



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

October 18, 2022

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

RE: Notice of Exempt Modification
670 Chapel Street, Stratford, CT 06614
Latitude: 41.23785
Longitude: -73.12244
T-Mobile Site#: CT11426A_L600

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 110-foot level of the existing 125-foot monopole located at 670 Chapel Street, Stratford, CT 06614. The tower and property are owned by CL&P d/b/a Eversource. T-Mobile now intends to relocate all existing equipment to the new pole (pole #19520) per Petition No. 1582. T-Mobile also intends to remove three (3) existing antenna and replace them with six (6) new 600/700/1900/2100 MHz antenna. The new antennas would be installed at the 110-foot level of the new 125-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) APX16DWV 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) Commscope VV-65A-R1 Antenna 600/700/1900/2100 MHz Antenna
(24) Coax Line

Existing to Remain:

NONE



This facility was originally approved by the Connecticut Siting Council on March 24, 1999 Petition No. 411. This pole is being replaced by Eversource with Petition No. 1582, this Petition was approved on October 13, 2023.

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 Mayor Laura R. Hoydick and Daniel Brennan, Zoning Enforcement Officer, 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
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Fax: 413-521-0558
Office: 420 Main Street, Unit 2, Sturbridge MA 01566
Email: victoria@northeastsitesolutions.com



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Attachments:

cc: Laura R. Hoydick, Mayor
Stratford Town Hall
2725 Main Street
Stratford, CT 06615

Daniel Brennan, Zoning Enforcement Officer
Stratford Town Hall
2725 Main Street
Stratford, CT 06615

CL&P d/b/a Eversource Energy, as tower owner and property owner
PO BOX 270
Hartford, CT 06141

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

October 13, 2023

Deborah Denfeld
Team Lead – Transmission Siting
Eversource Energy
P.O. Box 270
Hartford, CT 06141
deborah.denfeld@eversource.com

RE: **PETITION NO. 1582** - 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 Pootatuck to West Devon Rebuild Project consisting of the replacement and reconductoring of electric transmission line structures along approximately 3.3 miles of its existing electric transmission line right-of-way shared by its existing 115-kilovolt (kV) 1580, 1241, 1483 and 1545 Lines between The United Illuminating Company's (UI) Pootatuck Substation in Shelton, UI's Trap Falls Substation in Shelton and Eversource's West Devon Junction in Stratford, traversing the municipalities of Shelton and Stratford, Connecticut, and related electric transmission line and substation improvements.

Dear Deborah Denfeld:

At a public meeting held on October 12, 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. Submit a copy of the Department of Energy and Environmental Protection (DEEP) Stormwater Permit prior to commencement of construction;
3. Submit a copy of the Final DEEP Natural Diversity Database (NDDB) Determination Letter prior to commencement of construction;
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. Implement the Vernal Pool Protection Plan;
7. Submit a Post-Construction Temporary Wetland Impact Restoration Report for project areas where temporary matting is utilized;
8. 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;

9. The Council shall be notified in writing at least two weeks prior to the commencement of site construction activities;
10. 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 Shelton and the Town of Stratford;
11. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed **along with a representative photograph of the project**;
12. 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
13. 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 July 3, 2023, and additional information dated August 17, 2023.

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

Sincerely,



Melanie A. Bachman
Executive Director

MAB/MP/dll

Enclosure: Staff Report dated October 12, 2023

- c: The Honorable Mark A. Lauretti, Mayor, City of Shelton (shelton01@cityofshelton.org)
The Honorable Laura R. Hoydick, Mayor, Town of Stratford (mayor@townofstratford.com)
Kathleen Shanley, Eversource Energy (Kathleen.shanley@eversource.com)

STATE OF CONNECTICUT)

: ss. Southington, Connecticut

October 13, 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. 1582 issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:



Melanie A. Bachman
Executive Director
Connecticut Siting Council

STATE OF CONNECTICUT)

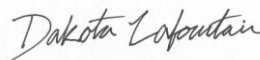
: ss. New Britain, Connecticut

October 13, 2023

COUNTY OF HARTFORD)

I certify that a copy of the Connecticut Siting Council Decision and Staff Report in Petition No. 1582 has been forwarded by Certified First Class Return Receipt Requested mail, on October 13, 2023, to each party and intervenor, or its authorized representative, as listed on the attached service list, dated July 3, 2023.

ATTEST:



Dakota LaFountain
Clerk Typist
Connecticut Siting Council

LIST OF PARTIES AND INTERVENORS
SERVICE LIST

Status Granted	Document Service	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Petitioner	<input checked="" type="checkbox"/> E-mail	The Connecticut Light and Power Company d/b/a Eversource Energy	Deborah Denfeld Team Lead – Transmission Siting Eversource Energy P.O. Box 270 Hartford, CT 06141 Phone: (860) 728-4654 deborah.denfeld@eversource.com



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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Petition No. 1582

**The Connecticut Light and Power Company d/b/a Eversource Energy
Pootatuck to West Devon Rebuild Project
Shelton and Stratford**

**Staff Report
October 12, 2023**

Introduction

On July 3, 2023, the Connecticut Siting Council (Council) received a 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 Pootatuck to West Devon Rebuild Project (Petition or Project) within existing Eversource electric transmission line right-of-way (ROW) in the Town of Stratford and the City of Shelton (municipalities).

The Project consists of the replacement of electric transmission line structures and conductors, and the replacement of shield wire with optical ground wire (OPGW)¹ on the 1580, 1241, 1483, and 1545 Lines along approximately 3.3 miles of existing ROW between The United Illuminating Company's (UI) Pootatuck Substation in Shelton, UI's Trap Falls Substation in Shelton; and Eversource's West Devon Junction in Stratford; and related electric transmission line and substation improvements.

On June 30, 2023, 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 July 5, 2023, 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 August 2, 2023. No comments were received from any of the municipalities.

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 July 27, 2023, the Council on Environmental Quality submitted comments on the Project.²

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.³

The Council submitted interrogatories to Eversource on August 4, 2023. Eversource submitted responses to the interrogatories on August 17, 2023.

¹ OPGW contains a conductor for lightning protection and fiber optics for communications between substations. It would be installed overhead.

² https://portal.ct.gov/-/media/CSC/3_Petitions-medialibrary/Petitions_MediaLibrary/MediaPetitionNos1501-1600/PE1582/ProceduralCorrespondence/PE1582_CEOCommentsRecd_a.pdf

³ *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 August 17, 2023 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 December 30, 2023, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

Notice and Community Outreach

Eversource initiated outreach to the municipalities in January 2023. Eversource did not receive comments from the Town of Stratford. The City of Shelton requested that Eversource include the municipal stormwater system on the contractor's map set for use in the field. Eversource would include this information.

Eversource initiated outreach to property owners along the Project route in fall 2022. 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. During the construction phase of the Project, Eversource would maintain contact with the municipalities and abutting property owners to inform them of construction activities. Some property owners requested advance notification prior to work occurring on or near their property and expressed concern regarding site restoration.

Existing Facility Site

The existing facility site includes approximately 3.3 miles of existing Eversource ROW that extends through commercial and residential areas, municipal conservation space, and Routes 8 and 15. It also crosses a gas line, several wetlands, Wells Brook, Farmill River, Black Brook, and Cranberry Pond. Approximately 0.6 mile of the ROW is between Pootatuck Substation and Trap Falls Substation, and 2.7 mile of the ROW is between Trap Falls Substation and West Devon Junction.

The ROW was established in 1923. Eversource's easements for the existing ROW grant Eversource rights to enter upon the right of way and to erect, repair, maintain, replace, inspect, operate and remove upon, infrastructure related to the conduction of electricity. The easements also grant rights to trim, cut, and remove vegetation within the ROW.

The Project ROW is approximately 110 feet wide. It is managed to its full width.⁴ No expansion of the ROW is proposed.

Telecommunications antennas are collocated on Structures 1321 and 1340. Equipment would be relocated to the replacement structures by the telecommunications carriers.

Vegetation management was last performed in portions of the Project ROW in 2021.

Project Development

The purpose of the proposed Project is to improve system reliability on 1580, 1241, 1483, and 1545 Lines by replacing aged conductors and shield wire and replacing electric transmission line structures to structurally support the new conductors and OPGW and to meet National Electrical Safety Code (NESC) standards.

From Pootatuck Substation to West Devon Junction, the 1580, 1241, 1483, and 1545 Lines are supported on a total of 53 structures. Once the Project is complete, 51 of these structures would have been replaced including

⁴ According to the Federal Energy Regulatory Commission, "full right-of-way" means the portion of land for which a utility has documented legal rights to build and maintain transmission facilities. Managing a narrower maintained right-of-way, rather than the full right-of-way, is a relatively common industry practice, though not a best practice.

all 49 existing double-circuit lattice structures. Structures 1341A and 1341B on the 1483 and 1241 Lines, respectively, were replaced under UI Petition 1228 and would be capable of supporting the proposed conductor.

The Project is identified in the 2023 Eversource Forecast of Loads and Resources Report and in the June 2023 Independent System Operator New England, Inc. (ISO-NE) Regional System Plan Asset Condition List.⁵ There are no generation facilities listed on the ISO-NE interconnection queue associated with the proposed Project.

Cost

The total estimated cost of the Project is approximately \$38.79M. All of the total Project cost would be eligible for regional cost allocation as it is associated with Pool Transmission Facilities.⁶ Pending a final determination from ISO-NE, total costs are expected to be allocated⁷ as follows:

Eversource Connecticut ratepayers ⁸	19.2%	(\$7.45M)
Other Connecticut ratepayers ⁹	6.0%	(\$2.33M)
<u>Other New England ratepayers¹⁰</u>	<u>74.8%</u>	<u>(\$29.01M)</u>
Cost Total	100%	(\$38.79M)

Proposed Project

The Project is proposed to address identified asset condition deficiencies by replacing aged conductors, replacing copper shield wire with OPGW, and replacing transmission structures necessary to structurally support the new conductors and OPGW. It includes the replacement of 14 double-circuit steel lattice structures with 14 double-circuit monopoles; replacement of 35 double-circuit steel lattice structures with 45 single-circuit monopoles; replacement of one double-circuit monopole with two single-circuit monopoles; and replacement of one single-circuit steel structure with one single-circuit monopole.

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.

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.¹¹

⁵ Entry #372.

⁶ 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.

⁷ These allocations are estimates based on 2022 actual loads.

⁸ Electrical service customers of Eversource and located within Connecticut.

⁹ Electrical service customers located within Connecticut but outside of Eversource's service territory.

¹⁰ Electrical service customers located within New England but outside of Connecticut.

¹¹ Petition 1527, response to Council interrogatory 19.

NESC clearance requirements for conductor uplift and insulator swing were factored into the transmission line design. Conductor uplift is a condition where wire on a structure pulls up on the hardware instead of hanging down vertically. It typically occurs in spans where structures are located at different ground levels or have different heights. The amount of insulator swing on a transmission line depends on conductor tension, temperature, wind velocity, insulator weight, ratio of weight span to wind span, and line angle. These issues can be mitigated by taller structures in certain locations to increase the load tension of the insulators and the span weight load of the conductors.

1580 Line – Pootatuck Substation to West Devon Junction

The 1580 Line is a 115-kV line supported by double-circuit lattice structures¹² installed beginning in 1923. The 1580 Line consists of 4/0 copper conductor between Pootatuck Substation and West Devon Junction.

Project work consists of the following:

- a) Replace 25 double-circuit steel lattice structures with 25 single-circuit weathering steel monopoles;
- b) Replace 4/0 copper conductor with 1590 kcmil ACSS conductor; and
- c) Replace 3/8-inch copperweld shield wire with OPGW.

1241 and 1483 Lines – Pootatuck Substation to Trap Falls Substation

The 1241 and 1483 Lines are 115-kV lines supported by double-circuit lattice structures, single-circuit steel monopoles and a double-circuit steel monopole installed beginning in 1923. The 1241 and 1483 Lines consist of 795 kcmil aluminum conductor steel reinforced (ACSR) conductor between Pootatuck Substation and Trap Falls Substation.

Project work consists of the following:

- a) Replace one double-circuit steel lattice structure with two single-circuit weathering steel monopoles;
- b) Replace three double-circuit steel lattice structures with three double-circuit weathering steel monopoles;
- c) Replace one double-circuit monopole structure with two single-circuit weathering steel monopoles;
- d) Replace 795 kcmil aluminum conductor steel reinforced (ACSR) conductor with 1590 kcmil ACSS conductor; and
- e) Replace 3/8-inch copperweld shield wire with OPGW.

1545 and 1483 Lines – Trap Falls Substation to West Devon Junction

The 1545 and 1483 Lines are 115-kV lines supported by mostly double-circuit lattice structures installed beginning in 1923. The 1545 and 1483 Lines consist of 795 kcmil ACSR conductor between Trap Falls Substation and West Devon Junction.

Project work consists of the following:

- a) Replace 9 double-circuit steel lattice structures with 18 single-circuit weathering steel monopoles;
- b) Replace 11 double-circuit steel lattice structures with 11 double-circuit weathering steel monopoles;
- c) Replace one single-circuit steel pole structure with one single-circuit weathering steel monopole;
- d) Replace 795 kcmil aluminum conductor steel reinforced (ACSR) conductor with 1590 kcmil ACSS conductor; and
- e) Replace 3/8-inch copperweld shield wire with OPGW.

¹² The 1580 Line structures also supported the 1590 Line conductors before the 1590 Line was decommissioned. The 1590 Line would be removed and not replaced.

In addition to the structure replacements and OPGW installation, Project work includes installation of counterpoise and transfer of the existing lightning arrestors to the new structures, as needed.¹³

Project Construction

Eversource would establish a temporary staging/laydown area for the Project at 61 Caswell Street in Milford. This staging/laydown area is approximately 0.8 acre. This staging/laydown area would contain Project equipment, office trailers, and vehicles. It would not be located within the existing ROW.

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, NDDB areas, and lawns) to reach certain structure locations.

Eversource would obtain a Connecticut Department of Transportation (CDOT) Encroachment Permit to cross Routes 8 and 15 and a CDOT Entry Permit for Route 714.

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).¹⁴ Typical E&S control measures include, but are not limited to, biodegradable blankets, hay bales, silt fencing, gravel anti-tracking pads, soil and slope protection, water bars, check dams, berms, swales, and plunge pools.

A project-specific Stormwater Pollution Control Plan (SWPCP) would be developed for registration under a DEEP Stormwater Permit. The Stormwater Permit requires the designing qualified professional to conduct the SWPCP Implementation Inspection that confirms compliance with the Stormwater 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 U.S. Army Corps of Engineers (USACE)/DEEP Self-Verification Notification process in regard to wetland impact. The self-verification notification forms would be submitted to the USACE - New England District 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 pad dimensions would vary based on site specific conditions such as terrain, proximity to the existing and replacement structures, and the type of construction activities.

Work pads for structure replacements would typically range from approximately 75 feet by 75 feet to 125 feet by 110 feet. Pull pads, necessary to accommodate machinery needed for pulling conductors and/or OPGW, would typically be 110 feet by 75 feet. Most of the work pads would be composed of gravel. Temporary work pads would be used in sensitive areas such as wetlands, NDDB areas, and lawns.

¹³ Petition 1566, Eversource Responses to Spaulding Interrogatory Nos. 65 and 66 - Counterpoise is typically installed at structure locations under the outside phase conductors at a depth of 18 inches.

¹⁴ [2022 Eversource Best Management Practices MA, CT](#)

17 proposed structure foundations would be direct-embed foundations, and 45 proposed structure foundations would be 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, cranes, 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 using a crane, bucket trucks and excavator.

After the new structures are installed, OPGW and new conductor would be installed using conductor reels, pulling and tensioning rigs, guard trucks, and bucket trucks. During crossings of water bodies, new conductor and OPGW would be installed by maintaining appropriate tension and utilizing construction means and methods such as a series of pulleys and ropes to avoid contact with water beneath the span.

After the new structures/conductors/OPGW are installed 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 or mitigation. 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.

Upon completion of the Project, gravel access roads and work pads would be left in place to facilitate future transmission line maintenance. If a property owner requests their removal, Eversource would discuss mitigation options with the landowner.

Except for concrete trucks, no construction equipment or vehicle washing would be allowed in the ROW. In accordance with Eversource's BMPs, 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 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. Construction warning signs along public roads would be installed near work sites and flaggers or police personnel would be used to direct traffic, if necessary.

Environmental Effects and Mitigation Measures

All work would occur within a maintained ROW. No tree clearing is required for the Project. Notwithstanding, mature vegetation removal, pruning of side vegetation and removal hazard trees along the ROW edges may be necessary.

Most vegetation removal would be accomplished manually using chainsaws. However, in some locations, the use of mechanical methods may be necessary. Vegetation removal activities would be performed in accordance with Eversource BMPs.

A total of 17 wetland areas and 6 watercourses occur along the ROW or in adjacent off-ROW areas. The Project would result in 600 square feet of permanent wetland impacts associated with the installation of 14 structures within wetlands areas. These structures are proposed within the wetlands in accordance with the overall Project design and structure alignment. They are located within wetlands that cannot be reasonably avoided.

Temporary wetland impacts related to Project construction matting would total approximately 2.88 acres. The Project would require one temporary watercourse crossing, using wood matting, for work pads and access roads. Construction activities within wetlands and across watercourses would be conducted in accordance with Eversource's BMPs.

A total of 2 vernal pools (VP) were identified in the Project ROW, but none of the VPs would be directly affected by construction activities. Work would occur within the VP envelope (100 feet from the VP edge) of the 2 VPs to facilitate access to the structures and/or new structures. Two proposed structures would be located within the VP envelope of VP1.

Eversource would conduct work in this area in accordance with Eversource's BMPs and Project specific VP protective measures, which include, but are not limited to, minimizing vegetative clearing and retaining stumps, establishment of E&S controls, use of temporary matting, and avoidance of permanent disturbance that could cause permanent habitat alteration or changes in local drainage patterns.

The DEEP-approved SWPCP would contain 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, USACE self-verification procedures, and Eversource's BMPs. In addition, the qualified inspector would be on-site to monitor environmental resource protections as established in Eversource's BMP's and within the Final DEEP Natural Diversity Database (NDDDB) Determination letter.¹⁵ An Environmental Monitor would conduct weekly inspections of resource areas for the duration of Project construction.

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 Farmill River. No proposed monopoles would be located within the 100-year or 500-year flood zones. A temporary pull pad would be located within the 500-year flood zone. There would be no permanent fill within FEMA flood zone of the Farmill River. Temporary matting, construction materials and equipment would be properly secured where placed within the flood zone and would be removed upon completion of construction.

The Project is not within a Public Drinking Water Supply Watershed. There are no DEEP-designated Aquifer Protection Areas within the Project ROW. Notwithstanding, to protect subsurface water quality, Eversource would conduct work in accordance with its BMPs which include provisions for the proper storage, secondary containment, and handling of diesel fuel, motor oil, grease, and other lubricants.

A preliminary DEEP NDDDB assessment was issued for the Project on May 23, 2023. Eversource would implement DEEP recommended species-specific protection measures during construction, which include, but are not limited to, time of year best management practices.

¹⁵ Eversource currently has a preliminary DEEP NDDDB Determination Letter, dated May 23, 2023.

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. Per USFWS NLEB guidance, Eversource performed an analysis using the USFWS NLEB planning tool which determined the Project would have no effect on the NLEB. 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 impact to NLEB are expected.

