NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Victoria Masse
420 Main Street #2, Sturbridge, MA 01566
860-306-2326
victoria@northeastsitesolutions.com

October 17, 2023

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

RE: Notice of Exempt Modification
640 Westport Turnpike, Fairfield CT 06824
Latitude: 41.20161600
Longitude: -73.33205500
T-Mobile Site#: CT11360A_L600

Dear Ms. Bachman:
T-Mobile currently maintains two (2) antennas at the 96-foot level of the existing 81-foot transmission pole located at 640 Westport Turnpike, Fairfield CT 06824. The tower is owned by CL&P d/b/a Eversource and property is owned by Ian Latchmansingh J & Emily F Palmer. T-Mobile now intends to relocate all existing equipment to the new pole per Petition No. 1549. T-Mobile also intends to remove two (2) existing antenna and replace with six (6) new 600/700/1900/2100 MHz antenna. The new antennas would be installed at the 112-foot level of the new 115-foot monopole. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable.
T-Mobile Planned Modifications:
Remove:
All existing equipment

Remove and Replace:
(3) EMS RR90-17-02DP Antenna (Remove) – (3) RFS APXVAALL24 600/700/1900/2100 MHz Antenna (Replace)
(1) Existing Antenna Mount (Remove) – (1) Antenna Platform Mount RMQLP-496-HK (Replace)

Install New:
(3) Radio 4480 B71+B85
(3) Radio 4460 B25+B66
(6) Smart Bias-T (Commscope: ATSBT-TOP-MF-4G)
(3) APX16DWV-16DWV-S-E-A20 Antenna
(12) Coax Line

Existing to Remain:
NONE

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This facility was approved by the Connecticut Siting Council Petition No. 1549 on February 16, 2023. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Brenda L. Kupchick, First Selectwoman and Jim Wendt, Planning Director, as well as the property owner and the tower owner.

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

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 2, Sturbridge MA 01566
Email: victoria@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments:

cc: Brenda L. Kupchick, First Selectwoman
Sullivan Independence Hall
725 Old Post Road
Fairfield, CT 06824

Jim Wendt, Planning Director
Sullivan Independence Hall
725 Old Post Road
Fairfield, CT 06824

Ian Latchmansingh & Emily Palmer, as property owner
640 Westport Turnpike
Fairfield, CT 06824

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

Exhibit A

Original Facility Approval

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL & CERTIFIED MAIL
RETURN RECEIPT REQUESTED

February 16, 2023

Kathleen M. Shanley
Manager-Transmission Siting
Eversource Energy
P.O. Box 270
Hartford, CT 06103
Kathleen.shanley@eversource.com

RE: **PETITION NO. 1549** – The Connecticut Light and Power Company d/b/a Eversource Energy petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed 1714 Line Rebuild Project consisting of the replacement and reconductoring of approximately 9.4 miles of its existing Nos. 1714, 1720, and 1222 115-kilovolt (kV) electric transmission lines and one structure along its 1637 line within existing Eversource electric transmission right-of-way between Eversource's Weston Substation, 85 Weston Street in Weston and the United Illuminating Company's Old Town Substation, 122 Kaechele Place in Bridgeport, Connecticut traversing Weston, Fairfield, Easton and Bridgeport and related electric transmission line and substation improvements.

Dear Kathleen Shanley:

At a public meeting held on February 16, 2023, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need with the following conditions:

1. Approval of any project changes be delegated to Council staff;

2. Identification of staging areas and provisions for erosion and sedimentation (E&S) controls, if necessary, at the staging area locations prior to the commencement of construction;

3. Relocate Structure No. 19763 to the east and outside of the 100-foot vernal pool envelope associated with Vernal Pool 1;

4. Incorporate pollinator habitat in the restoration of disturbed areas consistent with CGS §16-50hh, where feasible;

5. An environmental monitor shall oversee construction activities in sensitive resource areas;

6. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the

Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;

7. The Council shall be notified in writing at least two weeks prior to the commencement of site construction activities;

8. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the City of Bridgeport and the Towns of Easton, Fairfield and Weston;

9. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

10. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v; and

11. This Declaratory Ruling may be transferred or partially transferred, provided both the facility owner/operator/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. The Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer. Both the facility owner/operator/transferor and the transferee shall provide the Council with a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility, including contact information for the individual acting on behalf of the transferee.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition dated November 14, 2022 and additional information dated February 1, 2023.

Enclosed for your information is a copy of the staff report on this project.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/RDM/laf

Enclosure: Staff Report dated February 16, 2023

c: The Honorable Joseph P. Ganim, Mayor, City of Bridgeport (mayor@bridgeportct.gov
The Honorable David Bindelglass, First Selectperson, Town of Easton (dbindelglass@eastonct.gov)
The Honorable Brenda L. Kupchick, First Selectperson, Town of Fairfield (firstselectmanffld@fairfieldct.org)
The Honorable Samantha Nestor, First Selectperson, Town of Weston (snestor@westonct.gov)
Deborah Denfeld, Team Lead – Transmission Siting, Eversource Energy (deborah.denfeld@evesource.com)

STATE OF CONNECTICUT)

: ss. Southington, Connecticut February 16, 2023

COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the Decision and Staff Report in Petition No. 1549 issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Melanie A. Bachman
Executive Director
Connecticut Siting Council

STATE OF CONNECTICUT)

: ss. New Britain, Connecticut February 16, 2023

COUNTY OF HARTFORD)

I certify that a copy of the Connecticut Siting Council Decision and Staff Report in Petition No. 1549 has been forwarded by Certified First Class Return Receipt Requested mail, on February 16, 2023, to all parties and intervenors of record as listed on the attached service list, dated December 22, 2022.

ATTEST:

Lisa Fontaine
Fiscal Administrative Officer
Connecticut Siting Council

Date: December 22, 2022

LIST OF PARTIES AND INTERVENORS
SERVICE LIST

Status Granted	Document Service	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Petitioner	☒ E-mail	The Connecticut Light and Power Company d/b/a Eversource Energy	Kathleen M. Shanley Manager-Transmission Siting Eversource Energy P.O. Box 270 Hartford, CT 06103 Phone: (860) 728-4527 Kathleen.shanley@eversource.com
Party *(granted on 12/22/22)*	☒ E-mail	The United Illuminating Company	Bruce L. McDermott, Esq. Murtha Cullina LLP 265 Church Street New Haven, CT 06510 Phone: (203) 772-7787 bmcdermott@murthalaw.com Renni Pavolini The United Illuminating Company 100 Marsh Hill Road Orange, CT 06477 rpavolini@uinet.com

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

Petition No. 1549
The Connecticut Light and Power Company d/b/a Eversource Energy
1714 Line Rebuild Project
Bridgeport, Easton, Weston, and Fairfield
Staff Report
February 16, 2023

Introduction

On November 15, 2022, the Connecticut Siting Council (Council) received a petition (Petition) from The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource) for a declaratory ruling pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k, for the 1714 Line Rebuild Project (Project) within existing Eversource electric transmission line right-of-way (ROW) in the City of Bridgeport and Towns of Easton, Weston, and Fairfield (municipalities).

The Project consists of replacement and reconductoring of 115-kilovolt (kV) electric transmission line structures on the Nos. 1714/1720 and 1714/1222 Lines and the replacement of one structure on the No. 1637/1720 Line, along approximately 9.4 miles of existing ROW between Eversource's Weston Substation in Weston and the United Illuminating Company's (UI) Old Town Substation in Bridgeport, and related transmission line and substation improvements.

On November 10, 2022, in compliance with Regulations of Connecticut State Agencies (RCSA) §16-50j-40, Eversource provided notice of the proposed Project to the municipalities and abutting property owners.

On November 17, 2022, the Council sent correspondence to the municipalities stating that the Council has received the Petition and invited the municipalities to contact the Council with any questions or comments by December 15, 2022. On November 21, 2022, the Town of Weston requested an extension of time to submit comments, which was granted to January 4, 2023. No comments were received from any of the municipalities.

On December 8, 2022, UI requested party status. The Council granted UI party status during a public meeting held on December 22, 2022.

Under RCSA §16-50j-40, neither Eversource nor the Council is required to provide notice to the state agencies listed in CGS §16-50j(g) when a petition for a declaratory ruling for modifications to an ***existing facility*** is submitted to the Council. On December 16, 2022, the Council on Environmental Quality submitted comments on the Project.[1]

Under CGS §16-50x, the Council retains exclusive jurisdiction over the existing electric transmission line and substation facility sites. Under RCSA §16-50j-2a(29), "site" means a contiguous parcel of property with specified boundaries, including, but not limited to, the leased area, right-of-way, access and easements on which a facility and associated equipment is located, shall be located or is proposed to be located. The Council cannot delegate its statutory authority to any other entity and it is not required to abide by comments from state agencies.[2]

The Council submitted interrogatories to Eversource on January 11, 2023. Eversource submitted responses to the interrogatories on February 1, 2023.

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[1] CEQ Comments
[2] *Corcoran v. Connecticut Siting Council*, 284 Conn. 455 (2007)

Pursuant to CGS §4-176(e) of the Uniform Administrative Procedure Act, an administrative agency is required to take action on a petition within 60 days of receipt. On December 22, 2022, pursuant to CGS §4-176(e), the Council voted to set the date by which to render a decision on the Petition as no later than May 14, 2023, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

The purpose of the proposed Project is to improve system reliability on the Nos. 1714/1720, 1714/1222 and 1637/1720 lines by replacing and/or reconductoring electric transmission line structures that are at the end of their service life and to meet National Electrical Safety Code (NESC) standards, including, but not limited to, conductor clearance requirements. Additionally, the Project entails realignment of the existing structure configuration to maintain consistent electrical clearances, installation of new mid-span structures to reduce span widths and mitigate conductor blowout and coordination with UI on modifications at its Hawthorne and Old Town Substation facilities.[3]

The design of the Project is not dependent upon the design of any UI projects.

Municipal and Abutter Notice

Eversource initiated outreach to the municipalities in March and April 2022. During this outreach, the Town of Weston requested more information regarding the Petition process and inquired as to the capability of the Project to meet future electrical needs. No other municipality commented on the Project.

In early to mid-2022, Eversource initiated outreach to property owners along the Project route. All abutting property owners were notified of the Project and provided information on how to obtain additional information, as well as how to submit comments to the Council. The Project includes the installation of new midspan structures in 16 locations. Eight of the structures would be on properties (excluding Eversource-owned property) that do not currently host a structure. Several abutters contacted Eversource with concerns about visibility, restoration, and property value. During the construction phase of the Project, Eversource would maintain contact with property owners to inform them of construction activities.

Existing Project Area

The existing Project area includes approximately 9.4 miles of existing Eversource ROW that extends through residential, recreational, and undeveloped areas between Eversource's Weston Substation and UI's Old Town Substation.

The ROW was acquired in 1923 and 1924. Eversource's easement for the existing ROW grants Eversource rights to *"enter upon the subject land and erect, install, inspect, operate, replace, repair and patrol, and permanently maintain on the right of way, poles and towers, with necessary conductors, wired, cross arms, guy wires and other usual fixtures and appurtenances used or adapted for the transmission of electric current for light, heat, power or any other purpose, and used and adapted for telephone purposes."*

Easements along Eversource ROWs also grant rights to *"trim, cut, and remove at any and all times such trees, parts of tree, limbs, branches, underbrush within or projecting into the ROW which may interfere with or endanger said poles, towers and wires or their operation or with any of their appurtenances when erected."*

The ROW is approximately 80 feet wide, with two segments in the Town of Weston that are 175 feet wide. No expansion of the ROW is proposed. Vegetation maintenance was performed in September 2020 and December 2020 to remove incompatible tree species and to trim trees along the edge of the maintained ROW.

[3] Council Docket No. 490.

Proposed Project

The Project is proposed to address identified asset condition deficiencies by replacement of deteriorated structures, conductors and static wire on the Nos. 1714/1720 and 1714/1222 Lines and the replacement of one deteriorated structure on the Nos. 1637/1720 Line west of Weston Substation. The existing conductors have exceeded their planned service life and are at risk of failure. The existing structures supporting the conductors require replacement due to degradation, limited structural capacity to support new conductors, and compliance with new conductor clearance requirements.

The Project entails a total of 114 replacement and new mid-span structures. The majority of the replacement structures would be of double-circuit design. However, in some locations, two single-circuit monopoles would be used to support each line. The single circuit poles would be "dead-end" or "angle" structures that are typically installed at ROW angle points to meet horizontal electrical clearances and/or provide for safe conductor pulling locations.

The Project requires taller structures to meet NESC standards, including, but not limited to, conductor clearance requirements. The NESC is the authoritative code for ensuring the continued practical safeguarding of persons and utility facilities during the installation, operation and maintenance of electric power and communications utility systems, including substations, overhead lines and underground lines.

Due to the narrow ROW, taller structures would also be installed to increase the distance of the conductors to adjacent vegetation. The Nos. 1714 and 1720 Lines have recorded higher than acceptable flashover rates due to vegetation contact. A flashover rate is a measure of a transmission line's performance due to certain events causing a disturbance. Flashover analysis indicates 115-kV lines typically have an average rate of 3 flashovers/100miles/year, and with an action level for additional study if rates exceed 4.5 flashovers/100 miles/year.

The flashover rate for the Nos. 1714 and 1720 Lines due to vegetation contact is approximately 10.7 flashovers/100 miles/year and, together with related weather events, approximately 19.1 flashovers/100 miles/year. To further reduce flashover events, Eversource applied a structure height increase of 5 to 10 feet above the NESC design criteria for structures that were identified in areas where adjacent trees were at a height that could cause unacceptable flashover conditions. The Project, designed to current NESC clearance standards and Eversource vegetation design criteria, is anticipated to reduce the flashover rate to 3 flashovers/100 miles/year.

NESC clearance requirements for conductor sway due to wind (blowout) are based on established horizontal clearance requirements during specific wind events to buildings (9.1 feet of clearance to the ROW edge for 115-kV conductors). Transmission lines are designed with the assumption that a building could be erected at any location along the ROW edge. To provide a buffer for construction tolerance, Eversource typically designs transmission corridors to have 11 feet of clearance to the ROW edge during specific wind events. For this Project, Eversource is replacing the existing conductors with larger capacity conductors mainly to reduce the potential for blowout. Eversource typically replaces conductors in narrow ROW, such as the ROW for this Project, with larger conductors to reduce conductor blowout and meet the NESC clearance standards.

Eversource proposes to install new mid-span structures along the ROW to restrain the conductors and fiber optic ground wire (OPGW) from blowout caused by wind conditions. Typical conductor span lengths on Eversource 115-kV lines are 800 feet or less.[4] The number of new mid-span structures cannot be further reduced using anti-galloping devices or other design options given the narrowness of the existing ROW and the hilly terrain.

[4] Petition 1527, response to Council interrogatory 19.

The Project was presented to the Independent System Operator -New England (ISO) Planning Advisory Committee on November 15, 2022. It will be added to ISO's Asset Condition List in March 2023.

Structure Replacement and Reconductoring of Nos. 1637/1720 Lines

The Nos. 1637/1720 Lines extend west from Weston Substation and consist of 556 kcmil Aluminum Conductor Steel Reinforced (ACSR) conductors supported by steel lattice structures. The conductors are approximately 50 years old.

Project work consists of the following:

a) Replace one double-circuit steel lattice structure west of the Weston Substation with two single-circuit weathering steel monopoles installed side by side;
b) Replace existing 556 kcmil ACSR conductor with 1590 kcmil Aluminum Conductor Steel Supported (ACSS) conductor from the new structures to the Weston Substation;
c) Install new all dielectric self-supporting cable (ADSS) on the 1637 and 1720 Lines to the Weston Substation control enclosure; and
d) Transfer existing OPGW to the replacement structures.

Structure Replacement and Reconductoring of Nos. 1714/1720 Lines

The Nos. 1714/1720 Lines extend east from Eversource's Weston Substation in Weston to UI's Hawthorne Substation in Fairfield. The ROW segment is paralleled by 45-90 foot vegetation and among the worst-performing Eversource circuits in the state due to vegetation-related disturbances. The Nos. 1714/1720 consist of 556 kcmil ACSR conductors supported by steel lattice and monopole structures. The conductors are approximately 50 years old.

Project work consists of the following:

a) Replace 51 double-circuit steel lattice structures with 40 new double-circuit weathering steel monopoles and 22 single-circuit weathering steel monopoles installed in pairs side by side;
b) Replace two single-circuit steel lattice structures with two single-circuit steel monopoles;
c) Replace three single-circuit steel monopoles with three new single-circuit weathering steel monopoles;
d) Replace one double-circuit steel monopole with two new single-circuit weathering steel monopoles;
e) Replace one triple-circuit steel lattice structure with two double-circuit weathering steel monopoles;
f) Install 11 new mid-span double-circuit weathering steel monopoles and six new mid-span single-circuit weathering steel monopoles (single circuit poles to be installed in pairs side by side;
g) Replace existing 556 kcmil ACSR conductor with 1590 kcmil ACSS conductor. New conductor will be installed to the terminal structure within UI's Hawthorne Substation (and may require UI to install new tap conductors);
h) Transfer existing OPGW on the 1720 Line to the replacement structures;
i) Replace the existing copperweld overhead shield wire on the 1714 Line with OPGW;
j) Install new ADSS on the 1714 Line to the Weston Substation control enclosure; and
k) Install a new cabinet, patch panel and communications equipment within the existing Weston Substation control enclosure.

Structure Replacement and Reconductoring of Nos. 1714/1222 Lines

The Nos. 1714/122 Lines extend from UI's Hawthorne Substation in Fairfield to UI's Old Town Substation in Bridgeport and consist of 556 kcmil ACSR conductors supported by steel lattice and monopole structures. The conductors are approximately 50 years old.

Project work consists of the following;

a) Replace 14 existing double-circuit lattice structures with nine new double-circuit weathering steel monopoles and 10 new single-circuit weathering steel monopoles installed in pairs side by side;
b) Replace one single-circuit steel monopole with one new single-circuit weathering steel monopole;
c) Replace one double-circuit steel monopole with two new single-circuit weathering steel monopoles;
d) Install two new mid-span double-circuit weathering steel monopoles;
e) Replace existing 556 kcmil ACSR conductor with 1590 kcmil ACSS conductor. New conductor will be installed to the terminal structure within UI's Hawthorne Substation (and may require UI to install new tap conductors);
f) Transfer the existing OPGW on the 1714 Line to the new structures;
g) Relocate existing fiber line from UI's Hawthorne Substation to Structure 19717; and
h) Replace the existing 1222 Line copperweld overhead shield wire with new OPGW.

Cost

The total estimated cost of the Project is approximately $124.29M. The entire Project cost would be eligible for regional cost allocation as it is associated with Pool Transmission Facilities.[5] Pending a final determination from ISO-NE, total costs are expected to be allocated[6] as follows:

Eversource Connecticut ratepayers[7]	19.1%	(23.74M)
Other Connecticut ratepayers[8]	5.9%	($7.33M)
Other New England ratepayers[9]	75.0%	($93.22M)
Cost Total	100%	($124.29M)

The Project is the first part of a two-part project to rebuild the ROW corridor from Norwalk Junction Substation in Wilton to UI's Old Town Substation in Bridgeport. The second part of the project, the 1637/1720 Lines Rebuild Project, from Norwalk Junction Substation to the Weston Substation, would be submitted to the Council at a later date.

In addition, the Project is being coordinated with UI's Old Town Substation Rebuild Project, approved by the Council on January 28, 2021 in Docket 490. After Eversource replaces its structures located on UI's Old Town Substation property, Eversource would reconductor from Structure No. 19701/ Structure No. 19701A west of the substation to the new structures on the substation property.

Project Construction and Work Procedures

Eversource would establish temporary equipment staging areas near the Project site prior to construction. The staging areas would contain Project equipment, vehicles and office trailers.

Eversource would utilize existing ROW access roads to the extent possible during construction. Where existing access roads are not present, new permanent gravel roads would be established. Multiple access roads are required so that equipment can access various construction zones along the ROW without relying on one point of access for long ROW segments. Construction matting would be utilized to install temporary access roads to protect sensitive areas (e.g. wetlands, lawn, meadow) to reach certain structure locations.

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[5] ISO-NE defines Pool Transmission Facilities as facilities rated 69-kV or above owned by the participating transmission owners over which ISO-NE has operating authority in accordance with the terms set forth in the Transmission Operating Agreements.
[6] These allocations are estimates based on 2021 actual loads.
[7] Electrical service customers of Eversource and located within Connecticut.
[8] Electrical service customers located within Connecticut but outside of Eversource's service territory.
[9] Electrical service customers located within New England but outside of Connecticut.

Eversource would obtain a Department of Transportation Encroachment Permit to cross five state routes (Routes 15, 57, 58, 59 and 136) within the Project area.

Construction areas would be isolated by establishing erosion and sedimentation (E&S) controls in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* and Eversource's April 2022 Best Management Practices Manual for Massachusetts and Connecticut (BMPs).[10] Typical E&S control measures include, but are not limited to, straw blankets, hay bales, silt fencing, gravel anti-tracking pads, soil and slope protection, water bars, check dams, berms, swales, plunge pools, and sediment basins.

A project-specific Stormwater Pollution Control Plan (SWPCP) would be developed for registration under a DEEP General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (General Permit). The General Permit requires the designing qualified professional to conduct the SWPCP Implementation Inspection that confirms compliance with the General Permit and the initial implementation of all SWPCP control measures for the initial phase of construction. The SWPCP also requires a qualified inspector to inspect the work areas at least once per week and within 24-hours after a rain event that meets certain permit criteria.

The Project is eligible for certification through the US Army Corps of Engineers/DEEP Self-Verification Notification process in regard to wetland impact. The self-verification notification forms would be submitted to the U.S. Army Corps of Engineers - New England District (USACE) and DEEP prior to the start of project construction as required by the SWPCP.

At each transmission line structure location, a work pad would be constructed, if necessary, to stage material for final on-site assembly and/or removal of structures, to pull conductors and to provide a safe, level work base for construction equipment. Work pads for the project would typically range from 80 feet by 100 feet. For areas where machinery is needed for pulling conductors through an angled structure, work pads of approximately 80 feet by 150 feet would be required. Larger pads would be used for structures where the ROW is wider. Most of the work pads would be composed of gravel. Temporary work pads would be used in sensitive areas such as wetlands, lawns and agricultural land.

