, BS EN 1992-1-1: 2004+A1: 2014/2004, EN 1992-1-1:1992, IS 456: 2000, AS 3600-2001, NZS 3101: 1995, SBC 304-2007
- Cold Formed Steel Design Codes: AISI S100-16/12/10/07: ASD & LRFD, AISI NAS-04/01: ASD & LRFD, AISI 1999: ASD & LRFD, CSA S136-16/12/10/07/04/01: LSD, CANACERO 16: ASD, CANACERO 12/10/07/04/01: ASD & LRFD
- Aluminum Design Codes: AA ADM1-15/10: ASD & LRFD, AA ADM1-05: ASD
- Wood Design Codes: AWC NDS-18/15/12: ASD, AF&PA NDS-08/05/01/97/91: ASD, CSA 086-14/09 Ultimate, Structural Composite Lumber, multi-ply, full sawn, Glulam, shear walls
- Masonry Design Codes: TMS 402-16: ASD & Strength, ACI 530-13/11/08/05/02: ASD & Strength, ACI 530-99: ASD, UBC 1997: ASD & Strength
- Stainless Steel Design Code: AISC 360-10: ASD & LRFD
- Wind loads are generated automatically (ASCE 7-16/10/05/02/98/95, NBC 15/10/05, NTC 2004, & IS 875: 1987) for building-type structures, including partial wind cases
- Seismic loads are generated automatically (ASCE 7-16/10/05/02, CBC 2001, IBC 2000, UBC 1997, NBC 15/10/05, NTC 2004, & IS 1893: 2002) for building-type structures, including accidental torsion

Design Features

- Designs/optimizes concrete, hot rolled & cold formed steel, masonry, wood and aluminum

- Program selected or user-defined rebar layouts for flexure and shear
- Concrete beam detailing (Rectangular, T and L).
- Concrete column interaction diagrams
- Concrete wall design including in-plane, out-of-plane & bearing loads
- Automatic spectra generation for ASCE 7, NBC, IS 1893, NTC
- Extensive user controlled generation of load combinations
- Intelligent unbraced length calculations for physical members
- Tapered wide flange design per AISC Design Guide 25
- Masonry wall design for in-plane and out-of-plane
- Wood Shapes: Complete NDS species/grade and Glulam database
- Complete wood wall design for bearing & shear walls: Segmented, Perforated & Force Transfer Around Openings design methods
- Strap and Hold Down design for Wood Shear Walls
- Seismic design of concrete walls using ACI 318-14 Chapter 18
- Concrete seismic coupling beams for multi-story walls with diaphragms

Results Features

- Graphic presentation of color-coded results and plotted designs
- Color contours on plates, solid stresses/forces with smoothing and animation
- Spreadsheet results with sorting and filtering of: deflections, forces, stresses, optimized sizes for strength or deflection, code designs, concrete reinforcing, material takeoffs, etc.
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams

Integrated Building Design

RISA-3D, RISAFloor, RISAFoundation and RISAConnection are so tightly integrated that they operate as one program on the same building model. Optimize the gravity system in RISAFloor, the lateral system in RISA-3D, the connection design in RISAConnection and the foundation system in RISAFoundation, with a complete flow of information both ways.

General Features

- Compatible with Windows 7/8.1/10 (64-bit Windows)
- Program technical support provided by Professional Engineers

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-TOWER

PLS-TOWER is a Microsoft Windows program for the analysis and design of steel latticed towers used in electric power lines or communication facilities. Both self-supporting and guyed towers can be modeled. The program performs design checks of structures under user specified loads. For electric power structures it can also calculate maximum allowable wind and weight spans and interaction diagrams between different ratios of allowable wind and weight spans.

Modeling Features:

- Powerful graphics module (stress usages shown in different colors)
- Graphical selection of joints and members allows graphical editing and checking
- Towers can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces
- Can extract geometry and connectivity information from a DXF CAD drawing
- CAD design drawings, title blocks, drawing borders or photos can be tied to structure model
- XML based post processor interface
- Steel Detailing Neutral File (SDNF) export to link with detailing packages
- Can link directly to line design program PLS-CADD
- Automatic generation of structure files for PLS-CADD
- Databases of steel angles, rounds, bolts, guys, etc.
- Automatic generation of joints and members by symmetries and interpolations
- Automated mast generation (quickly builds model for towers that have regular repeating sections) via graphical copy/paste
- Steel angles and rounds modeled either as truss, beam or tension-only elements
- Guys are easily handled (can be modeled as exact cable elements)

Analysis Features:

- Automatic handling of tension-only members
- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Automatic calculation of tower dead, ice, and wind loads as well as drag coefficients according to:
  - ASCE 74-1991, 2009
  - NESC 2002, 2007, 2012, 2017
  - IEC 60826:2003, 2017
  - IS 802 : 1995, 2015
  - ISEC-NCR-83
  - EN50341-1:2001 and 2012 (CENELEC)
  - EN50341-3-2:2001 (Belgium NNA)
  - EN50341-3-9:2001, EN50341-2-9:2015, 2017 (UK NNA)
  - EN50341-3-17:2001 (Portugal NNA)
  - EN50341-2-22:2016 (Poland NNA)
  - AS/NZS 7000:2010, 2016
  - ESAA C(b)1-2003 (Austalia)
  - TPNZ (New Zealand)
  - REE (Spain)
  - SP 16.13330.2011 (SNiP Russia
- Automated microwave antenna loading as per EIA/TIA 222-F and ANSI/TIA 222-G
- Minimization of problems caused by unstable joints and mechanisms
- Automatic bandwidth minimization and ability to solve large problems

- Design checks according to (other standards can be added easily):
  - ASCE Standard 10-90
  - AS 3995 (Australian Standard 3995)
  - BS 8100 (British Standard 8100)
  - EN50341-1 (CENELEC, both empirical and analytical methods are available)
  - ECCS 1985
  - NGT-ECCS
  - PN-90/B-03200
  - EIA/TIA 222-F
  - ANSI/TIA 222-G
  - CSA S37-01
  - EDF/RTE Resal
  - IS 802 (India Standard 802)

Results Features:

- Design summaries printed for each group of members
- Easy to interpret text, spreadsheet and graphics design summaries
- Automatic determination of allowable wind and weight spans
- Automatic determination of interaction diagrams between allowable wind and weight spans
- Capability to batch run multiple tower configurations and consolidate the results
- Automated optimum angle member size selection and bolt quantity determination

Tool for interactive angle member sizing and bolt quantity determination.

Criteria for Design of PCS Facilities On or Extending Above Metal Electric Transmission Towers & Analysis of Transmission Towers Supporting PCS Masts (1)

Introduction

This criteria is the result from an evaluation of the methods and loadings specified by the separate standards, which are used in designing telecommunications towers and electric transmission towers. That evaluation is detailed elsewhere, but in summary; the methods and loadings are significantly different. This criteria specifies the manner in which the appropriate standard is used to design PCS facilities including masts and brackets (hereafter referred to as "masts"), and to evaluate the electric transmission towers to support PCS masts. The intent is to achieve an equivalent level of safety and security under the extreme design conditions expected in Connecticut and Massachusetts.

ANSI Standard TIA-222-H covering the design of telecommunications structures specifies LRFD design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that it does not exceed code defined percentage of failure strength.

ANSI Standard C2-2023 (National Electrical Safety Code) covering the design of electric transmission metal structures is based upon an ultimate strength/yield stress design approach. This approach applies a multiplier (overload capacity factor) to the loads possible from extreme weather loading conditions, and designs the structure so that it does not exceed its ultimate strength (yield stress).

Each standard defines the details of how loads are to be calculated differently. Most of the Eversource effort in "unifying" both codes was to establish what level of strength each approach would provide, and then increasing the appropriate elements of each to achieve a similar level of security under extreme weather loadings.

Two extreme weather conditions are considered. The first is an extreme wind condition (hurricane) based upon a 1700-year recurrence for TIA-22-H risk category III and a 100-year recurrence for NESC Grade B. The second is a winter condition combining wind and ice loadings.

The following sections describe the design criteria for any PCS mast extending above the top of an electric transmission tower, and the analysis criteria for evaluating the loads on the transmission tower from such a mast from the lower portions of such a mast, and loads on the pre-existing electric lower portions of such a mast, and loads on the pre-existing electric transmission tower and the conductors it supports.

Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

The PCS facility (mast, external cable/trays, including the initial and any planned future support platforms, antennas, etc. extending the full height above the top level of the electric transmission structure) shall be designed in accordance with the provisions of TIA 222-H:

E L E C T R I C T R A N S M I S S I O N T O W E R

The electric transmission tower shall be analyzed using yield stress theory in accordance with the attached table titled “Eversource Design Criteria”. This specifies uniform loadings (different from the TIA loadings) on the each of the following components of the installed facility:

- PCS mast for its total height above ground level, including the initial and planned future support platforms, antennas, etc. above the top of an electric transmission structure.
- Conductors are related devices and hardware.
- Electric transmission structure. The loads from the PCS facility and from the electric conductors shall be applied to the structure at conductor and PCS mast attachment points, where those load transfer to the tower.