No properties/districts listed on the National Register of Historic Places are located within 500 feet of the Project ROW. A Phase 1A Cultural Resources Assessment (Phase 1A) of the Project area identified locations within the Project ROW possessing a moderate to high potential for archaeological sensitivity. A Phase 1B Survey (Phase 1B) was performed and these locations were reclassified as having no/low archaeological sensitivity. No further archaeological investigation was recommended. SHPO reviewed the results of the Phase 1B and concurred that no historic properties would be affected by the Project.

The nearest publicly accessible recreational areas are the James Farm Road Open Space and Roosevelt Forest in Stratford. The Project would not affect the recreational uses of these properties.

Disturbed areas would be stabilized using temporary E&S controls such as straw mulch, compost filters, and biodegradable erosion control blankets until final stabilization has been achieved. Appropriate seed mixes would be applied in uplands to revegetate disturbed areas, promote shrub land and other low-growth habitat along the ROW to benefit pollinators and other species.

In accordance with the SWPCP, monthly inspections would be conducted to monitor stabilization measures. A qualified inspector or a qualified professional engineer would inspect the areas and confirm compliance with the post-construction stormwater management requirements.

The Project would require increasing the height of many replacement structures to meet NESC clearance requirements within the existing ROW. Existing structures to be replaced on the lines range from 81 to 101 feet above ground level. The replacement structures on the lines would range from 85 feet to 115 feet above ground level, with an average height increase of 17.3 feet to meet NESC clearance requirements. Two structures would decrease in height by 1 to 11 feet. Three replacement structures would increase in height by 30 feet or more, and of those, two are adjacent to James Farm Road in Stratford (increase of 32 feet each); and one is adjacent to Route 8 in Shelton (increase of 37 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. Additionally, the replacement of lattice towers with monopoles would result in a more streamlined appearance.

Public Safety

There would be no permanent changes to existing ROW sound 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.

Eversource received No Hazard Determinations from the Federal Aviation Administration (FAA) for the replacement structures, and no marking or lighting would be required.

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*.

MF at or beyond the edges of ROW are expected to decrease. The highest calculated MF level is 10.5 mG at the edge of the ROW, well below the ICNIRP and ICES recommended exposure standards.

Construction Schedule

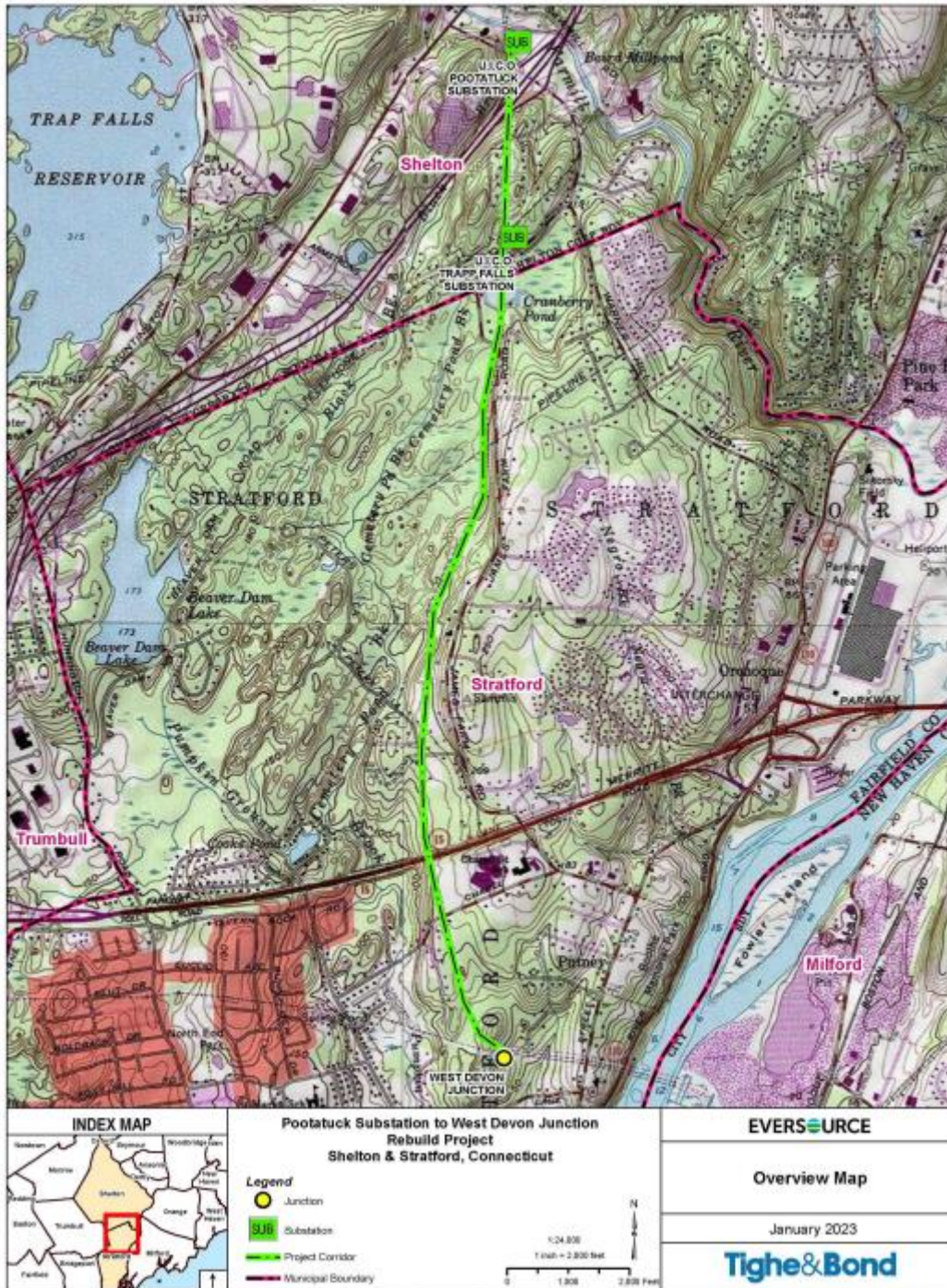
Construction is expected to begin in the fourth quarter of 2023 with anticipated completion by mid-2024. Normal work hours would be Monday through Saturday from 7:00 a.m. to 7:00 p.m. Sunday work hours or evening work (i.e. after 7:00 p.m.) may be necessary due to unforeseen circumstances, delays caused by inclement weather and/or outage constraints.

Conclusion

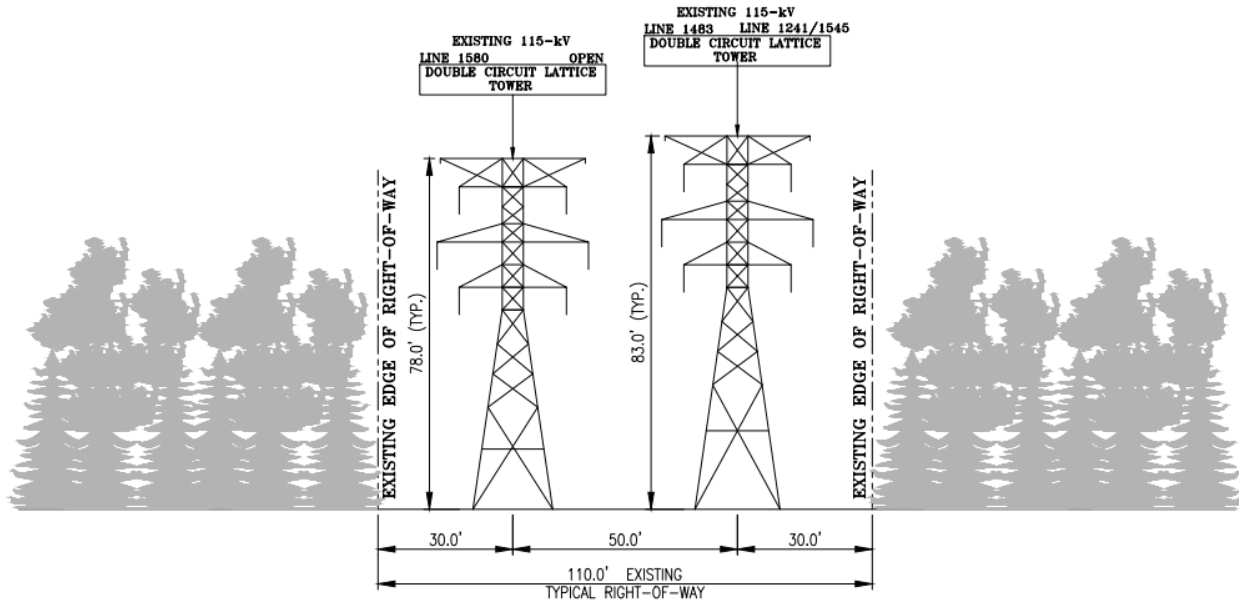
If approved, staff recommends the following conditions:

1. Approval of any project changes be delegated to Council staff;
2. Submit a copy of the DEEP Stormwater Permit prior to commencement of construction;
3. Submit a copy of the Final DEEP NDDB Determination Letter prior to commencement of construction;
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.

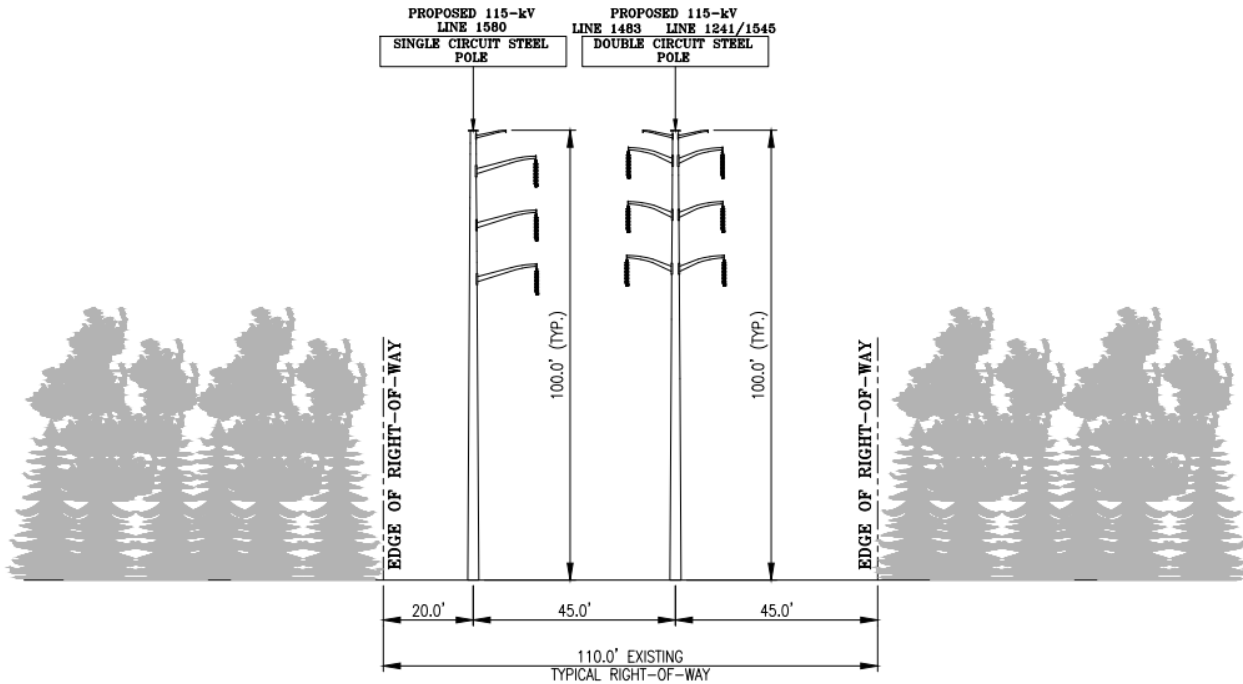
Project Location



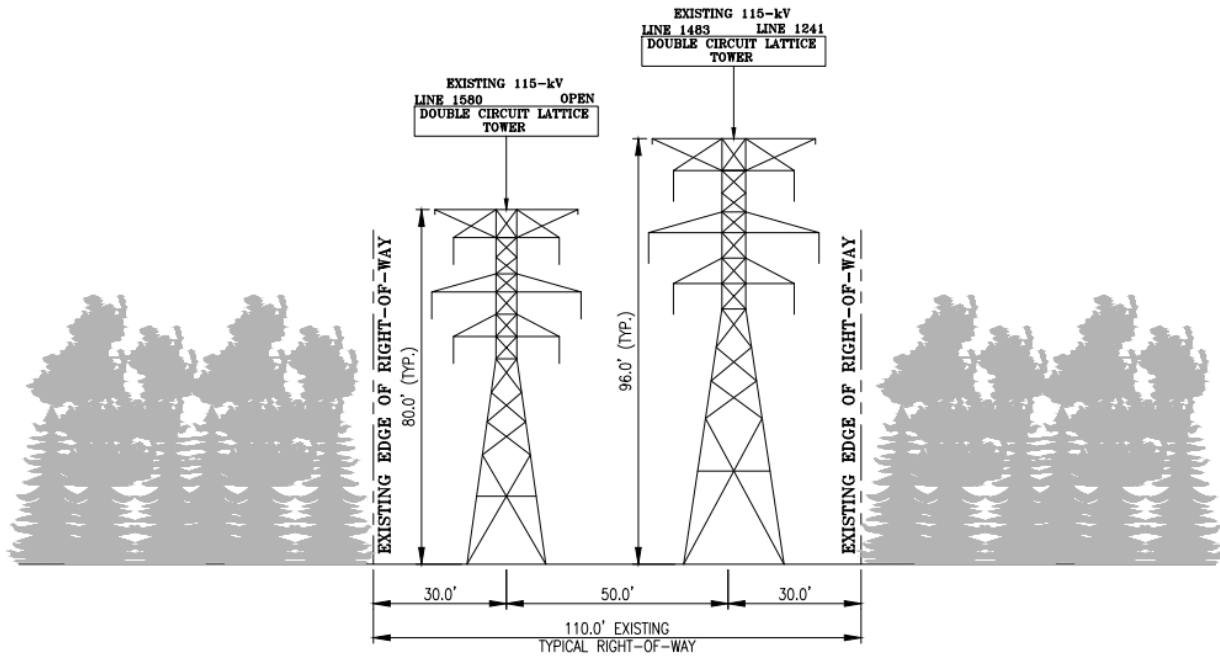
Project ROW Profiles



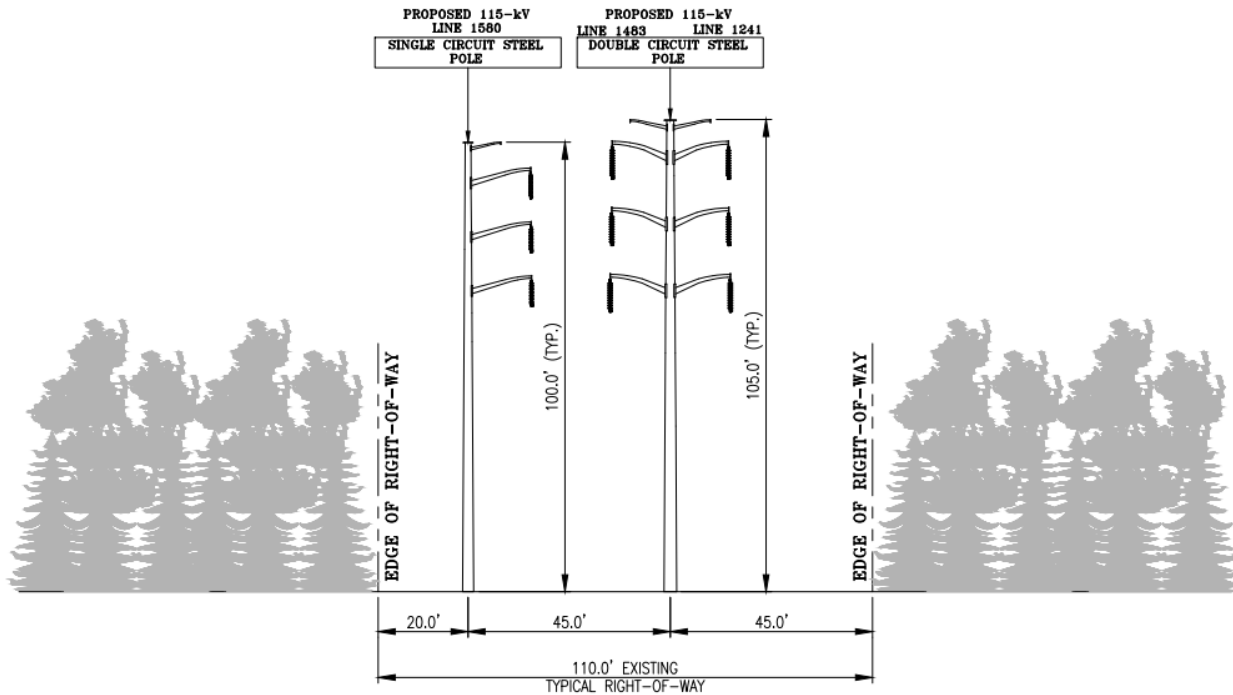
EXISTING R.O.W. CONFIGURATION
DOUBLE CIRCUIT STEEL LATTICE VERTICAL DESIGN
LOOKING FROM W. DEVON JCT. TO POOTATUCK S/S



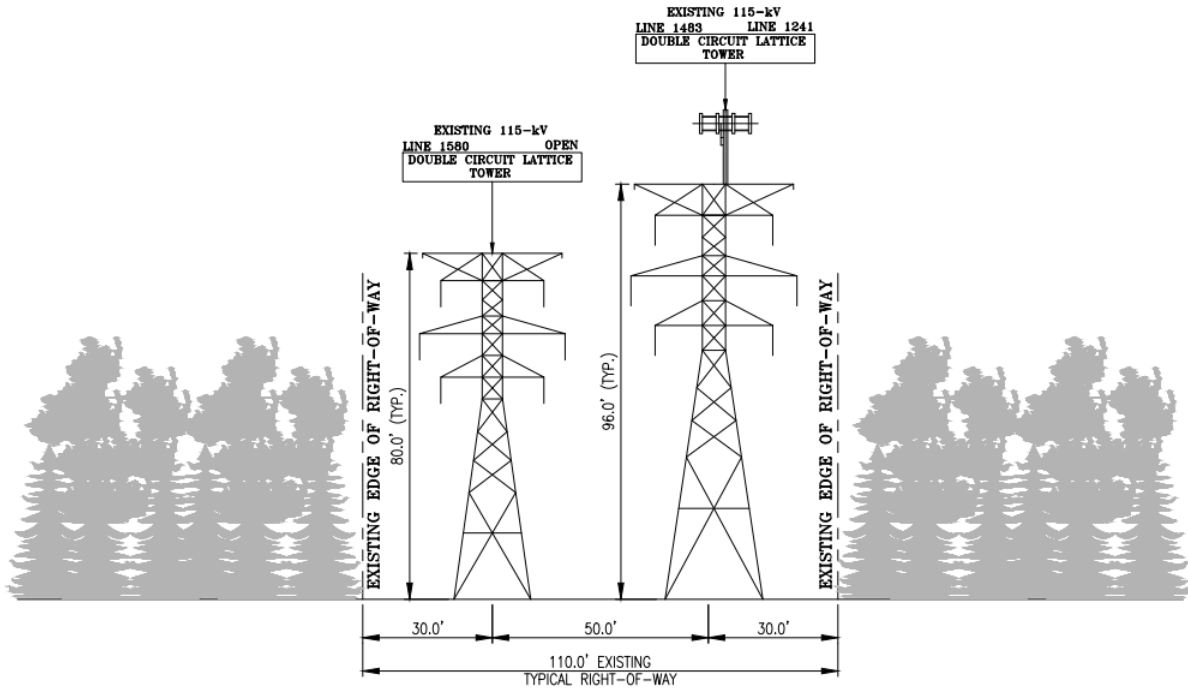
PROPOSED R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL MONOPOLE/DOUBLE
CIRCUIT STEEL VERTICAL DESIGN
LOOKING FROM W. DEVON JCT. TO POOTATUCK S/S