The proposed structures would have drilled (caisson) foundations. Foundation installation work would require the use of equipment such as drill rigs, pneumatic hammers, augers, dump trucks, concrete trucks, grapple trucks, and light duty trucks. If groundwater is encountered, pumping trucks or other equipment would be utilized. The water would then be discharged in accordance with local, state and federal requirements. New structure sections, components and hardware would be delivered by flatbed truck to the structure locations for assembly by crane and bucket trucks.

New conductors and OPGW would be installed after the structures are installed. The required equipment would include cable reels, pulling and tensioning rigs, and bucket trucks. The removal of the existing conductor and static wire would take place during the active installation of the new conductor and OPGW because the existing conductor and shield wire would be used as pulling lines, if possible. Conductor dead-ending and splicing would be accomplished with pressed hardware. The existing structures would be removed after the new conductor and OPGW are installed.

After the new structures/conductors/OPGW are installed, the lines are re-energized and the existing structures are removed, ROW restoration activities would commence. Restoration work would include the removal of construction debris, signage, flagging, temporary fencing, and construction mats and work pads that are designated for removal. Affected areas would be re-graded as practical and stabilized via revegetation or other measures before removing temporary E&S controls. ROW restoration would be performed in accordance with Eversource BMPs and in consultation with affected property owners.

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[10] 2022 Eversource Best Management Practices MA_CT

Upon completion of the project, access roads and work pads located in uplands would be left in place to facilitate future transmission line maintenance. If a property owner requests their removal, Eversource would work with such property owner regarding mitigation options which could include, but not limited to, covering with topsoil/seeding. Eversource would restore stone walls that were affected by the Project if requested by the property owner.

Except for concrete trucks, no construction equipment or vehicle washing would be allowed in the ROW. Concrete truck wash-out would occur only in upland areas of the ROW (a minimum of 50 feet from wetlands) to avoid or minimize the potential for impacts to water resources. All wash-out areas would include measures to control and contain wash-water and collect the cement wash-off for off-site disposal.

Project-related traffic would be expected to be temporary and highly localized in the vicinity of ROW access points along public roads and at the staging area. Due to the phasing of construction work, project-related traffic is not expected to significantly affect transportation patterns or levels of service on public roads. Traffic management procedures would be developed, if necessary.

Environmental Effects and Mitigation Measures

Most of the work would occur within a maintained 80-foot-wide ROW and thus, no tree clearing will occur for the proposed structure replacements except for the portion of ROW at Structures 19783 and 19783A, near Good Hill Road in Weston, where the ROW is 175 feet wide. Approximately 0.6 acre of tree clearing would occur to facilitate work at these two structures, with vegetation cut to an above ground height of 6-8 inches to limit soil disturbance.

For other areas, tree trimming, minor vegetation removal and/or mowing within the managed transmission line ROW corridor may be required to improve work site access, and to develop and/or restore off-ROW access roads and to meet NESC and Eversource conductor clearance standards. Hazard trees located in un-managed areas outside of the ROW would be removed after approval from the affected landowner.

Vegetation removal/tree trimming would be accomplished using mechanical methods using flat-bed trucks, brush hogs or other types of mowing equipment, skidders, forwarders, bucket trucks for canopy trimming, and chippers. Vegetation removal activities would be performed in accordance with Eversource BMPs.

A total of 43 wetland areas and 23 watercourses occur along the ROW or in off-ROW areas. Temporary wetland impacts related to project construction matting would total approximately 72,425 square feet (1.66 acres). The Project would require 11 temporary watercourse crossings, using wood matting, for work pads and access roads. Construction activities within wetlands and over watercourses would be conducted in accordance with Eversource's BMPs.

Approximately 320 square feet of permanent wetland impacts would result from the replacement of two lattice structures within wetlands and two new mid-span structures installed within wetlands. In addition, a new permanent access road to one structure would result in approximately 100 square feet of permanent wetland impact.

A total of 6 vernal pools (VP) were identified in the Project area. No temporary construction matting would be placed within any VP. As proposed, temporary matting would be installed within the vernal pool envelope (100 feet from VP edge) of four vernal pools. At the request of the Council, Eversource would be willing to shift the work area for Structure No. 19763 in Weston eastward to avoid work within a vernal pool envelope.

Eversource would conduct work in this area in accordance with Eversource's BMPs as well as Project specific VP protective measures, which include, but are not limited to, selective tree/shrub vegetation clearing with hand tools where necessary, use of temporary matting, avoid removing shrub vegetation within 25 feet of a VP, avoid the use of E& controls with plastic meeting, and installation of E&S controls that does not restrict movement of VP obligate species.

The DEEP-approved SWPCP contains details regarding the E&S control measures that would be implemented to protect wetlands and vernal pools. E&S controls would also be inspected weekly by a qualified inspector, as required by the SWPCP. The Project would comply with the SWPCP, ACOE self-verification procedures, and Eversource's BMPs.

Invasive species mitigation measures would be conducted in accordance with Eversource's BMPs. Measures include the cleaning of temporary mats to prevent the introduction of invasive species into wetlands, the cleaning of vehicles, equipment, materials, gear, footwear or clothing of all visible soil and plant material on site known to contain invasives or as near as practical to the invasive area, prior to leaving the Project site.

The Project ROW extends across 100-year and 500-year Federal Emergency Management Agency-designated flood zones associated with the six watercourses. Work associated with five structures would occur within designated 100-year and/or 500-year flood zones. Eversource would utilize Secured temporary matting for work pads/access roads within these flood zone. No permanent fill would be used in these areas to prevent alteration of flood zone characteristics.

The ROW crosses a DEEP-designated Aquifer Protection Area (APA) near Timber Mill Lane in Weston. The Project ROW is partially located within the Hemlocks Reservoir System Public Water Supply Watershed operated by Aquarion Water Company of CT (Aquarion), a subsidiary of Eversource. Eversource would conduct work in accordance with its BMPs as well as practices recommended by Aquarion. Provisions are included for the proper storage, secondary containment, and handling of diesel fuel, motor oil, grease and other lubricants, to protect water quality in these areas.

A portion of the Project is within DEEP Natural Diversity Database (NDDB) areas. A DEEP NDDB Determination is a requirement of the DEEP General Permit application. Eversource reviewed a NDDB Determination from DEEP dated February 22, 2022. Eversource would implement DEEP recommended species-specific protection measures during construction, which include, but are not limited to, providing contractor training, time of year best management practices, monitoring, and installation of exclusionary fencing.

Eversource also consulted with the U.S. Fish & Wildlife Service's (USFWS) Information, Planning and Consultation (IPaC) service regarding federally-listed species that may be present within the project area. The IPaC report identified the northern long-eared bat (NLEB), a federally-listed and state-listed Endangered Species and the Bog Turtle, a federally-listed Threatened Species, and state-listed Endangered Species as occurring proximate to the Project. There are no known NLEB maternity roost trees within 150 feet of the Project area, and no known NLEB hibernaculum is located within the municipalities; thus, no Project-related impacts to NLEB are expected. Although historic records of the bog turtle occur from northern Fairfield County, the turtle is considered extirpated from the area, and therefore, the Project would have no effect on the bog turtle.

A Phase 1A Cultural Resources Assessment (Phase 1A) of the Project area determined that three previously identified archaeological sites; and two Historic Districts and one Scenic Byway (Merritt Parkway) listed on the National Register of Historic Places (NRHP) are located within 500 feet of the Project. The Phase 1A determined that the Project would not affect the three archaeological sites or the two NRHP-listed Historic Districts. One new midspan structure would be visible from the Merritt Parkway but the visual impact would be minimal.

The Phase 1A indicated that 131 work locations possessed a potential for moderate to high archaeological sensitivity. A subsequent Phase 1B Cultural Resources Reconnaissance Survey found no archaeological significance at these locations and no further action was recommended. SHPO reviewed the Phase 1A/1B survey and sent correspondence to Eversource on January 30, 2023 indicating the Project would have no effect on historic properties.

A portion of the Project ROW traverses or is adjacent to several public recreational resource areas including open space areas, state forest, a golf course, and a developed recreational park. Eversource would consult with representatives of these resources to coordinate construction activities and implement measures to maintain public safety and access during Project construction. Upon Project completion, restoration in these areas would be in accordance with the BMPs and the property owners/managers. For example, the Town of Fairfield requested that gravel roads established within Brett Woods Conservation area remain in place post-construction to act as hiking trails.

After construction, gravel work pad restoration measures would be implemented to mitigate construction related disturbance. Mitigation includes the application of stockpiled topsoil or fine process grave followed by application of a native warm season grass mix and habitat enhancements to benefit pollinator species Upon restoration, the ROW would continue to be maintained as early successional habitat which would benefit the New England Cottontail and other species that rely on shrub habitats.

Disturbed areas would be stabilized using temporary erosion and sediment controls such as straw mulch, compost filters, and biodegradable erosion control blankets until final stabilization has been achieved. In accordance with the SWPCP, monthly inspections would be conducted to monitor stabilization measures. A qualified soil erosion and sediment control professional or a qualified professional engineer would inspect the areas and confirm compliance with the post-construction stormwater management requirements.

The replacement and reconductoring of the lines would require increases in structure heights to meet NESC clearance requirements within the existing ROW. Existing structures on the lines range from 55 to 115 feet above ground level. The replacement structures on the lines would range from 58 feet to 132 feet above ground level, with increases in height ranging from one foot to 43 feet. Four replacement structures would increase in height by 40 feet or more. The new mid span structures would range in height from 106 feet to 132 feet, with an average height of approximately 117 feet.

Due to the increase in structure heights to comply with NESC clearance criteria, there would be indirect visual impacts to the surrounding area. The use of weathering steel replacement structures would blend in with the surrounding wooded landscape.

A large gravel work pad is proposed within the ROW for Structures No. 19719, 19718, 19717, and 19717A, between Hawthorne Substation and residential yards. Work preparation would include the removal of 3 to 5 trees and mowing prior to pad installation. The Council's interrogatories requested Eversource examine the feasibility of using temporary matting in this area to reduce disturbance; however, due to variable topography, temporary matting is not possible.

Public Safety

There would be no permanent changes to existing ROW sounds levels after completion of the Project. Noise associated with construction activities is exempt from DEEP Noise Control Regulations. Notwithstanding, any construction-related noise would be short-term and localized in the vicinity of work sites.

Notice to the Federal Aviation Administration would not be required for any of the proposed structures.

Electric fields (EF) are produced whenever voltage is applied to electrical conductors and equipment. Electric fields are typically measured in units of kilovolts/meter (kV/m). As the weight of scientific evidence indicates that exposure to electric fields, beyond levels traditionally established for safety, does not cause adverse health effects, and as safety concerns for electric fields are sufficiently addressed by adherence to the NESC, as amended, health concerns regarding Electric and Magnetic Fields (EMF) focus on MF rather than EF. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has established a guideline of 4.2 kV/m.

The Project route contains an existing transmission line that emits magnetic fields (MF). In the United States, no state or federal exposure standards for 60-Hertz MF based on demonstrated health effects have been established, nor are there any such standards established worldwide. However, the ICNIRP has established a level of 2,000 milliGauss (mG), based on extrapolation from scientific experimentation, and the International Committee on Electromagnetic Safety (ICES) has calculated a guideline of 9,040 mG for exposure to workers and the general public, and recognized in the Council's *Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut.*

Eversource reviewed EMF levels associated with the Project. Pre- and post-construction EMF levels* for double circuit structures are presented in the tables below:

Weston Substation-Hawthorne Substation (Annual Average Loads)		North ROW Edge	Max in ROW	South ROW Edge
Magnetic Fields (mG)	Existing	16.7	28.8	14.2
	Proposed	17.6	32.0	15.4
Electric Fields (kV/m)	Existing	0.23	0.71	0.23
	Proposed	0.24	0.80	0.24

Hawthorne Substation-Old Town Substation (Average Annual Loads)		North ROW Edge	Max in ROW	South ROW Edge
Magnetic Fields (mG)	Existing	21.3	39.1	22.8
	Proposed	22.8	44.6	24.1
Electric Fields (kV/m)	Existing	0.23	0.71	0.23
	Proposed	0.24	0.80	0.24

*based on average annual loads

In areas where single circuit structures are installed, such as angle structures, MF levels would increase by an additional 5 mG to 11 mG, depending on location. All EF and MF values would be below the ICNIRP exposure guidelines of 4.2 kV/m and 2,000 mG, respectively.

Construction Schedule

Construction is expected to begin in April 2023 with an anticipated completion by September 2024. Normal work hours would be Monday through Saturday from 7:00 a.m. to 7:00 p.m. Evening work hours may be required based on DOT permits for pulling conductor and OPGW over Route 15. Sunday work hours or evening work (i.e. after 7:00 p.m.) may be necessary due to unforeseen circumstances, delays caused by inclement weather and/or outage constraints.

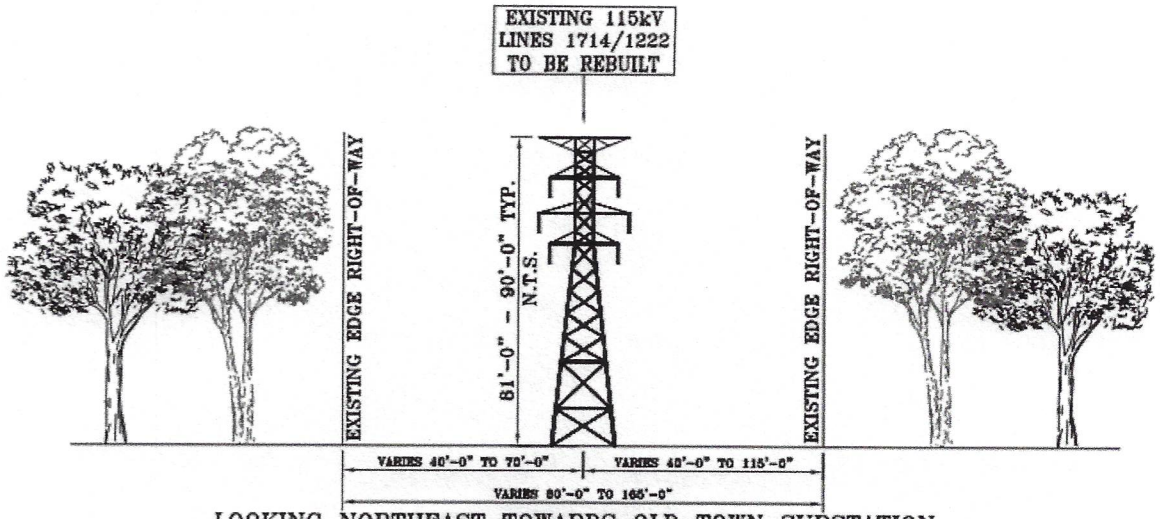
Conclusion

If approved, staff recommends the following conditions:

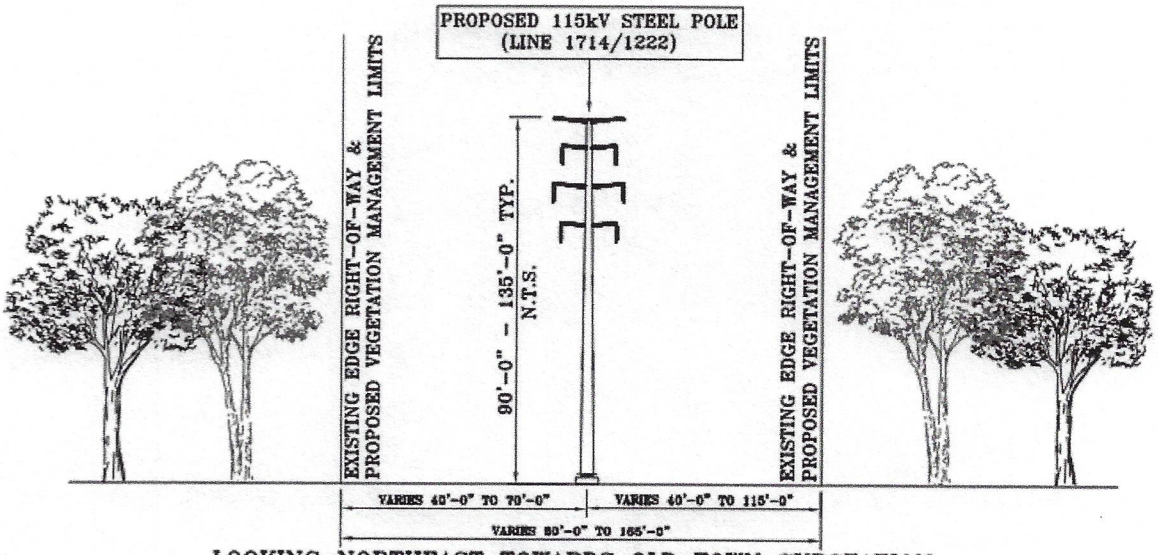
1) Approval of any project changes be delegated to Council staff;
2) Identification of staging areas and provisions for erosion and sedimentation (E&S) controls, if necessary, at the staging area locations prior to the commencement of construction;
3) Relocate Structure No. 19763 to the east and outside of the 100-foot vernal pool envelope associated with Vernal Pool 1;
4) Incorporate pollinator habitat in the restoration of disturbed areas consistent with CGS §16-50hh, where feasible; and
5) An environmental monitor shall oversee construction activities in sensitive resource areas.

Project Location

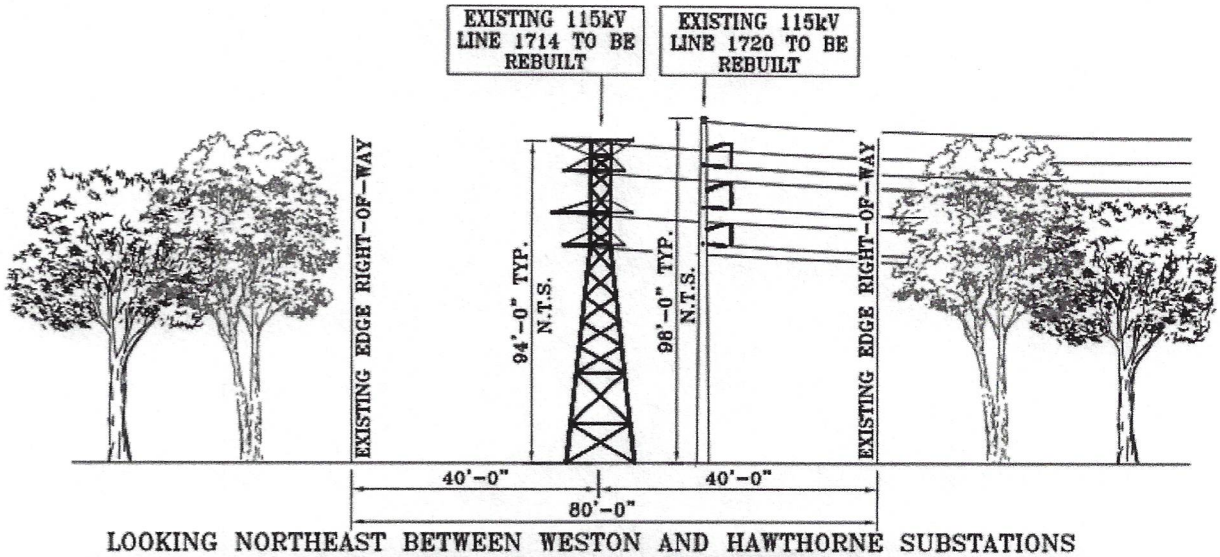
Project ROW Profiles



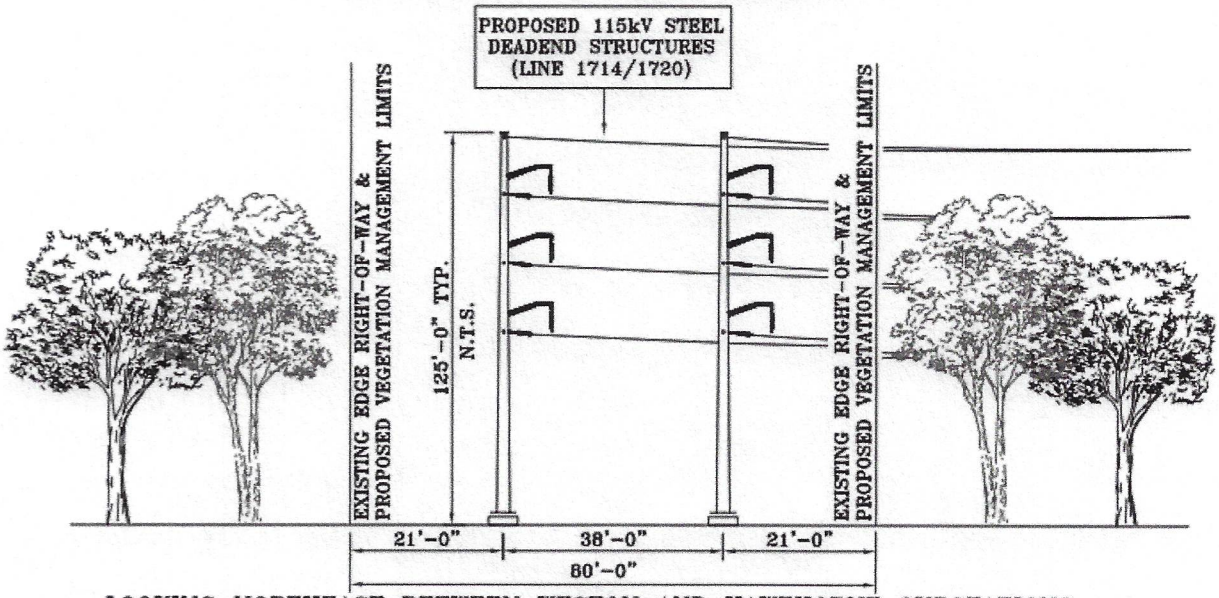
LOOKING NORTHEAST TOWARDS OLD TOWN SUBSTATION
IN THE TOWN OF FAIRFIELD: EXISTING