The uniform loadings and factors specified for the above components in the table are based upon the National Electrical Safety Code 2023 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to TIA and its loads and factors with the exceptions noted above. (Note that the NESC does not require the projected wind surfaces of structures and equipment to be increased by the ice covering.)

In the event that the electric transmission tower is not sufficient to support the additional loadings of the PCS mast, reinforcement will be necessary to upgrade the strength of the overstressed members.

Attachment A
Eversource Design Criteria

		Attachment A ES Design Criteria	Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef. - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
NESC Extreme Ice with Wind Condition*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 x Gust Response Factor Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
		*Only for structures installed after 2007						

determined from NESC applied loading conditions (not TIA Loads) on the structure and mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The strength reduction factor obtained from the field investigation shall be applied to the members or connections that are showing signs of deterioration from their original condition With the written approval of Eversource Transmission Line Engineering on a case by case the existing structures may be analyzed initially using the current NESC code, then it is permitted to use the original design code with the original conductor load should the existing tower fail the current NESC code.

The structure shall be analyzed using yield stress theory in accordance with Attachment A, "Eversource Design Criteria." This specifies uniform loadings (different from the TIA loadings) on each of the following components of the installed facility:

a) Wireless communication mast for its total height above ground level, including the initial and any planned future equipment (Support Platforms, Antennas, TMA's etc.) above the top of an electric transmission structure.

b) Conductors and related devices and hardware (wire loads will be provided by Eversource).

c) Electric Transmission Structure

i) The loads from the wireless communication equipment components based on NESC and Eversource Criteria in Attachment A, and from the electric conductors shall be applied to the structure at conductor and wireless communication mast attachment points, where those loads transfer to the tower. ii)

ii) Shape Factor Multiplier:

NESC Structure Shape	Cd
Polyround (for polygonal steel poles)	1.3
Flat	1.6
Open Lattice	3.2
Pole with Coaxial Cable	See Below Table

iii) When Coaxial Cables are mounted alongside the pole structure, the shape multiplier shall be:

Mount Type	Cable Cd	Pole Cd
Coaxial Cables on outside periphery (One layer)	1.45	1.45
Coaxial Cables mounted on stand offs	1.6	1.6

d) The uniform loadings and factors specified for the above components in Attachment A, "Eversource Design Criteria" are based upon the National Electric Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to the TIA and its loads and factors with the exceptions noted above.

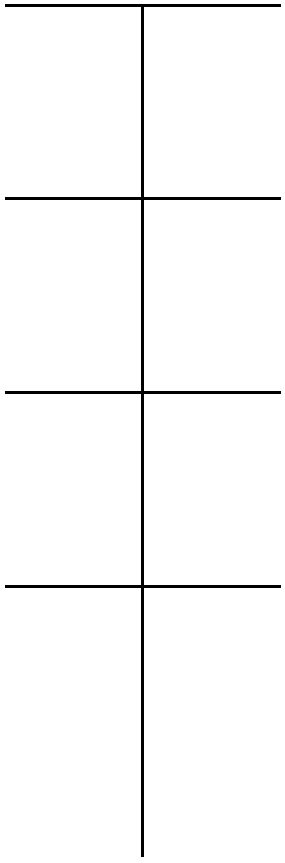
Project: 1740/1750 Lines, Structure 1280
Date: 7/23/19
Engineer: JS
Purpose: Recalculate wire loads for T-Mobile site.

Shield Wires:
1740: 336 "Linnet" ACSR, sagged in PLS-CADD
1750: AFL DNO-8363 OPGW, sagged in PLS-CADD

Conductors:
1272 "Bittern" ACSR, sagged in PLS-CADD

NESC 250B

1740 Line			**1750 Line**	
Linnet	**V**	1154	1129	**V OPGW**
	T	2661	2793	**T**
	L	100	50	**L**
Top Phase:	**V**	2695	2759	**V**
	T	3509	3838	**T**
	L	-2239	-603	**L**
Mid Phase:	**V**	2653	2671	**V**
	T	3409	3543	**T**
	L	-2923	-2851	**L**
Bot Phase:	**V**	2769	2856	**V**
	T	3772	4238	**T**
	L	-286	1055	**L**



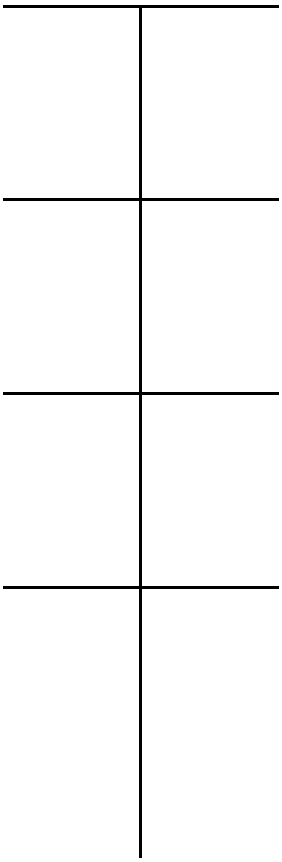
Project: 1740/1750 Lines, Structure 1280
Date: 7/23/19
Engineer: JS
Purpose: Recalculate wire loads for T-Mobile site.

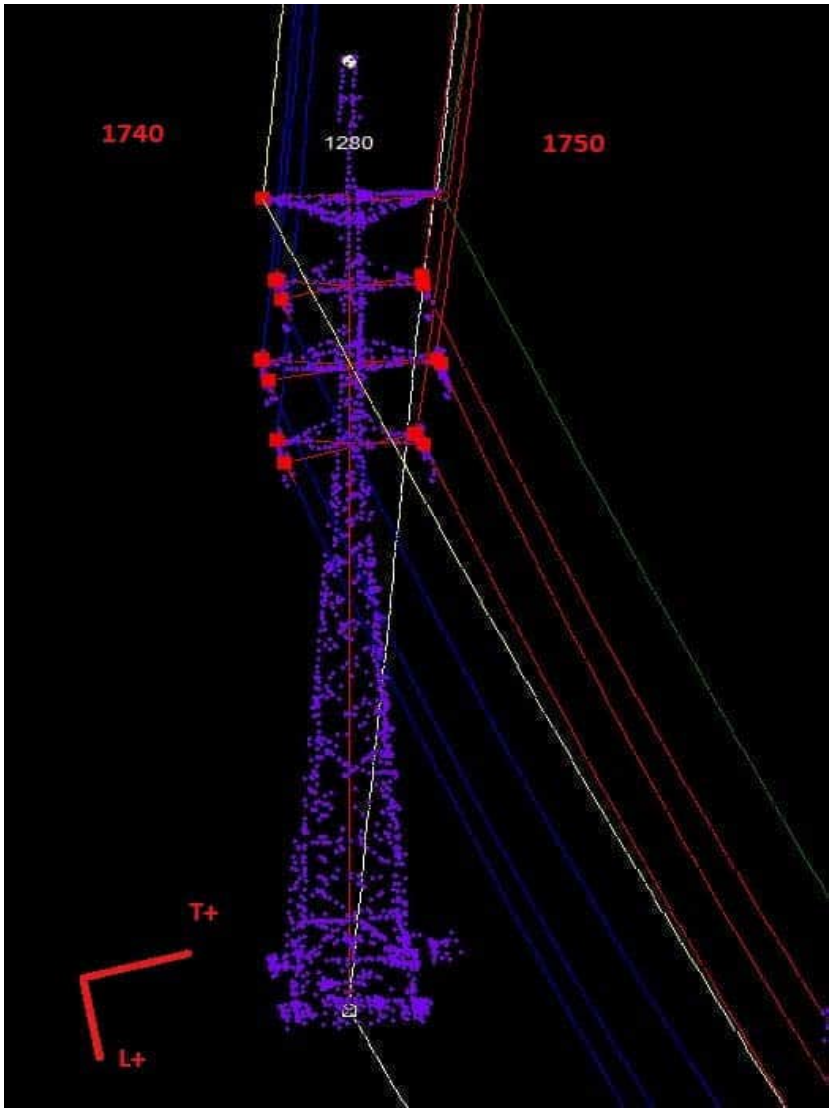
Shield Wires:
1740: 336 "Linnet" ACSR, sagged in PLS-CADD
1750: AFL DNO-8363 OPGW, sagged in PLS-CADD

Conductors:
1272 "Bittern" ACSR, sagged in PLS-CADD

NESC 250C

1740 Line			**1750 Line**	
Linnet	**V**	518	536	**V OPGW**
	T	2150	2172	**T**
	L	100	50	**L**
Phase:	**V**	1458	1502	**V**
	T	3656	3791	**T**
	L	-1890	-1232	**L**
Phase:	**V**	1423	1450	**V**
	T	3548	3599	**T**
	L	-2193	-2203	**L**
t Phase:	**V**	1482	1531	**V**
	T	3631	3830	**T**
	L	-988	-670	**L**




1740
1280
1750
T+
L+

℄ T-MOBILE ANTENNAS
EL. ±161'-0" AGL

℄ T-MOBILE ANTENNAS
EL. ±153'-0" AGL

T-MOBILE (TO REMAIN): THREE (3) ANDREW TMBXX-6516 PANEL ANTENNAS AND THREE (3) ANDREW ATSBT-TOP-FM-4G SMART BIAS TEE FLUSH MOUNTED.
T-MOBILE (EXISTING TO REMOVE): THREE (3) ANDREW LNX-6512DS PANEL ANTENNAS FLUSH MOUNTED.
T-MOBILE (PROPOSED): THREE (3) RFS APXVAARR18_43 PANEL ANTENNAS AND THREE (3) ANDREW ATSBT-TOP-FM-4G SMART BIAS TEE FLUSH MOUNTED.