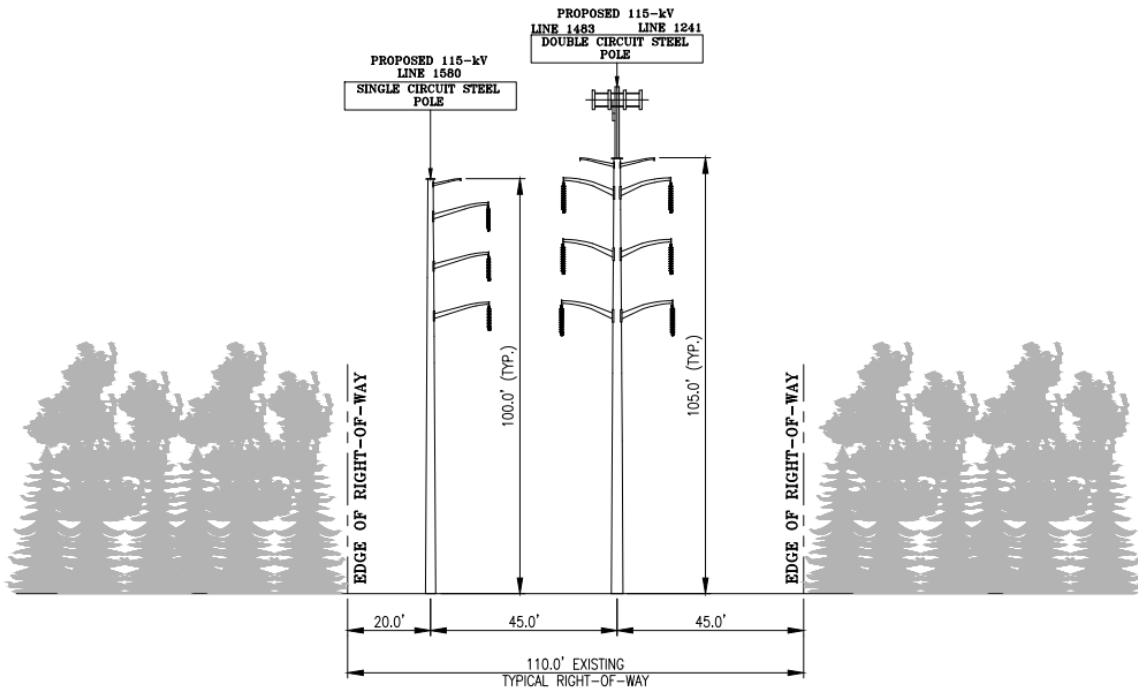
EXISTING R.O.W. CONFIGURATION
DOUBLE CIRCUIT STEEL LATTICE VERTICAL DESIGN
LOOKING FROM TRAP FALLS S/S TO POOTATUCK S/S



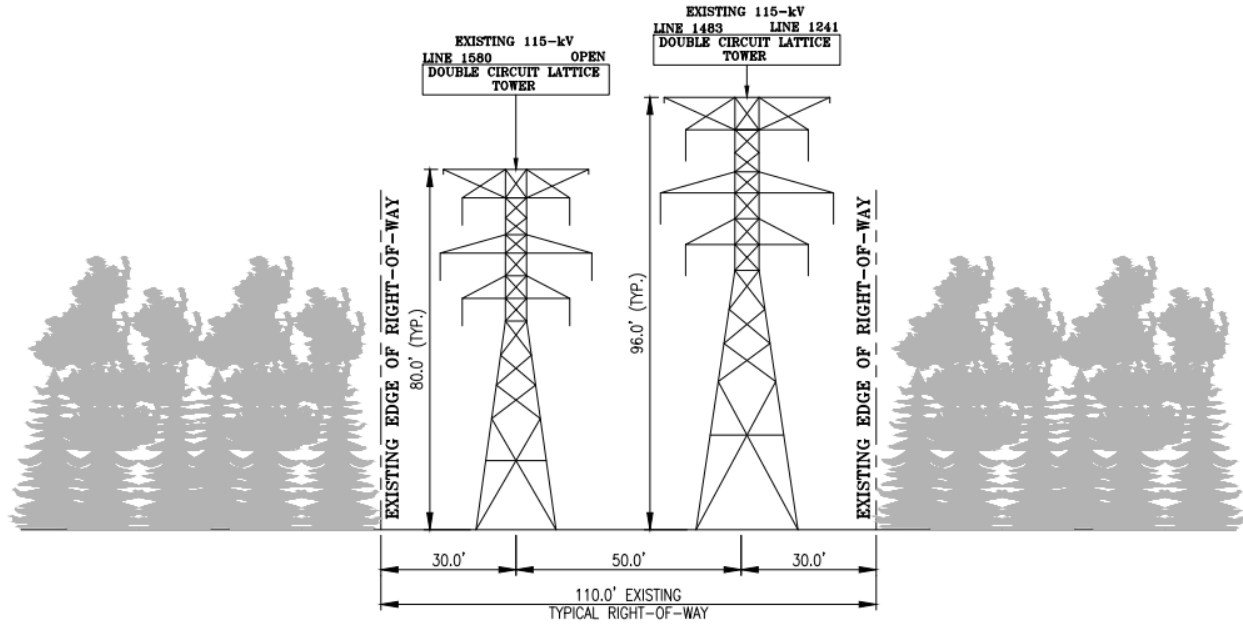
PROPOSED R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL MONOPOLE/DOUBLE
CIRCUIT STEEL VERTICAL DESIGN
LOOKING FROM TRAP FALLS S/S TO POOTATUCK S/S



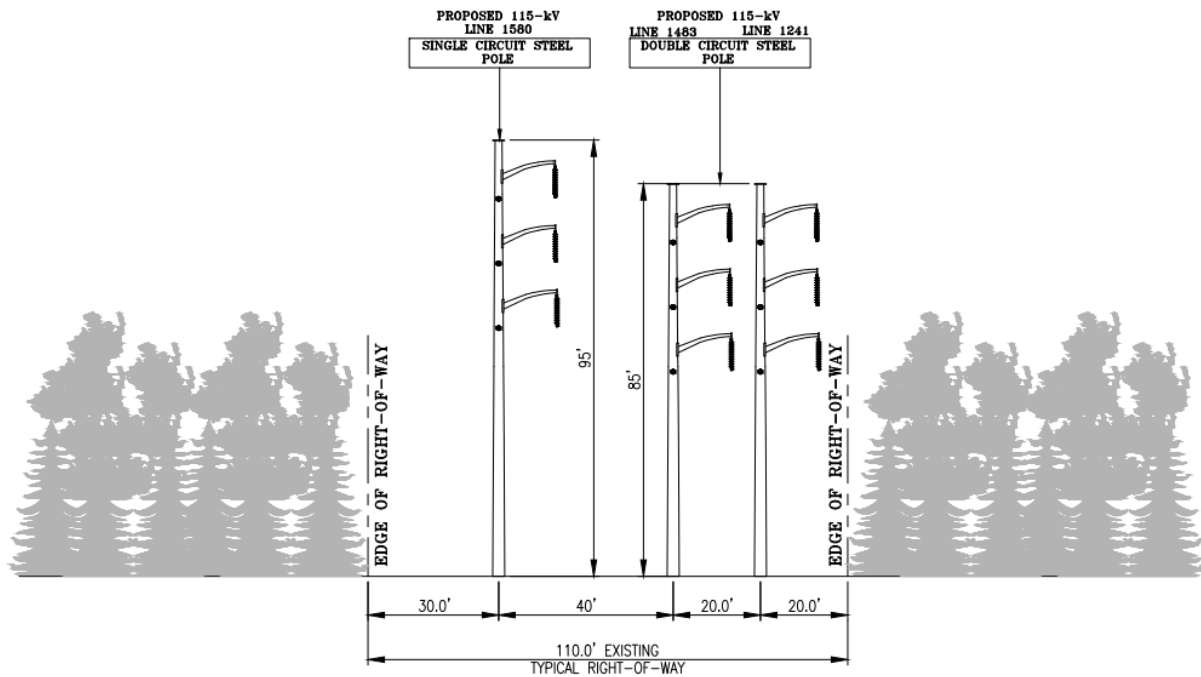
EXISTING R.O.W. CONFIGURATION
DOUBLE CIRCUIT STEEL LATTICE VERTICAL DESIGN
LOOKING FROM TRAP FALLS S/S TO POOTATUCK S/S



PROPOSED R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL MONOPOLE/DOUBLE
CIRCUIT STEEL VERTICAL DESIGN
LOOKING FROM TRAP FALLS S/S TO POOTATUCK S/S



**EXISTING R.O.W. CONFIGURATION
DOUBLE CIRCUIT STEEL LATTICE VERTICAL DESIGN
LOOKING FROM TRAP FALLS S/S TO POOTATUCK S/S**



**PROPOSED R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL MONOPOLE/DOUBLE
CIRCUIT STEEL VERTICAL DESIGN
LOOKING FROM TRAP FALLS S/S TO POOTATUCK S/S**

Exhibit B

Property Card

CHAPEL ST

Location CHAPEL ST

Mblu 50/17 1/ 32/ 1

Acct# 0332100

Owner CONNECTICUT LIGHT &
POWER CO

PBN

Assessment \$480,130

Appraisal \$685,900

PID 3414

Building Count 1

Sewer Use E00

EPA Action

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2019	\$0	\$685,900	\$685,900

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$0	\$480,130	\$480,130

Owner of Record

Owner CONNECTICUT LIGHT & POWER CO

Sale Price \$0

Co-Owner

Certificate

Address PO BOX 270

Book 0106

HARTFORD, CT 06141

Page 0281

Sale Date 10/24/1922

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Sale Date	Book	Page
CONNECTICUT LIGHT & POWER CO	\$0		10/24/1922	0106	0281

Building Information

Building 1 : Section 1

Year Built:

Living Area: 0

Building Percent Good:

Building Attributes	
Field	Description
Style:	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Total Kitchens	
Whirlpool Tub	
Fireplaces	
Rec Room Area	
Rec Room Quality	
Num Park	
Fireplaces 2	
Fndtn Cndtn	
Basement	

Building Photo

 Building Photo
 (https://images.vgsi.com/photos/StratfordCTPhotos///0087/IMG_0025_876!)

Building Layout

 Building Layout (ParcelSketch.ashx?pid=3414&bid=3414)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use		Land Line Valuation	
Use Code	423R	Size (Acres)	15.27
Description	Elec Trsmn	Frontage	0
Zone		Depth	0
Neighborhood	6	Assessed Value	\$480,130
Alt Land Appr Category	No	Appraised Value	\$685,900

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2022	\$0	\$685,900	\$685,900
2021	\$0	\$685,900	\$685,900
2020	\$0	\$685,900	\$685,900

Assessment			
Valuation Year	Improvements	Land	Total
2022	\$0	\$480,130	\$480,130
2021	\$0	\$480,130	\$480,130
2020	\$0	\$480,130	\$480,130



1:3,407

Legend

- Streetname
- Roadways
 - Local
 - Collector
 - Minor Collector
 - Minor Arterial
 - Major Collector
 - PA Other
 - PA Other Expwy
 - PA Interstate

567.8 283.90 567.8 Feet



WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION



Exhibit C

Construction Drawings

T-Mobile

SITE NAME: STRATFORD/MP/JAMES FARM

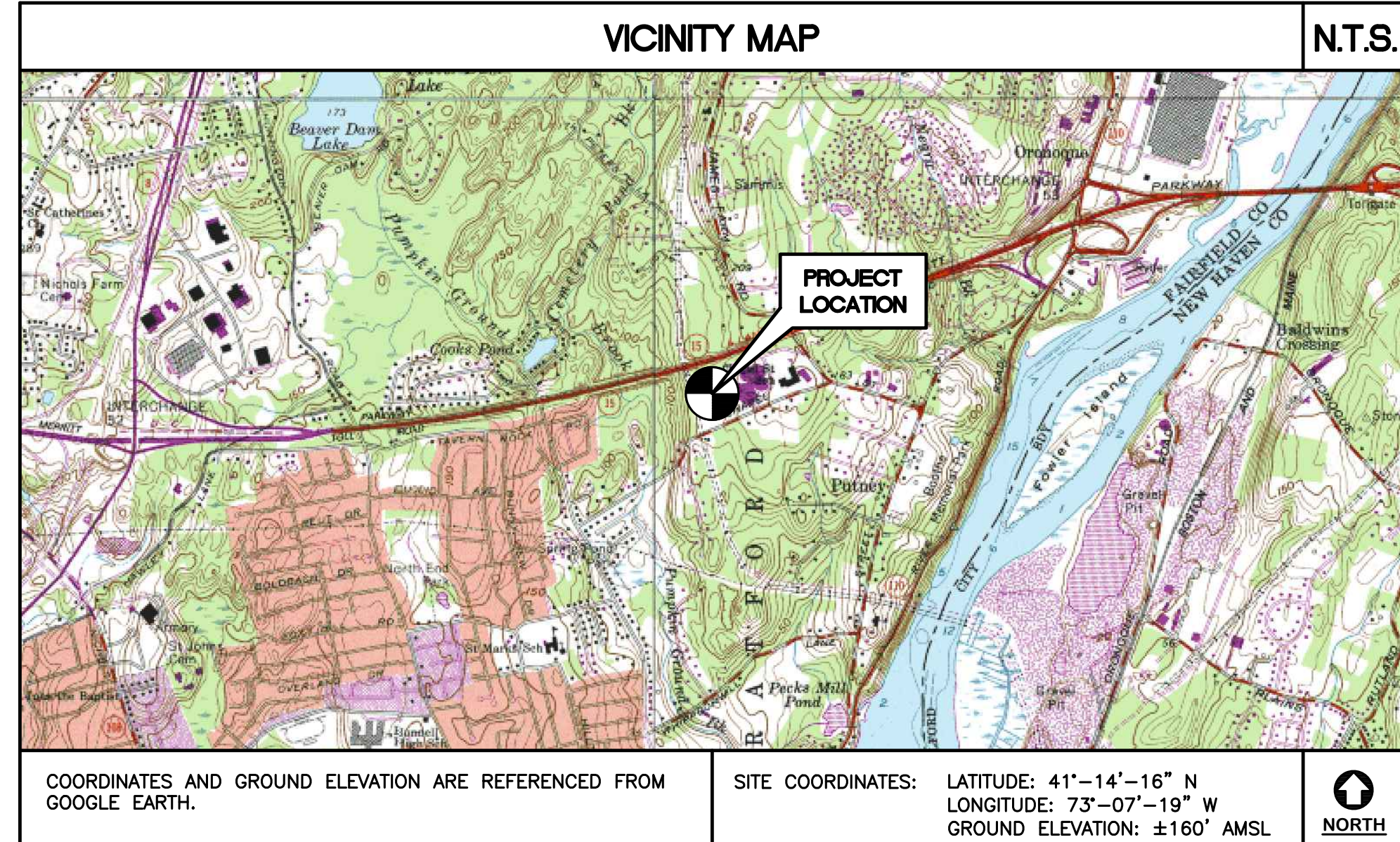
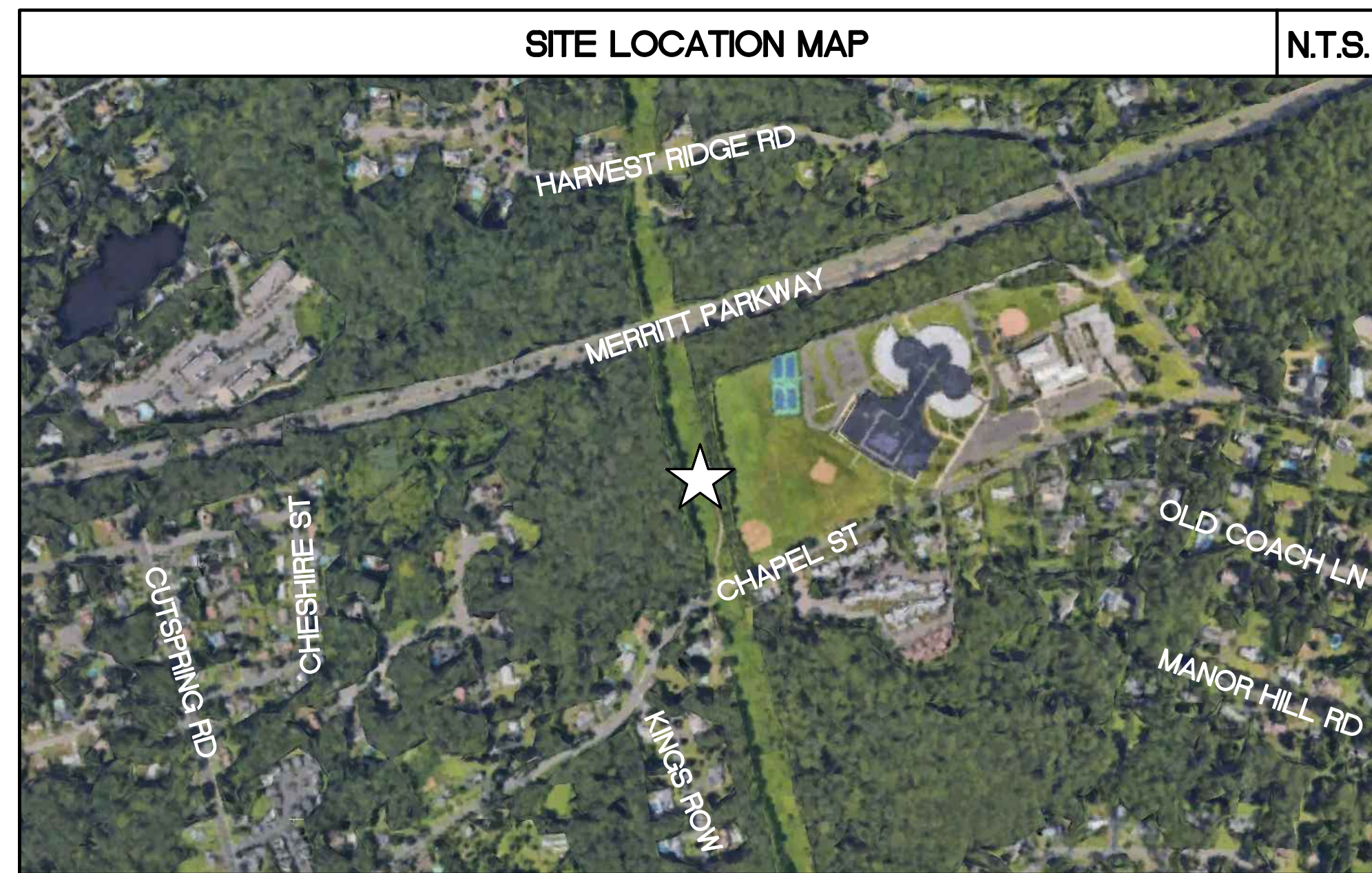
SITE ID: CT11426A

670 CHAPEL ST, CL&P POLE 19520
STRATFORD, CT 06614

T-MOBILE RAN TEMPLATE (PROVIDED BY RFDS)
67E998E 6160
T-MOBILE A+L TEMPLATE (PROVIDED BY RFDS)
4SEC-67E998E_1QP+1OP

PROJECT SUMMARY	
THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:	
<ol style="list-style-type: none"> REMOVAL OF EXISTING UTILITY TOWER AND INSTALLATION OF NEW TOWER TO BE DONE (BY OTHERS) REMOVE EXISTING COAX CABLES REMOVE EXISTING RBS 6102 CABINET REMOVE EXISTING RFS: APX16DW-16DW-S-E-A20 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3) REMOVE EXISTING TMA_s AND DIPLEXERS REMOVE EXISTING ANTENNA MOUNTS REMOVE EXISTING 100A ELECTRICAL PANEL INSTALL RFS: APXVAALL24_43-U-NA20 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3) INSTALL COMMSCOPE: W-65A-R1 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3) INSTALL ERICSSON: RADIO 4460 B25+B66, TYP. (1) PER SECTOR; TOTAL OF (3) INSTALL ERICSSON: RADIO 4480 B71+B85, TYP. (1) PER SECTOR; TOTAL OF (3) INSTALL T-MOBILE 6160 POWER CABINET INSTALL T-MOBILE B160 BATTERY CABINET INSTALL SITE PRO: PLATFORM ANTENNA MOUNT (P/N: RMQLP-496-HK) INSTALL NEW UNISTRUTS TO SERVE NEW RADIO INSTALLATION INSTALL 200A PPC CABINET INSTALL 200A METER 	

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.	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.
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.	15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
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.	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.
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.	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.
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.	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.
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.	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.
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.	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.
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.	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.
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.	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.
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.	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.
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.	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.
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.	25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
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.	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.