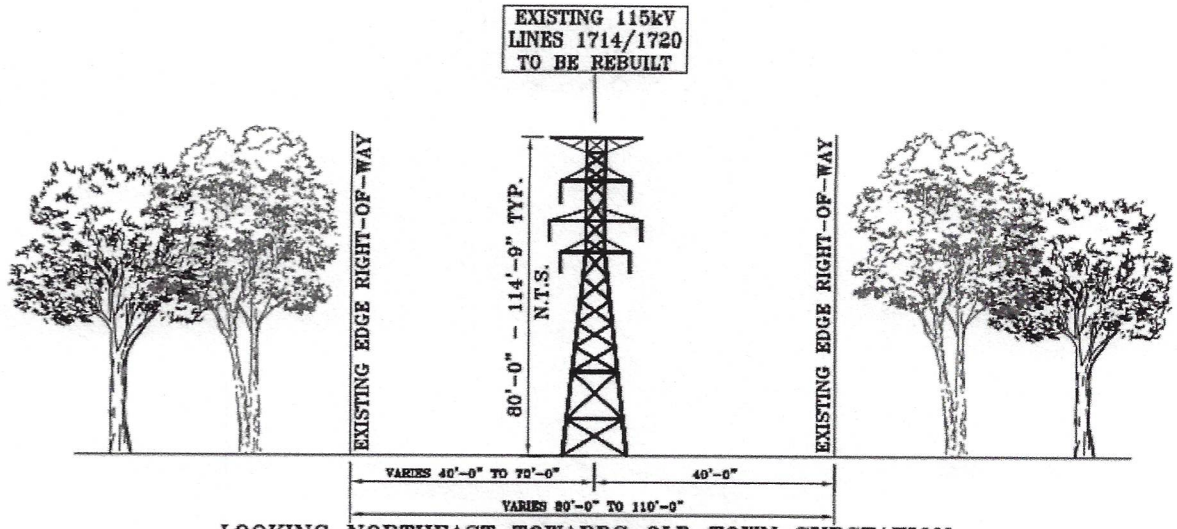
LOOKING NORTHEAST TOWARDS OLD TOWN SUBSTATION
IN THE TOWN OF FAIRFIELD: PROPOSED



LOOKING NORTHEAST BETWEEN WESTON AND HAWTHORNE SUBSTATIONS
IN THE TOWN OF EASTON: EXISTING



LOOKING NORTHEAST BETWEEN WESTON AND HAWTHORNE SUBSTATIONS
IN THE TOWN OF EASTON: PROPOSED



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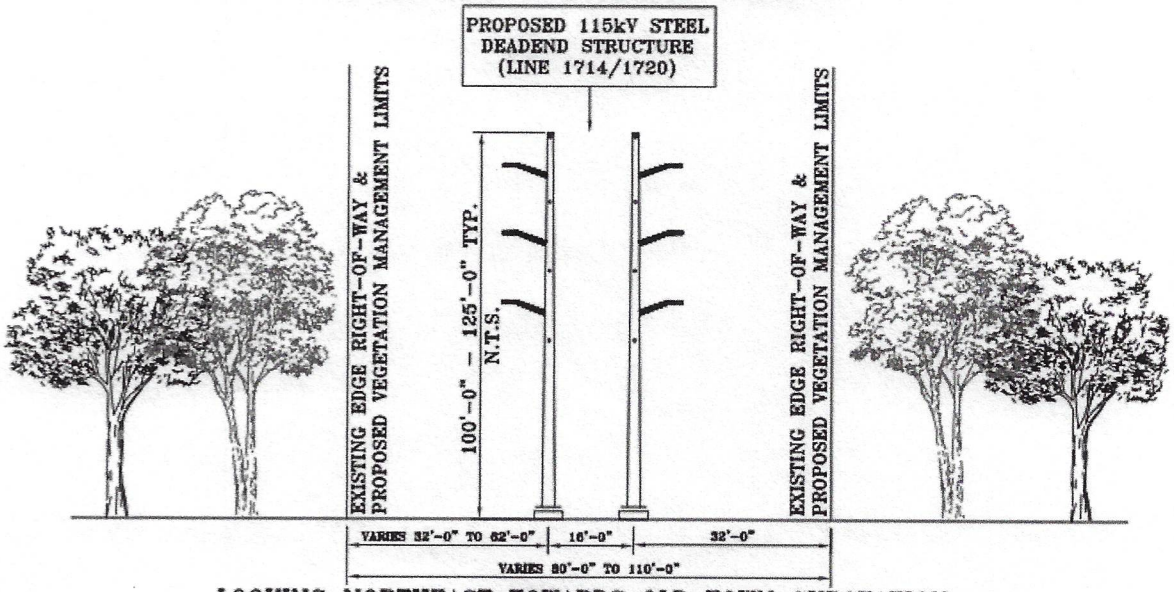
IN THE TOWN OF FAIRFIELD: EXISTING



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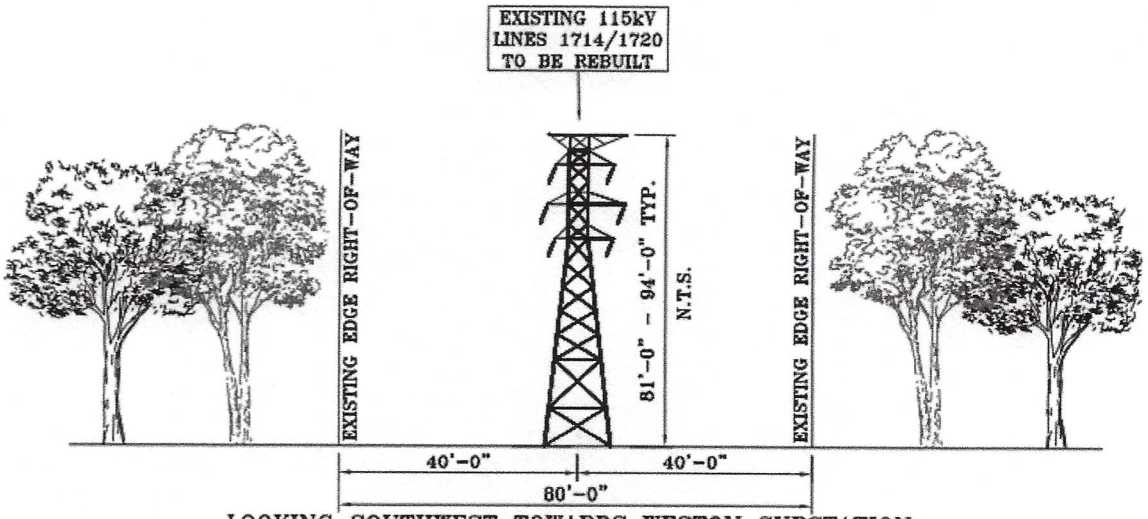
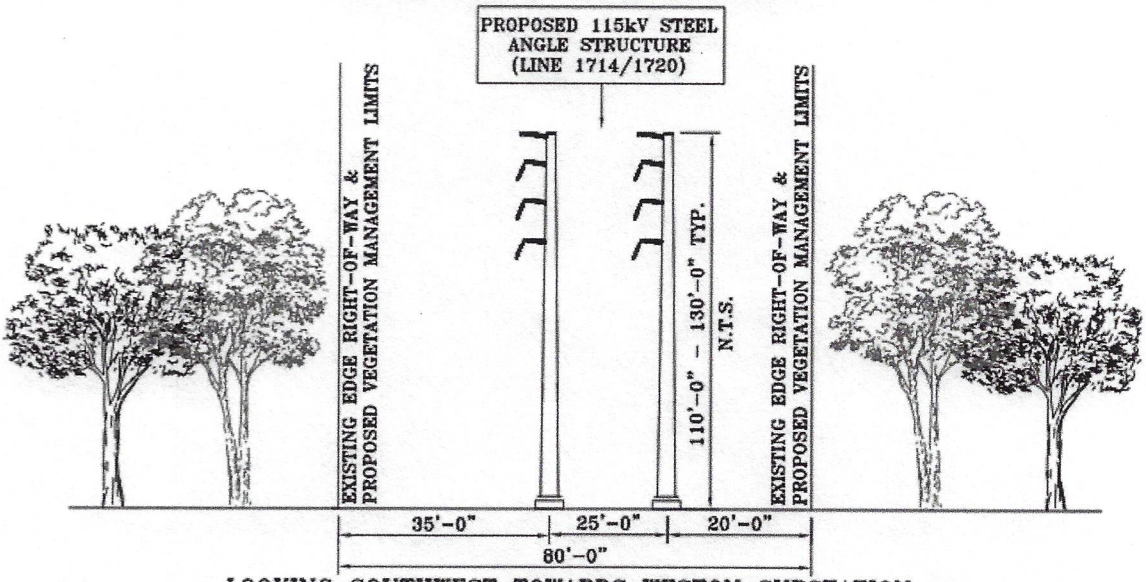
IN THE TOWN OF FAIRFIELD: PROPOSED



LOOKING SOUTHWEST TOWARDS WESTON SUBSTATION
IN THE TOWN OF WESTON: EXISTING



LOOKING SOUTHWEST TOWARDS WESTON SUBSTATION
IN THE TOWN OF WESTON: PROPOSED

Exhibit B

Property Card

Property Location 640 WESTPORT TURNPIKE | Map ID 258/ 12/ / / | Bldg Name | State Use 1010
Vision ID 20914 | Account # 15297 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 2/14/2023 5:52:03 PM

CURRENT OWNER

LATCHMANSINGH IAN J
PALMER EMILY F
640 WESTPORT TURNPIKE

FAIRFIELD CT 06824

TOPO	UTILITIES	STRT / ROAD	LOCATION
2 Above Street	4 Gas	1 Paved	2 Suburban
	5 Well		X
	6 Septic		K

SUPPLEMENTAL DATA

Alt Prcl ID	00258 00012 00000	Legal	32 SCOT
Assoc.		Descrip	ALAN COR
Lots		Descrip	P
I&E SuppF		Record Ma	
Notice	N	Multi Fam	
Census	604		
GIS ID	2580120000	Assoc Pid#	

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
RES LAND	1-1	382,600	267,820
RES EXCES	1-2	2,800	1,960
DWELLING	1-3	244,000	170,800
RES OUTBL	1-4	1,200	840
Total		630,600	441,420

6051

FAIRFIELD, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE		SALE DATE	Q/U	V/I	SALE PRICE	VC
LATCHMANSINGH IAN J	6273	67	01-26-2022	Q	I	570,000	00
LEE CALVIN W & ANNE S (SV)	1047	0025	05-14-1991	U	V	310,000	

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Code	Assessed V	Year	Code	Assessed
2022	1-1	267,820	2021	1-1	267,820	2020	1-1	267,820
	1-2	1,960		1-2	1,960		1-2	1,960
	1-3	170,800		1-3	170,800		1-3	170,800
	1-4	840		1-4	840		1-4	840
	Total	441,420		Total	441,420		Total	441,420

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

Nbhd	Sub	Nbhd Name	B	Tracing	Batch
0057	A				

NOTES

ALARM SYS CATH-C - SKYLTS
ECO=POWER LINES
ANTENNA ON NE UTIL POLE 2001=NTV
2005=NV #38311&38479
9/23/14 149774 RENO KITCHEN & BATH*
*COMPLETE FOR 10/1/14 - NO CHANGE

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	238,900
Appraised Xf (B) Value (Bldg)	5,100
Appraised Ob (B) Value (Bldg)	1,200
Appraised Land Value (Bldg)	385,400
Special Land Value	0
Total Appraised Parcel Value	630,600
Valuation Method	C
Total Appraised Parcel Value	630,600

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments
149774	09-24-2013	RE	Remodel	30,000	09-23-2014	100	09-23-2014	RMDL KITCHEN/BATHS
38311	02-24-2005	RE	Remodel	1,848	12-12-2014	100	12-12-2014	REPL WINDOWS
31725	08-03-2000	AD	Addition	65,000	08-01-2001	100	05-29-2001	ANTENNAE

VISIT / CHANGE HISTORY

Date	Id	Type	Is	Cd	Purpost/Result
04-27-2015	VA			21	Data Mailer - Change
12-12-2014	RH			00	Measur+Listed
09-23-2014	KC			40	No change
10-05-2010	MV		1	20	Data Mailer - No Change
02-14-2002	RM			43	Change - Reinspection/Rer
08-01-2001	JP			43	Change - Reinspection/Rer
12-09-1993	DF			46	Change - Value Change C

LAND LINE VALUATION SECTION

B	Use Code	Description	Zone	Land Type	Land Units		Unit Price	Size Adj	Site Index	Cond.	Nbhd.	Nbhd. Adj	Notes	Location Adjustment		Adj Unit P	Land Value
1	1010	Single Fam MDL	AAA		87,120	SF	5.74	1.00000	5	0.90	0057	0.850	ROW/ECO		1.0000		382,600
1	1010	Single Fam MDL	AAA		0.100	AC	110,000.00	1.00000	0	0.30	0057	0.850	TOPO/ESMT		1.0000		2,800
				Total Card Land Units	87,120	SF	Parcel Total Land Area	2.10								Total Land Value	385,400

Property Location	640 WESTPORT TURNPIKE		Map ID	258/ 12/ / /		Bldg Name	State Use 1010
Vision ID	20914	Account #	15297	Bldg #	1	Sec # 1 of 1	Card # 1 of 1	Print Date 2/14/2023 5:52:03 PM

CONSTRUCTION DETAIL

Element	Cd	Description
Style:	03	Colonial
Model	01	Residential
Grade:	04	
Stories:	2	2 Stories
Occupancy	1	
Exterior Wall 1	14	Wood Shingle
Exterior Wall 2		
Roof Structure:	03	Gable/Hip
Roof Cover	03	Asphalt
Interior Wall 1	05	Drywall
Interior Wall 2		
Interior Flr 1	12	Hardwood
Interior Flr 2		
Heat Fuel	02	Oil
Heat Type:	05	Hot Water
AC Type:	01	None
Total Bedrooms	03	3 Bedrooms
Total Bthrms:	2	
Total Half Baths	1	
Total Xtra Fixtrs		
Total Rooms:	8	
Bath Style:	02	Average
Kitchen Style:	02	Average
FCPZ		

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd	Description

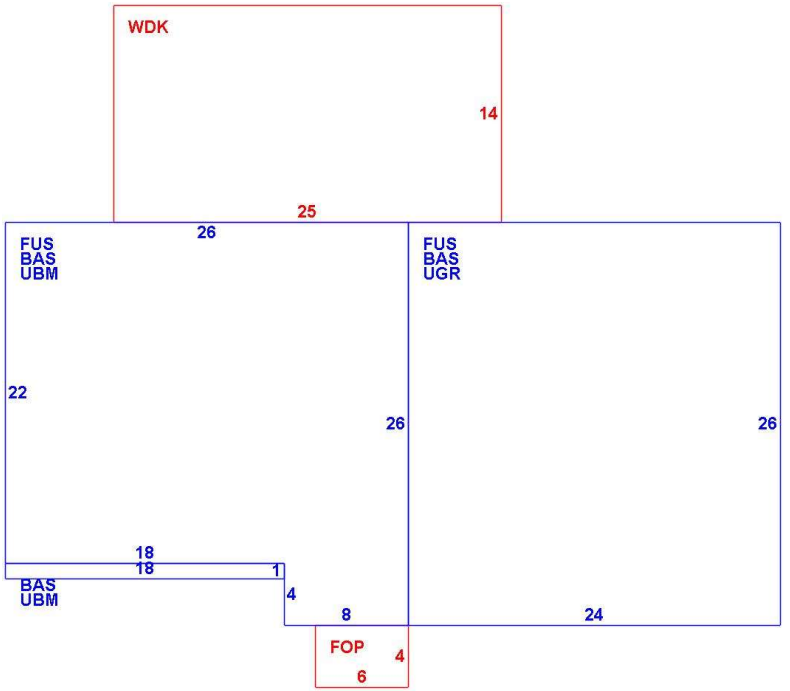
CONDO DATA

Parcel Id		C		Owne	0.0
		B		S	

Adjust Type	Code	Description	Factor%
Condo Flr			
Condo Unit			

COST / MARKET VALUATION

Building Value New	351,394
Year Built	1979
Effective Year Built	
Depreciation Code	4
Remodel Rating	
Year Remodeled	
Depreciation %	27
Functional Obsol	0
External Obsol	5
Trend Factor	1
Condition	
Condition %	
Percent Good	68
Cns Sect RcnId	238,900
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	



OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

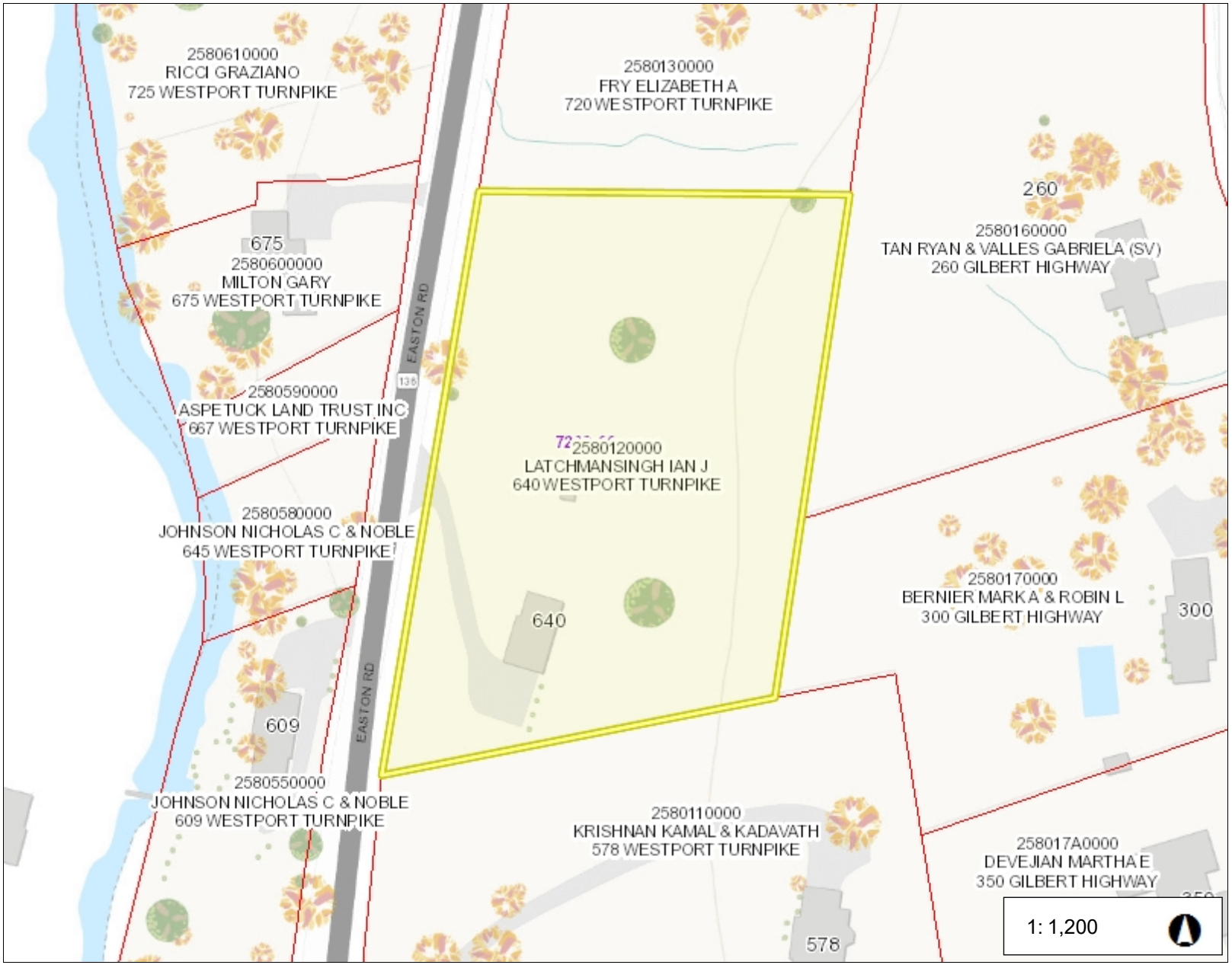
Code	Descript	Sub	Sub Ty	L/B	Units	Unit Pric	Yr Blt	Cond. C	% Gd	Grade	Grade A	Appr. V
FPL3	2.0 STO			B	1	7500.00	1993		68		0.00	5,100
SHD1	SHED F			L	80	16.50	2001		90		0.00	1,200

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Floor Area		Unit Cost	Undeprec Value
BAS	First Floor	1,246	1,246		124.39	154,987
FOP	Porch, Open, Finished	0	24		25.91	622
FUS	Upper Story, Finished	1,228	1,228		124.39	152,748
UBM	Basement, Unfinished	0	622		24.80	15,424
UGR	Garage, Under	0	624		37.28	23,260
WDK	Deck, Wood	0	350		12.44	4,354
	Ttl Gross Liv / Lease Area	2,474	4,094	2,825		351,395

Town of Fairfield

Title



Legend

- Parcels
- Local Basin Boundary
  - Major
  - Regional
  - Subregional
  - Local
- Local Basin Area

200.0 0 100.00 200.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

METROCOG
Connecticut Metropolitan Council of Governments

Exhibit C

Construction Drawings

SITE NAME: WESTPORT/RT 136
SITE ID: CT11360A
NEW EVERSOURCE STRUCT. #19766
640 WESTPORT TURNPIKE
FAIRFIELD, CT 06824

T-MOBILE RAN TEMPLATE (PROVIDED BY RFDS)

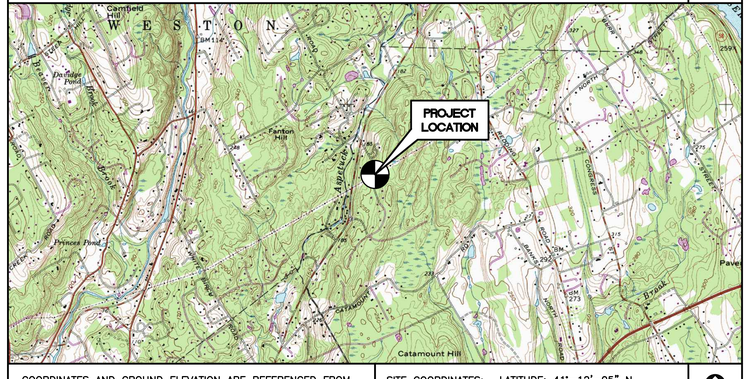
67E04B OUTDOOR

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 LOCATION MAP — N.T.S.

VICINITY MAP — N.T.S.



COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH.