EXISTING 10" DIA.
SCH.80 PIPE MAST

EXISTING 140' TALL
STEEL TOWER
STRUCTURE NO. 1280

T-MOBILE EXISTING
EIGHTEEN (18) 1 5/8"
DIA. COAX CABLES

T-MOBILE PROPOSED
SIX (6) 1 5/8" DIA.
COAX CABLES

T-MOBILE EXISTING
EIGHTEEN (18) 1 5/8"
DIA. COAX CABLES

T-MOBILE PROPOSED
SIX (6) 1 5/8" DIA.
COAX CABLES

2
EL-1

EXISTING TOWER LEG

2 EL-1 COAX MOUNTING PLAN
NOT TO SCALE

1 EL-1 TOWER & MAST ELEVATION
SCALE: NOT TO SCALE

REVISIONS		
0	1/22/24	CONSTRUCTION

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

CT11241A
EVERSOURCE 1280

STATION DRIVE
GREENWICH, CT 06830

PROJECT NO:	23058.11
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	1/22/24

TOWER AND MAST ELEVATION

EL-1

DWG. 1__ OF 1

RAN Template:	A&L Template:
67D94B Outdoor	67D94B_1DP+1QP+1OP

CT11241A_L600_6_draft

Print Name: Standard (1)
PORs: L600_CMP5

Section 1 - Site Information

Site ID: CT11241A
Status: Draft
Version: 6
Project Type: L600
Approved: Not approved
Approved By: Not approved
Last Modified: 12/18/2023 9:55:48 AM
Last Modified By: Ryan.MonteDeRamos@T-Mobile.com

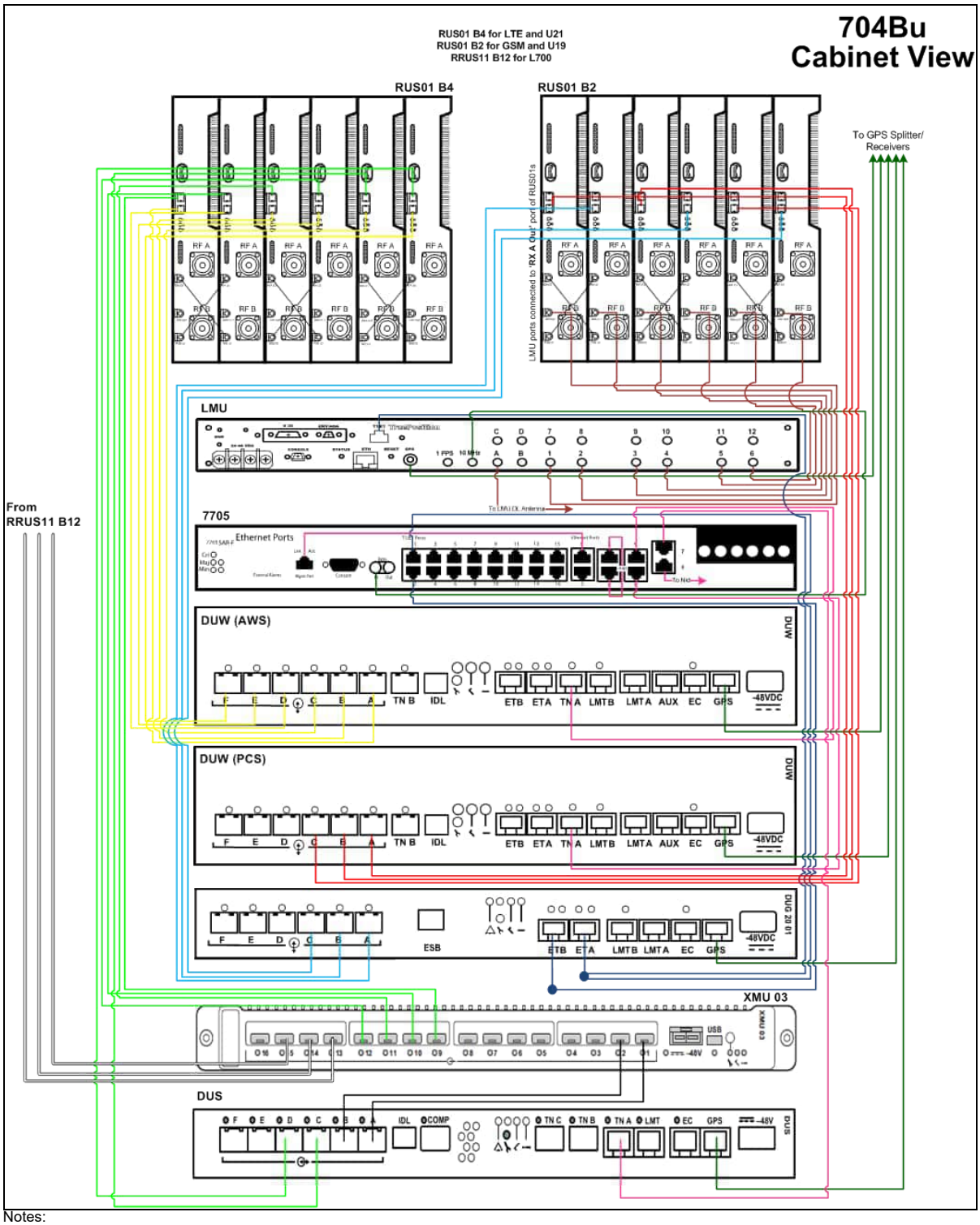
Site Name: GREENWICH/COS COB/I-95
Site Class: Utility Lattice Tower
Site Type: Structure Non Building
Plan Year:
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Northeast Utilities

Latitude: 41.029986
Longitude: -73.597484
Address: Station drive - Line # 1750 - Pole# 1280
City, State: Greenwich, CT
Region: NORTHEAST

RAN Template: 67D94B Outdoor			AL Template: 67D94B_1DP+1QP+1OP	
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 24	**TMA Count:** 0	**RRU Count:** 3