PROJECT INFORMATION	
SITE NAME:	STRATFORD/MP/JAMES FARM
SITE ID:	CT11426A
SITE ADDRESS:	670 CHAPEL ST, CL&P POLE 19520 STRATFORD, CT 06614
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
SITE COORDINATES:	CARLO F. CENTORE, PE (203) 488-0580 EXT. 122 LATITUDE: 41°-14'-16" N LONGITUDE: 73°-07'-19" W GROUND ELEVATION: ±160' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX		
SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	2
N-1	NOTES AND SPECIFICATIONS, ANT. SCHEDULE	2
C-1	COMPOUND PLAN, EQUIPMENT PLANS AND ELEVATION	2
C-2	ANTENNA PLANS AND ELEVATIONS	2
C-3	TYPICAL EQUIPMENT DETAILS	2
E-1	ELECTRICAL RISER DIAGRAM AND CONDUIT ROUTING	2
E-2	ELECTRICAL SCHEMATIC DIAGRAM	2
E-3	ELECTRICAL GROUNDING PLANS	2
E-4	TYPICAL ELECTRICAL DETAILS	2
E-5	ELECTRICAL SPECIFICATIONS	2

CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR				
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR				
CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION	TJR				
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR				
CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW	TJR				
CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW	TJR				

PROFESSIONAL ENGINEER SEAL

T-Mobile

NSS
NORTHEAST
SITE SOLUTIONS
Matt Bandle, Project Manager
508-642-8801

CENTEK engineering
Centore & Centore
203-488-0580
203-488-8327 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC
SITE NAME: STRATFORD/MP/JAMES FARM
SITE ID: CT11426A
670 CHAPEL ST, CL+P POLE 19520
STRATFORD, CT 06614

DATE: 07/28/22
SCALE: AS NOTED
JOB NO. 22073.05

TITLE SHEET

T-1
SHEET NO. 1 OF 10

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 (VuH) (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10).

SITE NOTES

- THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
- 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.
- THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
- 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.
- 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

- 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.
- SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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
- 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.
- 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.
- 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.
- THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- 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.
- 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.

ANTENNA/APPURTENANCE SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA – AT TOWER	SIZE (INCHES) (L x W x D)	ANTENNA Q HEIGHT	AZIMUTH	(E/P) RRU (QTY) – AT CABINET	(QTY) HYBRID/COAX
A1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	110'	70°	(P) RADIO 4480 B71+B85 (1)	(8) 1-5/8" COAX CABLES
A3	PROPOSED	COMMSCOPE (W-65A-R1)	54.7 x 12.08 x 4.6	110'	70°	(P) RADIO 4460 B25+B66 (1)	
B1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	110'	230°	(P) RADIO 4480 B71+B85 (1)	(8) 1-5/8" COAX CABLES
B3	PROPOSED	COMMSCOPE (W-65A-R1)	54.7 x 12.08 x 4.6	110'	230°	(P) RADIO 4460 B25+B66 (1)	
C1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	110'	330°	(P) RADIO 4480 B71+B85 (1)	(8) 1-5/8" COAX CABLES
C3	PROPOSED	COMMSCOPE (W-65A-R1)	54.7 x 12.08 x 4.6	110'	330°	(P) RADIO 4460 B25+B66 (1)	

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

CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS	ISSUED FOR CONSTRUCTION	REVIEWED PER CLIENT COMMENTS	REVIEWED PER CLIENT COMMENTS	ISSUED FOR CONSTRUCTION	REVIEWED PER CLIENT COMMENTS	REVIEWED PER CLIENT COMMENTS	ISSUED FOR CONSTRUCTION	REVIEWED PER CLIENT COMMENTS	REVIEWED PER CLIENT COMMENTS
TJR	TJR	TJR	TJR	TJR	TJR	TJR	TJR	TJR	TJR
ASC	ASC	ASC	ASC	ASC	ASC	ASC	ASC	ASC	ASC
10/09/23	09/20/23	09/20/23	08/30/23	08/21/23	08/21/23	08/21/23	08/21/23	08/21/23	08/21/23
2	1	0	C	B	A	B	A	B	A
REV.	REV.	REV.	REV.	REV.	REV.	REV.	REV.	REV.	REV.

DATE: 07/28/22
SCALE: AS NOTED
JOB NO. 22073.05

NOTES AND SPECIFICATIONS, ANT. SCHEDULE

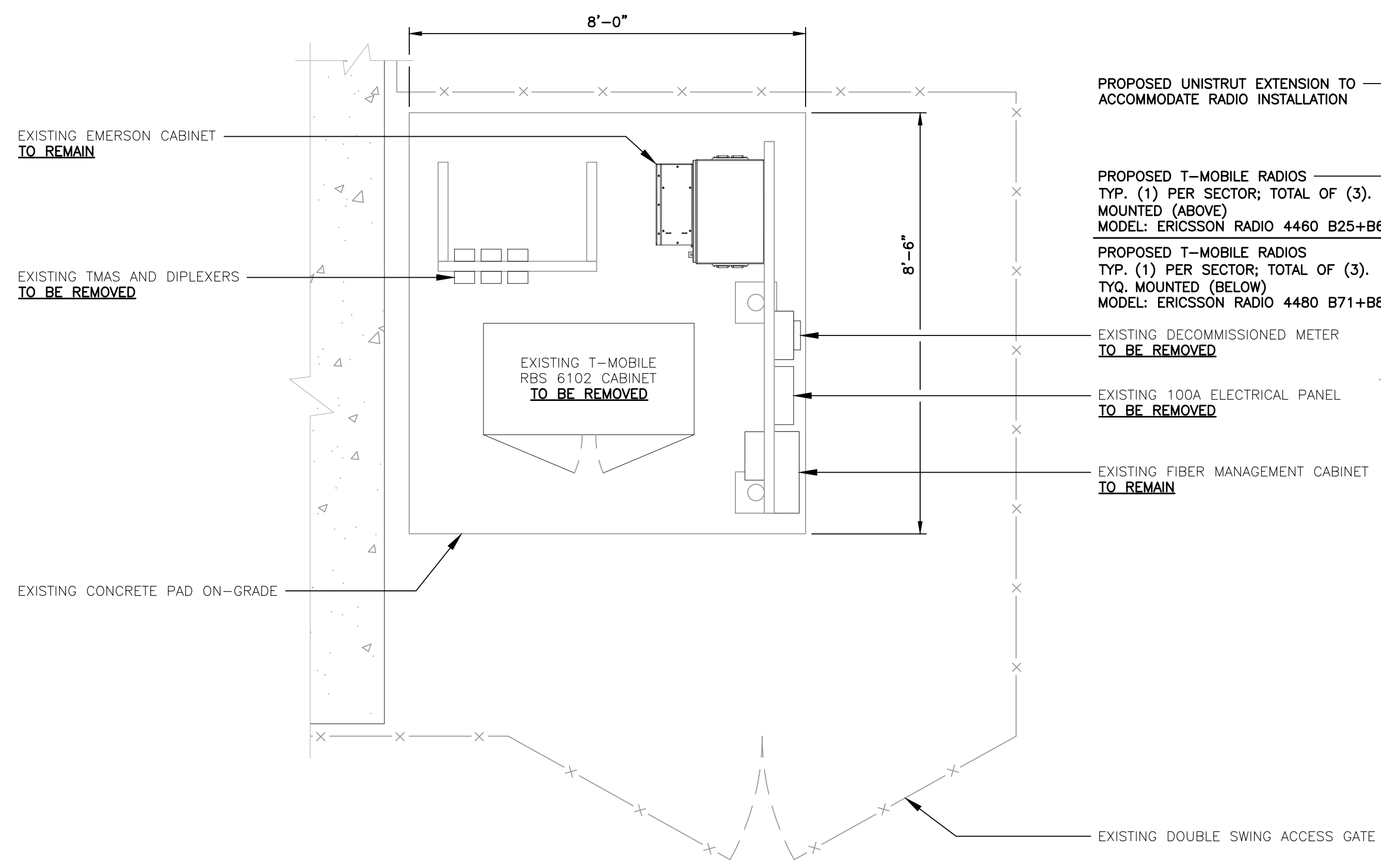
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SHEET NO. 2 OF 10

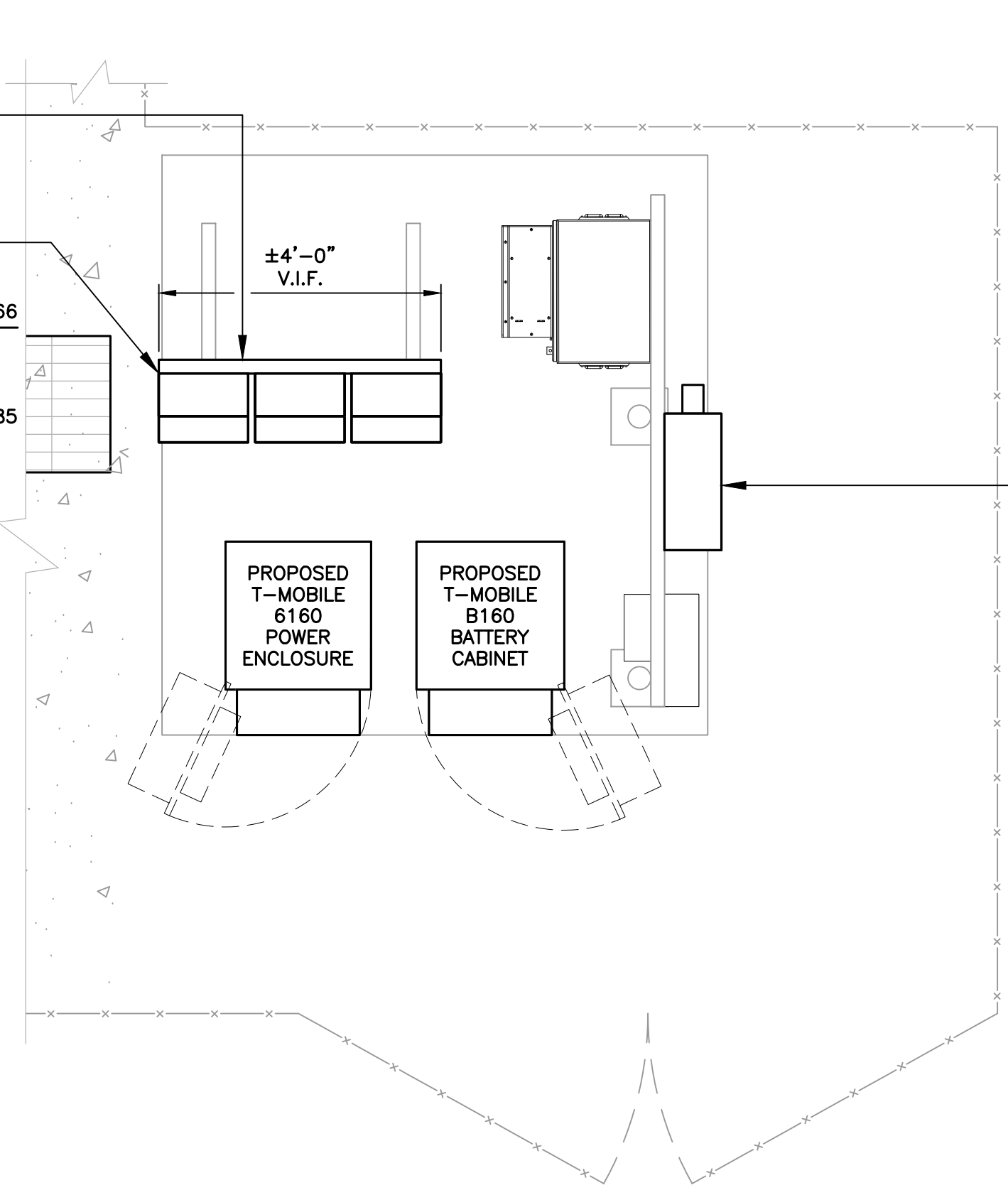
PROFESSIONAL ENGINEER SEAL
STATE OF CONNECTICUT
JAMES STRATFORD, PE
No. 12475
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SITE ID: C11426A
670 CHAPEL ST, CL-HP POLE 19520
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3 EQUIPMENT PLAN - EXISTING
 C-1 SCALE: 3/8" = 1' TRUE NORTH



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

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

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

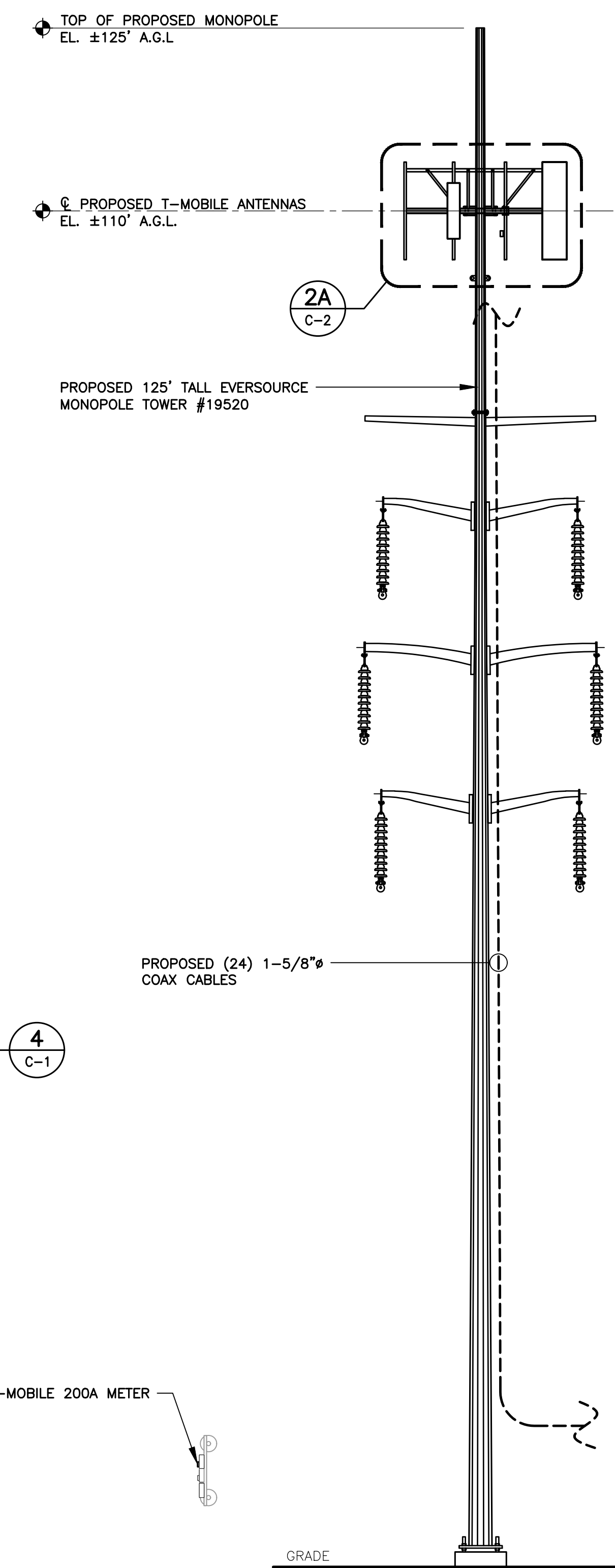
REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 22073.05) DATED 10/03/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER AND TOWER FOUNDATION

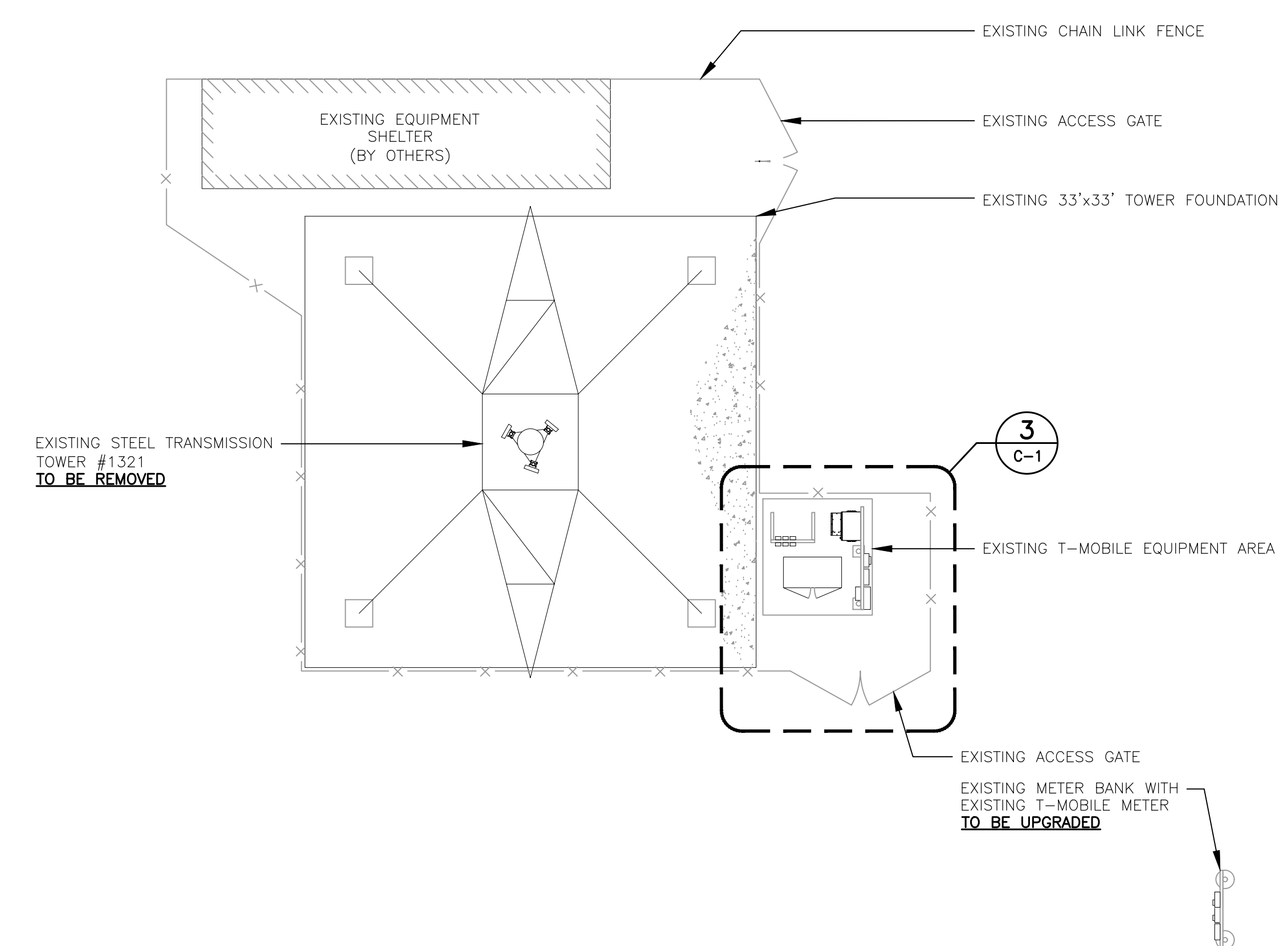
A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 22073.05) DATED 08/10/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