SITE COORDINATES: LATITUDE: 41°-12'-05" N
LONGITUDE: 73°-19'-55" W
GROUND ELEVATION: ±196' AMSL

NORTH

PROJECT SUMMARY

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

1. REMOVAL OF EXISTING UTILITY TOWER AND INSTALLATION OF NEW TOWER TO BE DONE (BY OTHERS)
2. REMOVE EXISTING COAX CABLES
3. REMOVE EXISTING EMS; RR90-17-02DP ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (2)
4. REMOVE EXISTING TMAs AND DIPLEXERS
5. REMOVE EXISTING ANTENNA MOUNTS
6. INSTALL (4) 7/8" COAX CABLES PER SECTOR; TOTAL OF (12) AT TOWER
7. INSTALL (1) 6/24 4AWG HYBRID CABLES PER SECTOR; TOTAL OF (3) AT GRADE
8. INSTALL RFS; APXVAALL24_43-U-NA20 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3)
9. INSTALL RFS; APX16DWV-16DWV-S-E-A20 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3)
10. INSTALL ERICSSON: RADIO 4460 B25+B66, TYP. (1) PER SECTOR; TOTAL (3) AT GRADE
11. INSTALL ERICSSON: RADIO 4480 B71+B85, TYP. (1) PER SECTOR; TOTAL (3) AT GRADE
12. INSTALL SMART BIAS-T: ATSBT-TOP-MF-4G TMA, TYP. (2) PER SECTOR; TOTAL OF (6)
13. INSTALL ANTENNA MOUNT PLATFORM: SITE PRO: RMQLP-496-HK
14. INSTALL NEW UNISTRUTS TO SERVE NEW RADIO INSTALLATION
15. INSTALL NEW RRU EQUIPMENT FRAME AT BASE OF FUTURE TOWER

PROJECT INFORMATION

SITE NAME:	WESTPORT/RT 136
SITE ID:	CT11360A
SITE ADDRESS:	640 WESTPORT TURNPIKE FAIRFIELD, CT 06824
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT. 06002
CONTACT PERSON:	MATT BANDLE (PROJECT MANAGER) NORTHEAST SITE SOLUTIONS (508) 642-8801
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT. 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
SITE COORDINATES:	LATITUDE: 41°-12'-05" N LONGITUDE: 73°-19'-55" W GROUND ELEVATION: ±196' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

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REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
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B	04/14/23	ASC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW
A	07/28/22	JLD	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT — CARLO F. CENTORE — LICENSED PROFESSIONAL ENGINEER

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Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC
SITE NAME: WESTPORT/RT 136
SITE ID: CT11360A
640 WESTPORT TURNPIKE #ST910 #1720
FAIRFIELD, CT 06824

DATE: 07/28/22
SCALE: AS NOTED
JOB NO. 22073.02

TITLE SHEET

T-1

SHEET NO. 1 OF 6

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED: 97 MPH (Vult)
  (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10).

SITE NOTES

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

GENERAL NOTES

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.
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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.
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STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX
2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ANTENNA/APPURTENANCE SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA - AT TOWER	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY) - AT CABINET	(E/P) TMA (QTY) - AT TOWER	(QTY) HYBRID/COAX
A1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	112'	10°	(P) RADIO 4480 B71+B85 (1)	(P) (SMART BIAST-ATSBT-TOP-MF-4G) (1)	(12) 7/8 COAX CABLES (TOWER) (3) 6/24 4AWG HYBRID CABLES (GRADE)
A3	PROPOSED	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13 x 3.15	112'	10°	(P) RADIO 4460 B25+B66 (1)	(P) (SMART BIAST-ATSBT-TOP-MF-4G) (1)	
B1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	112'	120°	(P) RADIO 4480 B71+B85 (1)	(P) (SMART BIAST-ATSBT-TOP-MF-4G) (1)	
B3	PROPOSED	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13 x 3.15	112'	120°	(P) RADIO 4460 B25+B66 (1)	(P) (SMART BIAST-ATSBT-TOP-MF-4G) (1)	
C1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	112'	240°	(P) RADIO 4480 B71+B85 (1)	(P) (SMART BIAST-ATSBT-TOP-MF-4G) (1)	
C3	PROPOSED	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13 x 3.15	112'	240°	(P) RADIO 4460 B25+B66 (1)	(P) (SMART BIAST-ATSBT-TOP-MF-4G) (1)	

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

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	10/17/23	ASC	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
2	10/11/23	ASC	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
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PROFESSIONAL ENGINEER SEAL

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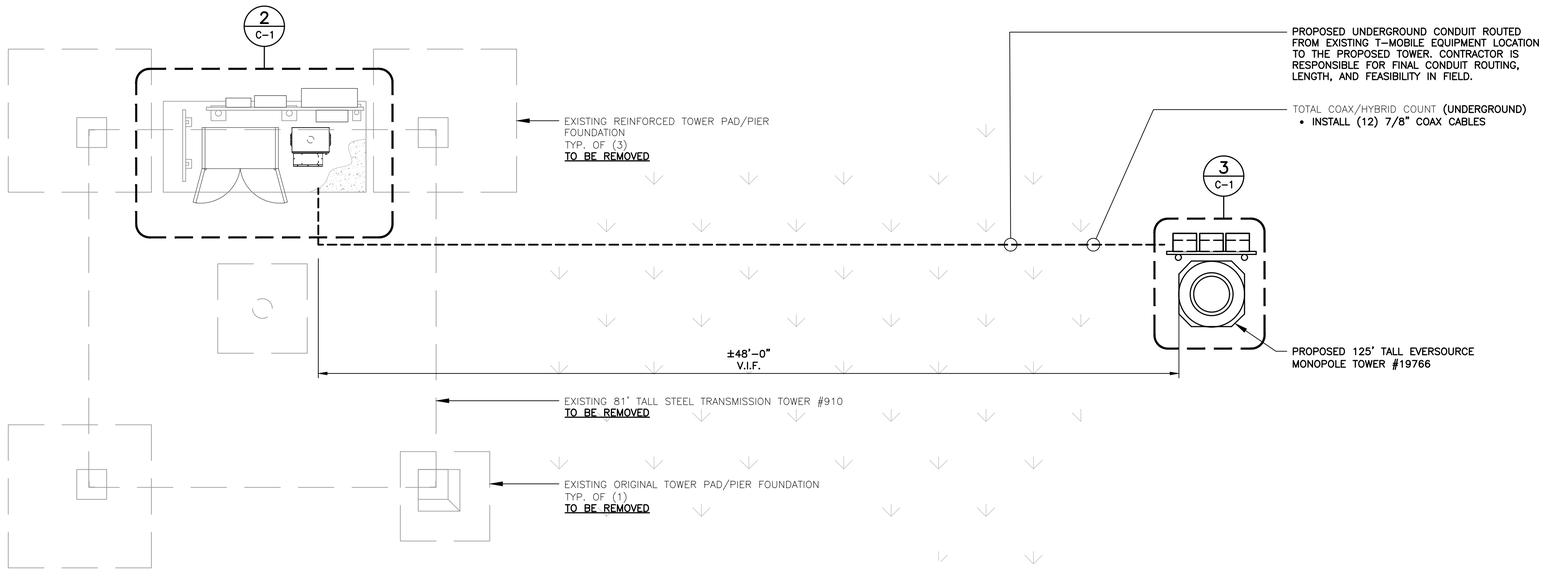
SITE NAME: WESTPORT/RT 136
SITE ID: CT11360A
640 WESTPORT TURNPIKE #ST910 #1720
FAIRFIELD, CT 06824

DATE: 07/28/22
SCALE: AS NOTED
JOB NO. 22073.02

SPECIFICATIONS, NOTES AND ANT. SCHEDULE

N-1

SHEET NO. 2 OF 6



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

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

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

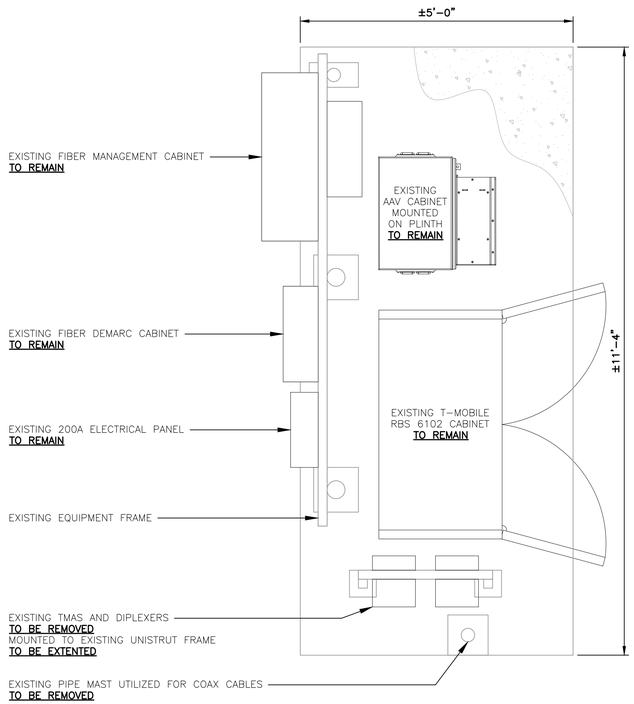
REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 22073.02) DATED 05/18/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER AND TOWER FOUNDATION

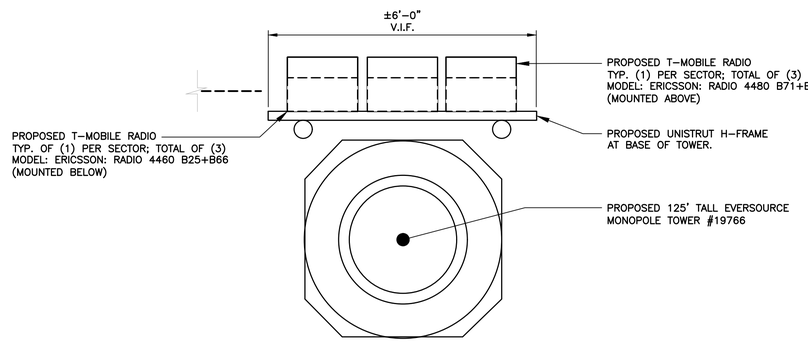
A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 22073.02_Rev1) DATED 05/02/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

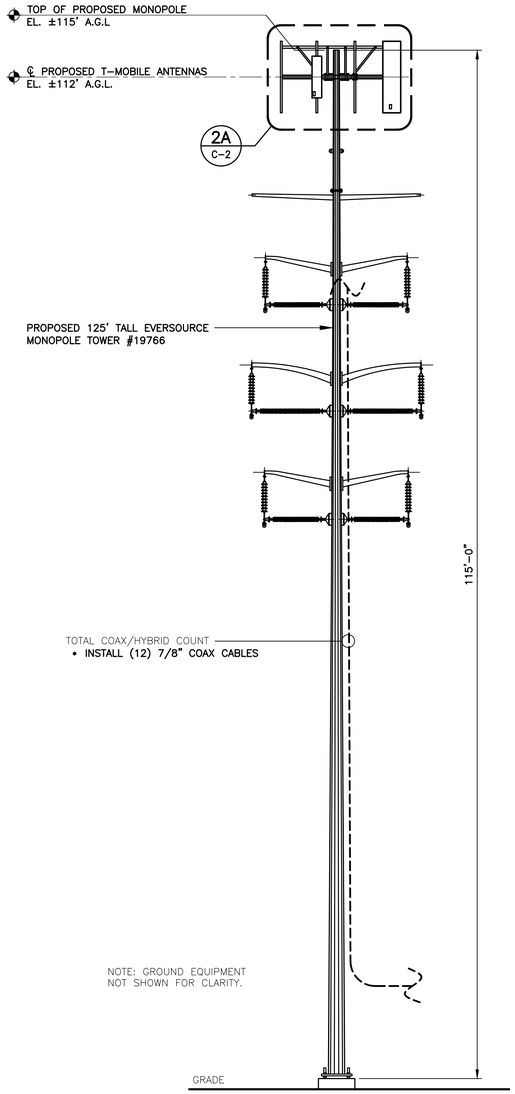
NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.



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



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



4 C-1 **TOWER ELEVATION - PROPOSED**
SCALE: 1" = 8'

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	10/17/23	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
2	10/11/23	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
1	09/11/23	ASC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR REVIEW/APPROVAL
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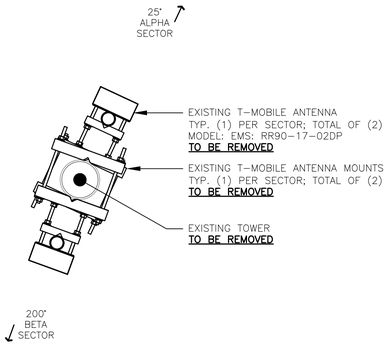
COMPOUND PLAN, EQUIPMENT PLANS, AND ELEVATION

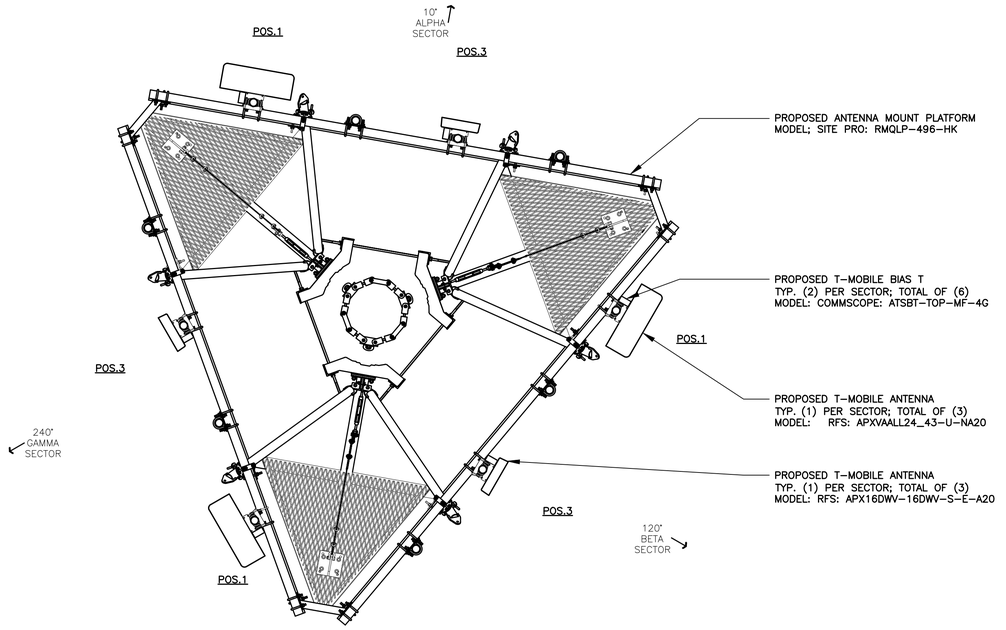
C-1

SHEET NO. 3 OF 6



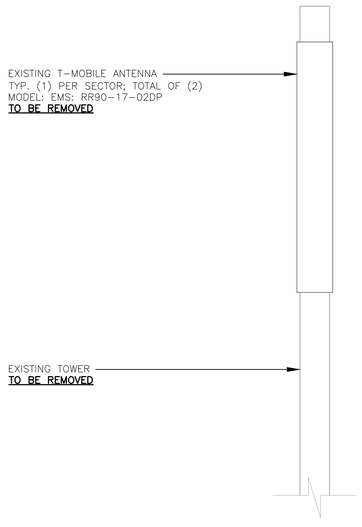
1 C-2 **ANTENNA PLAN - EXISTING (OLD TOWER)**
SCALE: 1" = 1'

TRUE NORTH

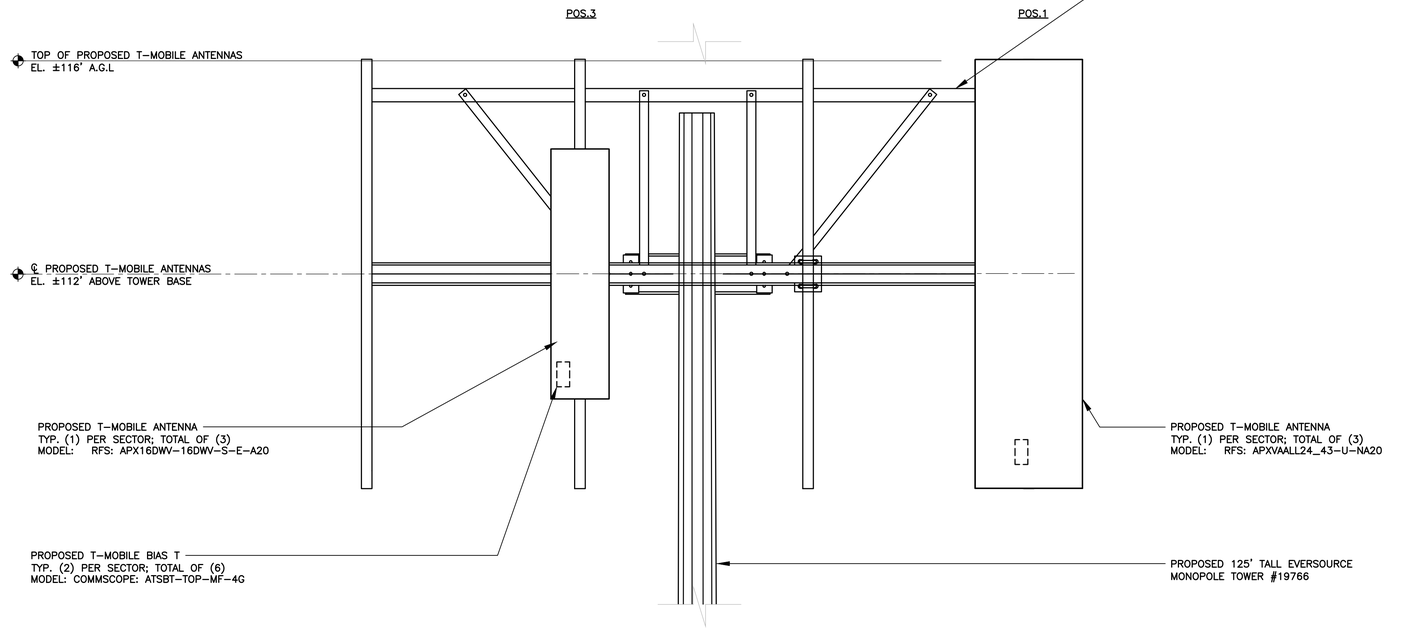


2 C-2 **ANTENNA PLAN - PROPOSED (NEW TOWER)**
SCALE: 1/2" = 1'

TRUE NORTH



1A C-2 **ANTENNA ELEVATION - EXISTING (OLD TOWER)**
SCALE: 3/4" = 1'



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

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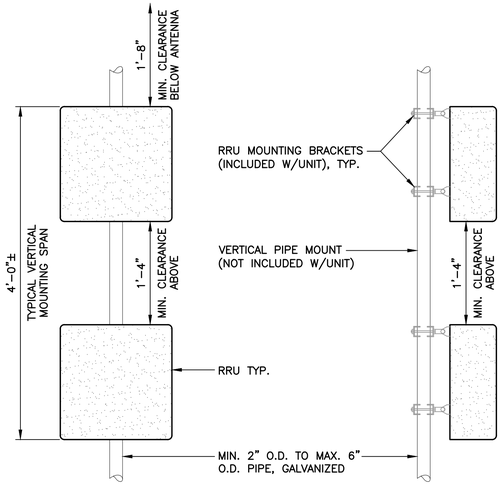
ANTENNA PLANS AND ELEVATIONS

C-2

SHEET NO. 4 OF 6

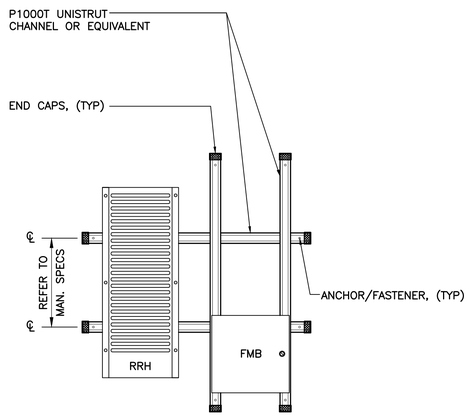


FRONT ELEVATION SIDE ELEVATION

NOTES: (PIPE 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-3 **TYPICAL RRU MOUNTING DETAILS**
SCALE: NOT TO SCALE



FRONT ELEVATION

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.

APXVAALL24_43-U-NA20

APX16DWV-16DWV-S-E-A20

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: APXVAALL24_43-U-NA20	95.9"L x 24.0"W x 8.5"D	±150 LBS.
MAKE: RFS MODEL: APX16DWV-16DWV-S-E-A20	55.9"L x 13.0"W x 3.15"D	±40 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.		

2 C-3 **PROPOSED ANTENNA DETAIL**
SCALE: NOT TO SCALE

RADIO 4460 B25+B66

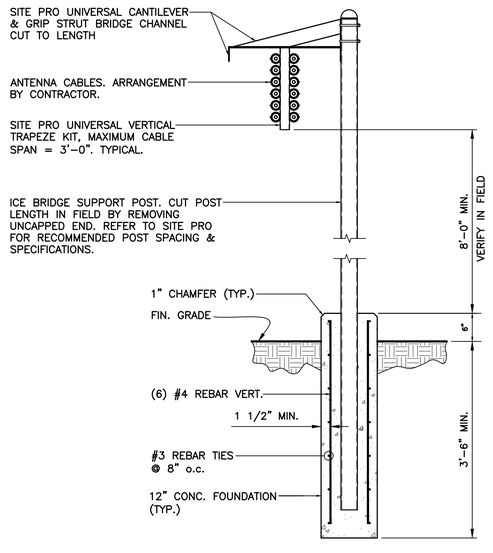
RADIO 4480 B71+B85

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4460 B25+B66	19.6"L x 15.7"W x 12.1"D	±109 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
MAKE: ERICSSON MODEL: RADIO 4480 B71+B85	21.8"L x 15.7"W x 7.5"D	±84 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.			