Section 2 - Existing Template Images

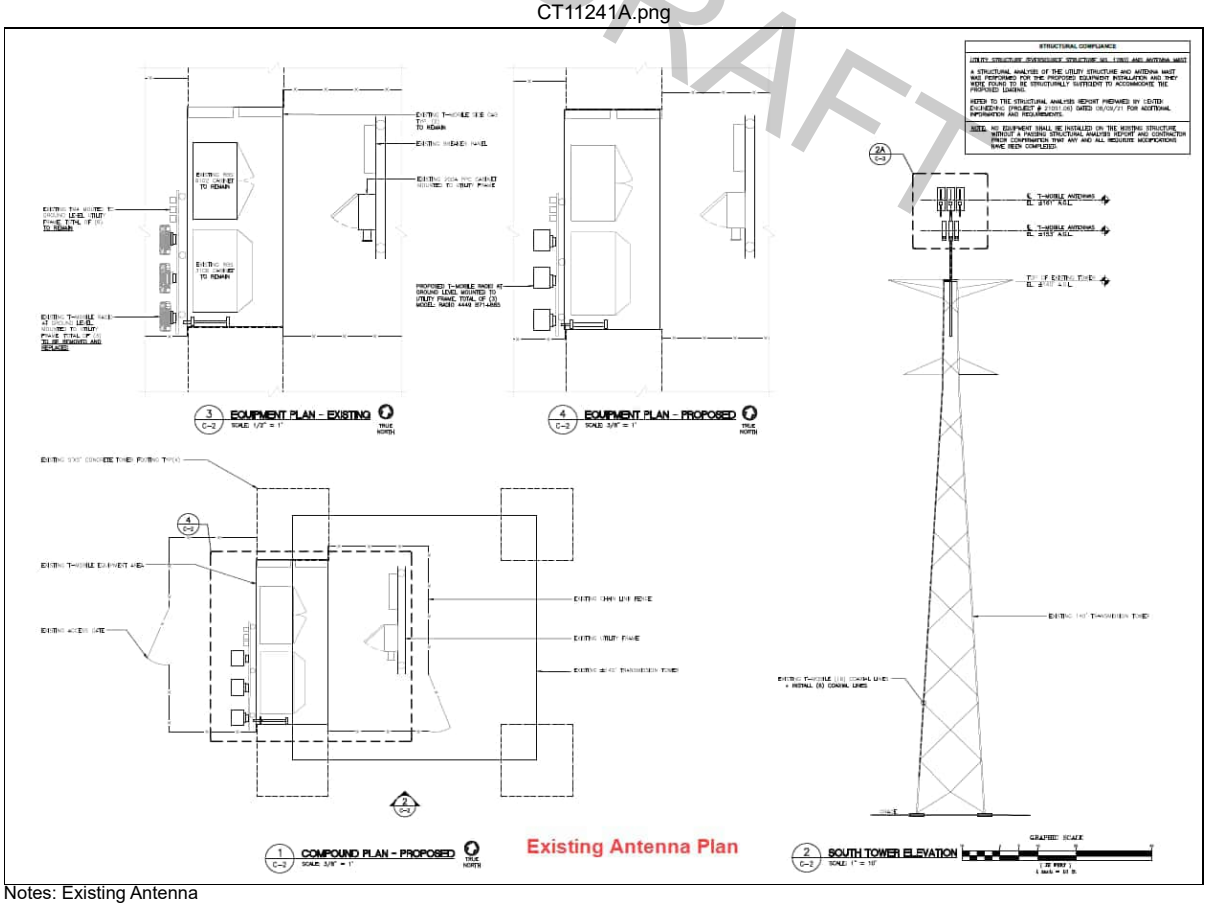
704Bu.png


704Bu
Cabinet View
RUS01 B4 for LTE and U21
RUS01 B2 for GSM and U19
RRUS11 B12 for L700
RUS01 B4
RUS01 B2
To GPS Splitter/
Receivers
LMU ports connected to 'RX A Out' port of RUS01s
LMU
From
RRUS11 B12
7705
Ethernet Ports
DUW (AWS)
DUW (PCS)
DUG 20 01
ESB
XMU 03
DUS
TN B
IDL
ETB
ETA
TN A
LMTB
LMTA
AUX
EC
GPS
-48VDC
COMP
TN C
LMT
-48V

Notes:

Section 3 - Proposed Template Images

CT11241A.png



Notes: Existing Antenna

Section 4 - Siteplan Images

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RAN Template:	A&L Template:
67D94B Outdoor	67D94B_1DP+1QP+1OP

CT11241A_L600_6_draft

Print Name: Standard (1)
PORs: L600_CMP5

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 704Bu Outdoor

Enclosure	1	2
Enclosure Type	Ground Mount (Ericsson)	RBS 6102
Radio	RRUS11 B12 (x3) L700	RUS01 B2 (x3) L1900 G1900; RUS01 B2 (x3) L1900 U1900 (DECOMMISSIONED); RUS01 B4 (x3) U2100 (DECOMMISSIONED); RUS01 B4 (x3) L2100
Baseband		BB 5216 L700 L1900 L2100; DUG20 G1900; DUW30 U1900 (DECOMMISSIONED); DUW30 U2100 (DECOMMISSIONED)
Multiplexer		XMU L700 L1900 L2100

Proposed RAN Equipment

Template: 67D94B Outdoor

Enclosure	1
Enclosure Type	RBS 6102
Radio	RUS01 B2 (x3) L1900 G1900; RUS01 B2 (x3) L1900; RUS01 B4 (x6) L2100 U2100 (DECOMMISSIONED)
Baseband	BB 5216 L1900 L2100; DUG20 G1900; DUW30 U2100 (DECOMMISSIONED); RP 6651 N600 L600 L700
Multiplexer	XMU L1900 L2100

RAN Scope of Work:

RF NOTES:
12/15/2023 - During the Scoping Session, it was proposed to replace the current Passive Antenna on the 2nd Rad Ctr with a 5G-ready one. However, it was found that the POR open is only L600, which means that ordering a new Passive Antenna can only be done if a Radio Upgrade POR or Anchor Project is initiated.
Existing: (18) Coaxial Lines
Add (6) Coaxial Lines

RAN Template:	A&L Template:
67D94B Outdoor	67D94B_1DP+1QP+1OP

CT11241A_L600_6_draft

Print Name: Standard (1)
PORs: L600_CMP5

Section 6 - A&L Equipment

Existing Template: 1HP_704Bu
Proposed Template: 67D94B_1DP+1QP+1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro		
Antenna	**1**		**2**
Antenna Model	Andrew - TMBXX-6516-A2M (Quad)		Andrew - LNX-6513DS-A1M (Dual)
Azimuth	20		20
M. Tilt	0		0
Height (ft)	153		161
Ports	**P1**	**P2**	**P3**
Active Tech	L1900 G1900	L2100	L700
Dark Tech			
Restricted Tech			
Decomm. Tech	U1900	U2100	
E. Tilt	2	2	2
Cables	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**
TMAs	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)	
Diplexer / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

Leave the Andrews TMZXX antenna and install a new L700 antenna. Intall GMA's on ground and Bias T- up top for RETS

RAN Template:	A&L Template:
67D94B Outdoor	67D94B_1DP+1QP+1OP

CT11241A_L600_6_draft

Print Name: Standard (1)
PORs: L600_CMP5

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1		2			
Antenna Model	Andrew - TMBXX-6516-A2M (Quad)		RFS - APXVAALL18_43-U-NA20 (Octo)			
Azimuth	20		20			
M. Tilt	0		0			
Height (ft)	153		161			
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	G1900, L1900	L2100	N600, L700, L600	N600, L700, L600		
Dark Tech						
Restricted Tech						
Decomm. Tech		U2100				
E. Tilt	2	2	2	2		
Cables	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**		
TMAs	Generic Twin Style 1A - PCS (At Cabinet)	Generic Twin Style 1B - AWS (At Cabinet)				
Diplexer / Combiners						
Radio			Radio 4480 B71+B85 (At Cabinet)	Radio 4480 B71+B85 (At Cabinet)		
Sector Equipment		Andrew Smart Bias T (Ericsson) (At Antenna)		Andrew Smart Bias T (Ericsson) (At Antenna)		

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D94B Outdoor	67D94B_1DP+1QP+1OP

CT11241A_L600_6_draft

Print Name: Standard (1)
PORs: L600_CMP5

Sector 2 (Existing) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	1		2
Antenna Model	Andrew - TMBXX-6516-A2M (Quad)		Andrew - LNX-6513DS-A1M (Dual)
Azimuth	140		140
M. Tilt	0		0
Height (ft)	153		161
Ports	P1	P2	P3
Active Tech	L1900 G1900	L2100	L700
Dark Tech			
Restricted Tech			
Decomm. Tech	U1900	U2100	
E. Tilt	2	2	2
Cables	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**
TMAs	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)	
Diplexer / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

Leave the Andrews TMZXX antenna and install a new L700 antenna. Intall GMA's on ground and Bias T- up top for RETS

RAN Template:	A&L Template:
67D94B Outdoor	67D94B_1DP+1QP+1OP

CT11241A_L600_6_draft

Print Name: Standard (1)
PORs: L600_CMP5

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro						
Antenna	1		2				
Antenna Model	Andrew - TMBXX-6516-A2M (Quad)		RFS - APXVAALL18_43-U-NA20 (Octo)				
Azimuth	140		140				
M. Tilt	0		0				
Height (ft)	153		161				
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	L1900, G1900	L2100	N600, L700, L600	N600, L700, L600		
Dark Tech						
Restricted Tech						
Decomm. Tech		U2100				
E. Tilt	2	2	2	2		
Cables	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**		
TMAs	Generic Twin Style 1A - PCS (At Cabinet)	Generic Twin Style 1B - AWS (At Cabinet)				
Diplexer / Combiners						
Radio			Radio 4480 B71+B85 (At Cabinet)	Radio 4480 B71+B85 (At Cabinet)		
Sector Equipment		Andrew Smart Bias T (Ericsson) (At Antenna)		Andrew Smart Bias T (Ericsson) (At Antenna)		

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D94B Outdoor	67D94B_1DP+1QP+1OP