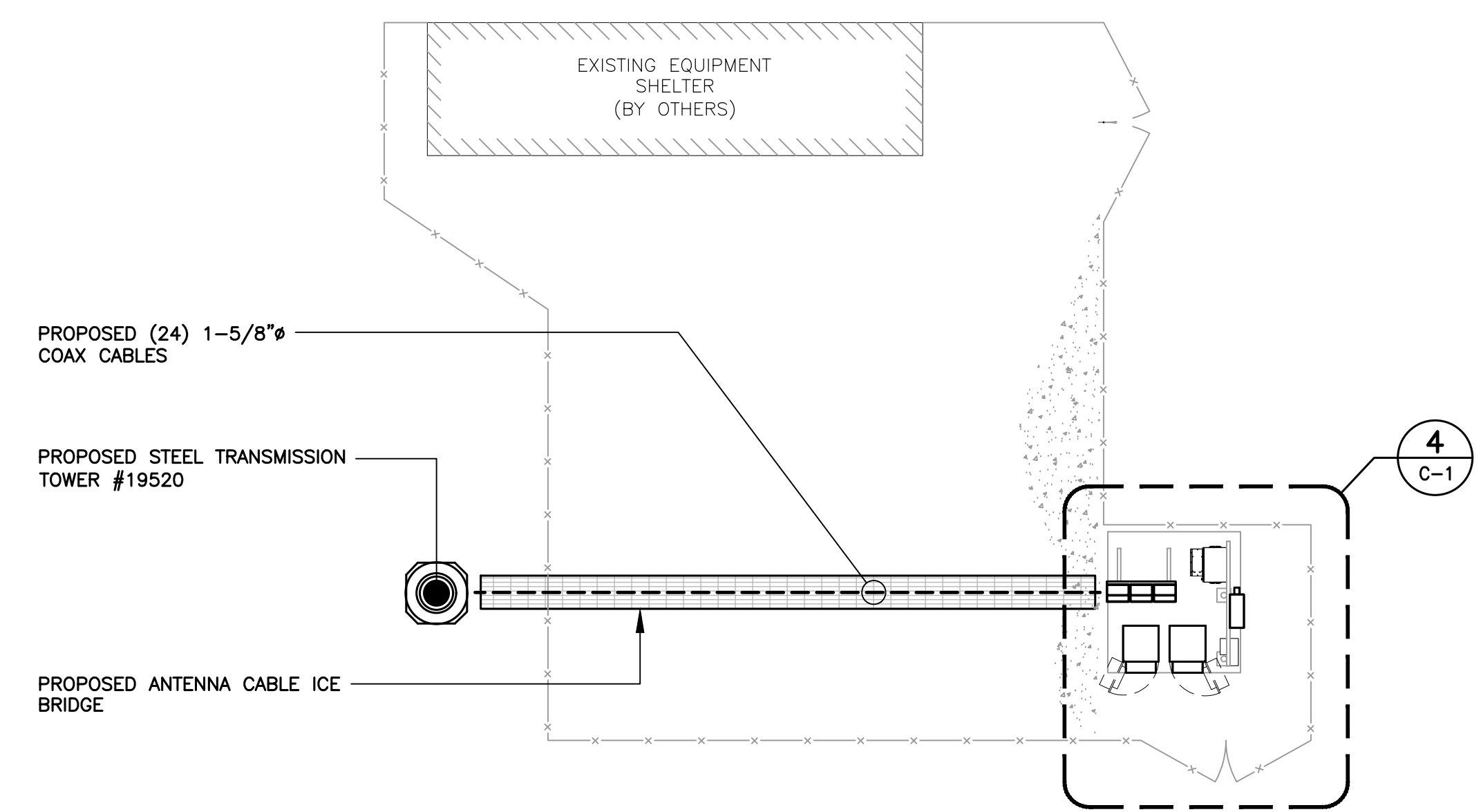
NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.



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



1 COMPOUND PLAN - EXISTING
 C-1 SCALE: 1" = 8' TRUE NORTH



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

CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	ASC	10/09/23	2
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	ASC	09/20/23	1
CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION	TJR	ASC	08/29/23	0
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	ASC	08/21/23	C
CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW	TJR	ASC	08/01/23	B
CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW	TJR	ASC	07/28/22	A
DESCRIPTION	JLD	ASC	07/28/22	A
CHECKED BY	JLD	ASC	07/28/22	A
DRAWN BY	JLD	ASC	07/28/22	A
DATE	07/28/22	ASC	07/28/22	A
REV.		ASC	07/28/22	A

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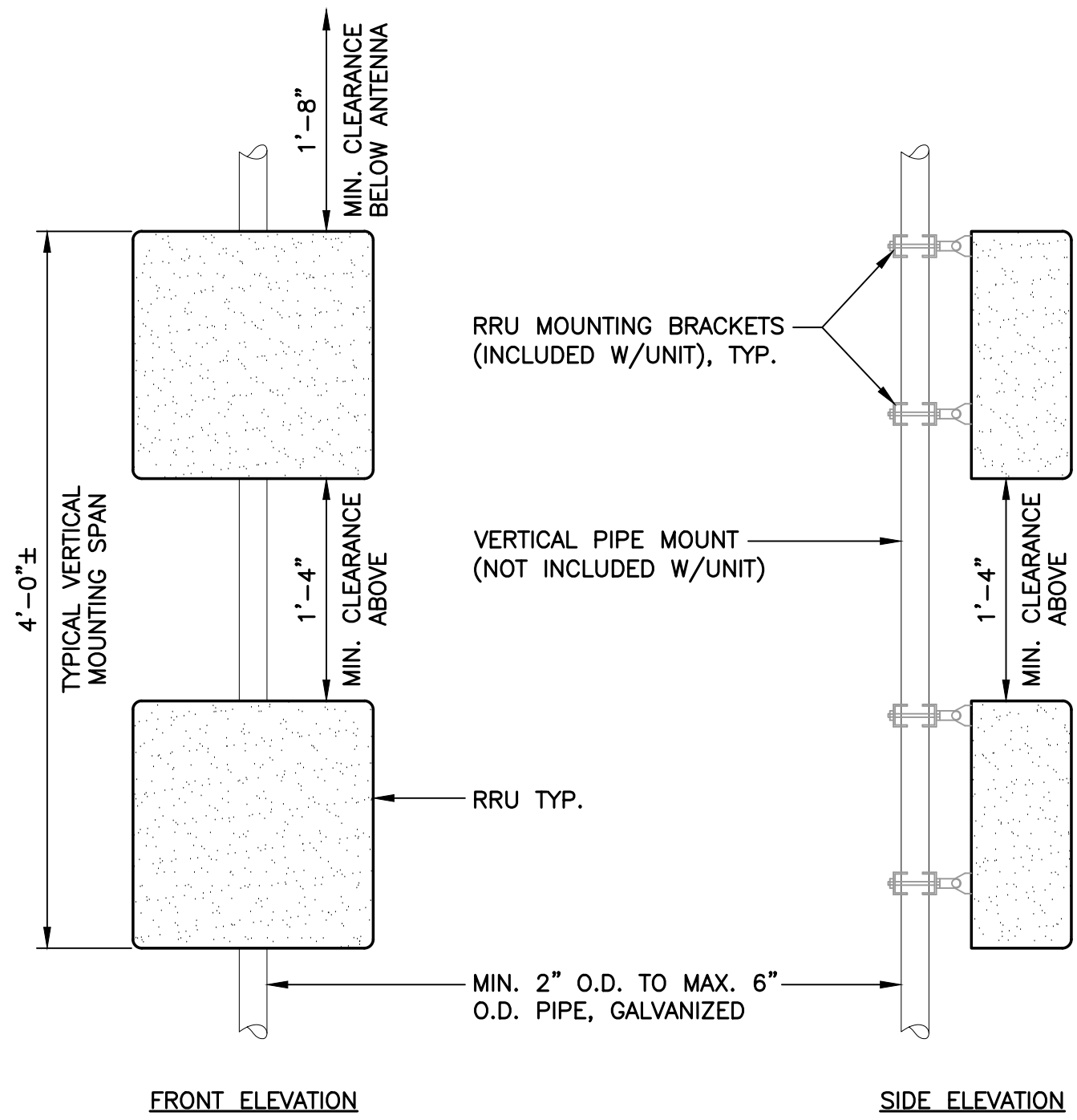
T-MOBILE NORTHEAST LLC
 SITE NAME: STRATFORD/MP/JAMES FARM
 SITE ID: CT11426A
 670 CHAPEL ST, CL+P POLE 19520
 STRATFORD, CT 06614

DATE: 07/28/22
 SCALE: AS NOTED
 JOB NO. 22073.05

COMPOUND PLAN, EQUIPMENT PLANS, AND ELEVATION

C-1

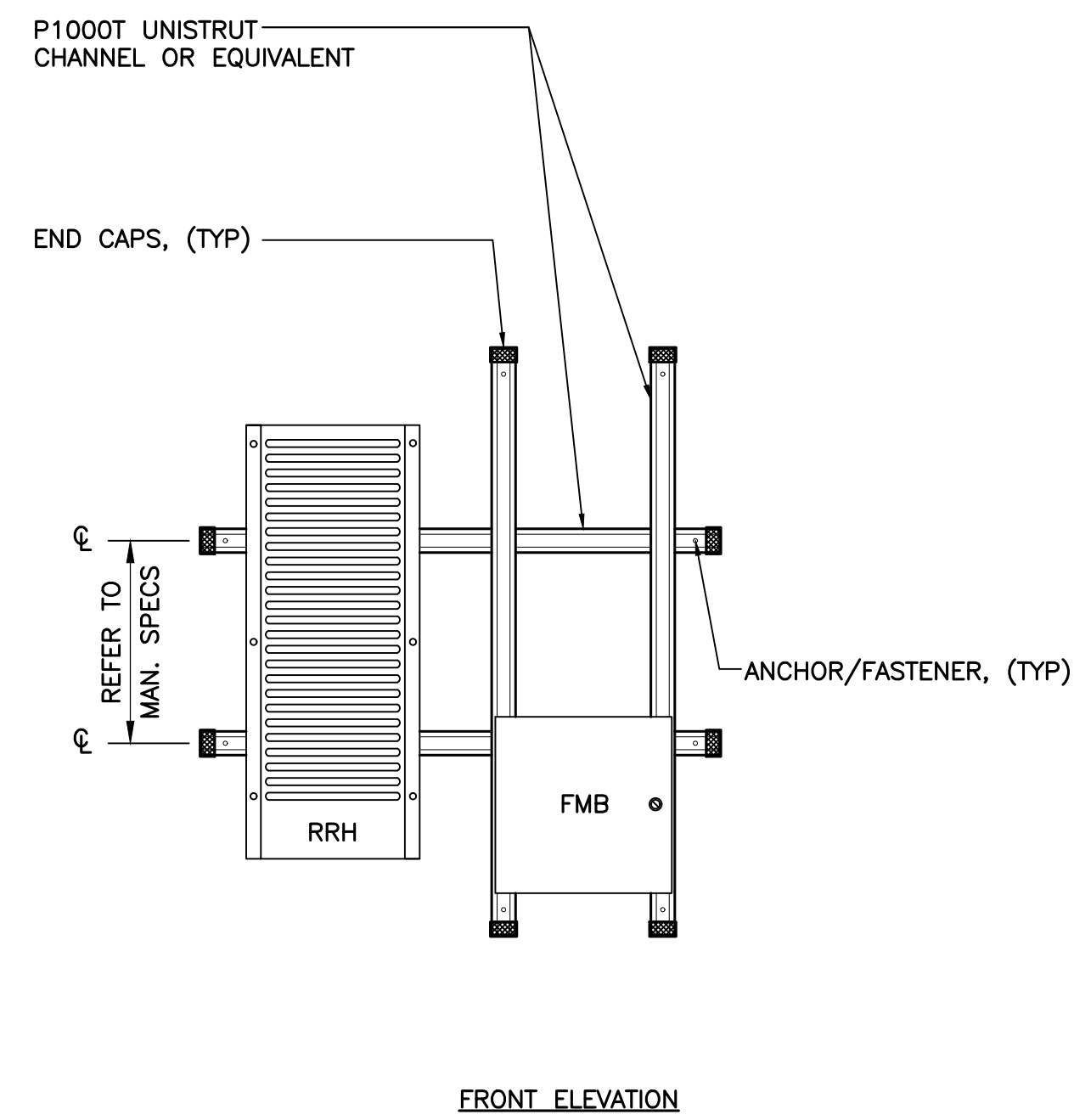
SHEET NO. 3 OF 10



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 TYPICAL RRU MOUNTING DETAILS
C-3 SCALE: NOT TO SCALE



NOTES: (UNISTRUT MOUNTING)

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

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



APXVAALL24 43-U-NA20



VV-65A-R1

ALPHA/BETA/GAMMA/DELTA 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: COMMSCOPE MODEL: VV-65A-R1	54.7"L x 12.08"W x 4.6"D	±23 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.



RADIO 4460 B25+B66

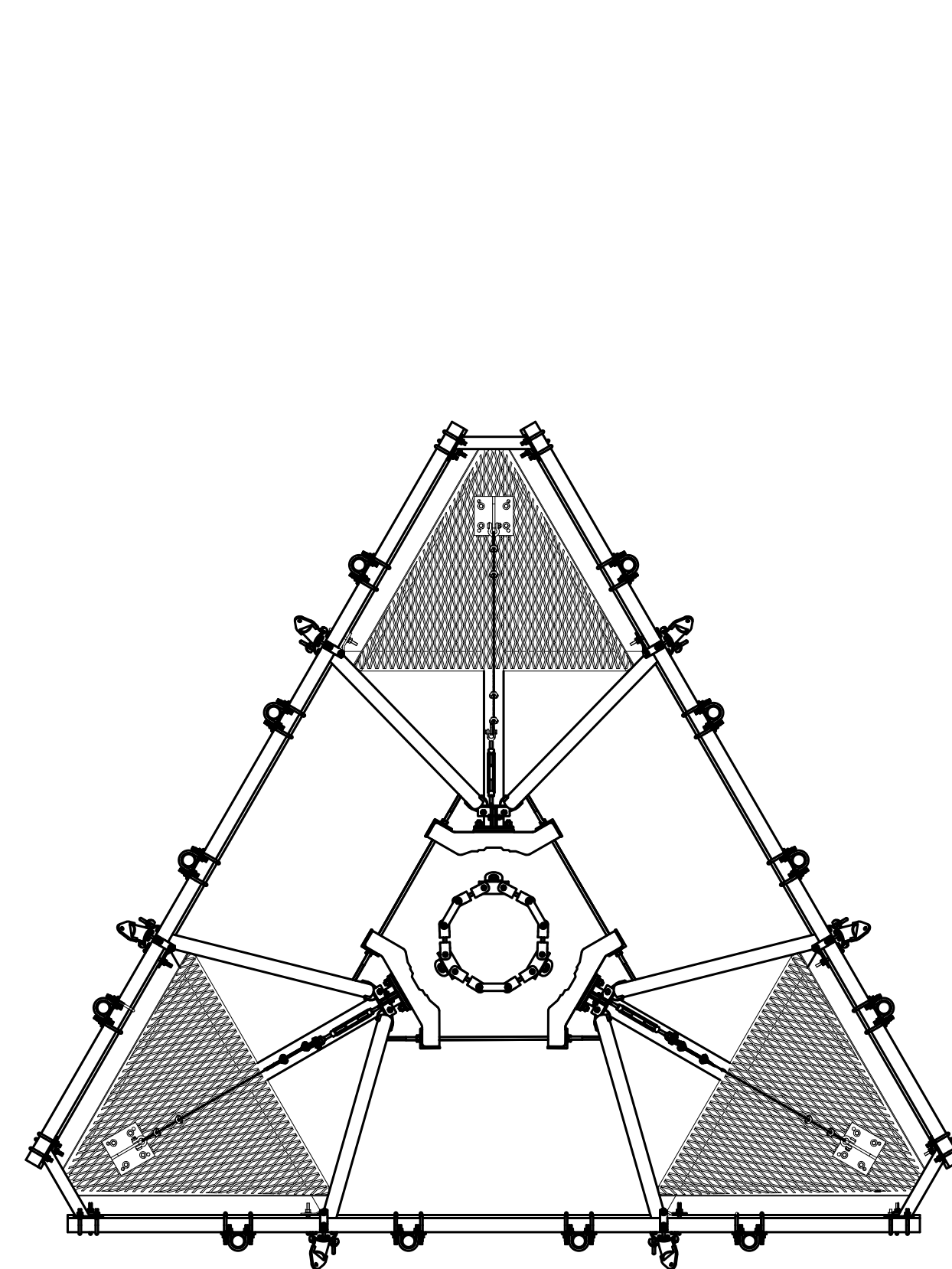


RADIO 4480 B71+B85

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.