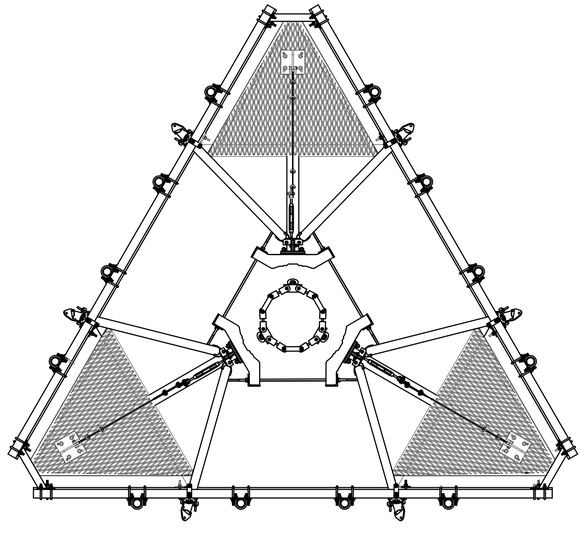
3 C-3 **PROPOSED RRU DETAIL**
SCALE: NOT TO SCALE

ANDREW SMART BIAS-T		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: ATSBT-TOP-MF-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-3 **PROPOSED BIAS-T DETAIL**
SCALE: NOT TO SCALE

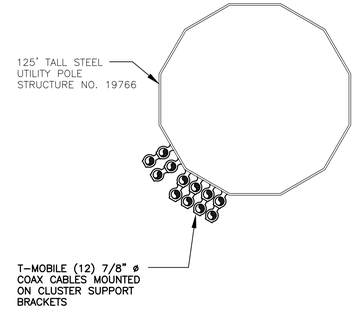


5 C-3 **TYPICAL ICE-BRIDGE DETAIL**
SCALE: NOT TO SCALE



SITEPRO1:
RMQLP-496-HK

6 C-3 **PLATFORM ANTENNA MOUNT DETAIL**
SCALE: NOT SCALE



7 C-3 **COAX CABLE PLAN**
SCALE: NOT SCALE

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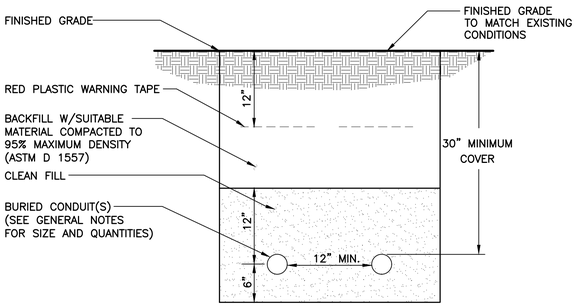
TYPICAL EQUIPMENT DETAILS

C-3

SHEET NO. 5 OF 6

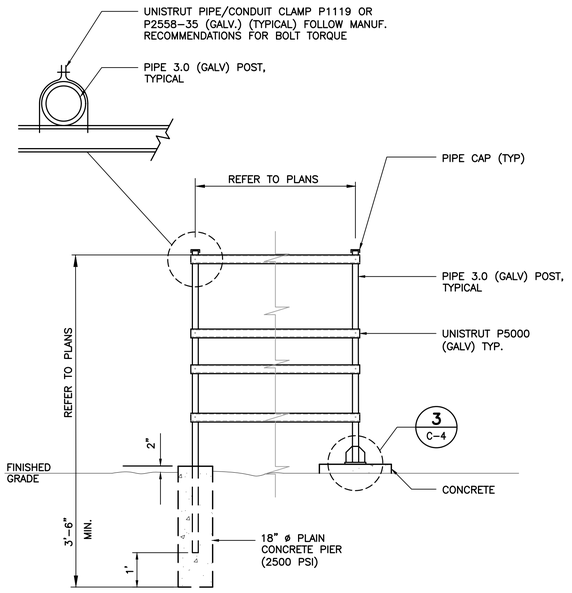


NOTES:

1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.

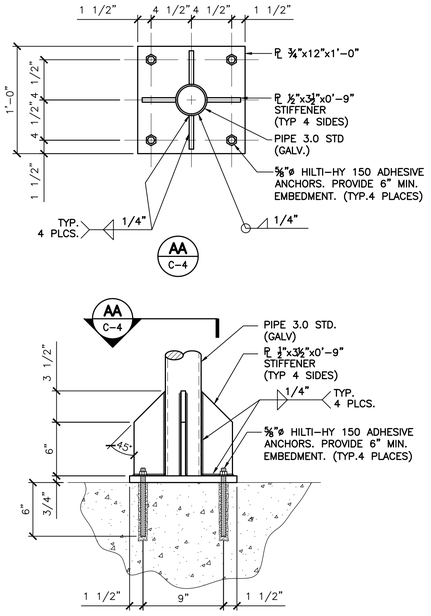
1 / C-4 TYPICAL ELECTRICAL/TEL TRENCH DETAIL

SCALE: NOT TO SCALE



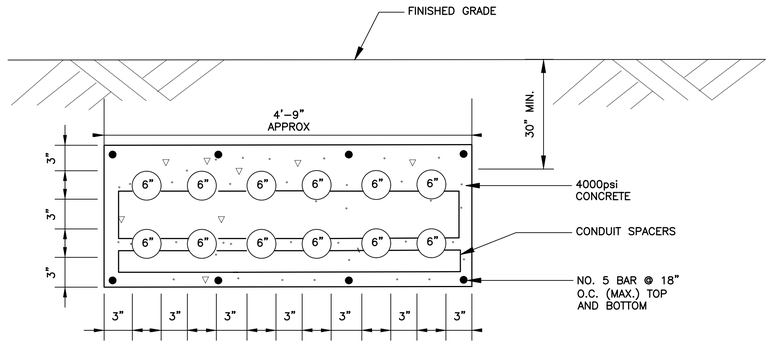
2 / C-4 TYPICAL FRAME MOUNTING DETAIL

SCALE: NOT TO SCALE



3 / C-4 FRAME TO CONCRETE CONNECTION DETAIL

SCALE: NOT TO SCALE



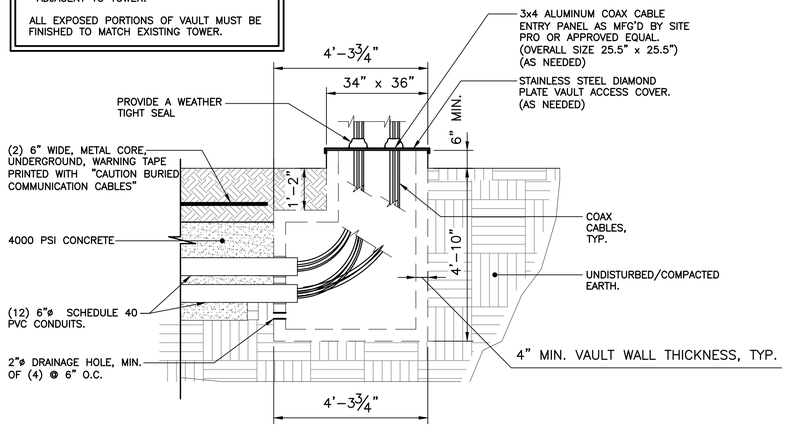
4 / C-4 CONCRETE ENCASED CONDUIT TRENCH DETAIL

SCALE: NOT TO SCALE

NOTES:

CONDUIT VAULTS REQUIRED AT (2) LOCATIONS:
–DIRECTLY ADJACENT TO EQUIPMENT;
–ADJACENT TO TOWER.

ALL EXPOSED PORTIONS OF VAULT MUST BE FINISHED TO MATCH EXISTING TOWER.



5 / C-4 CONDUIT VAULT AND DOGHOUSE DETAIL

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
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3	10/17/23	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS

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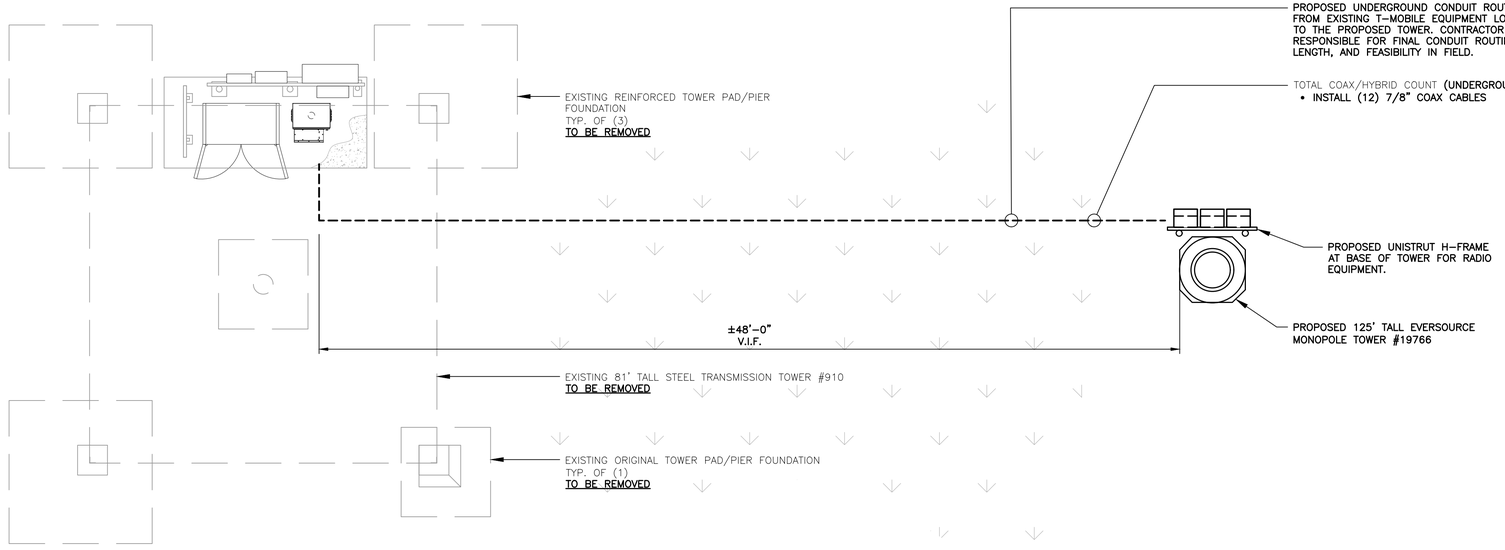
TYPICAL EQUIPMENT DETAILS

C-4

SHEET NO. 6 OF 6



1 / E-1 **ELECTRICAL COMPOUND PLAN**

SCALE: 1/8" = 1'

TRUE NORTH

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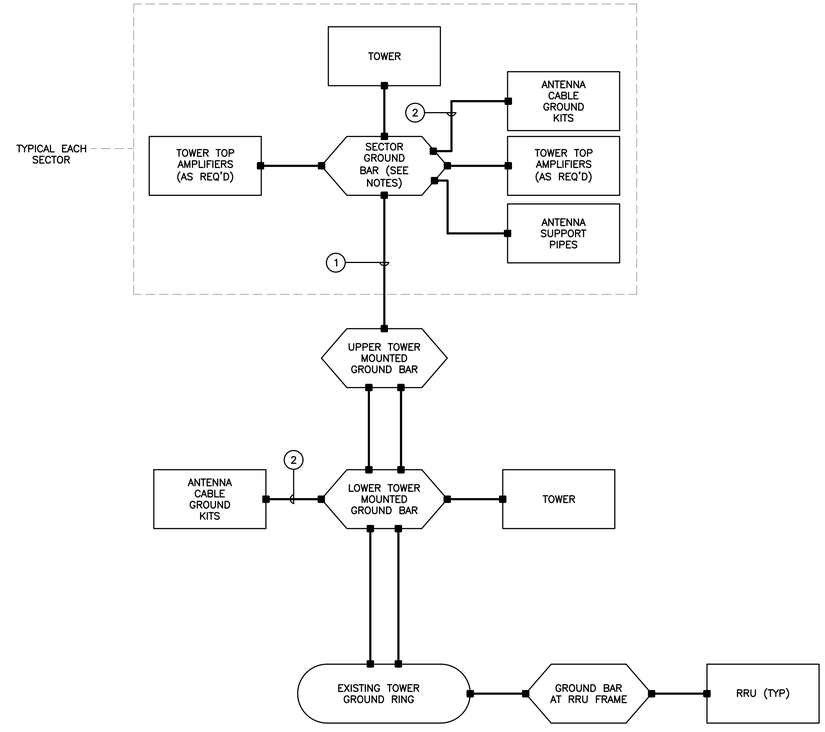
ELECTRICAL COMPOUND PLAN

E-1

SHEET NO. 6 OF 6



1 / E-2 **ELECTRICAL GROUNDING SCHEMATIC**
SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

(1) #2/0 GREEN INSULATED

(2) #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. BOND CABLE TRAY AND ICE BRIDGE 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. ALL BONDS TO TOWER SHALL BE MADE IN STRICT ACCORDANCE WITH SPECIFICATIONS OF TOWER MANUFACTURER OR STRUCTURAL ENGINEER.
7. REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
8. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
9. COORDINATE ALL TOWER MOUNTED EQUIPMENT WITH OWNER.
10. ALL TOWER MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
11. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.
12. COORDINATE WITH EVERSOURCE TRANSMISSION DEPARTMENT REPRESENTATIVE TO DETERMINE ADDITIONAL GROUNDING REQUIREMENTS. PROVIDE ALL REQUIRED ELEMENTS TO MEET EVERSOURCE APPROVAL.
13. COORDINATE WITH TOWER OWNER BEFORE INSTALLING ANY GROUNDING ELEMENTS ON TOWER OR BONDING TO EXISTING TOWER GROUND RING.

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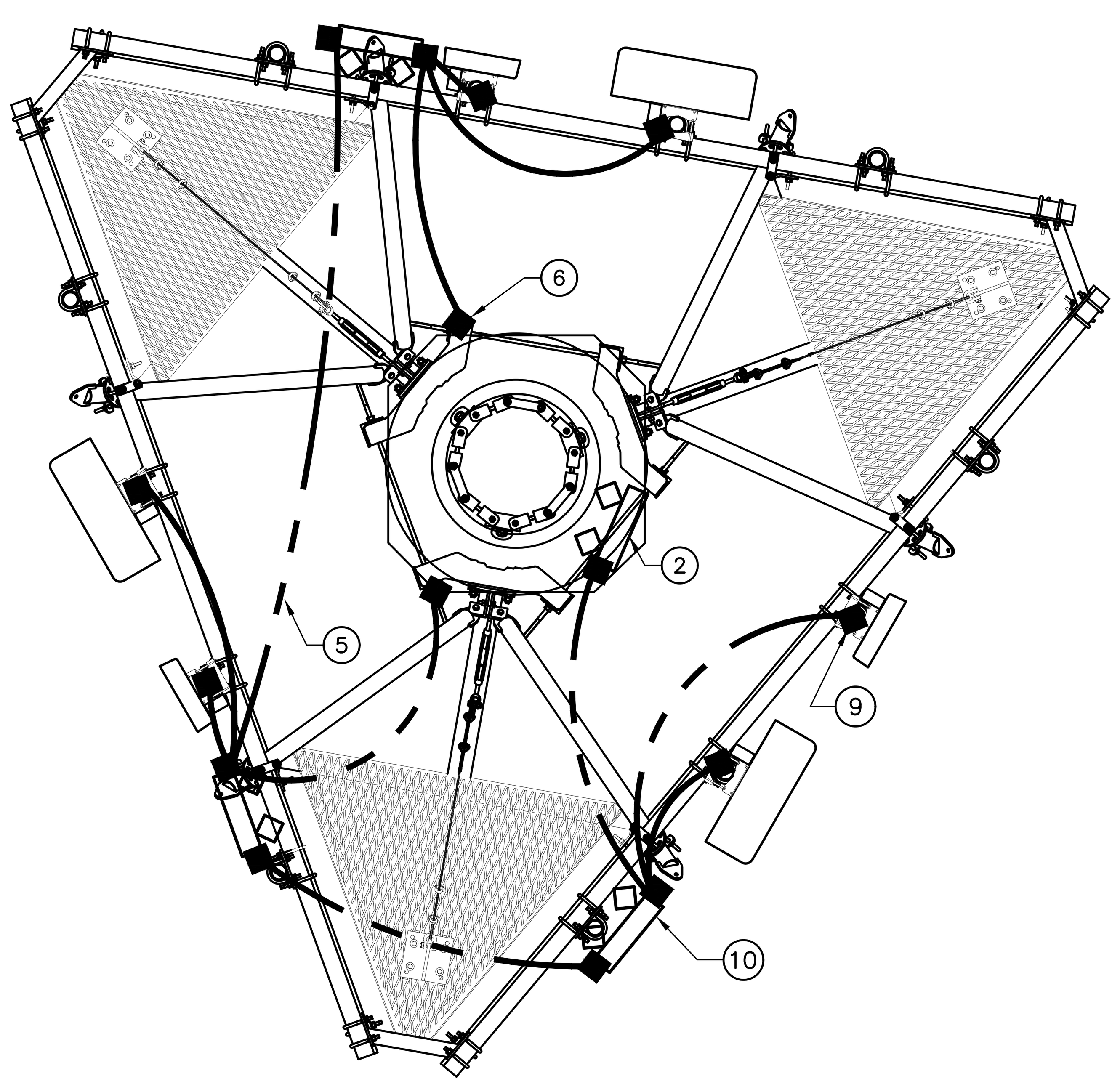
ELECTRICAL SCHEMATIC DIAGRAM

E-2

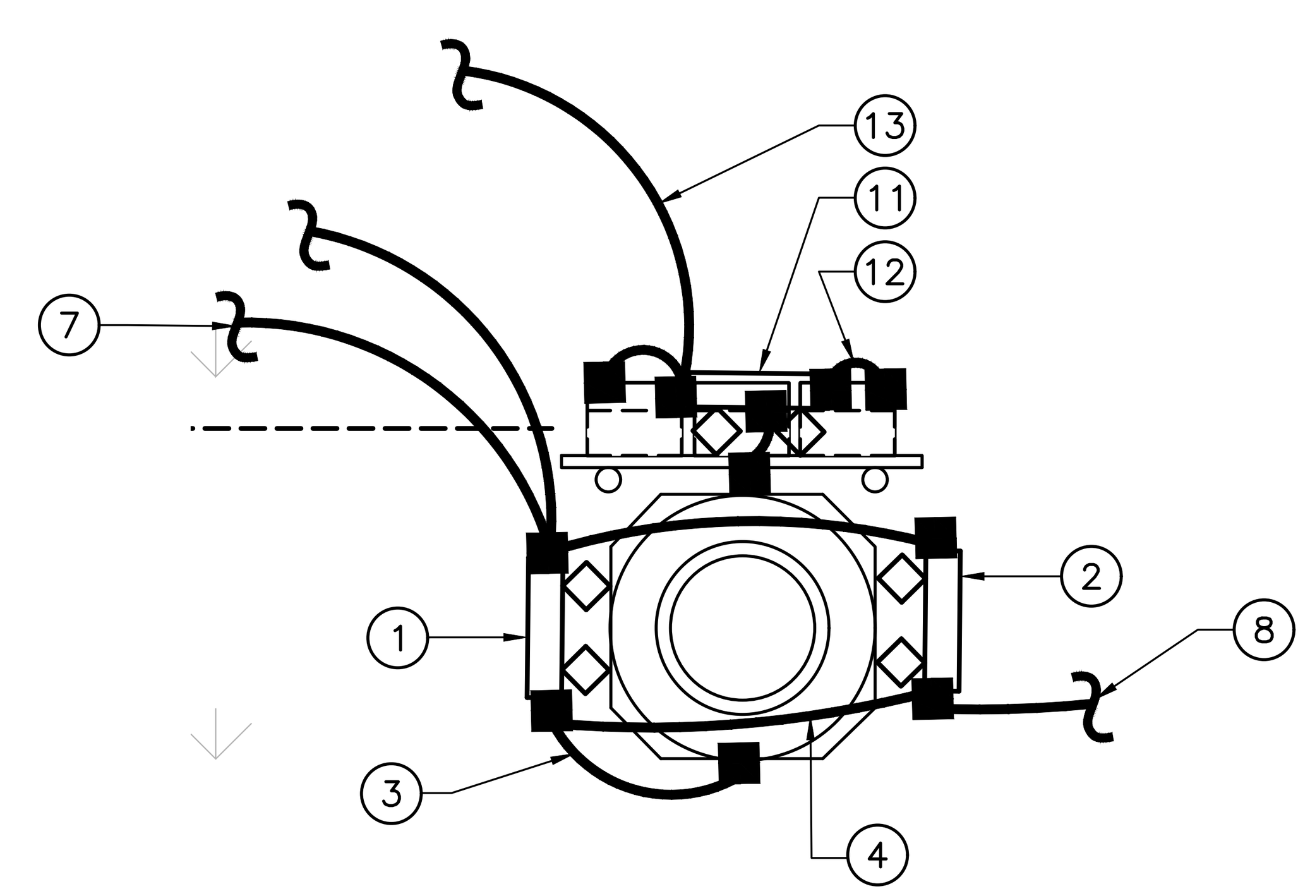
SHEET NO. 7 OF 6

GROUNDING PLAN NOTES

1. LOWER TOWER MOUNTED GROUND BAR.
2. UPPER TOWER MOUNTED GROUND BAR.
3. BOND GROUND BAR TO TOWER.
4. BOND UPPER TOWER MOUNTED GROUND BAR TO LOWER TOWER MOUNTED GROUND BAR (2) # 2/0 GROUND LEADS.
5. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
6. BOND SECTOR GROUND BAR TO TOWER STEEL.
7. BOND LOWER TOWER MOUNTED GROUND BAR TO GROUND RING TYP 2 PLACES.
8. BOND UPPER TOWER MOUNTED GROUND BAR TO SECTOR GROUND BAR TYP.
9. BOND ANTENNA MOUNTING PIPES TO SECTOR GROUND BAR. (TYPICAL)
10. SECTOR GROUND BAR TYP.
11. GROUND BAR AT RRU FRAME.
12. BOND RRU TO GROUND BAR. TYPICAL OF EACH RRU.
13. BOND GROUND BAR TO EXISTING TOWER GROUND RING



1 / E-3 **ELECTRICAL GROUNDING PLAN - ANTENNA**
SCALE: NOT TO SCALE



2 / E-3 **ELECTRICAL GROUNDING PLAN - TOWER**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	10/17/23	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
2	10/11/23	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
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B	04/14/23	ASC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW
A	07/28/22	JLD	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW

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SITE ID: CT11360A
640 WESTPORT TURNPIKE #ST910 #1720
FAIRFIELD, CT 06824

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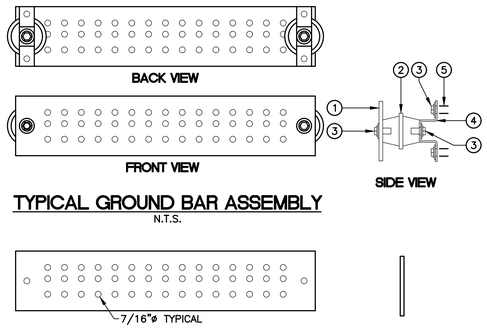
JOB NO.	22073.02

ELECTRICAL GROUNDING PLANS

E-3

SHEET NO. 8 OF 6

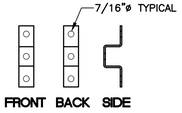


TYPICAL GROUND BAR ASSEMBLY
N.T.S.