CT11241A_L600_6_draft

Print Name: Standard (1)
PORs: L600_CMP5

Sector 3 (Existing) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	1		2
Antenna Model	Andrew - TMBXX-6516-A2M (Quad)		Andrew - LNX-6513DS-A1M (Dual)
Azimuth	240		240
M. Tilt	0		0
Height (ft)	153		161
Ports	P1	P2	P3
Active Tech	G1900 L1900	L2100	L700
Dark Tech			
Restricted Tech			
Decomm. Tech	U1900	U2100	
E. Tilt	2	2	2
Cables	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**	1-5/8" Coax - 170 ft.(At Antenna) **(x2)**
TMAs	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)	
Diplexer / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

Leave the Andrews TMZXX antenna and install a new L700 antenna. Intall GMA's on ground and Bias T- up top for RETS

RAN Template:	A&L Template:
67D94B Outdoor	67D94B_1DP+1QP+1OP

CT11241A_L600_6_draft

Print Name: Standard (1)
PORs: L600_CMP5

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro						
Antenna	1		2				
Antenna Model	Andrew - TMBXX-6516-A2M (Quad)		RFS - APXVAALL18_43-U-NA20 (Octo)				
Azimuth	240		240				
M. Tilt	0		0				
Height (ft)	153		161				
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	G1900, L1900	L2100	L600, N600, L700	L600, N600, L700		
Dark Tech						
Restricted Tech						
Decomm. Tech		U2100				
E. Tilt	2	2	2	2		
Cables	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**	1-5/8" Coax - 170 ft. **(x2)** Coax Jumper **(x2)**		
TMAs	Generic Twin Style 1A - PCS (At Cabinet)	Generic Twin Style 1B - AWS (At Cabinet)				
Diplexer / Combiners						
Radio			Radio 4480 B71+B85 (At Cabinet)	Radio 4480 B71+B85 (At Cabinet)		
Sector Equipment		Andrew Smart Bias T (Ericsson) (At Antenna)		Andrew Smart Bias T (Ericsson) (At Antenna)		

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RADIO FREQUENCY SYSTEMS
The Clear Choice®

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°

FEATURES / BENEFITS

This antenna provides a 8 Port multi-band flexible platform for advanced use for flexible use in deployment scenarios for encompassing 600MHz, 700MHz, AWS & PCS applications.

- **24 Inch Width For Easier Zoning**
- **Field Replaceable (Integrated) AISG RET platform for reduced environmental exposure and long lasting quality**
- **Superior elevation pattern performance across the entire electrical down tilt range**
- **Includes three AISG RET motors - Includes 0.5m AISG jumper for optional daisy chain of two high band RET motors for one single AISG point of high band tilt control.**
- **Low band arrays driven by a single RET motor**

Technical Features

LOW BAND LEFT ARRAY (617-746 MHZ) [R1]

Frequency Band	MHz	617-698	698-746
Gain Over All Tilts	dBi	14.1 +/- .3	14.5 +/- .4
Horizontal Beamwidth @3dB	Deg	66.1+/-4.3	63.1+/-2.3
Vertical Beamwidth @3dB	Deg	14.2+/-0.8	13.0+/-0.5
Electrical Downtilt Range	Deg	0-14	
Upper Side Lobe Suppression 0 to +20	dB	20.5	21.4
Front-to-Back, at +/-30°, Copolar	dB	22.4	21.8
Cross Polar Discrimination (XPD) @ Boresight	dB	21.4	20.1
Cross Polar Discrimination (XPD) @ +/-60	dB	5.2	3.5
3rd Order PIM 2 x 43dBm	dBc	-153	
VSWR	-	1.5:1	
Cross Polar Isolation	dB	25	
Maximum Effective Power per Port	Watt	250	

LOW BAND RIGHT ARRAY (617-746 MHZ) [R2]

Frequency Band	MHz	617-698	698-746
Gain Over All Tilts	dBi	13.8 +/- .3	14.1 +/- .4
Horizontal Beamwidth @3dB	Deg	66.5+/-4.9	63.3+/-2.2
Vertical Beamwidth @3dB	Deg	14.2+/-0.8	12.9+/-0.6
Electrical Downtilt Range	Deg	0-14	
Upper Side Lobe Suppression 0 to +20	dB	20.3	21.3
Front-to-Back, at +/-30°, Copolar	dB	22.4	21.4
Cross Polar Discrimination (XPD) @ Boresight	dB	20.2	19.7
Cross Polar Discrimination (XPD) @ +/-60	dB	4.5	1.7
3rd Order PIM 2 x 43dBm	dBc	-153	
VSWR	-	1.5:1	
Cross Polar Isolation	dB	25	
Maximum Effective Power per Port	Watt	250	

RADIO FREQUENCY SYSTEMS
The Clear Choice®

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°

ELECTRICAL SPECIFICATIONS

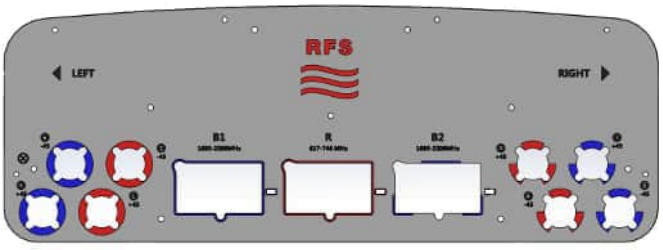
Impedance	Ohm	50.0
Polarization	Deg	±45°

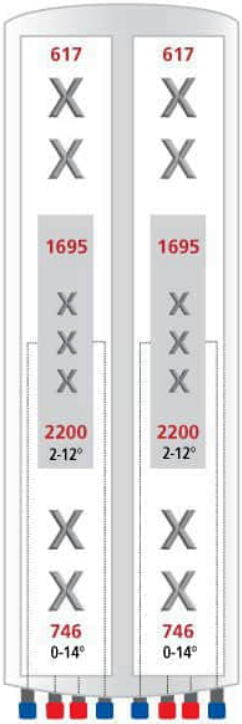
MECHANICAL SPECIFICATIONS

Dimensions - H x W x D	mm (in)	1829 x 609 x 215 (72 x 24 x 8.5)
Weight (Antenna Only)	kg (lb)	48 (106)
Weight (Mounting Hardware only)	kg (lb)	11.5 (25.3)
Packing size- HxWxD	mm (in)	1980 x 735 x 375 (77.9 x 28.9 x 14.8)
Shipping Weight	kg (lb)	70 (154)
Connector type		8 x 4.3-10 female at bottom + 6 AISG connectors (3 male, 3 female)
Adjustment mechanism		Integrated RET solution AISG compliant (Field Replaceable) + Manual Override + External Tilt Indicator
Mounting Hardware Material		Galvanized steel
Radome Material / Color		Fiber Glass / Light Grey RAL7035

TESTING AND ENVIRONMENTAL

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Lightning protection		IEC 61000-4-5
Survival/Rated Wind Velocity	km/h	240 (150)
Wind Load @Rated Wind Front	N	1072.0
Wind Load @Rated Wind Side	N	326.0
Wind Load @Rated Wind Rear	N	1160.0
Environmental		ETSI 300-019-2-4 Class 4.1E





Product Specifications

ATSBT-TOP-FM-4G

Teletilt® Top Smart Bias Tee

- Injects AISG power and control signals onto a coaxial cable line
- Reduces cable and site lease costs by eliminating the need for AISG home run cables
- AISG 1.1 and 2.0 compliant
- Operates at 10-30 Vdc
- Weatherproof AISG connectors
- Intuitive schematics simplify and ensure proper installation
- Enhanced lightning protection plus grounding stud for additional surge protection
- 7-16 DIN female connector (BTS)
- 7-16 DIN male connector (ANT)

General Specifications

Smart Bias Tee Type	10–30 V Top
Brand	Teletilt®
Operating Frequency Band	694 – 2690 MHz

Electrical Specifications

EU Certification	CE
Protocol	AISG 1.1 | AISG 2.0
Antenna Interface Signal	dc Blocked | RF
BTS Interface Signal	AISG data | dc | RF
Interface Protocol Signal	Data | dc
Voltage Range	10–30 Vdc
VSWR | Return Loss	1.17:1 | 22 dB, typical
Power Consumption, maximum	0.6 W
RF Power, maximum	250 W @ 1850 MHz 500 W @ 850 MHz
Impedance	50 ohm
Insertion Loss, typical	0.1 dB
3rd Order IMD	-158.0 dBc (relative to carrier)
3rd Order IMD Test Method	Two +43 dBm carriers
Electromagnetic Compatibility (EMC)	CFR 47 Part 15, Subpart B, Class B | EN 55022, Class B | ICES-003 Issue 4 CAN/CSA-CEI/IEC CISPR 22:02

Mechanical Specifications

Antenna Interface	7-16 DIN Male
BTS Interface	7-16 DIN Female
AISG Input Connector	8-pin DIN Female
Color	Silver
Grounding Lug Thread Size	M8
Material Type	Aluminum
Lightning Surge Capability	5 times @ -3 kA 5 times @ 3 kA