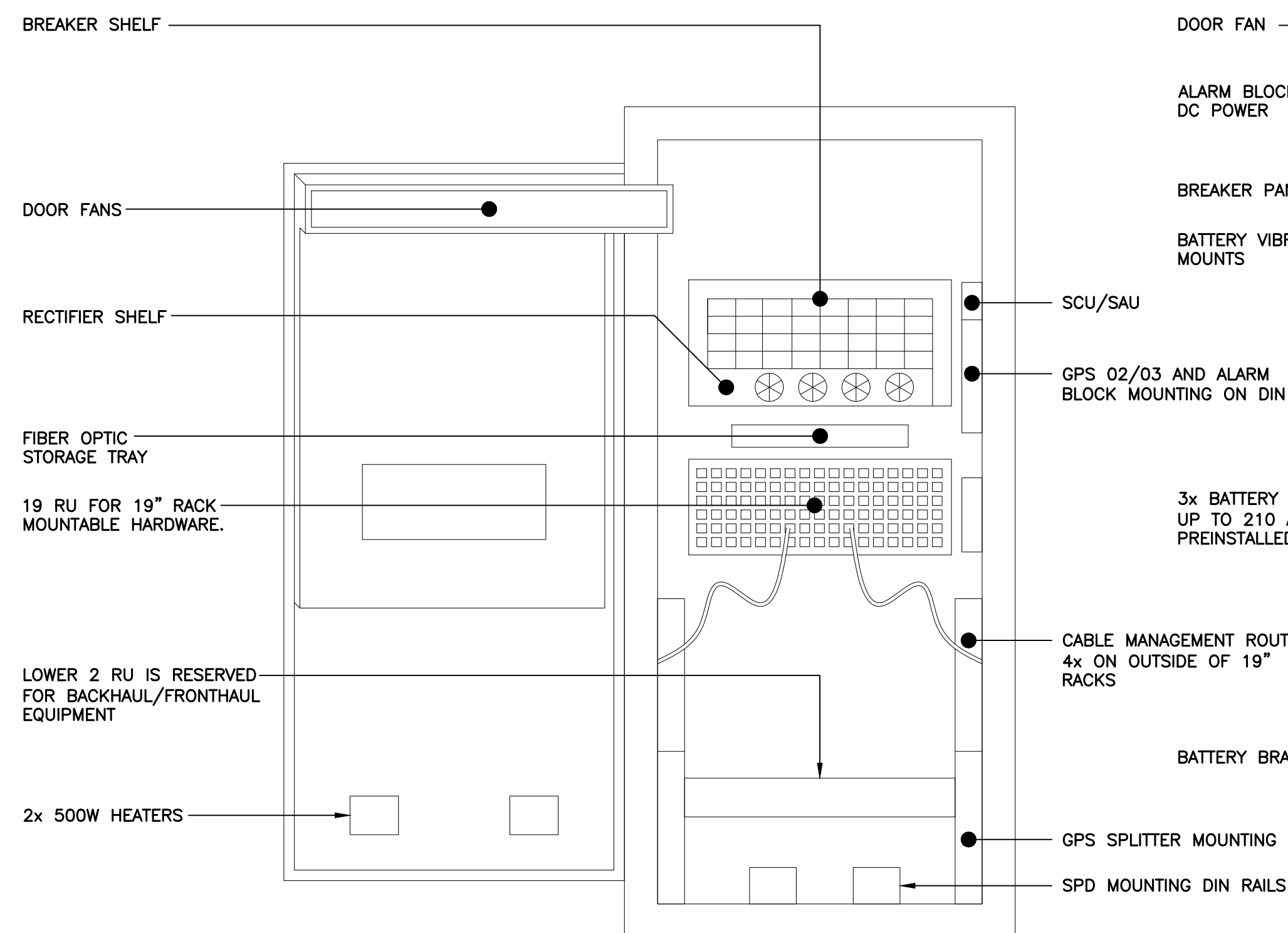
NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

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



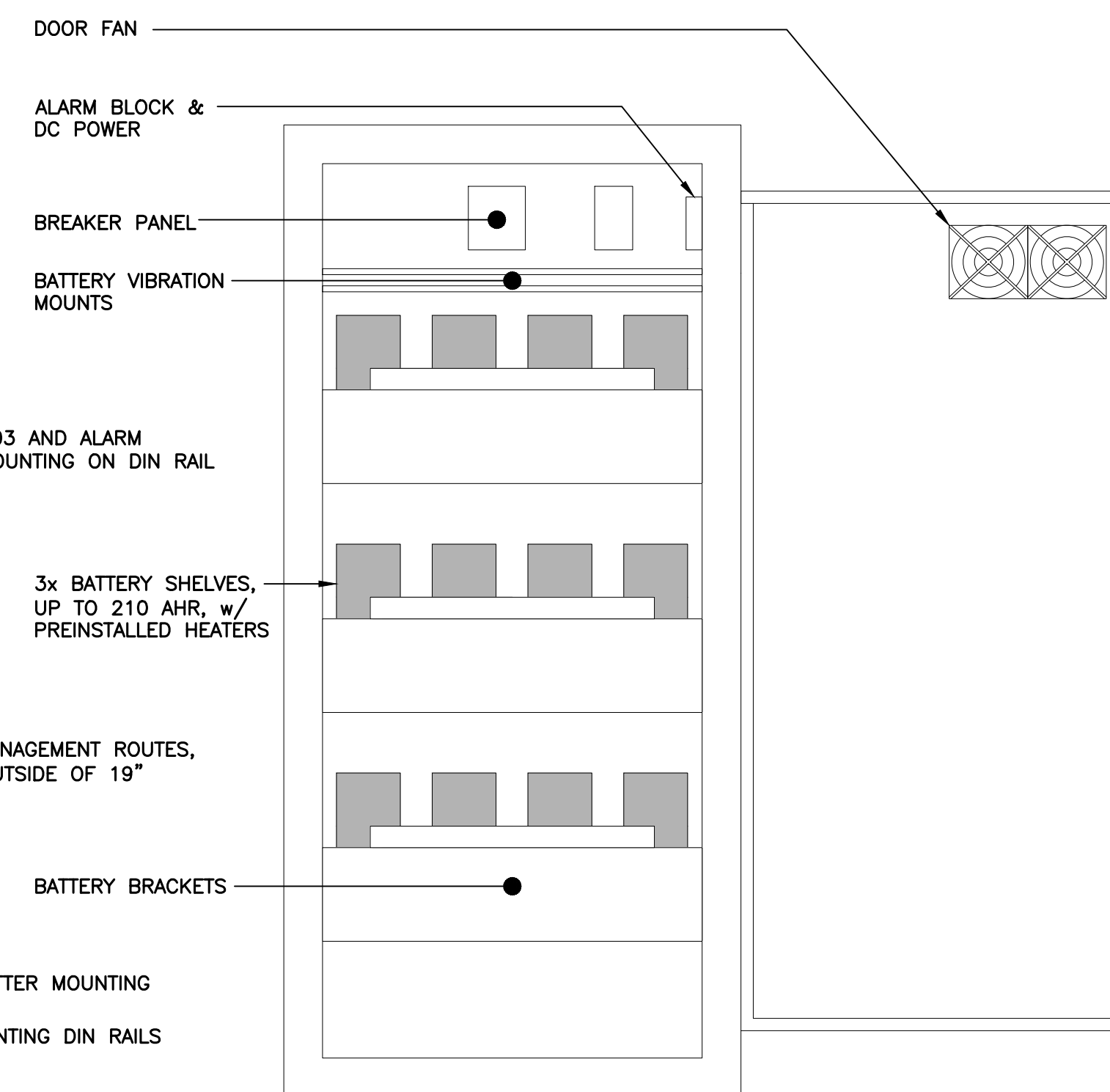
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RMQLP-496-HK

4 PLATFORM ANTENNA MOUNT DETAIL
C-3 SCALE: NOT SCALE



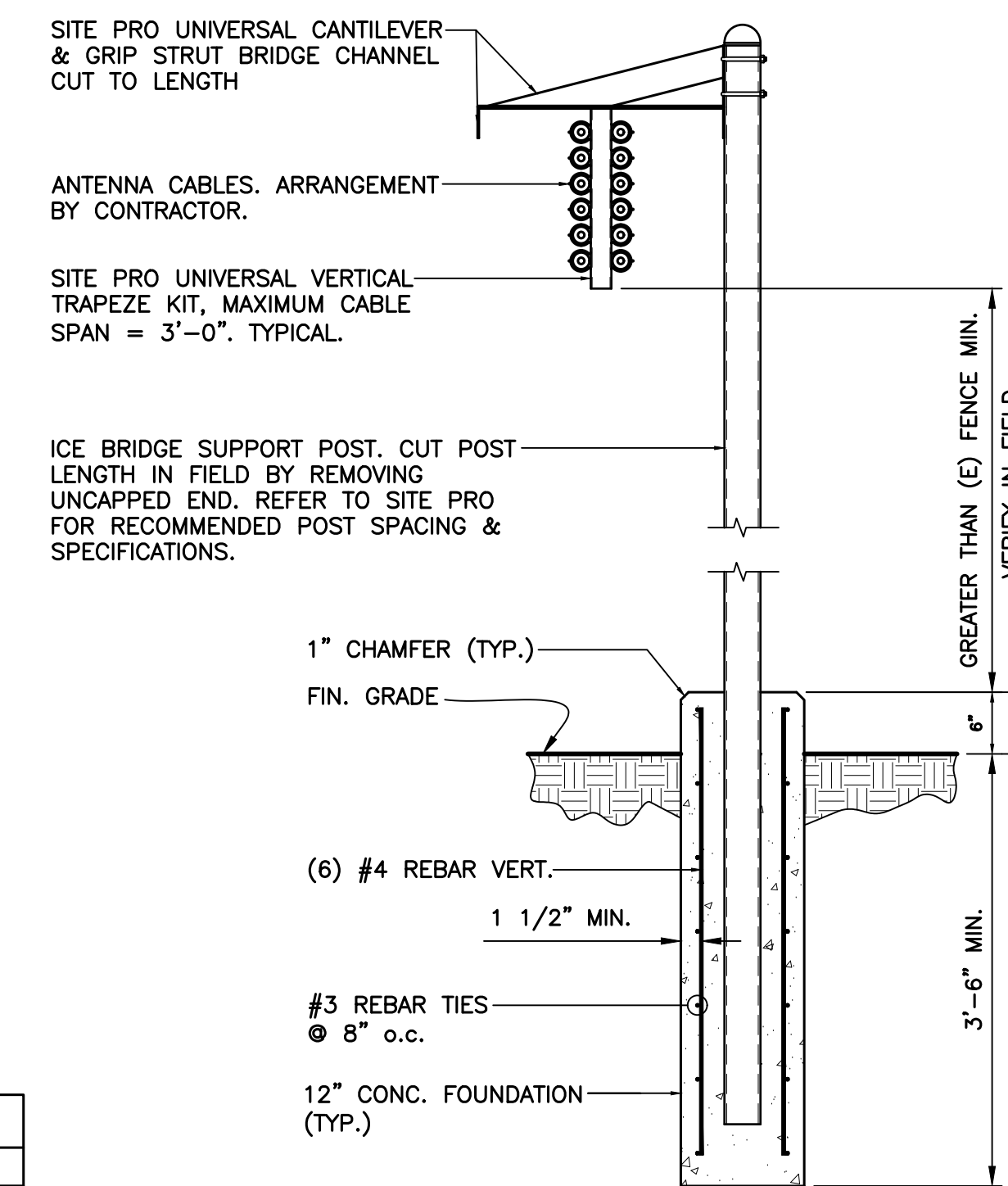
EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: ENCLOSURE 6160 CABINET	62.0"H x 26.0"W x 26.0"D	±1200 LBS

5 ENCLOSURE 6160 CABINET DETAIL
C-3 SCALE: NOT TO SCALE



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

6 BATTERY B160 CABINET DETAIL
C-3 SCALE: NOT TO SCALE



7 TYPICAL ICE-BRIDGE DETAIL
C-4 SCALE: NOT TO SCALE

CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	ASC	10/09/23	DATE	BY	DESCRIPTION
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	ASC	09/20/23	DATE	BY	DESCRIPTION
CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION	TJR	ASC	08/29/23	DATE	BY	DESCRIPTION
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	ASC	08/21/23	DATE	BY	DESCRIPTION
CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW	TJR	ASC	08/07/23	DATE	BY	DESCRIPTION
CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW	TJR	ASC	07/28/23	DATE	BY	DESCRIPTION
REV.	REV.	REV.	REV.	DATE	DRAWN BY	CHECKED BY

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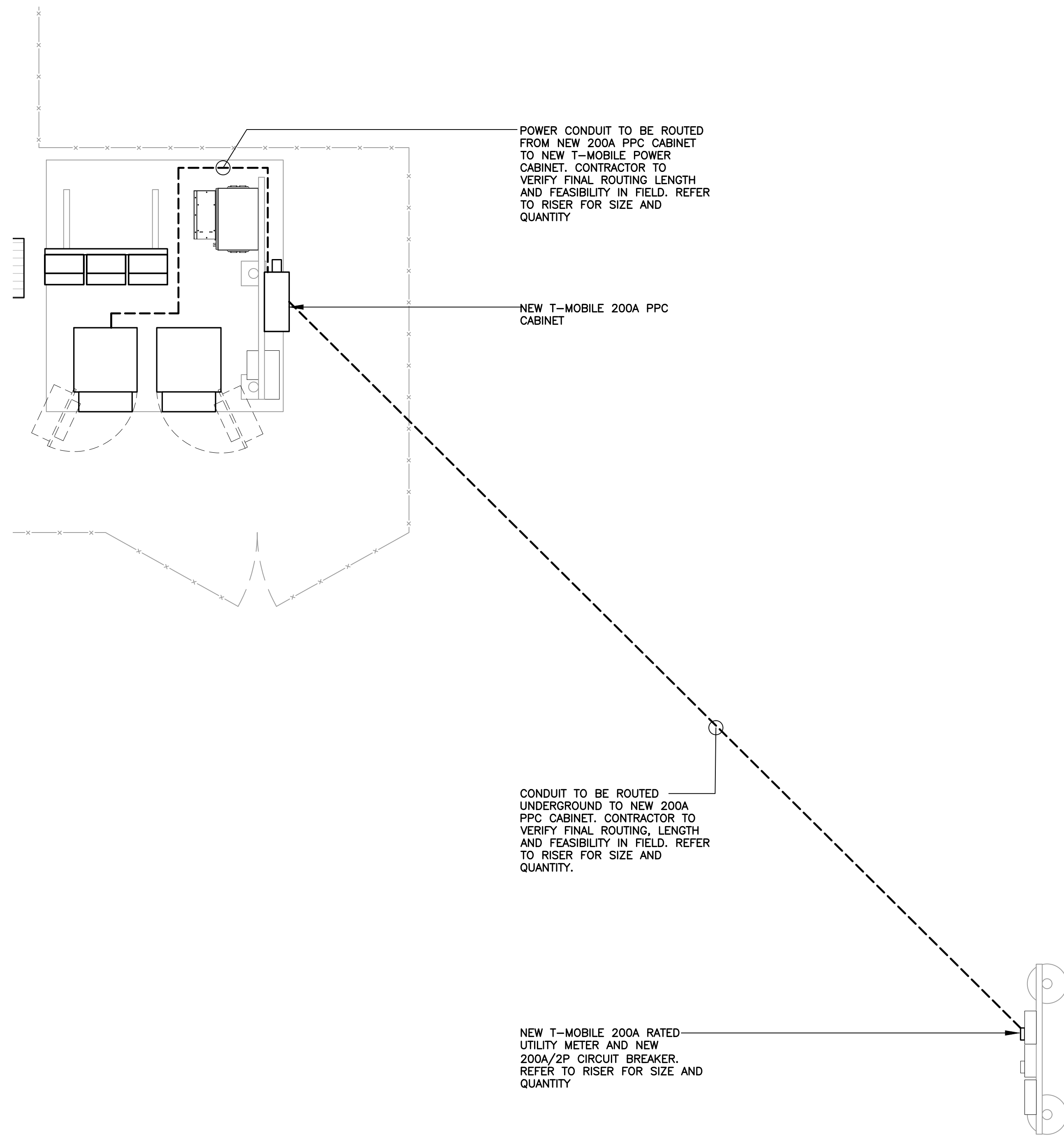
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SCALE: AS NOTED
JOB NO. 22073.05

TYPICAL EQUIPMENT DETAILS

C-3

SHEET NO. 5 OF 10

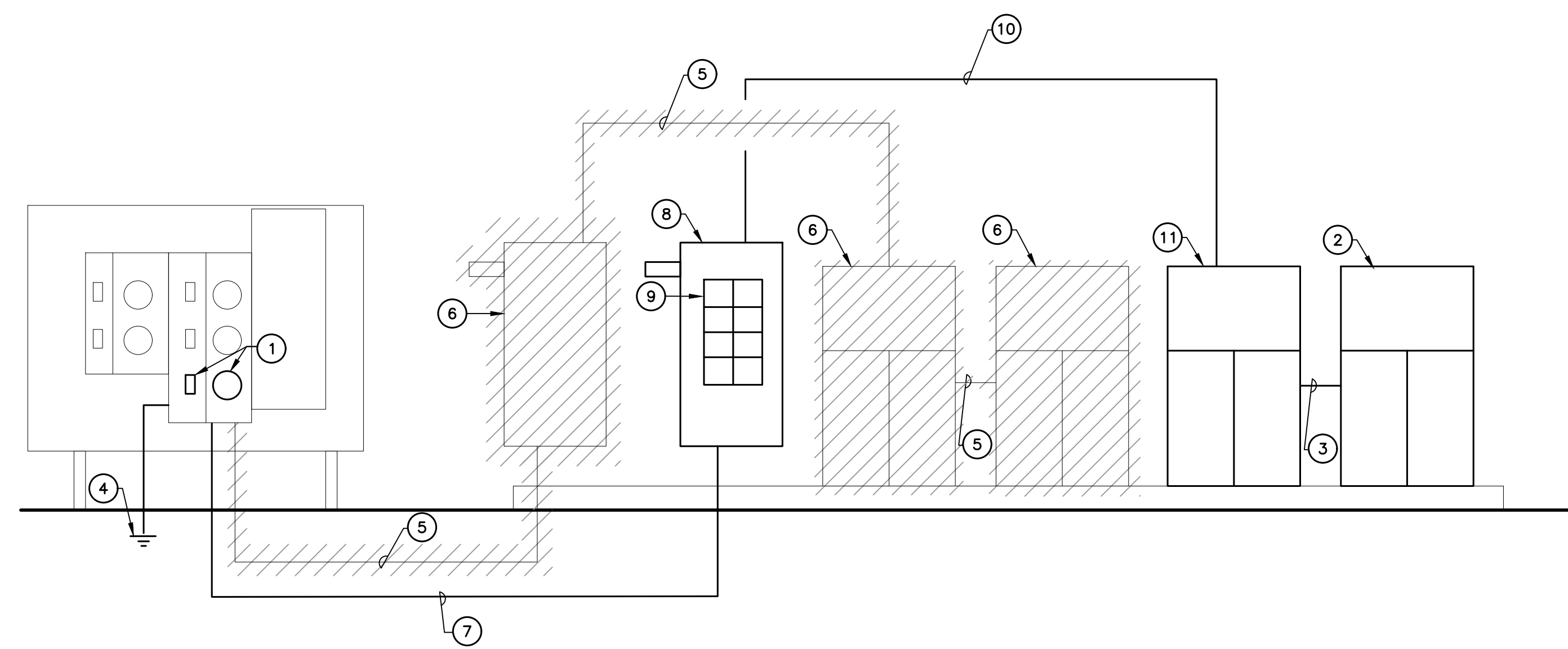
NOTE: CONDUITS SHOWN HEREIN ARE DIAGRAMMATICAL IN NATURE. CONTRACTOR IS RESPONSIBLE FOR ALL CONDUIT ROUTING REGARDING LENGTH OF RUN, FEASIBILITY, AND SAFETY PROTOCOLS. CONDUITS SHOULD BE INSTALLED IN A MANNER OF LEAST OBSTRUCTION TO EGRESS PATHS/WALKWAYS TO AVOID TRIPPING HAZARDS.