TYPICAL GROUND BAR - DIMENSIONS
N.T.S.

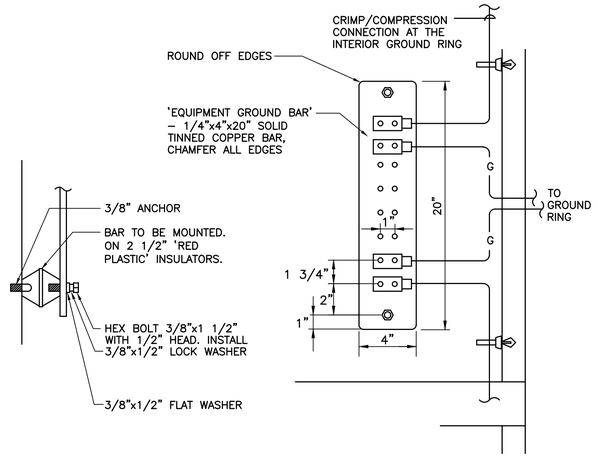
NOTES

1. HIGH CONDUCTIVITY TINNED COPPER BAR 1'-8"Lx4"Wx1/4"D.
2. RED COLORED STANDOFF INSULATOR PLASTIC #1872-1A.
3. STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
4. 1"Wx1/8"T STAINLESS STEEL TYPE 304 BRACKET.
5. STAINLESS STEEL TYPE 304 HARDWARE - 3/8"ø EXPANSION BOLT FOR CONCRETE.

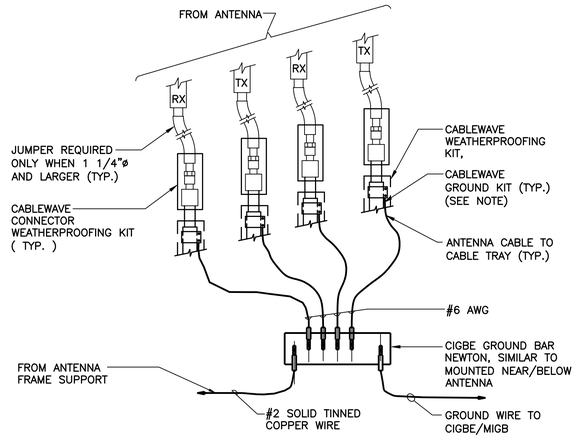


BRACKET FOR GROUND BAR-DIMENSIONS
N.T.S.

1 / E-4 MASTER/EQUIPMENT GROUND BAR DETAILS
SCALE: NOT TO SCALE



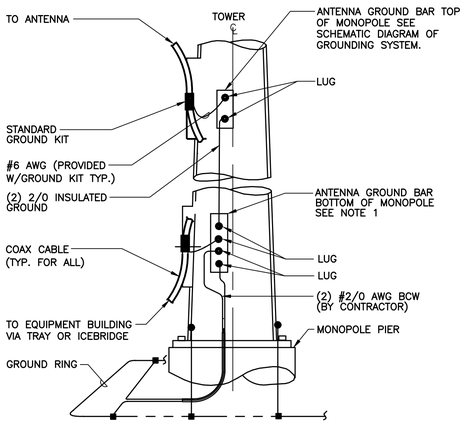
2 / E-4 EQUIPMENT GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

3 / E-4 CONNECTION OF GROUND WIRES TO GROUND BAR
SCALE: NOT TO SCALE



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

4 / E-4 ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE

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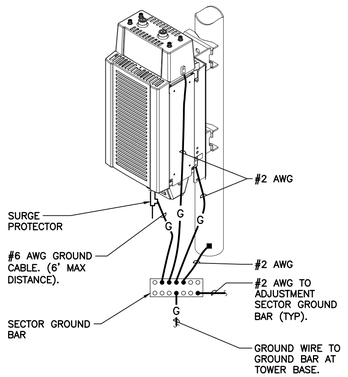
TYPICAL ELECTRICAL DETAILS

E-4

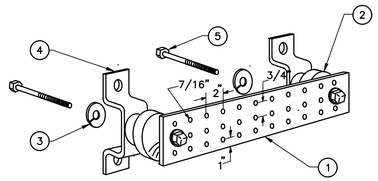
SHEET NO. 9 OF 6

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

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



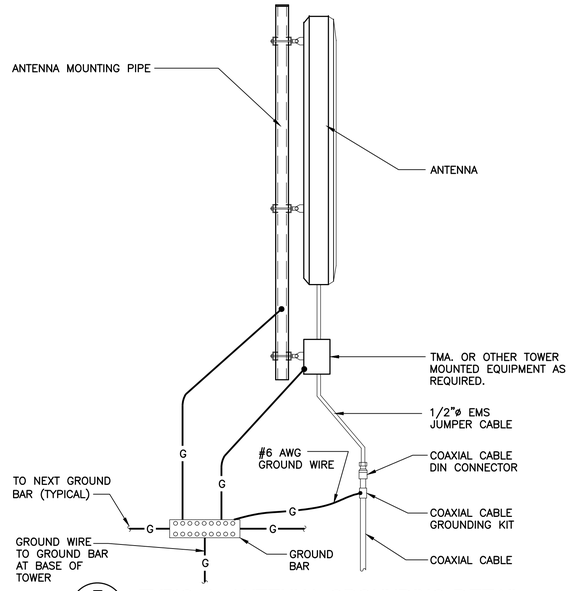
1 E-5 **RRH POLE MOUNT GROUNDING**
SCALE: NOT TO SCALE



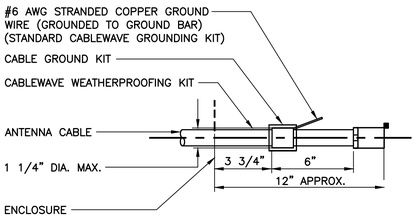
NOTES

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-5 **GROUND BAR DETAIL**
SCALE: NOT TO SCALE



3 E-5 **TYPICAL ANTENNA GROUNDING 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.

4 E-5 **ANTENNA CABLE GROUNDING DETAIL**
SCALE: NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-5

SHEET NO. 10 OF 6

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.02. GENERAL REQUIREMENTS

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

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

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR 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. THE 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. CONDUITS

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 CONNECTED TO THE PANELBOARDS SO 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	CHECKED BY	DESCRIPTION
3	10/17/23	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
2	10/11/23	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
1	09/11/23	ASC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR REVIEW/APPROVAL
0	06/21/23	ASC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
B	04/14/23	ASC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW
A	07/28/22	JLD	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW

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

SITE NAME: WESTPORT/RT 136
SITE ID: CT11360A
640 WESTPORT TURNPIKE #ST910 #1720
FAIRFIELD, CT 06824

DATE: 07/28/22
SCALE: AS NOTED
JOB NO. 22073.02

ELECTRICAL SPECIFICATIONS

E-6

SHEET NO. 11 OF 6

Exhibit D

Structural Analysis Report

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Utility Pole

T-Mobile Site Ref: CT11360A

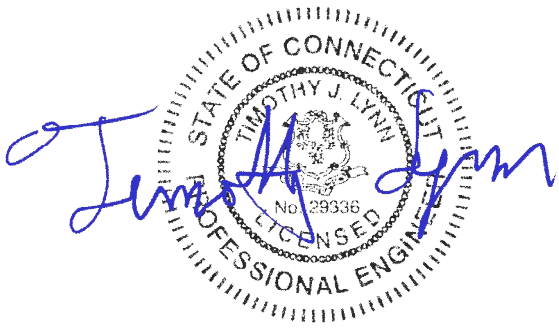
Eversource Structure No. 19766
115' Tall Electric Transmission Pole

640 Westport Turnpike
Fairfield, CT

CENTEK Project No. 22073.02

~~Date: April 11, 2023~~
Rev 1: May 2, 2023

Max Stress Ratio = 76.1%



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

Table of Contents

Introduction

The purpose of this report is to analyze the 115' utility pole located in Fairfield, CT for the proposed antenna and equipment upgrade by T-Mobile.

The loads consist of the following:

- **T-MOBILE (Final Configuration):**
  Antennas: Three (3) RFS APXVAALL24_43 panel antennas, three (3) RFS APX16DWV-16DWVS panel antennas and six (6) Commscope ATSBT-TOP-MF-4G Bias Tees mounted on one (1) Platform (SitePro p/n RMQLP-496-HK) to the utility pole with a RAD center elevation of 112-ft above grade.
  Cables: Twelve (12) 7/8" ∅ coax cables mounted to the outside of the pole as indicated in Section 4 of this report.

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 Manual No. 48-19, "Design of Steel Transmission Pole Structures", defines allowable 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.

Analysis

Structural analysis of the utility pole was independently completed using the current version of PLSPole computer program licensed to CENTEK Engineering, Inc.

NESC prescribed loads for the proposed wireless equipment were calculated to analyze the utility tower. Section 5 of this report details these loads.

Design Basis

Our analysis was performed in accordance with ASCE 48-19, "Design of Steel Transmission Pole Structures", NESC C2-2023 and Eversource 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 Manual No. 48-19.

  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"

  Load Case 3: NESC Extreme Ice w/ Wind

Wind Pressure……..	6.4 psf
Radial Ice Thickness…….	0.75"
Vertical Overload Capacity Factor…….	1.0
Wind Overload Capacity Factor…….	1.0

  Note 1: NESC C2-2023, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

R e s u l t s

- UTILITY POLE

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 Manual No. 48-19, "Design of Steel Transmission Pole Structures", for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 6 of this report. The analysis results are summarized as follows:

A maximum usage of **76.1%** occurs in the utility pole base plate under the **NESC Extreme** loading condition.

POLE SECTION:

The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
Section 4	0.00' -53.00' (AGL)	65.90%	**PASS**

BASE PLATE:

The base plate was found to be within allowable limits from the PLS output.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	76.1%	**PASS**

FLANGE:

The flange bolts and flange plate were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Flange Bolts	Tension	55.9%	**PASS**
Flange Plate	Bending	45.2%	**PASS**

- FOUNDATION AND ANCHORS

The base of the tower is connected to the foundation by means of (16) 2.25"∅, ASTM A615-75 anchor bolts embedded into the concrete foundation structure. Review of the foundation consisted of a comparison of the base reactions obtained from the proposed tower analysis and the original foundation design.

BASE REACTIONS:

From PLS-Pole analysis of utility pole based on NESC prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	26.71 kips	87.32 kips	2036.44 ft-kips
NESC Extreme Wind	45.03 kips	44.95 kips	3407.79 ft-kips
NESC Extreme Ice w/ Wind	20.90 kips	78.67 kips	1607.35 ft-kips

Note 1 – 10% increase to be applied to tower base reactions for foundation verification per OTRM 051

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	63.2%	**PASS**

FOUNDATION:

Force	Original Design Loading	Proposed Loading	Result
Moment	5,074 ft-kips	3,749 ft-kips	**PASS**
Shear	62.8 kips	49.6 kips	**PASS**

Note 1: Taken from Sabre design calculations.

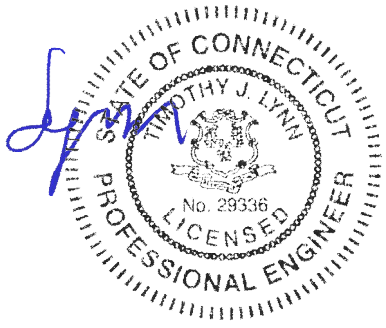
C o n c l u s i o n

This analysis shows that the subject utility pole **is adequate** to support the proposed 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 ~ PLS-POLE

PLS-POLE provides all of the capabilities a structural engineer requires to design transmission, substation or communications structures. It does so using a simple easy to use graphical interface that rests upon our time tested finite element engine. Regardless of whether you want to model a simple wood pole or a guyed steel X-Frame; PLS-POLE can handle the job simply, reliably and efficiently.

Modeling Features:

- Structures are made of standard reusable components that are available in libraries. You can easily create your own libraries or get them from a manufacturer
- Structure models are built interactively using interactive menus and graphical commands
- Automatic generation of underlying finite element model of structure
- Steel poles can have circular, 4, 6, 8, 12, 16, or 18-sided, regular, elliptical or user input cross sections (flat-to-flat or tip-to-tip orientations)
- Steel and concrete poles can be selected from standard sizes available from manufacturers
- Automatic pole class selection
- Cross brace position optimizer
- Capability to specify pole ground line rotations
- Capability to model foundation displacements
- Can optionally model foundation stiffness
- Guys are easily handled (modeled as exact cable elements in nonlinear analysis)
- Powerful graphics module (members color-coded by stress usage)
- Graphical selection of joints and components allows graphical editing and checking
- Poles can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces

Analysis Features:

- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Design checks for ASCE, ANSI/TIA/EIA 222 (Revisions F and G) or other requirements
- Automatic calculation of dead and wind loads
- Automated loading on structure (wind, ice and drag coefficients) according to:
    - ASCE 74-1991
    - NESC 2002
    - NESC 2007
    - IEC 60826:2003
    - EN50341-1:2001 (CENELEC)
    - EN50341-3-9:2001 (UK NNA)
    - EN50341-3-17:2001 (Portugal NNA)
    - ESAA C(b)1-2003 (Australia)
    - TPNZ (New Zealand)
    - REE (Spain)
    - EIA/TIA 222-F
    - ANSI/TIA 222-G
    - CSA S37-01
- Automated microwave antenna loading as per EIA/TIA 222-F and ANSI/TIA 222-G
- Detects buckling by nonlinear analysis

Results Features:

- Detects buckling by nonlinear analysis
- 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
- Automatic tracking of part numbers and costs

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 covering the design of telecommunications structures specifies a limit state design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that the design strength exceeds the required 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 NU 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 50-year recurrence (2% annual probability). 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), Combined Ice and Wind (Rule 250B-Heavy) and Extreme Ice w/ Wind (Rule 250D) 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.

Northeast Utilities System

Wire Loads

Project Name	1714/1720/1222 Line Rebuild		
Work Order	80060915		
Structure #	PCS-2 (19766 & 19725)		
Line #	1714/1720		
Prepared By	GJG	Date	6/3/2022
Checked By	JFAP	Date	6/3/2022

Structure Data

Structure Height (AGL)	125	Load Zone	Central CT
# of Circuits	2	Insulation Type	Suspension (Concrete Foundation
Insulator Weight	150	Broken Wire Side	Back
Broken Wire Side	Left	Structure Type	Double Circuit Steel Pole

Wire Data

Circuit #	Left	Right
Shield Wire	FOCAS-120	FOCAS-120
Conductor	FALCON/ACSS	FALCON/ACSS
# of Conductors	1	1

Line Geometry

	Circuit 1			Circuit 2		
	Ahead	Back	Total	Ahead	Back	Total
Wind Span	300	300	600	300	300	600
Weight Span	650	650	1300	650	650	1300
Minimum Line Angle	0	0	0	0	0	0
Maximum Line Angle	2.5	2.5	5	2.5	2.5	5

Wire Tensions

	Left Circuit		Right Circuit		
	Ahead	Back	Ahead	Back	
NESC Rule 250B	14000	14000	14000	14000	Conductor
NESC Rule 250C	13447	13447	13447	13447	
NESC Rule 250D	17202	17202	17202	17202	
60°F, No wind or ice	7271	7271	7271	7271	
NESC Rule 250B	6000	6000	6000	6000	Shield Wire
NESC Rule 250C	6236	6236	6236	6236	
NESC Rule 250D	7829	7829	7829	7829	
60°F, No wind or ice	2429	2429	2429	2429	

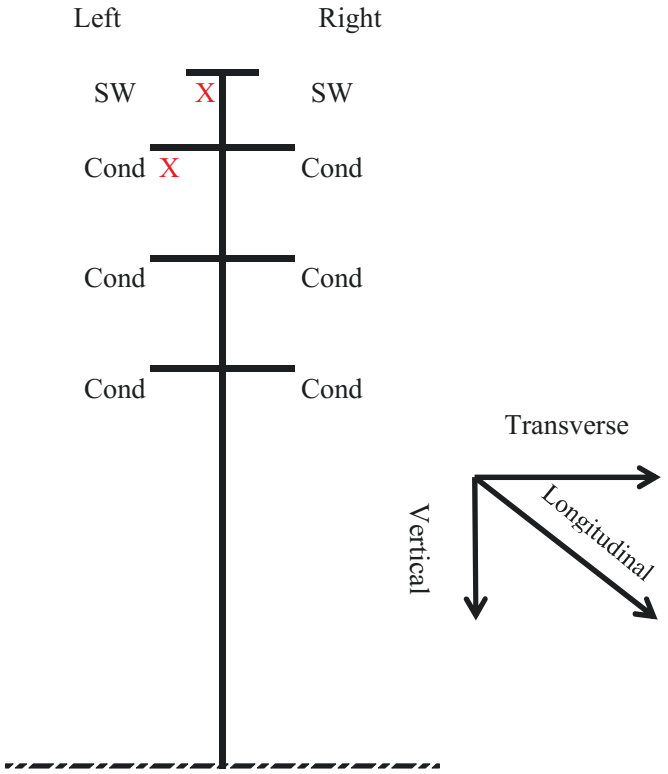
All Loads include Overload Factors but not Pole Shape Factors

Load Case	Description
1	NESC Rule 250B; 0°F, ½" of ice, 4 psf wind
2	NESC Rule 250C; (Extreme Wind Loading)
3	NESC Rule 250C; Extreme Wind Longtitudinal On The Pole Only
4	NESC Rule 250D; 15°F 1" of ice, 4 psf or NU Ice Case; 32°F 1" Ice
5	NESC Rule 250B with no OLFs (Service Load)
6	60°F, No wind or Ice (Deflection)
7a	NESC Rule 250B/261C Broken Wire Case (Broken SW and Borken Conductor)
7b	NESC Rule 250B/261C Broken Wire Case (Broken SW or Broken Phase)

Northeast Utilities System

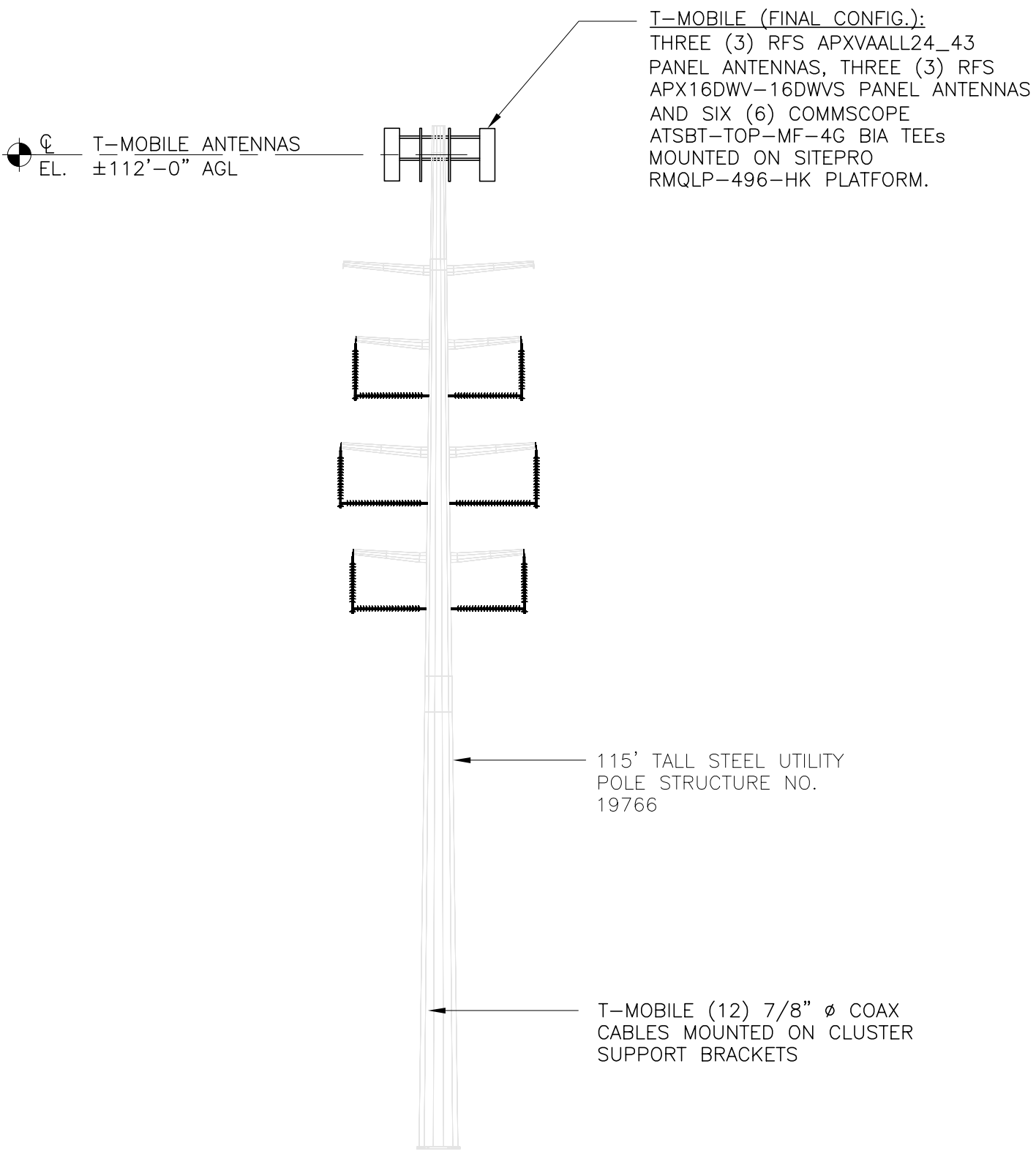
Wire Loads
Load Tree

Project Number
1714/1720/1222 Line Re
Structure Number
PCS-2 (19766 & 19725)
Line Number
1714/1720