Product Specifications

ATSBT-TOP-FM-4G

Lightning Surge Capability Test Method	IEC 61000-4-5, Level X
Lightning Surge Capability Waveform	1.2/50 voltage and 8/20 current combination waveform

Environmental Specifications

Ingress Protection Test Method	IEC 60529:2001, IP66
Operating Temperature	-40 °C to +70 °C (-40 °F to +158 °F)

Interface Port Drawing

Dimensions

Width	94.0 mm | 3.7 in
Depth	50.0 mm | 2.0 in
Height	143.00 mm | 5.63 in
Net Weight	0.8 kg | 1.8 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption

TMBXX-6516-R2M

±45° Dual Band Quad Antenna

Decibel®
Base Station Antennas

- Patented cross dipole and feed system
- Rugged, reliable design with excellent PIM suppression
- Includes factory installed AISG RET actuator
- Fully compatible with Andrew Teletilt® remote control antenna system

ELECTRICAL

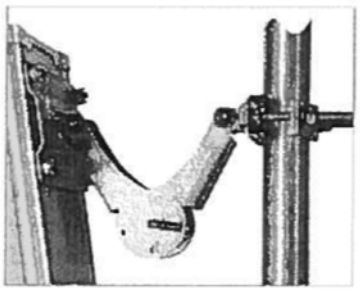
Frequency Range (MHz):	1710–2155				
Characteristic Impedance (Ohms):	50				
Azimuth BW (Deg):	64.5 ± 8				
Elevation BW (Deg):	7.2 ± 1.2				
Gain (dBi) :	17.5 ± 8				
Polarization:	±45°				
Front-to-Back Ratio (dB)	**2°**	**4°**	**6°**	**8°**	**10°**
Copol, 180° ± 30°:	>24	>24	>24	>24	>24
Total Power, 180° ± 30°:	>24	>23	>22	>23	>23
Upper Sidelobe (dB)	**2°**	**4°**	**6°**	**8°**	**10°**
Main Beam to +20°:	>18	>17	>15	>14	>11
VSWR / Return Loss (dB):	1.35:1 / 16.5				
Port-to-Port Isolation (dB):	>30				
Electrical Tilt Range (Deg):	2–10				
Electrical Downtilt Accuracy (Deg):	± 0.9				
Cross-pol (dBc)	**2°**	**4°**	**6°**	**8°**	**10°**
3 dB Beamwidth:	>13	>13	>12	>12	>12
Intermodulation Products (dBc)					
3rd Order, 2 x 20 Watts:	155				
Max. Input Power (Watts):	250				
Lightning Protection:	DC Ground				

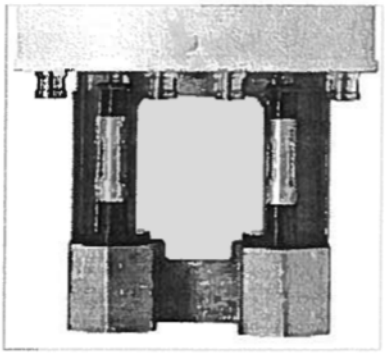
PERFORMANCE TRACKING

Gain Variation (dB) (between UL and DL frequency pair):	1.3
Electrical Tilt Accuracy (Deg) (between UL and DL frequncy pair within 0.5°):	<0.55
Azimuth HPBW (Deg) (between UL and DL frequncy pair):	11.5

MECHANICAL

Net Weight (kg / lbs):	15.7 / 34.6
Dimensions–LxWxD: (with actuator)	1499 x 302 x 160 mm 59 x 11.9 x 6.3 inch
Max. Wind Area (m² / ft²):	0.27 / 2.9
Max. Wind Load (N / lbf):	729.4 / 164
Max. Wind Speed (km/h / mph):	241 / 150
Hardware Material:	Hot Dip Galvanized
Connector Type:	7-16 DIN, Female (4)
Color:	Off White
Standard Mounting Hardware:	TM600899A-2





Andrew Corporation
2601 Telecom Parkway
Richardson, Texas U.S.A. 755082-3521
Tel: 214.631.0310

Fax: 214.688.0089
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

11/27/2006

dbtech@andrew.com

Exhibit E

Mount Analysis

CENTEK engineering

Centered on Solutions℠

Analysis Report

Antenna Mount Analysis

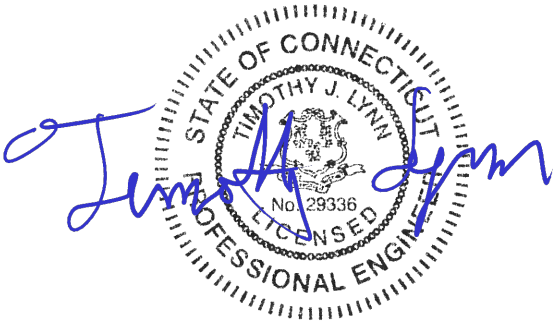
T-Mobile Site #: CT11241A

Station Drive
Greenwich, CT

Centek Project No. 23058.11

Date: February 26, 2024

Max Stress Ratio = 14%



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

CENTEK engineering

Centered on Solutions℠

February 26, 2024

Mr. Dan Reid
Northeast Site Solutions
1053 Farmington Ave, Unit G
Farmington, CT 06032

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11241A
Station Drive
Greenwich, CT

Centek Project No. 23058.11

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 mount, consisting of six (6) pipe masts on a two (2) tri-brackets to support the proposed/existing equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2021 International Building Code as modified by the 2022 Connecticut State Building Code (CTBC) including ASCE 7-16 and ANSI/TIA-222-H *Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures"*.

The loads considered in this analysis consist of the following:

- **T-Mobile:**
  Pipe Masts: Three (3) Adrew TMBXX-6516 panel antennas and three (3) ATSBT-TOP-MF-4G Bias Tees mounted on three (3) pipes with a RAD center elevation of 153 ft +/- AGL.
  Pipe Masts: Three (3) RFS APXVAALL18-43 panel antennas and three (3) ATSBT-TOP-MF-4G Bias Tees mounted on three (3) pipes with a RAD center elevation of 161 ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2021 International Building Code as modified by the 2022 Connecticut State Building Code considering a Ultimate design wind speed of 130 mph for Greenwich as required in Appendix P of the 2022 Connecticut State Building Code.

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

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

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

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

Exhibit F

Power Density/RF Emissions Report

FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CT11241A

Greenwinc / Cos Cob / I-95
Station drive - Line # 1750 - Pole# 1280
Greenwich, CT ZIP

February 29, 2024

Fox Hill Telecom Project Number: 240067

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	1.43 %

Fox Hill Telecom, Inc Worcester MA 01609

FOX HILL TELECOM

February 29, 2024

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CT11241A – Greenwinc / Cos Cob / I-95**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **Station drive - Line # 1750 - Pole# 1280, Greenwich, CT**, 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 (µW/cm2). 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.

General population 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 & 700 MHz 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) and 2100 MHz (AWS) 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 the percentage 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 performed for the proposed upgrades to the T-MOBILE antenna facility located at **Station drive - Line # 1750 - Pole# 1280, Greenwich, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the Far Field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **Far Field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors Considered, the worst case **Far Field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4\ ERP}{R^2}$$

S = Power Density (in μw/cm^2)
ERP = Effective Radiated Power from antenna (watts)
R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

For each T-Mobile sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	4	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	2	10
LTE	2100 MHz (AWS)	4	60

Table 1: Channel Data Table

The following T-Mobile antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAARR18_43-C-NA20	161
A	2	Andrew TMBXX-6516-A2M	153
B	1	RFS APXVAARR18_43-C-NA20	161
B	2	Andrew TMBXX-6516-A2M	153
C	1	RFS APXVAARR18_43-C-NA20	161
C	2	Andrew TMBXX-6516-A2M	153

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAARR18_43-C-NA20	600 MHz / 700 MHz	12.85 / 13.55	6	200	3,989.90	0.73
Antenna A2	Andrew TMBXX-6516-A2M	1900 MHz (PCS) / 2100 MHz (PCS)	15.85	10	340	13,076.12	0.70
						Sector A Composite MPE%	**1.43**
Antenna B1	RFS APXVAARR18_43-C-NA20	600 MHz / 700 MHz	12.85 / 13.55	6	200	3,989.90	0.73
Antenna B2	Andrew TMBXX-6516-A2M	1900 MHz (PCS) / 2100 MHz (PCS)	15.85	10	340	13,076.12	0.70
						Sector B Composite MPE%	**1.43**
Antenna C1	RFS APXVAARR18_43-C-NA20	600 MHz / 700 MHz	12.85 / 13.55	6	200	3,989.90	0.73
Antenna C2	Andrew TMBXX-6516-A2M	1900 MHz (PCS) / 2100 MHz (PCS)	15.85	10	340	13,076.12	0.70
						Sector C Composite MPE%	**1.43**