1 ELECTRICAL CONDUIT ROUTING PLAN
E-1 SCALE: 1/4" = 1'

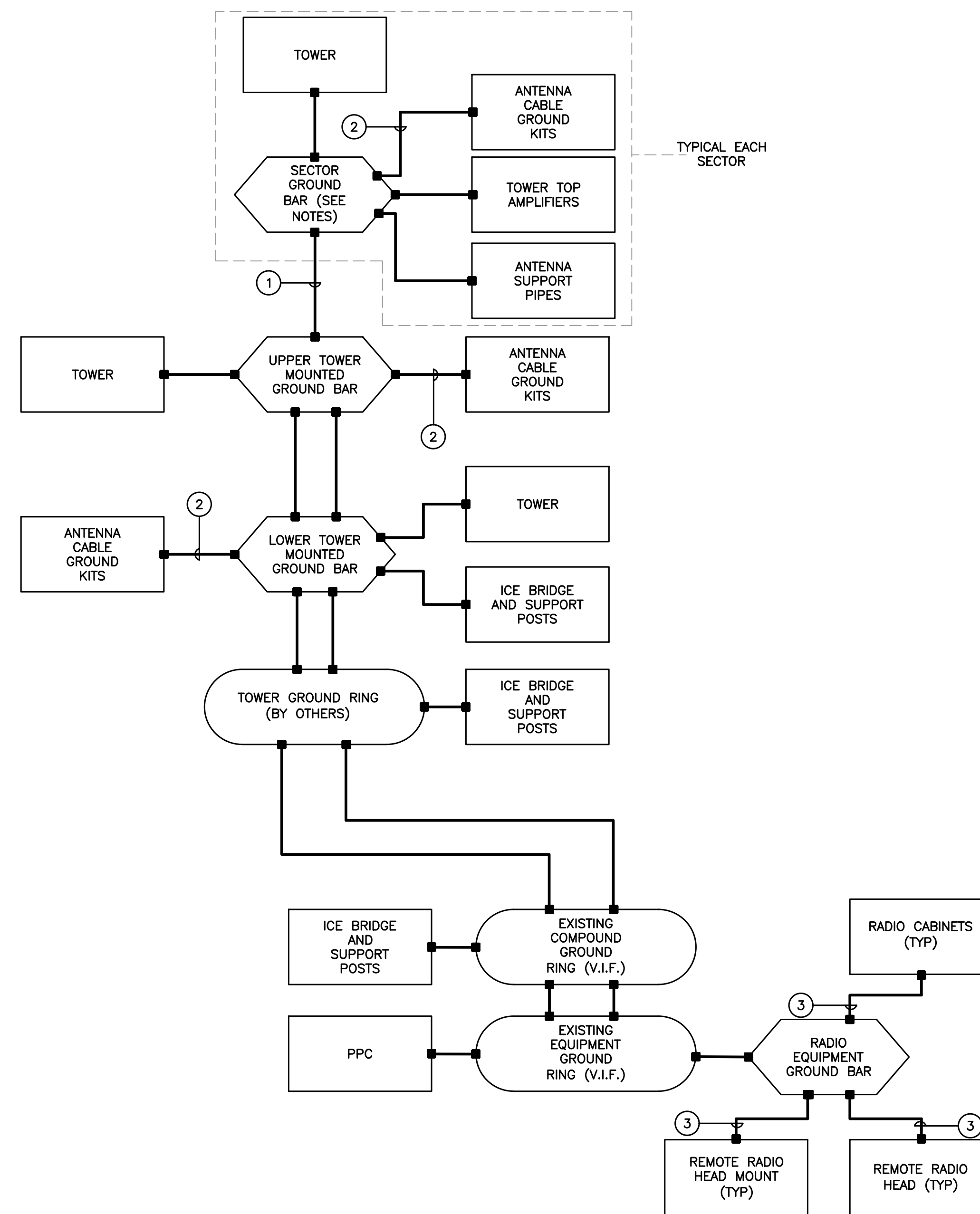
RISER DIAGRAM NOTES

- ① EXISTING T-MOBILE UTILITY METER WITH CIRCUIT BREAKER TO BE REMOVED AND REPLACED WITH NEW 200A RATED UTILITY METER AND NEW 200A/2P CIRCUIT BREAKER. EQUIPMENT UTILITY APPROVED.
- ② NEW T-MOBILE BATTERY CABINET
- ③ DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS
- ④ MAIN SERVICE GROUND: #4 AWG GROUNDING ELECTRODE CONDUCTOR IN 3/4" PVC CONDUIT.
- ⑤ EXISTING CONDUITS AND CONDUCTORS TO BE REMOVED.
- ⑥ EXISTING CABINETS TO BE REMOVED.
- ⑦ (3) 3/0 AWG, (1) #6 AWG GROUND. 2" CONDUIT
- ⑧ NEW 200A PPC CABINET
- ⑨ NEW 100A CIRCUIT BREAKER TO SERVE NEW EQUIPMENT.
- ⑩ (3) #1 AWG, (1) #8 AWG GROUND. 1-1/2" CONDUIT.
- ⑪ NEW T-MOBILE EQUIPMENT CABINET



2 ELECTRICAL POWER RISER DIAGRAM
E-1 SCALE: NOT TO SCALE

PROFESSIONAL ENGINEER SEAL	10/09/23	TGK	CONSTRUCTION DRAWINGS	REVISED PER CLIENT COMMENTS
	09/20/23	TGK	CONSTRUCTION DRAWINGS	REVISED PER CLIENT COMMENTS
T-Mobile	0	TGK	CONSTRUCTION DRAWINGS	ISSUED FOR CONSTRUCTION
	C	TGK	CONSTRUCTION DRAWINGS	REVISED PER CLIENT COMMENTS
CENTEK engineering	B	TGK	CONSTRUCTION DRAWINGS	ISSUED FOR CLIENT REVIEW
	A	JLD	CONSTRUCTION DRAWINGS	ISSUED FOR CLIENT REVIEW
DATE		07/28/22	CHECKED BY	
REV.			DRAWN BY	
T-Mobile		NORTH EAST		
CENTEK engineering		www.CentekEng.com		
T-MOBILE NORTHEAST LLC		SITE NAME: STRATFORD/MP/JAMES FARM		
		SITE ID: CT11426A		
		670 CHAPEL ST, CL+P POLE 1321		
		STRATFORD, CT 06614		
DATE:		07/28/22		
SCALE:		AS NOTED		
JOB NO.		22073.05		
ELECTRICAL RISER DIAGRAM AND CONDUIT ROUTING				
E-1				
SHEET NO. 6 OF 10				



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

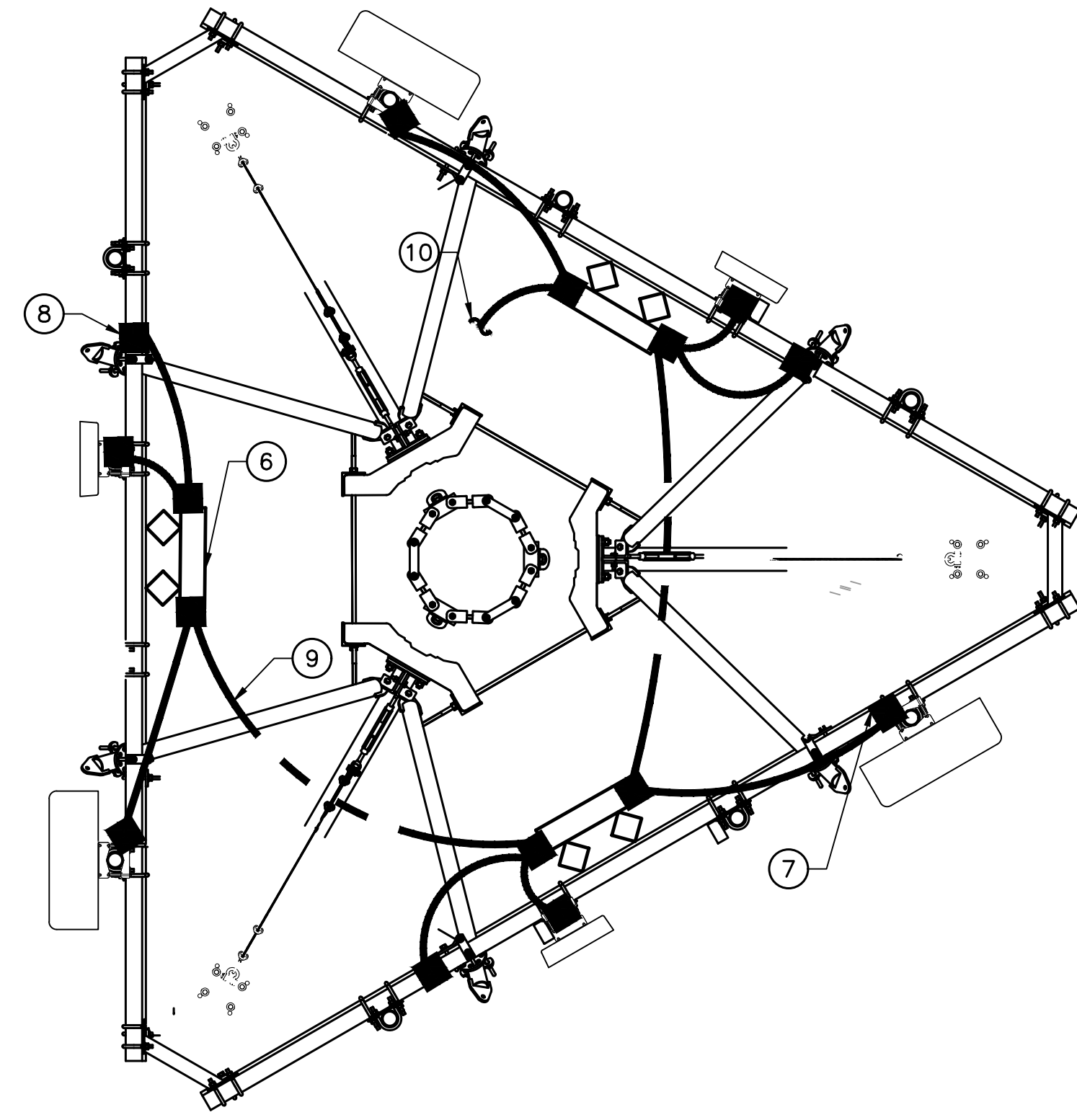
GROUNDING PLAN NOTES

- ① #2/0 AWG GREEN INSULATED
- ② #6 AWG
- ③ BOND PER MANUFACTURERS SPECIFICATIONS

GENERAL NOTES:

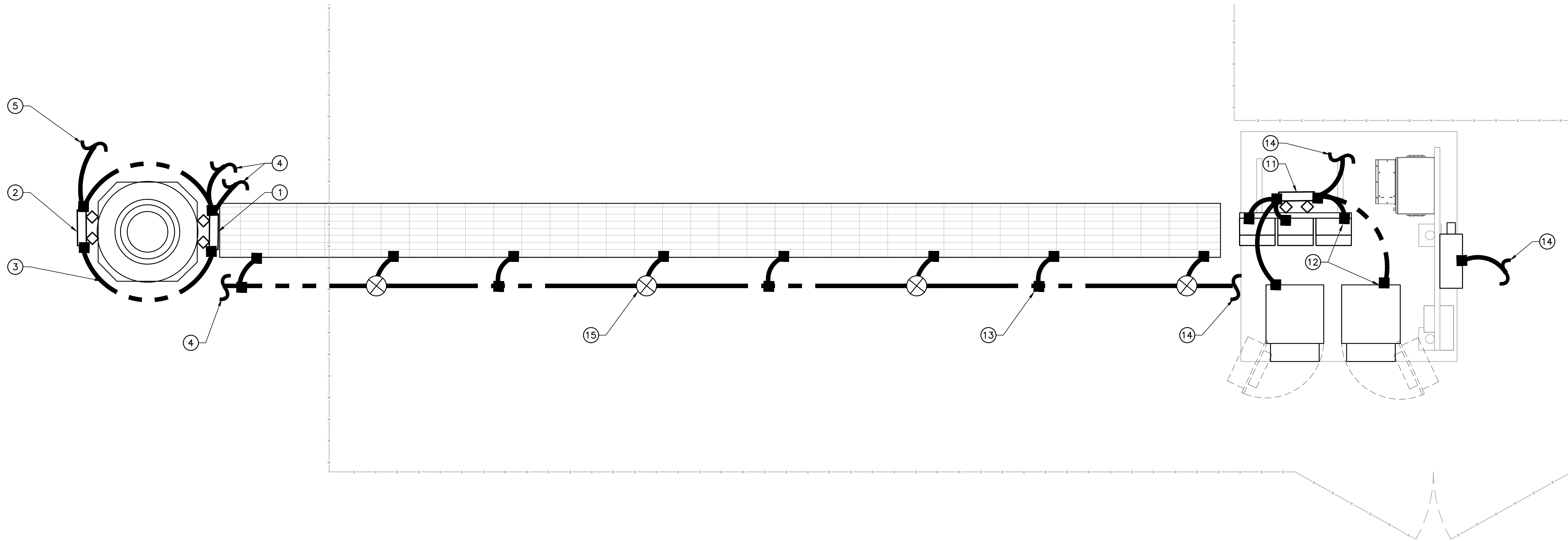
1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW - EXTERIOR; STRANDED GREEN INSULATED - INTERIOR).
3. BOND CABLE TRAY AND ICE BRIDGE SECTIONS TOGETHER 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.
14. BOND NEW FENCE POSTS TO EXISTING COMPOUND GROUND RING.

		TJK	TJK	TJK	TJK	TJK
2	10/09/23	TJK	TJK	TJK	TJK	TJK
1	09/20/23	TJK	TJK	TJK	TJK	TJK
0	08/29/23	TJK	TJK	TJK	TJK	TJK
C	08/21/23	TJK	TJK	TJK	TJK	TJK
B	08/01/23	TJK	TJK	TJK	TJK	TJK
A	07/28/22	JLD	JLD	JLD	JLD	JLD
REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION		
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T-MOBILE NORTHEAST LLC SITE NAME: STRATFORD/MP/JAMES FARM SITE ID: CT11426A 670 CHAPEL ST, CL+P POLE 1321 STRATFORD, CT 06614						
DATE: 07/28/22						
SCALE: AS NOTED						
JOB NO. 22073.05						
ELECTRICAL SCHEMATIC DIAGRAM						
E-2						
SHEET NO. 7 OF 10						



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

- ### GROUNDING PLAN NOTES
- ① LOWER TOWER MOUNTED GROUND BAR.
 - ② UPPER TOWER MOUNTED GROUND BAR.
 - ③ BOND UPPER TOWER MOUNTED GROUND BAR TO LOWER TOWER MOUNTED GROUND BAR (2) # 2/0 GROUND LEADS.
 - ④ BOND TO EXISTING TOWER GROUND RING.
 - ⑤ BOND UPPER TOWER MOUNTED GROUND BAR TO SECTOR GROUND BAR.
 - ⑥ SECTOR GROUND BAR TYP.
 - ⑦ BOND ANTENNA MOUNTING PIPES TO SECTOR GROUND BAR. (TYPICAL)
 - ⑧ BOND SECTOR GROUND BAR TO TOWER STEEL. (TYPICAL)
 - ⑨ ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
 - ⑩ BOND TO UPPER TOWER MOUNTED GROUND BAR.
 - ⑪ NEW EQUIPMENT GROUND BAR.
 - ⑫ BOND RADIO EQUIPMENT TO NEW GROUND BAR PER MANUFACTURERS SPECIFICATIONS (TYP).
 - ⑬ BOND EACH SECTION OF ICE BRIDGE TO GROUND. (TYP)
 - ⑭ BOND TO EXISTING PLATFORM GROUND RING.
 - ⑮ GROUND ROD PER DETAILS (TYP)



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

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
2	10/09/23	TGK	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
1	09/20/23	TGK	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
0	08/30/23	TGK	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
C	08/21/23	TGK	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
B	08/01/23	TGK	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW
A	07/28/22	JLD	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

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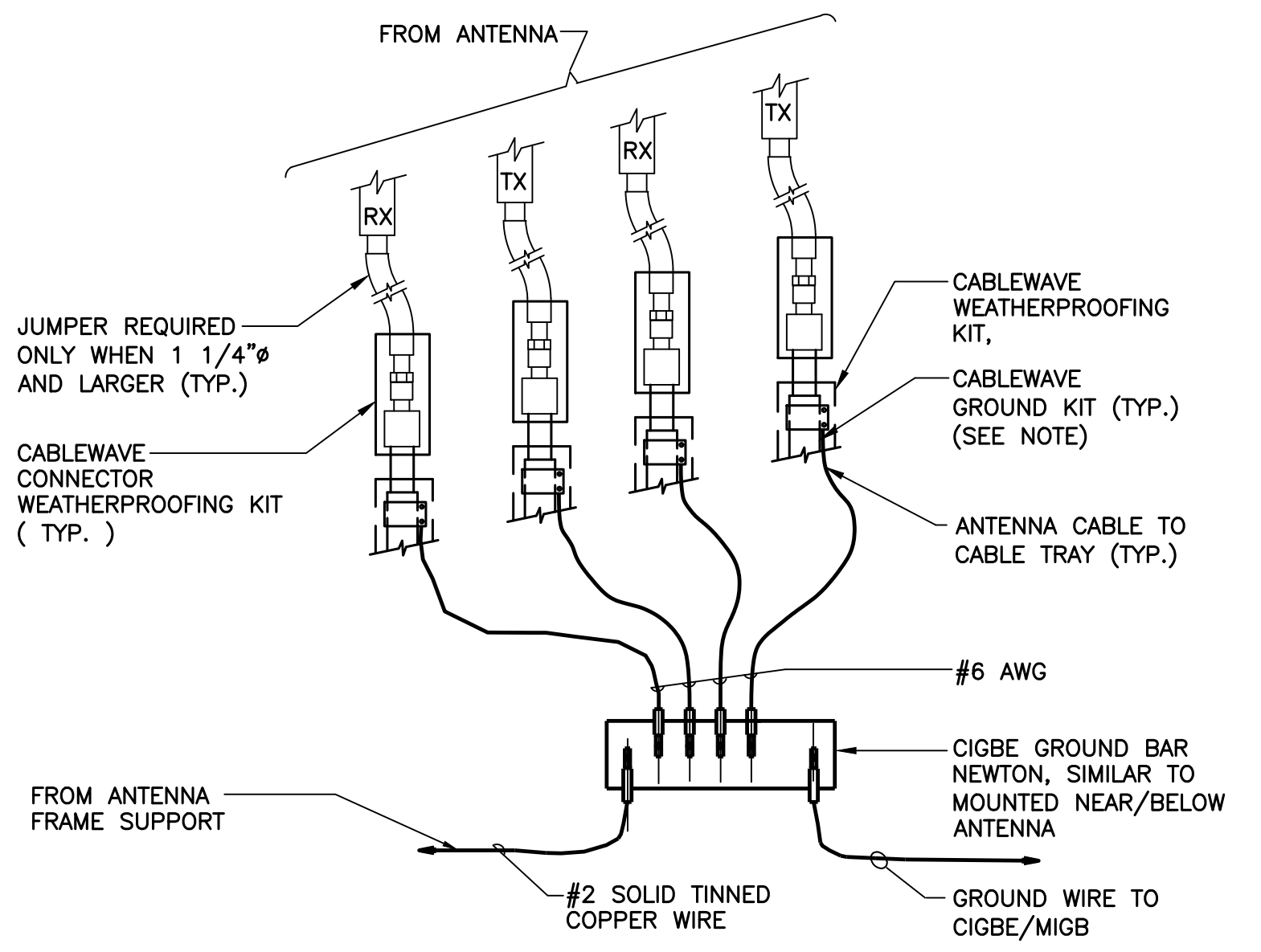
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SITE ID: CT11426A
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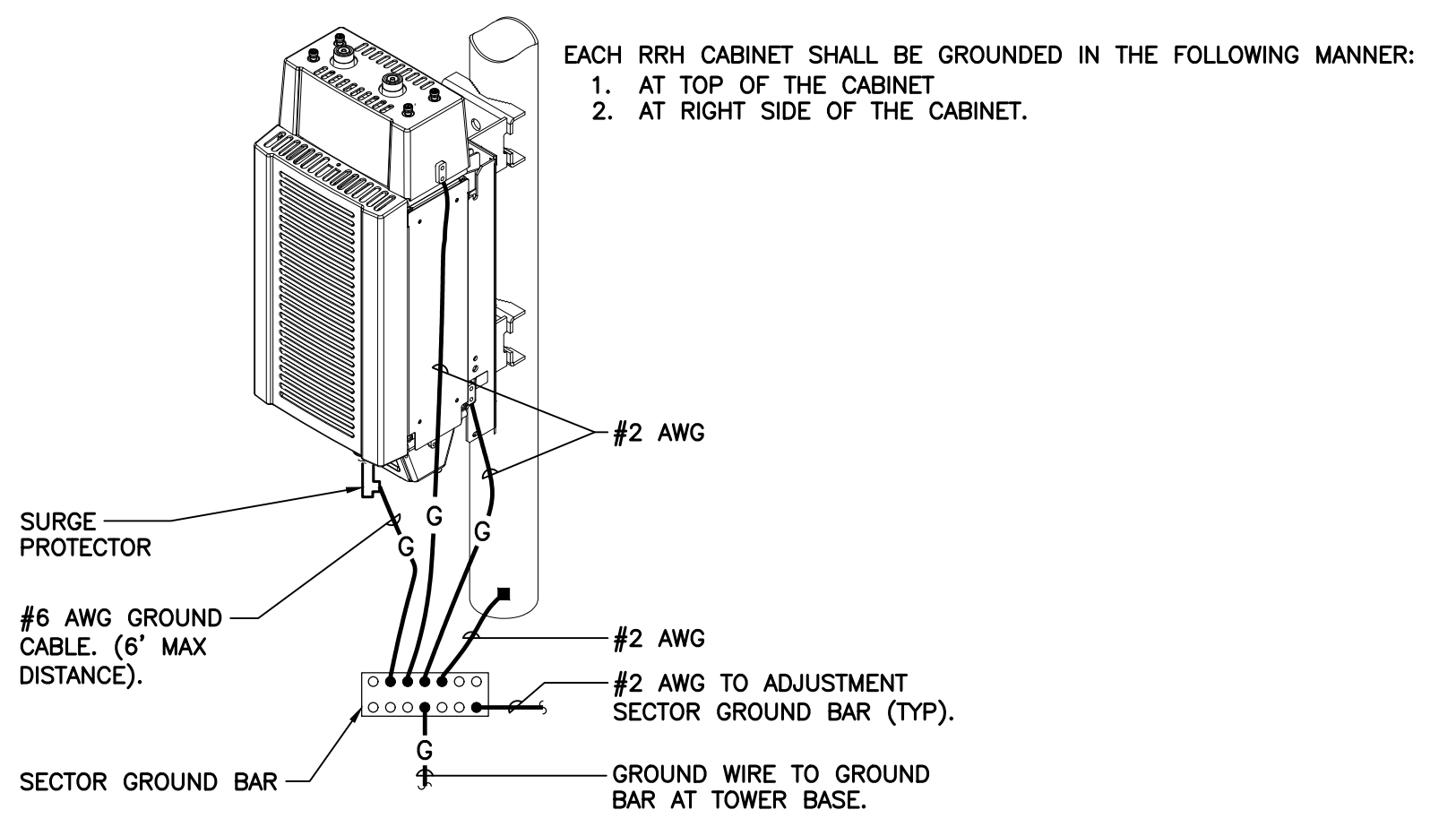
ELECTRICAL GROUNDING PLANS