Double Circuit Steel Pole Configuration
X Denotes Broken Wire Location. This attachment receives case 7 loads. All others receive Case 1 Loads for Case 7

	Left Circuit				Right Circuit			
Conductor	Case	Vertical	Transverse	Longitudinal	Case	Vertical	Transverse	Longitudinal
	1	6911.1105	2715.9771	0	1	6911.1105	2715.9771	0
	2	2953.82	3965.0998	0	2	2953.82	3965.0998	0
	3	2953.82	634.31313	0	3	2953.82	634.31313	0
	4	7069.594	2249.6814	0	4	7069.594	2249.6814	0
	5	4607.407	1770.3428	0	5	4607.407	1770.3428	0
	6	2953.82	634.31313	0	6	2953.82	634.31313	0
	7a	3455.5553	1357.9886	15400	7a	3455.5553	1357.9886	15400
	7b	3455.5553	1357.9886	15400	7b	3455.5553	1357.9886	15400
Shield Wire	Case	Vertical	Transverse	Longitudinal	Case	Vertical	Transverse	Longitudinal
	1	2511.6702	1444.7759	0	1	2511.6702	1444.7759	-6.281738
	2	673.4	1724.821	0	2	673.4	1724.821	-5.93529
	3	673.4	211.90298	0	3	673.4	211.90298	-2.31187
	4	3484.0936	1230.5924	0	4	3484.0936	1230.5924	-7.451473
	5	1674.4468	871.03265	0	5	1674.4468	871.03265	-5.710671
	6	673.4	211.90298	0	6	673.4	211.90298	-2.31187
	7a	1255.8351	722.38796	6600	7a	1255.8351	722.38796	6593.7183
	7b	1255.8351	722.38796	6600	7b	1255.8351	722.38796	6593.7183



1
SK-1

TOWER ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	4/11/23	ISSUED FOR REVIEW
01	5/2/23	CONSTRUCTION

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

CT11360A
STRUCTURE 19766

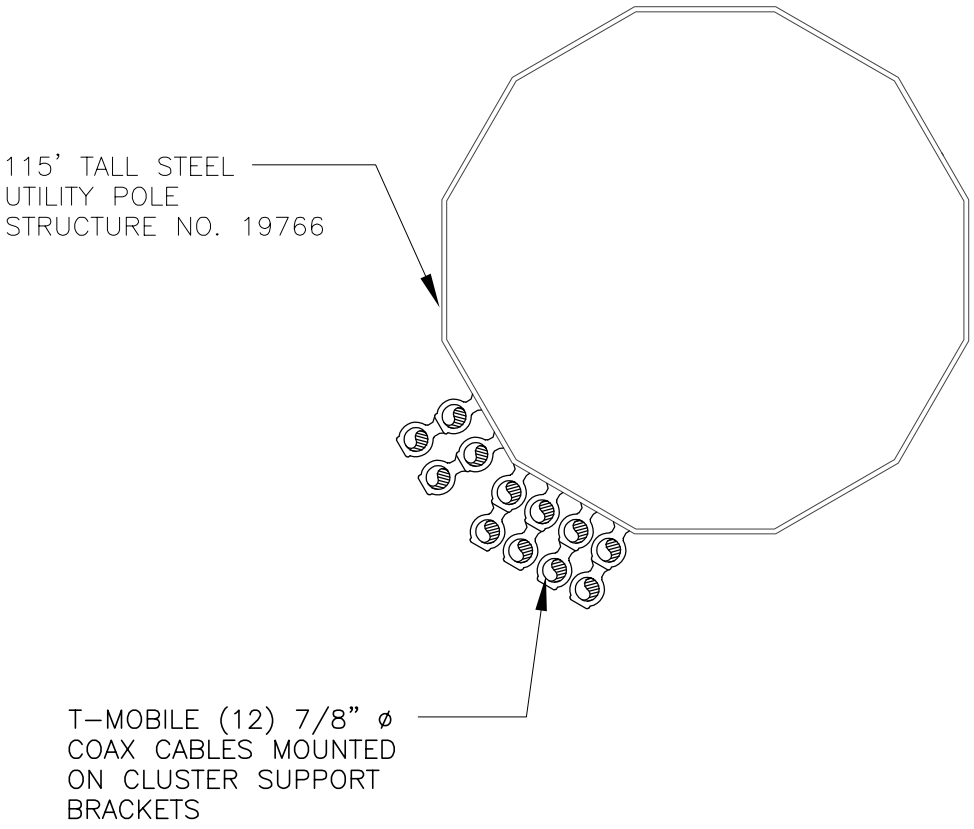
640 WESTPORT TURNPIKE
FAIRFIELD, CT

PROJECT NO:	22073.02
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	4/11/23

TOWER ELEVATION

SK-1

DWG. 1 OF 2



1 / SK-2 COAX CABLE PLAN

SCALE: NOT TO SCALE

REVISIONS		
00	4/11/23	ISSUED FOR REVIEW
01	5/2/23	CONSTRUCTION

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

CT11360A
STRUCTURE 19766

640 WESTPORT TURNPIKE
FAIRFIELD, CT

PROJECT NO:	22073.02
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	4/11/23

FEELINE PLAN

SK-2

DWG. 2 OF 2

RAN Template:	A&L Template:
67E04B Outdoor	

CT11360A_L600_4

Print Name: Standard
PORs: L600_L600 Coverage

Section 1 - Site Information

Site ID: CT11360A
Status: Final
Version: 4
Project Type: L600
Approved: 05/03/2023 2:06:01 PM
Approved By: Hansraj.Rana4@T-Mobile.com
Last Modified: 05/03/2023 2:06:01 PM
Last Modified By: Hansraj.Rana4@T-Mobile.com

Site Name: Westport/Rt 136
Site Class: Utility Lattice Tower
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Northeast Utilities

Latitude: 41.201616
Longitude: -73.332055
Address: 640 Westport Turnpike #ST910 Line #1720
City, State: Fairfield, CT
Region: NORTHEAST

RAN Template: 67E04B Outdoor		AL Template:		
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 12	**TMA Count:** 0	**RRU Count:** 6

Section 2 - Existing Template Images

----- This section is intentionally blank. -----

Section 3 - Proposed Template Images

----- This section is intentionally blank. -----

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 4B Outdoor

Enclosure	**1**
Enclosure Type	RBS 6102
Radio	RUS01 B2 **(x 3)** — G1900 RUS01 B2 **(x 3)** — U1900 (DECOMMISSIONED) RUS01 B4 **(x 6)** — L2100, U2100 (DECOMMISSIONED)
Baseband	BB 6630 — L2100 DUG20 — G1900 DUW30 — U1900 (DECOMMISSIONED) DUW30 — U2100 (DECOMMISSIONED)

Proposed RAN Equipment

Template: 67E04B Outdoor

Enclosure	**1**	**2**
Enclosure Type	RBS 6102	Ancillary Equipment (Ericsson)
Baseband	BB 6648 — N600, L600, L700, L1900, L2100 DUG20 — G1900	
Transport System	CSR 7210 SAS-Mxp	

RAN Scope of Work:

Remove Cabinet Radios B2/B4,
Remove DUW30.

Add BB6648.

RAN Template:	A&L Template:
67E04B Outdoor	

CT11360A_L600_4

Print Name: Standard
PORs: L600_L600 Coverage

Section 6 - A&L Equipment

Existing Template: 4B_2DP
Proposed Template:

Sector 1 (Existing) view from behind	
Coverage Type	A - Outdoor Macro
Antenna	1
Antenna Model	EMS - RR90-17-02DP (Dual)
Azimuth	25
M. Tilt	0
Height (ft)	96
Ports	P1
Active Tech	L2100, G1900
Dark Tech	
Restricted Tech	
Decomm. Tech	U2100, U1900
E. Tilt	2
Cables	1-5/8" Coax - 115 ft.(At Antenna) **(x2)**
TMAs	Generic Twin Style 1A - PCS (At Antenna)
Diplexer / Combiners	Generic AWS/PCS Diplexer (At Antenna)
Radio	
Sector Equipment	

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E04B Outdoor	

CT11360A_L600_4

Print Name: Standard
PORs: L600_L600 Coverage

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	10				10	
M. Tilt	0				0	
Height (ft)	112				112	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	L700, N600, L600	L700, N600, L600			N1900, G1900, L1900	L2100
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	7/8" Coax - 115 ft. **(x2)**	SHARED 7/8" Coax - 115 ft. **(x2)**			7/8" Coax - 115 ft. **(x2)**	SHARED 7/8" Coax - 115 ft. **(x2)**
TMAs						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment	Andrew Smart Bias T (Ericsson) (At Antenna)					Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

RAD Center change & Gamma sector add during this Upgrade.
New RAD center - 112 ft.
New AZI : 10/120/240
Add RFS APXVAALL24_43-U-NA20 Octo Antenna at P1 and RFS-APX16DWV at P3. Keep enough separation.
Add 4 coax lines for Low Band, Add 4 coax lines for MB.
Add Radio 4480 & 4460 at Base station on H-Frame.
Add 2 Bias Ts.
Coax length 60M.

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

RAN Template:	A&L Template:
67E04B Outdoor	

CT11360A_L600_4

Print Name: Standard
PORs: L600_L600 Coverage

Sector 2 (Existing) view from behind	
Coverage Type	A - Outdoor Macro
Antenna	**1**
Antenna Model	EMS - RR90-17-02DP (Dual)
Azimuth	200
M. Tilt	0
Height (ft)	96
Ports	**P1**
Active Tech	L2100 G1900
Dark Tech	
Restricted Tech	
Decomm. Tech	U2100 U1900
E. Tilt	2
Cables	1-5/8" Coax - 115 ft.(At Antenna) **(x2)**
TMAs	Generic Twin Style 1A - PCS (At Antenna)
Diplexer / Combiners	Generic AWS/PCS Diplexer (At Antenna)
Radio	
Sector Equipment	

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E04B Outdoor	

CT11360A_L600_4

Print Name: Standard
PORs: L600_L600 Coverage

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	120				120	
M. Tilt	0				0	
Height (ft)	112				112	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	N600 L700 L600	N600 L700 L600			L1900 G1900 N1900	L2100
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	7/8" Coax - 115 ft. **(x2)**	SHARED 7/8" Coax - 115 ft. **(x2)**			7/8" Coax - 115 ft. **(x2)**	SHARED 7/8" Coax - 115 ft. **(x2)**
TMAs						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment	Andrew Smart Bias T (Ericsson) (At Antenna)					Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

RAD Center change & Gamma sector add during this Upgrade.
New RAD center - 112 ft.
New AZI : 10/120/240
Add RFS APXVAALL24_43-U-NA20 Octo Antenna at P1 and RFS-APX16DWV at P3. Keep enough separation.
Add 4 coax lines for Low Band, Add 4 coax lines for MB.
Add Radio 4480 & 4460 at Base station on H-Frame.
Add 2 Bias Ts.
Coax length 60M.

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

RAN Template:	A&L Template:
67E04B Outdoor	

CT11360A_L600_4

Print Name: Standard
PORs: L600_L600 Coverage

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	240				240	
M. Tilt	0				0	
Height (ft)	112				112	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	N600 L700 L600	N600 L700 L600			G1900 N1900 L1900	L2100
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	7/8" Coax - 115 ft. **(x2)**	SHARED 7/8" Coax - 115 ft. **(x2)**			7/8" Coax - 115 ft. **(x2)**	SHARED 7/8" Coax - 115 ft. **(x2)**
TMAs						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment	Andrew Smart Bias T (Ericsson) (At Antenna)					Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

RAD Center change & Gamma sector add during this Upgrade.
New RAD center - 112 ft.
New AZI : 10/120/240
Add RFS APXVAALL24_43-U-NA20 Octo Antenna at P1 and RFS-APX16DWV at P3. Keep enough separation.
Add 4 coax lines for Low Band, Add 4 coax lines for MB.
Add Radio 4480 & 4460 at Base station on H-Frame.
Add 2 Bias Ts.
Coax length 60M.

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

RADIO FREQUENCY SYSTEMS

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-894/617-894/1695-2690/1695-2690MHz, 65deg, 16.2/16.1/18.9/18.7dBi, 2.4m (8ft), VET, RET, 2-12°/2-12°/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 600, 700, 800, AWS, PCS & BRS 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 (617-894 MHZ) [R1]

Frequency Band	MHz	617-698	698-806	806-894
Gain Typical	dBi	15.5	16.1	16.2
Gain Over All Tilts	dBi	15.2 +/- .3	15.6 +/- .5	15.8 +/- .4
Horizontal Beamwidth @3dB	Deg	65 +/-3	64 +/-2	62 +/-3
Vertical Beamwidth @3dB	Deg	9.9 +/- .7	8.6 +/- .7	7.6 +/-.4
Electrical Downtilt Range	Deg	2 to 12		
Upper Side Lobe Suppression Peak to +20	dB	15	14	14
Front-to-Back, at +/-30°, Copolar	dB	25	25	29
Cross Polar Discrimination (XPD) @ Boresight	dB	18	18	17
Cross Polar Discrimination (XPD) @ +/-60	dB	5	5	6
3rd Order PIM 2 x 43dBm	dBc	-153		
VSWR	-	1.5:1		
Cross Polar Isolation	dB	25		
Maximum Effective Power per Port	Watt	400		

RADIO FREQUENCY SYSTEMS

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-894/617-894/1695-2690/1695-2690MHz, 65deg, 16.2/16.1/18.9/18.7dBi, 2.4m (8ft), VET, RET, 2-12°/2-12°/2-12°/2-12°

HIGH BAND RIGHT ARRAY (1695-2690 MHZ) [Y2]

Frequency Band	MHz	1695-1880	1850-1990	1920-2200	2200-2490	2490-2690
Gain Typical	dBi	17.7	18.1	18.7	18.5	18.0
Gain Over All Tilts	dBi	17.1 +/- .6	17.6 +/- .5	18 +/- .7	17.9 +/- .6	17.4 +/- .6
Horizontal Beamwidth @3dB	Deg	67 +/- 5	64 +/- 5	65 +/- 5	62 +/- 7	60 +/- 9
Vertical Beamwidth @3dB	Deg	5.7 +/- .5	5.2 +/- .3	4.7 +/- .6	4.2 +/- .3	4.2 +/- .3
Electrical Downtilt Range	Deg	2 to 12				
Upper Side Lobe Suppression Peak to +20	dB	15	15	14	14	13
Front-to-Back, at +/-30°, Copolar	dB	27	28	26	23	21
Cross Polar Discrimination (XPD) @ Boresight	dB	21	17	14	16	18
Cross Polar Discrimination (XPD) @ +/-60	dB	10	8	7	4	1
3rd Order PIM 2 x 43dBm	dBc	-153				
VSWR	-	1.5:1				
Cross Polar Isolation	dB	25				
Maximum Effective Power per Port	Watt	300				

ELECTRICAL SPECIFICATIONS

Impedance	Ohm	50.0
Polarization	Deg	±45°

MECHANICAL SPECIFICATIONS

Dimensions - H x W x D	mm (in)	2436 x 609 x 215 (95.9 x 24 x 8.5)
Weight (Antenna Only)	kg (lb)	55.7 (122.8)
Weight (Mounting Hardware only)	kg (lb)	12.3 (27.1)
Packing size- HxWxD	mm (in)	2565 x 735 x 390 (101 x 28.9 x 15.4)
Shipping Weight	kg (lb)	77.9 (171.7)
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
Radome Material / Color		Fiber Glass / Light Grey RAL7035

TESTING AND ENVIRONMENTAL

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Grounding type		DC Grounded
Lightning protection		IEC 61000-4-5
Survival/Rated Wind Velocity	km/h	240 (150)
Wind Load @Rated Wind Front	N	1428.0
Wind Load @Rated Wind Side	N	434.0
Wind Load @Rated Wind Rear	N	1544.0
Environmental		ETSI 300-019-2-4 Class 4.1E

Product Data Sheet **APX16DWV-16DWVS-E-A20**

Optimizer® Side-by-Side Dual Polarized Antenna, 1710-2200, 65deg, 18.4dBi, 1.4m, VET, 0-10deg RET

Product Description

A combination of two X-Polarized antennas in a single radome, this pair of variable tilt antennas provides exceptional suppression of all upper sidelobes at all downtilt angles. It also features a wide downtilt range. This antenna is optimized for performance across the entire frequency band (1710-2200 MHz). The antenna comes pre-connected with two antenna control units (ACU).

Features/Benefits

- **Variable electrical downtilt - provides enhanced precision in controlling intercell interference. The tilt is infield adjustable 0-10 deg.**
- **High Suppression of all Upper Sidelobes (Typically <-20dB).**
- **Gain tracking – difference between AWS UL (1710-1755 MHz) and DL (2110-2155 MHz) <1dB.**
- **Two X-Polarised panels in a single radome.**
- **Azimuth horizontal beamwidth difference <4deg between AWS UL (1710-1755 MHz) and DL (2110-2155 MHz).**
- **Low profile for low visual impact.**
- **Dual polarization; Broadband design.**
- **Includes (2) AISG 2.0 Compatible ACU-A20-N antenna control units.**

Technical Specifications

Electrical Specifications

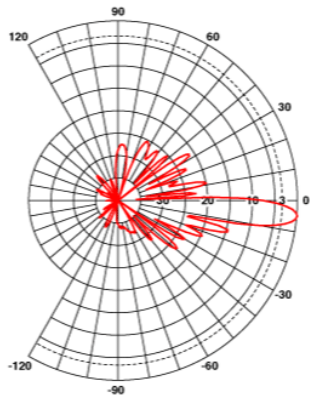
Frequency Range, MHz	1710-2200
Horizontal Beamwidth, deg	65
Vertical Beamwidth, deg	5.9 to 7.7
Electrical Downtilt, deg	0-10
Gain, dBi (dBd)	18.4 (16.3)
1st Upper Sidelobe Suppression, dB	> 18 (typically > 20)
Upper Sidelobe Suppression, dB	> 18 all (typically > 20)
Front-To-Back Ratio, dB	>26 (typically 28)
Polarization	Dual pol +/-45°
VSWR	< 1.5:1
Isolation between Ports, dB	> 30
3rd Order IMP @ 2 x 43 dBm, dBc	> 150 (155 Typical)
Impedance, Ohms	50
Maximum Power Input, W	300
Lightning Protection	Direct Ground
Connector Type	(4) 7-16 Long Neck Female

Mechanical Specifications

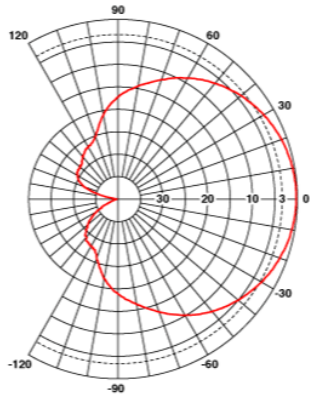
Dimensions - HxWxD, mm (in)	1420 x 331 x 80 (55.9 x 13 x 3.15)
Weight w/o Mtg Hardware, kg (lb)	18.5 (40.7)
Survival Wind Speed, km/h (mph)	200 (125)
Rated Wind Speed, km/h (mph)	160 (100)
Max Wind Loading Area, m² (ft²)	0.47 (5.03)
Front Thrust @ Rated Wind, N (lbf)	756 (170)
Maximum Thrust @ Rated Wind, N (lbf)	756 (170)
Wind Load - Side @ Rated Wind, N (lbf)	231 (52)
Wind Load - Rear @ Rated Wind, N (lbf)	408 (92)
Radome Material	Fiberglass
Radome Color	Light Grey RAL7035
Mounting Hardware Material	Diecasted Aluminum
Shipping Weight, kg (lb)	24.5 (53.9)
Packing Dimensions, HxWxD, mm (in)	1520 x 408 x 198 (59.8 x 16 x 7.8)

Ordering Information

Mounting Hardware	APM40-2 + APM40-E2



Vertical Pattern



Horizontal Pattern

ATSBT-TOP-MF-4G

Top Smart Bias Tee

- 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 (ANT)
- 7-16 DIN male connector (BTS)

Product Classification

Product Type	RET bias tee

General Specifications

AISG Input Connector	8-pin DIN Female
Antenna Interface	7-16 DIN Female
Antenna Interface Signal	RF | dc Blocked
BTS Interface	7-16 DIN Male
BTS Interface Signal	AISG data | RF | dc
Color	Silver
EU Certification	CE
Grounding Lug Thread Size	M8
Smart Bias Tee Type	10–30 V Top

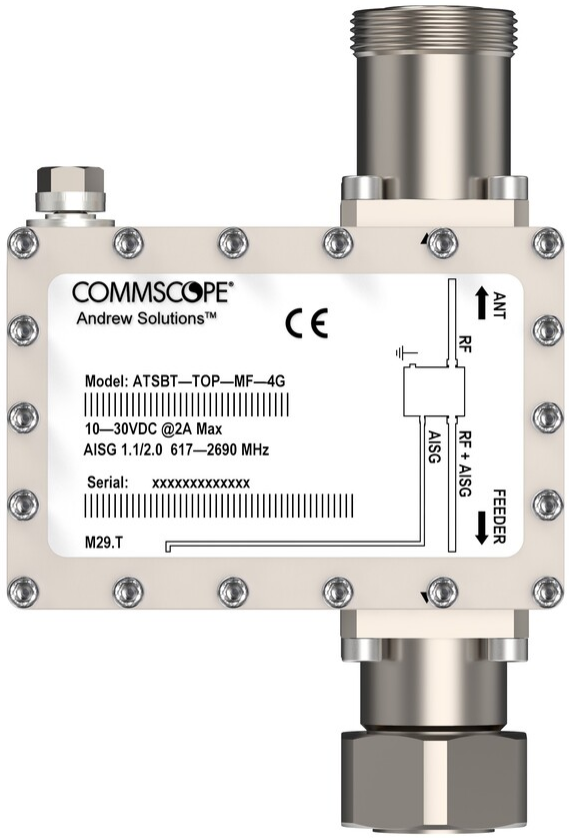
Dimensions

Height	143 mm | 5.63 in
Width	94 mm | 3.701 in
Depth	50 mm | 1.969 in

Electrical Specifications

3rd Order IMD	-158 dBc
3rd Order IMD Test Method	Two +43 dBm carriers
Insertion Loss, typical	0.1 dB
Electromagnetic Compatibility (EMC)	CFR 47 Part 15, Subpart B, Class B | EN 55022, Class B | ICES-003 Issue 4 CAN

ATSBT-TOP-MF-4G



Material Specifications

Material Type	Aluminum

Environmental Specifications

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

Packaging and Weights

Weight, net	0.8 kg | 1.764 lb

Regulatory Compliance/Certifications

Agency	**Classification**

SITE PRO 1
A valmont COMPANY

1545 Pidco Drive
Plymouth, IN 46563
Phone: 574.936.4221
Fax: 574.936.8925
Email: SP1Engineering@valmont.com
www.sitepro1.com

June 15, 2020

Site Pro 1 / Valmont Mounting System:

Part Number = RMQLP-xxx-HK / RMQLP-xxx + PRK-1245L + HRK14
Part Description = 14' Low Pro-Platform with Reinforcement and Handrail System

Mount EPA (no antenna pipes, walkway included, (0.67*EPA)):

EPA_N	= 39.24(26.29) sq-Ft	$EPA_{N\ (0.5"\ Ice)}$	= 48.14(32.25) sq-Ft	$EPA_{N\ (1"\ Ice)}$	= 56.69(37.98) sq-Ft
EPA_T	= 38.48(25.78) sq-Ft	$EPA_{T\ (0.5"\ Ice)}$	= 47.60(31.89) sq-Ft	$EPA_{T(1"\ Ice)}$	= 56.46(37.82) sq-Ft
Weight	= 2130 lb	$Weight_{(0.5"\ Ice)}$	=2580 lb	$Weight_{(1"\ Ice)}$	= 3165 lb

Classification Rating:

Heavy 10

Design Standards

ANSI/TIA-222-G-2012
ANSI/TIA-222-H-2018
ASCE 7-16
AT&T Mount Classification
International Building Code 2018
TIA-5053

Analysis and Modeling Technique

An elastic, three-dimensional, frame, truss model was developed to examine the structural behavior of the mount. All orientations in the engineering model correspond with the assembly drawing constraints. The mount was analyzed with four (4) mounting locations (antenna, mount pipe, radio, dish, and any other appurtenance) evenly spaced across the face of the mount, with no vertical eccentricity. Wind directions considered were perpendicular (normal) to the face of the frame and at 30 degree increments up to 90 degrees (tangential) to the face of the frame. Wind, dead weight and ice weight on the mount was also included in the model.