Table 3: T-MOBILE Emissions Levels

The Following table (*table 4*) shows all additional identified carriers on site and their emissions contribution estimates, along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three T-Mobile sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite estimated MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**1.43 %**
No Additional Carriers on This Site	NA
Site Total MPE %:	**1.43 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	1.43 %
T-MOBILE Sector B Total:	1.43 %
T-MOBILE Sector C Total:	1.43 %
Site Total:	1.43 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three T-Mobile sectors have the same configuration yielding the same results for all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	4	771.01	161	2.40	600 MHz	400	0.60%
T-Mobile 700 MHz LTE	2	452.93	161	0.61	700 MHz	467	0.13%
T-Mobile 1900 MHz (PCS) LTE	4	1,538.37	153	2.70	1900 MHz (PCS)	1000	0.27%
T-Mobile 1900 MHz (PCS) GSM	2	384.59	153	0.30	1900 MHz (PCS)	1000	0.03%
T-Mobile 2100 MHz (AWS) LTE	4	1,538.37	153	4.00	2100 MHz (AWS)	1000	0.40%
						Total:	**1.43 %**

Table 6: T-MOBILE Maximum Sector MPE Power Values

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 estimates 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:	1.43 %
Sector B:	1.43 %
Sector C:	1.43 %
T-MOBILE Maximum Total (per sector):	1.43 %
Site Total:	1.43 %
Site Compliance Status:	**COMPLIANT**

The estimated composite MPE value for this site assuming all carriers present is **1.43 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

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 estimated values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Worcester, MA 01609
(978)660-3998

Exhibit G

Letter of Authorization

EVERSOURCE ENERGY

56 Prospect Street,
Hartford, CT 06103

P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

February 26, 2024

Mr. Dan Reid
Northeast Site Solutions
420 Main St,
Sturbridge, MA 01566

RE: T-Mobile Antenna Site CT11241A, Station Dr, Greenwich CT, Eversource Structure 1280

Dear Mr. Reid:

Based on our reviews of the site drawings, the structural analysis and foundation review provided by Centek Engineering, along with a third party review performed by Paul J. Ford and Company, we accept the proposed modification.

Please work with Christopher Gelinas of Eversource Real Estate to process the site lease amendment. Please do not hesitate to contact us with questions or concerns. Christopher can be contacted at 860-665-2008, and I can be contacted at (860) 728-4862.

Sincerely,

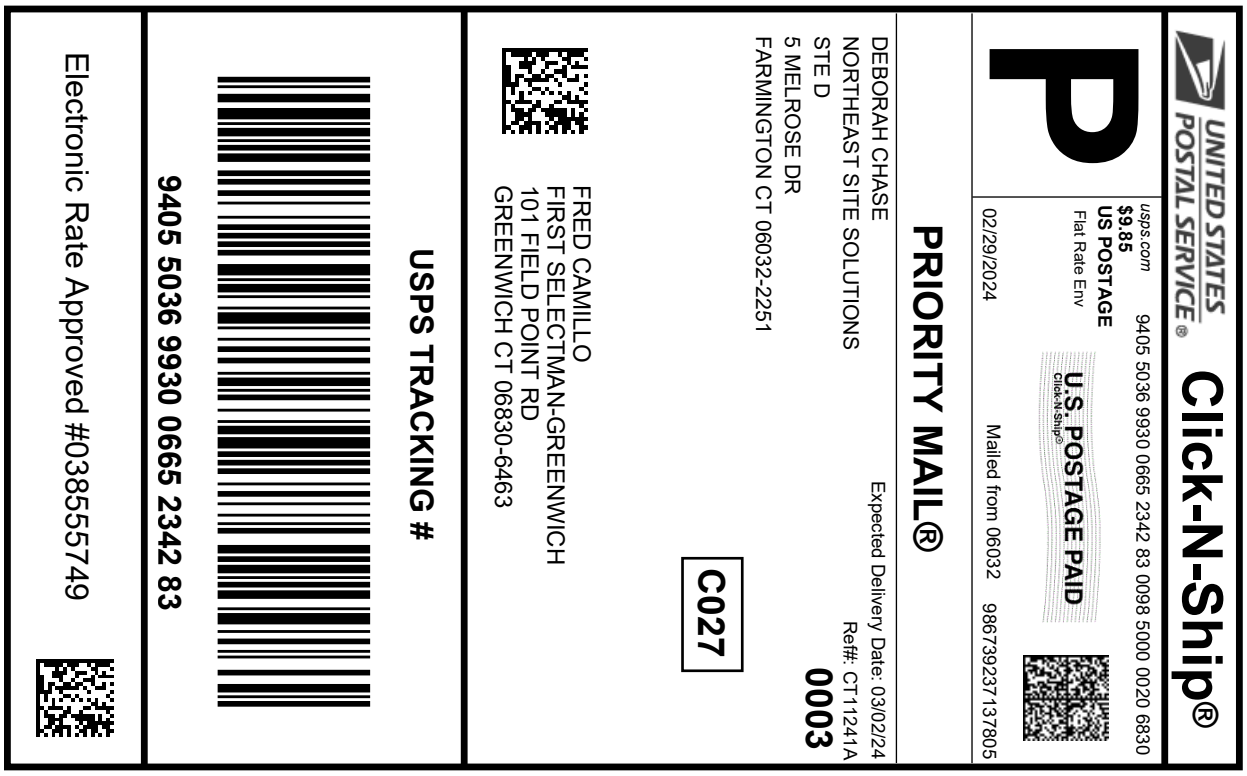
Masie Hartt

Masie Hartt
Transmission Line Engineering

Ref: 2024-0122 - CT11241A Structural Analysis Rev0 (23058.11)
2024-0123_23058.11 CT11241A - Rev2 CDs (S&S)
2024-0226 - CT11241A Mount Analysis Rev0 (23058.11)

Exhibit H

Recipient Mailings



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9405 5036 9930 0665 2342 83

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Ship Date:	02/29/2024
Expected Delivery Date:	03/02/2024

Priority Mail® Postage:	**$9.85**
Total:	**$9.85**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE D
5 MELROSE DR
FARMINGTON CT 06032-2251

Ref#: CT11241A

To: FRED CAMILLO
FIRST SELECTMAN-GREENWICH
101 FIELD POINT RD
GREENWICH CT 06830-6463

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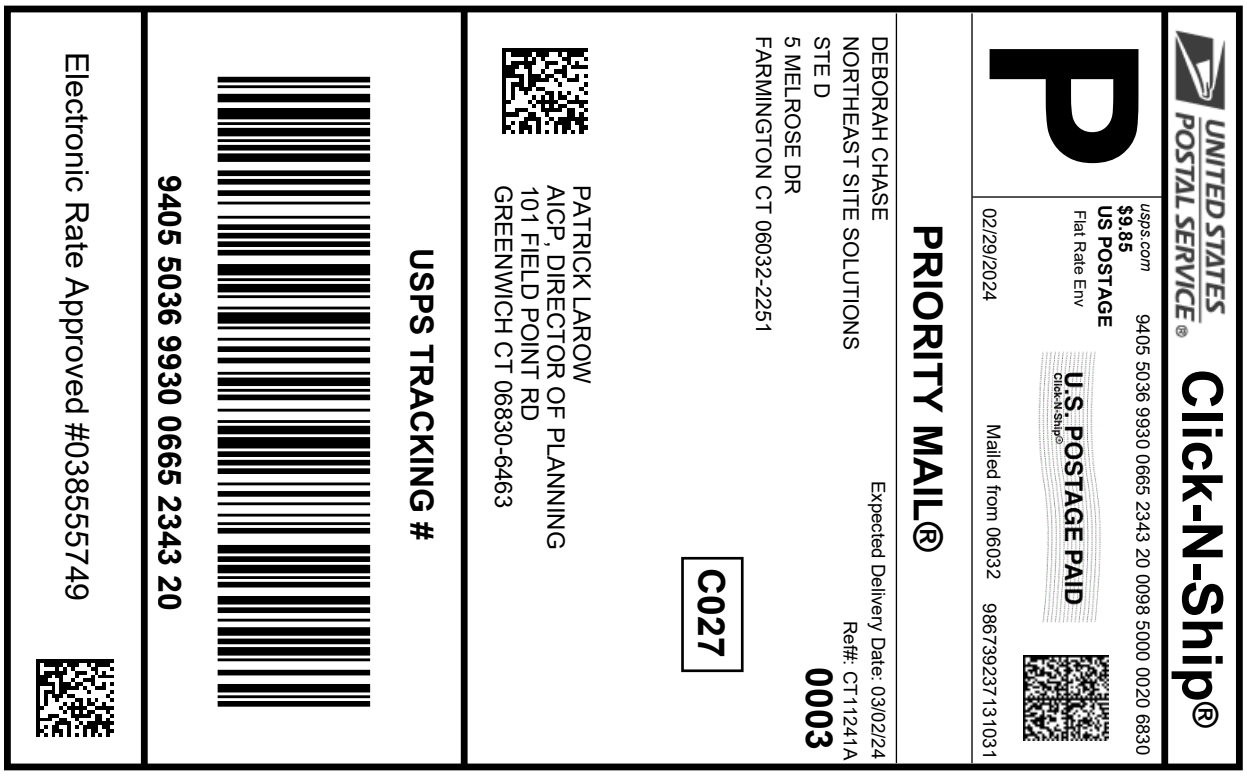