Modeling Software

Autodesk Inventor
RISA-3D
ANSYS Workbench

Exhibit E

Mount Analysis

CENTEK engineering

Centered on Solutions℠

Antenna Mount Analysis Report

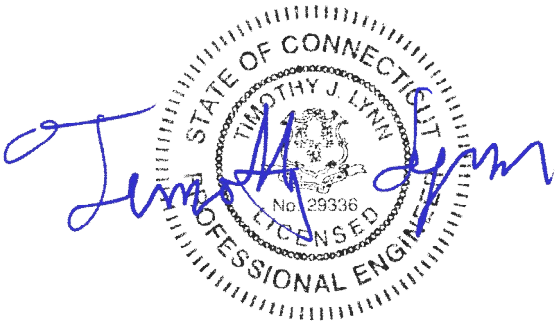
Site Ref: CT11360A

640 Westport Turnpike
Fairfield, CT

Centek Project No. 22073.02

Date: May 18, 2023

Max Stress Ratio = 45%



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

Table of Contents

CENTEK engineering

Centered on Solutions℠

May 18, 2023

Mr. Matthew Bandle
Northeast Site Solutions
1053 Farmington Ave, Unit G
Farmington, CT 06032

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11360A
640 Westport Turnpike
Fairfield, CT

Centek Project No. 22073.02

Dear Mr. Bandle,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the **proposed mount, consisting of one (1) platform mount (SitePro P/N: RMQLP-496-HK)** to support the proposed 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:**
  Platform: Three (3) RFS APXVAALL24_43 panel antennas, three (3) RFS APX16DWV-16DWVS panel antennas and six (6) Commscope ATSBT-TOP-MF-4G Bias Tees mounted on one (1) Platform to the utility pole with a RAD center elevation of 112-ft above grade.

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 Fairfield as required in Appendix P of the 2022 Connecticut State Building Code.

Based on our review of the installation, it is our opinion that the **subject antenna mount has sufficient capacity** to support the aforementioned antenna configuration.

If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

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: CT11360A

Westport/Rt 136
640 Westport Turnpike #ST910 Line #1720
Fairfield, CT 06824

May 15, 2023

Fox Hill Telecom Project Number: 230532

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	1.98 %

FOX HILL TELECOM

May 15, 2023

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

Emissions Analysis for Site: **CT11360A – Westport/Rt 136**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **640 Westport Turnpike #ST910 Line #1720, Fairfield, 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 µW/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 (µW/cm^2). The general population exposure limits for the 600 MHz & 700 MHz frequency bands are approximately 400 µW/cm^2 and 467 µW/cm^2 respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands is 1000 µW/cm^2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **640 Westport Turnpike #ST910 Line #1720, Fairfield, 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)
GSM	1900 MHz (PCS)	1	15
LTE / 5G NR	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	4	40
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

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 APX16DWV-16DWV-S-E-A20	112
A	2	RFS APXVAALL24_43-U-NA20	112
B	1	RFS APX16DWV-16DWV-S-E-A20	112
B	2	RFS APXVAALL24_43-U-NA20	112
C	1	RFS APX16DWV-16DWV-S-E-A20	112
C	2	RFS APXVAALL24_43-U-NA20	112

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 APX16DWV-16DWV-S-E-A20	1900 MHz (PCS) / 2100 MHz (AWS)	15.9	9	335	13,033.01	1.07
Antenna A2	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	0.91
						Sector A Composite MPE%	**1.98**
Antenna B1	RFS APX16DWV-16DWV-S-E-A20	1900 MHz (PCS) / 2100 MHz (AWS)	15.9	9	335	13,033.01	1.07
Antenna B2	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	0.91
						Sector B Composite MPE%	**1.98**
Antenna C1	RFS APX16DWV-16DWV-S-E-A20	1900 MHz (PCS) / 2100 MHz (AWS)	15.9	9	335	13,033.01	1.07
Antenna C2	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	0.91
						Sector C Composite MPE%	**1.98**

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 for 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	**1.98 %**
No Additional Carriers	NA
Site Total MPE %:	**1.98 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	1.98 %
T-MOBILE Sector B Total:	1.98 %
T-MOBILE Sector C Total:	1.98 %
Site Total:	1.98 %

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 1900 MHz (PCS) GSM	1	583.57	112	0.50	1900 MHz (PCS)	1000	0.05%
T-Mobile 1900 MHz (PCS) LTE / 5G NR	4	1,556.18	112	5.10	1900 MHz (PCS)	1000	0.51%
T-Mobile 2100 MHz (AWS) LTE	4	1,556.18	112	5.10	2100 MHz (AWS)	1000	0.51%
T-Mobile 600 MHz LTE / 5G NR	2	926.96	112	2.56	600 MHz	400	0.64%
T-Mobile 700 MHz LTE	2	485.32	112	1.26	700 MHz	467	0.27%
						Total:	**1.98 %**

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:	1.98 %
Sector B:	1.98 %
Sector C:	1.98 %
T-MOBILE Maximum Total (per sector):	1.98 %
Site Total:	1.98 %
Site Compliance Status:	**COMPLIANT**

The estimated composite MPE value for this site assuming all carriers present is **1.98 %** 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

October 12, 2023

Ms. Amanda Olsen
Northeast Site Solutions
420 Main St,
Sturbridge, MA 01566

RE: T-Mobile Antenna Site CT11360A, Westport Turnpike, Fairfield CT, Eversource Structure 19766

Ms. Olsen:

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,

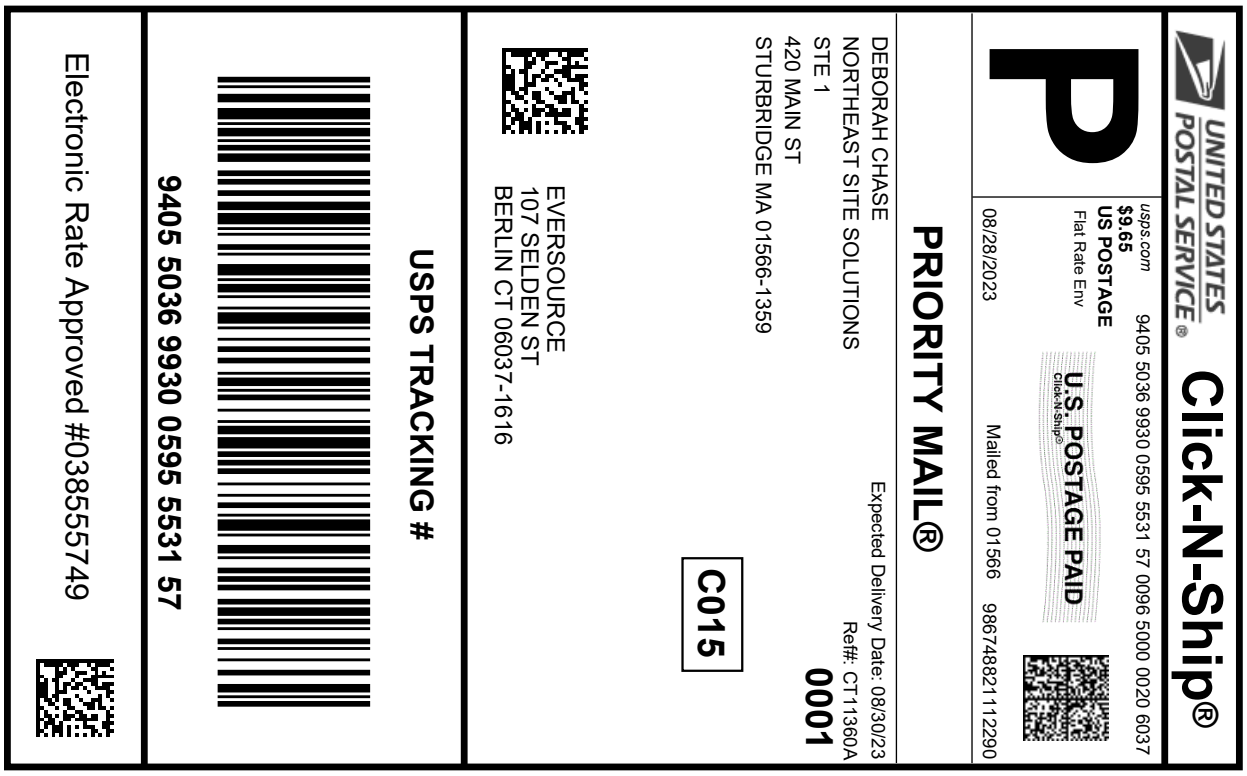
Masie Hartt

Masie Hartt
Transmission Line Engineering

Ref: 2023-0502 - CT11360A - Structural Analysis Rev1 (22073.02)
2023-0518 - CT11360A - Mount Analysis Rev0 (22073.02)
2023-1012_22073.02 CT11360A – Rev2 CDs (S&S)

Exhibit H

Recipient Mailings



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Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11360A

To: EVERSOURCE
107 SELDEN ST
BERLIN CT 06037-1616

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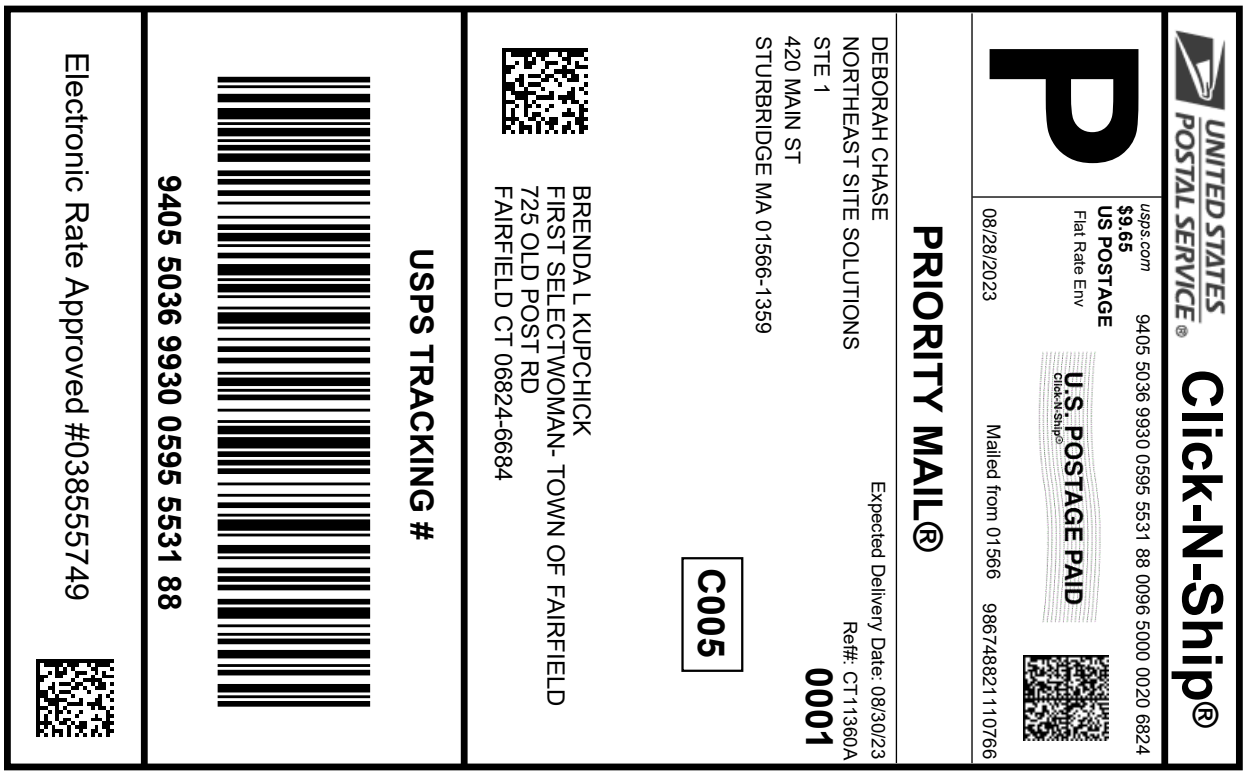

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Ship Date:	08/28/2023
Expected Delivery Date:	08/30/2023

Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11360A

To: BRENDA L KUPCHICK
FIRST SELECTWOMAN- TOWN OF FAIRFIELD
725 OLD POST RD
FAIRFIELD CT 06824-6684

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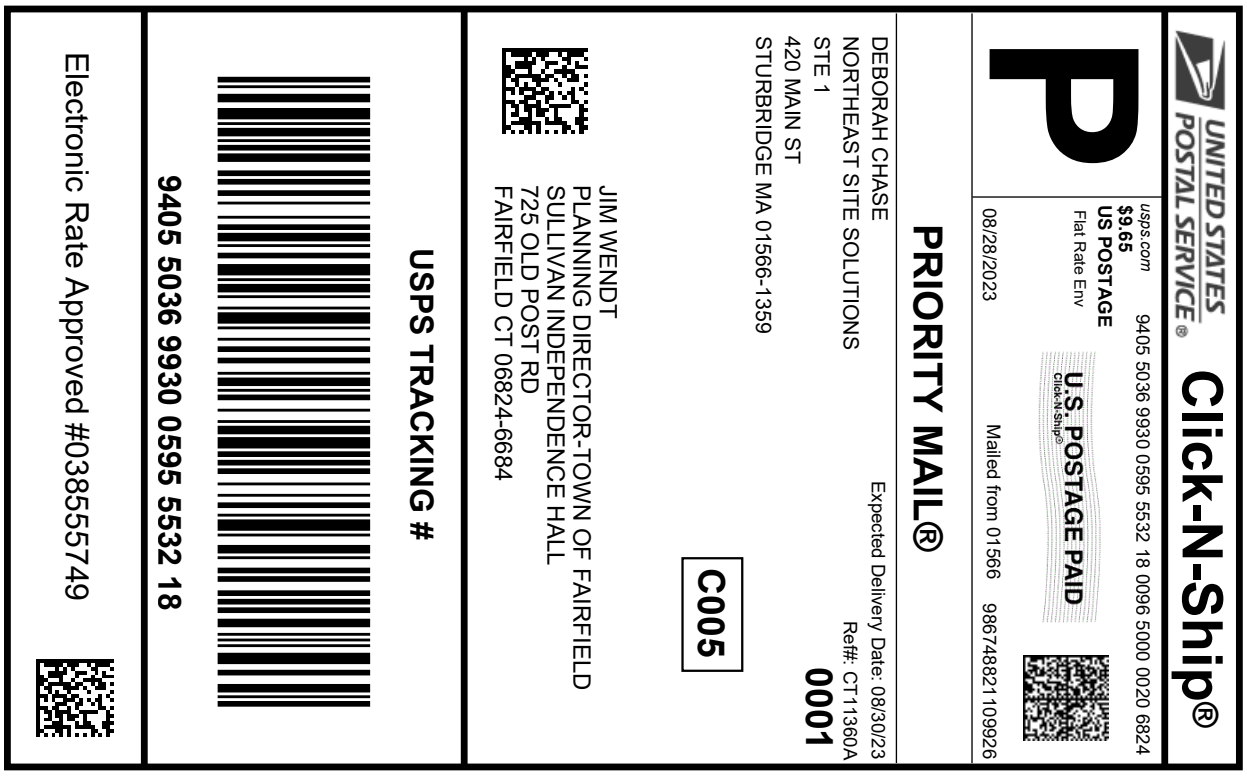

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Ship Date:	08/28/2023
Expected Delivery Date:	08/30/2023

Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11360A

To: JIM WENDT
PLANNING DIRECTOR-TOWN OF FAIRFIELD
SULLIVAN INDEPENDENCE HALL
725 OLD POST RD
FAIRFIELD CT 06824-6684

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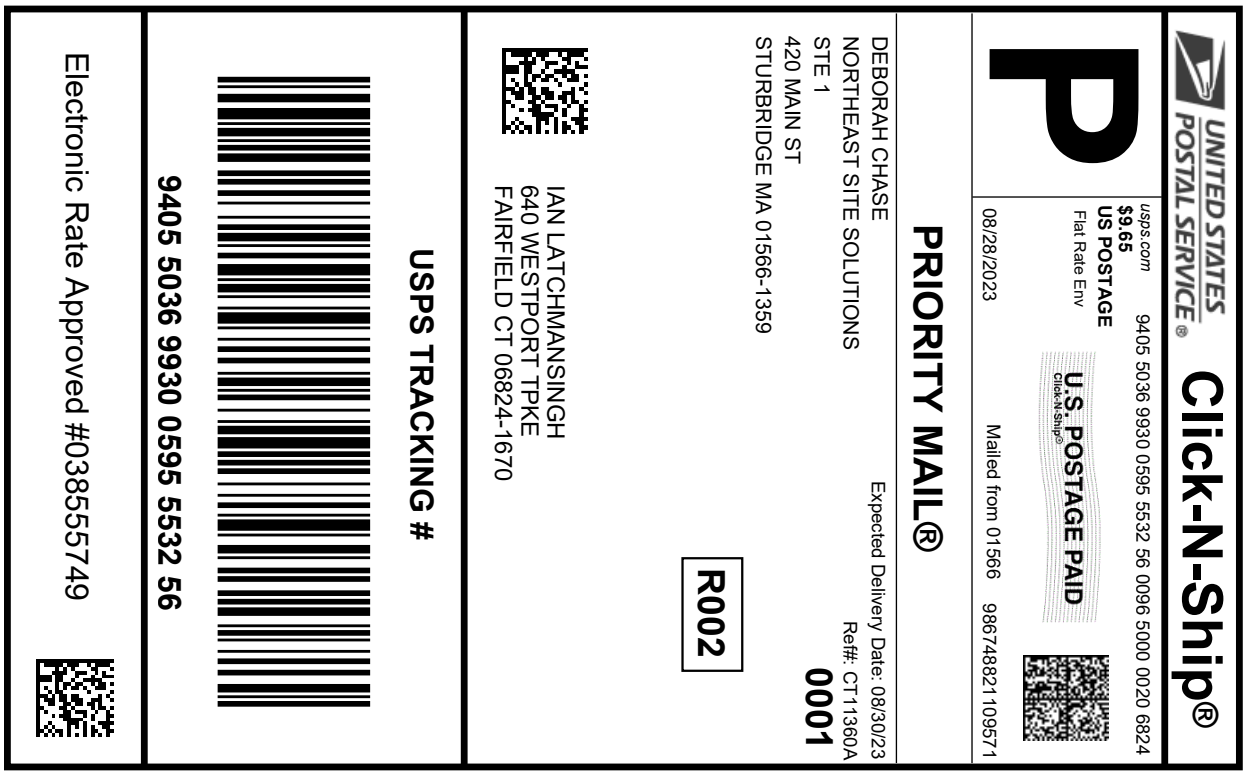

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Ship Date:	08/28/2023
Expected Delivery Date:	08/30/2023

Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11360A

To: IAN LATCHMANSINGH
640 WESTPORT TPKE
FAIRFIELD CT 06824-1670

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CT113600A - L6000

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Product	Qty	Unit Price	Price
Prepaid Mail Berlin, CT 06037 Weight: 1 lb 1.30 oz Acceptance Date: Tue 10/17/2023 Tracking #: 9405 5036 9930 0595 5531 57	1		$0.00
Prepaid Mail Fairfield, CT 06824 Weight: 1 lb 1.30 oz Acceptance Date: Tue 10/17/2023 Tracking #: 9405 5036 9930 0595 5531 88	1		$0.00
Prepaid Mail Fairfield, CT 06824 Weight: 1 lb 1.30 oz Acceptance Date: Tue 10/17/2023 Tracking #: 9405 5036 9930 0595 5532 56	1		$0.00
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Grand Total:			$0.00

CT 11360 - L6000
CT11104 CSC COPY

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WORCESTER, MA 01606-2378
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Product	Qty	Unit Price	Price
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Grand Total:			$0.00

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