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Trans. #:	600394516
Print Date:	02/29/2024
Ship Date:	02/29/2024
Expected Delivery Date:	03/02/2024

Priority Mail® Postage:	**$9.85**
Total:	**$9.85**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE D
5 MELROSE DR
FARMINGTON CT 06032-2251

Ref#: CT11241A

To: PATRICK LAROW
AICP, DIRECTOR OF PLANNING
101 FIELD POINT RD
GREENWICH CT 06830-6463

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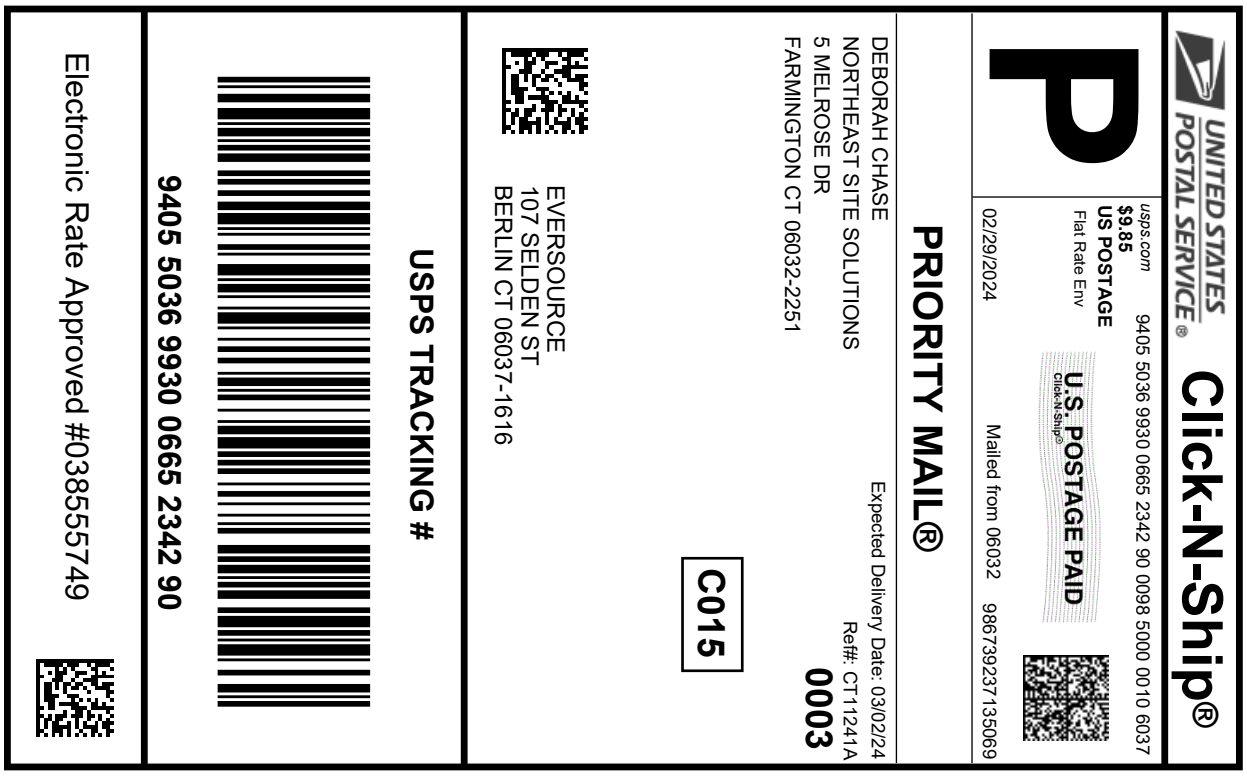

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Trans. #:	600394516
Print Date:	02/29/2024
Ship Date:	02/29/2024
Expected Delivery Date:	03/02/2024

Priority Mail® Postage:	**$9.85**
Total:	**$9.85**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
5 MELROSE DR
FARMINGTON CT 06032-2251

Ref#: CT11241A

To: EVERSOURCE
107 SELDEN ST
BERLIN CT 06037-1616

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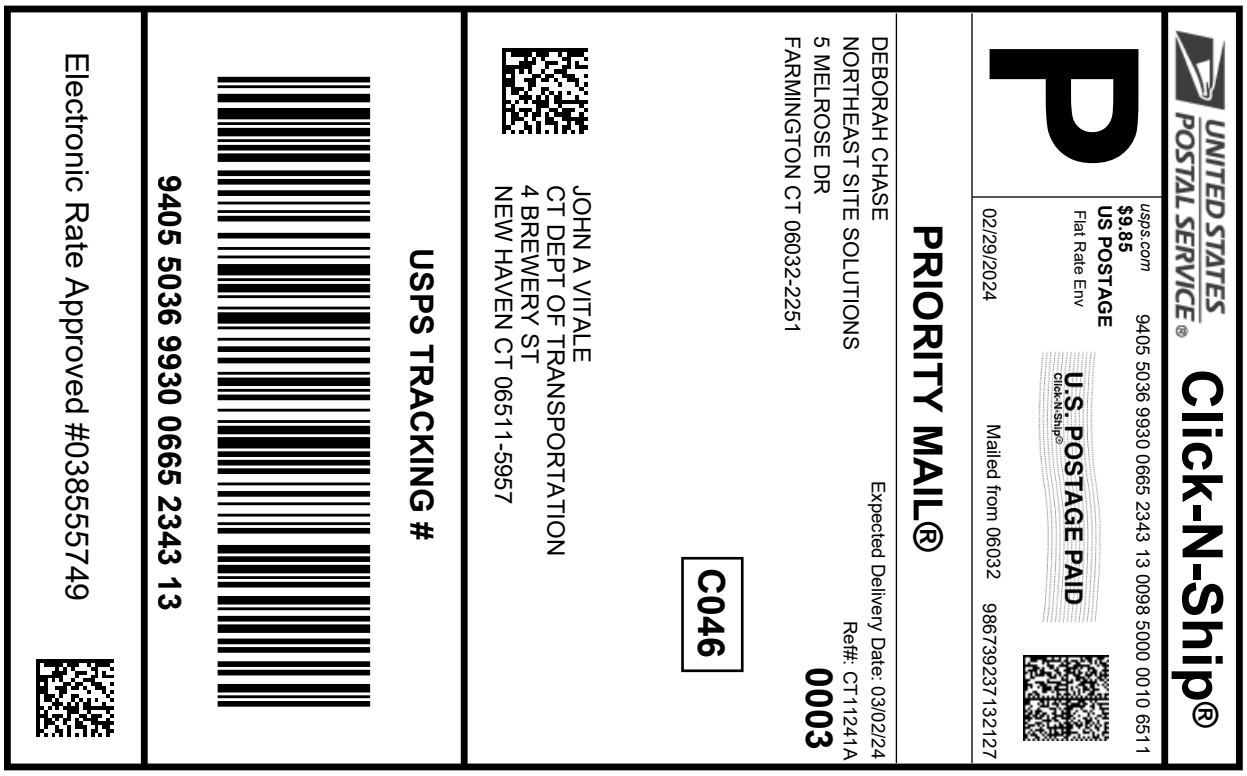

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Trans. #:	600394516
Print Date:	02/29/2024
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Expected Delivery Date:	03/02/2024

Priority Mail® Postage:	**$9.85**
Total:	**$9.85**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
5 MELROSE DR
FARMINGTON CT 06032-2251

Ref#: CT11241A

To: JOHN A VITALE
CT DEPT OF TRANSPORTATION
4 BREWERY ST
NEW HAVEN CT 06511-5957

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Product	Qty	Unit Price	Price
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Prepaid Mail Greenwich, CT 06830 Weight: 0 lb 13.30 oz Acceptance Date: Thu 02/29/2024 Tracking #: 9405 5036 9930 0665 2342 83	1		$0.00
Prepaid Mail Greenwich, CT 06830 Weight: 0 lb 13.30 oz Acceptance Date: Thu 02/29/2024 Tracking #: 9405 5036 9930 0665 2343 20	1		$0.00
Prepaid Mail New Haven, CT 06511 Weight: 0 lb 13.40 oz Acceptance Date: Thu 02/29/2024 Tracking #: 9405 5036 9930 0665 2343 13	1		$0.00
Grand Total:			$0.00

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