E-3

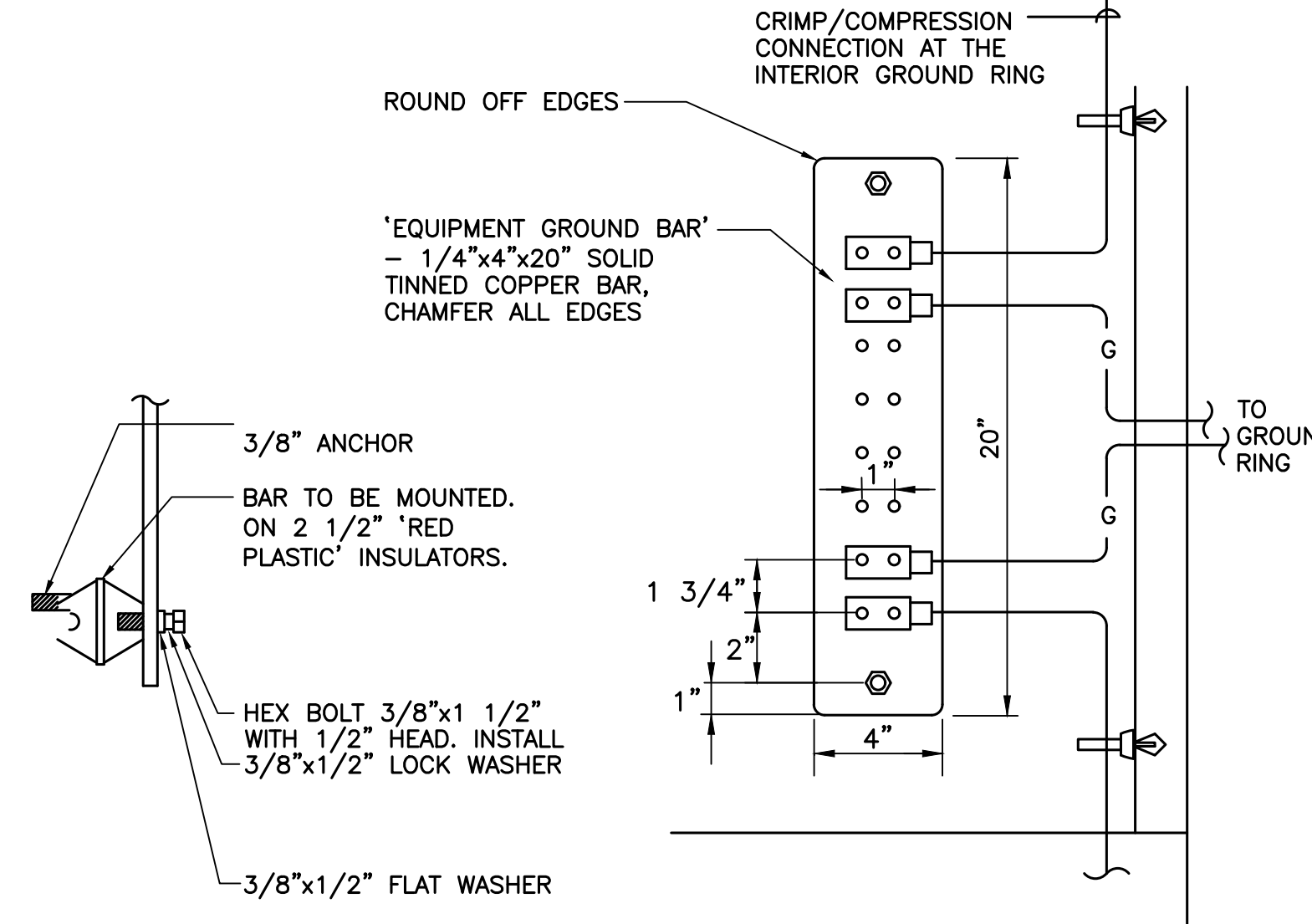
SHEET NO. 8 OF 10



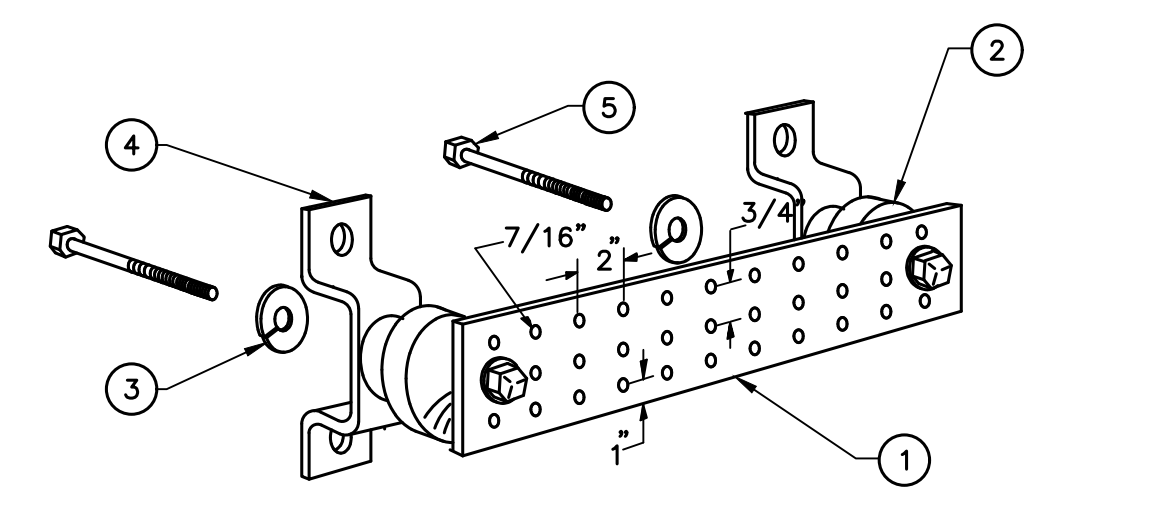
1 CONNECTION OF GROUND WIRES TO GROUND BAR
E-4 SCALE: NOT TO SCALE



6 RRH POLE MOUNT GROUNDING
E-4 SCALE: NOT TO SCALE

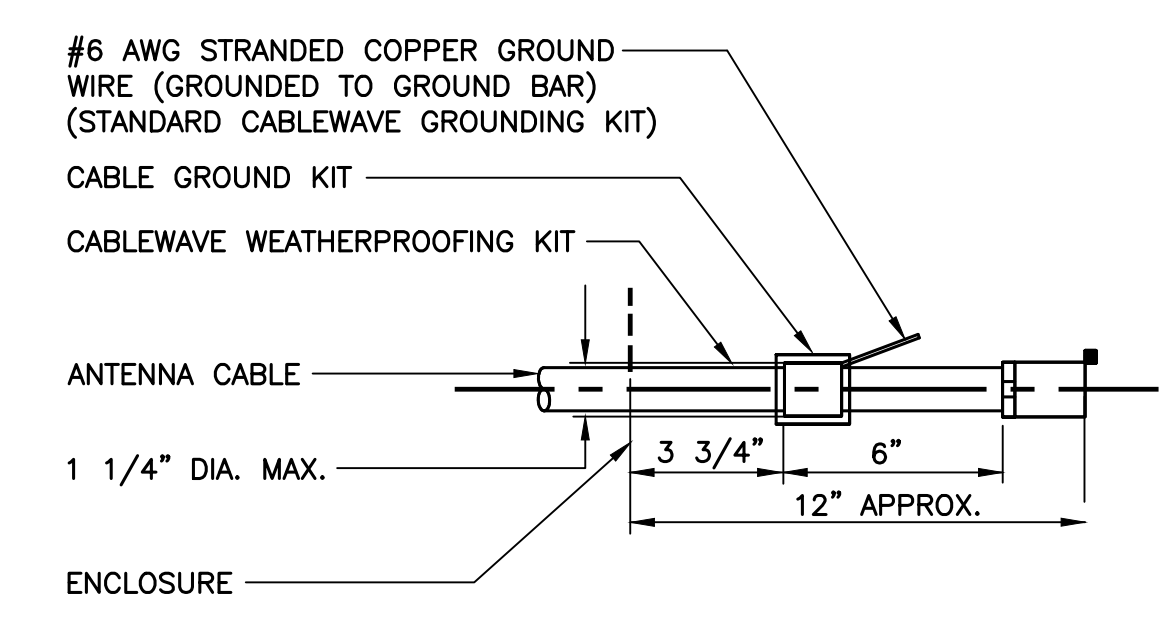


7 EQUIPMENT GROUND BAR DETAIL
E-4 SCALE: NOT TO SCALE



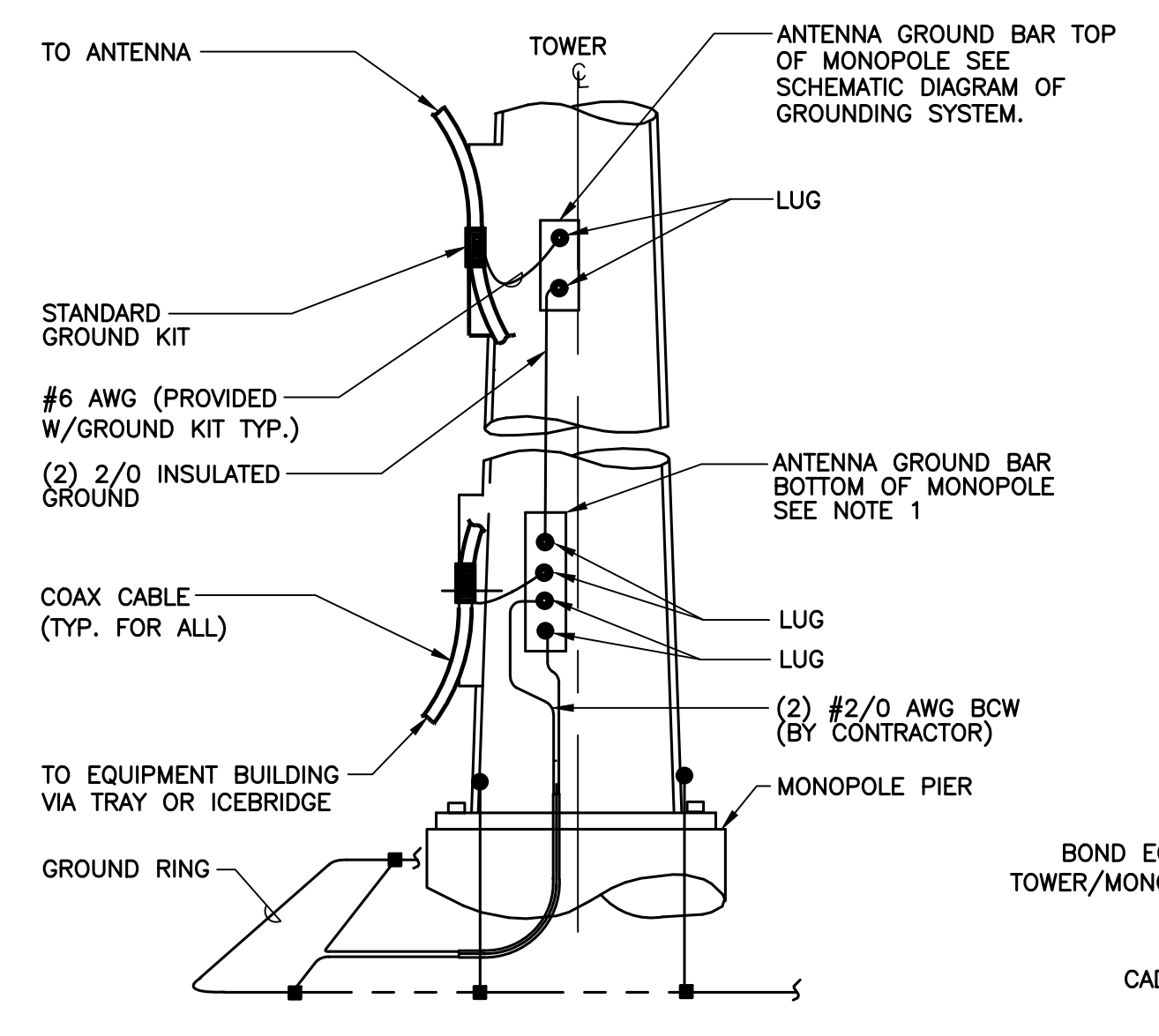
- NOTES**
- TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
 - INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
 - 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-B.
 - WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056.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

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



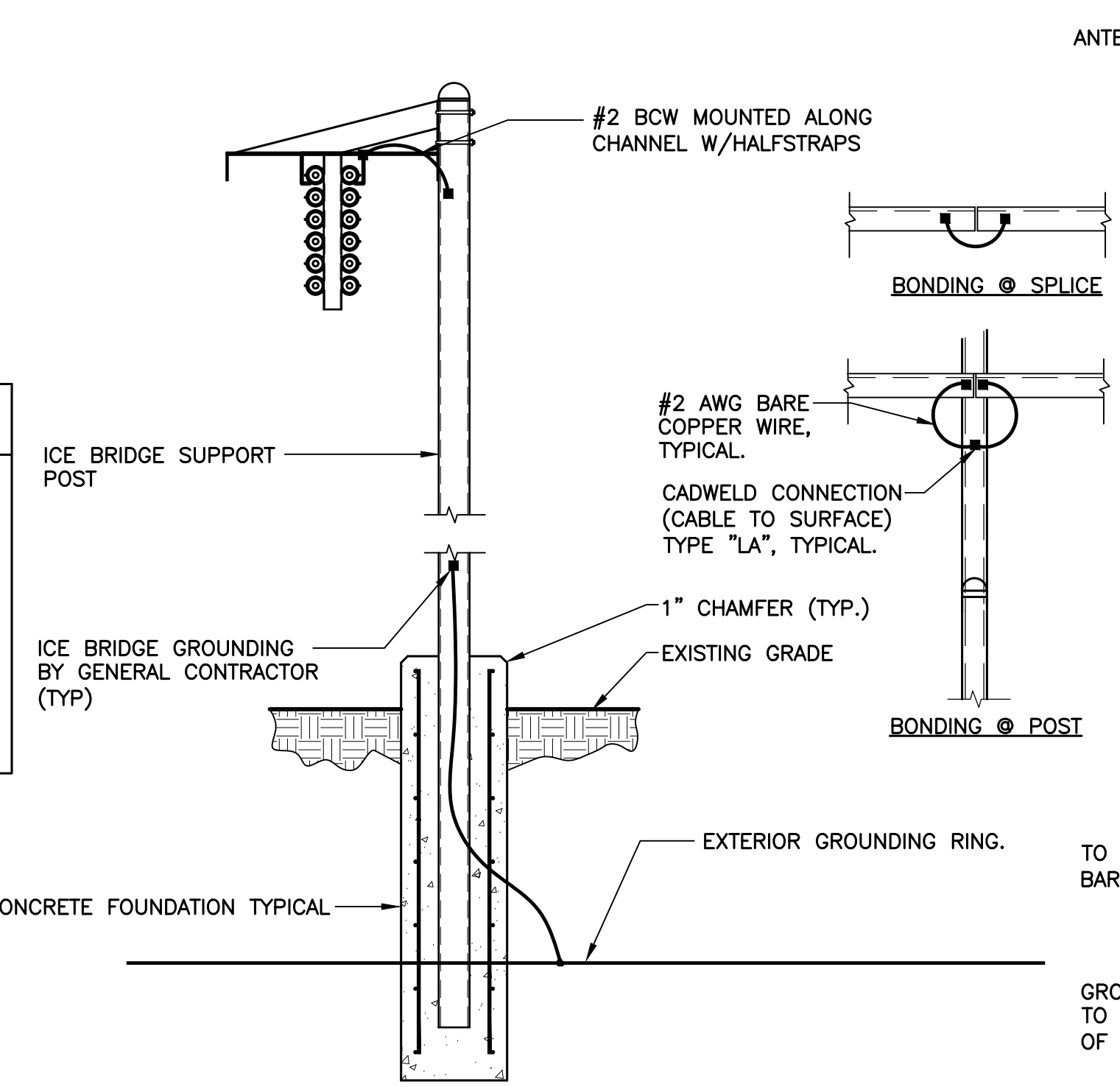
- NOTES**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

3 ANTENNA CABLE GROUNDING DETAIL
E-4 SCALE: NOT TO SCALE

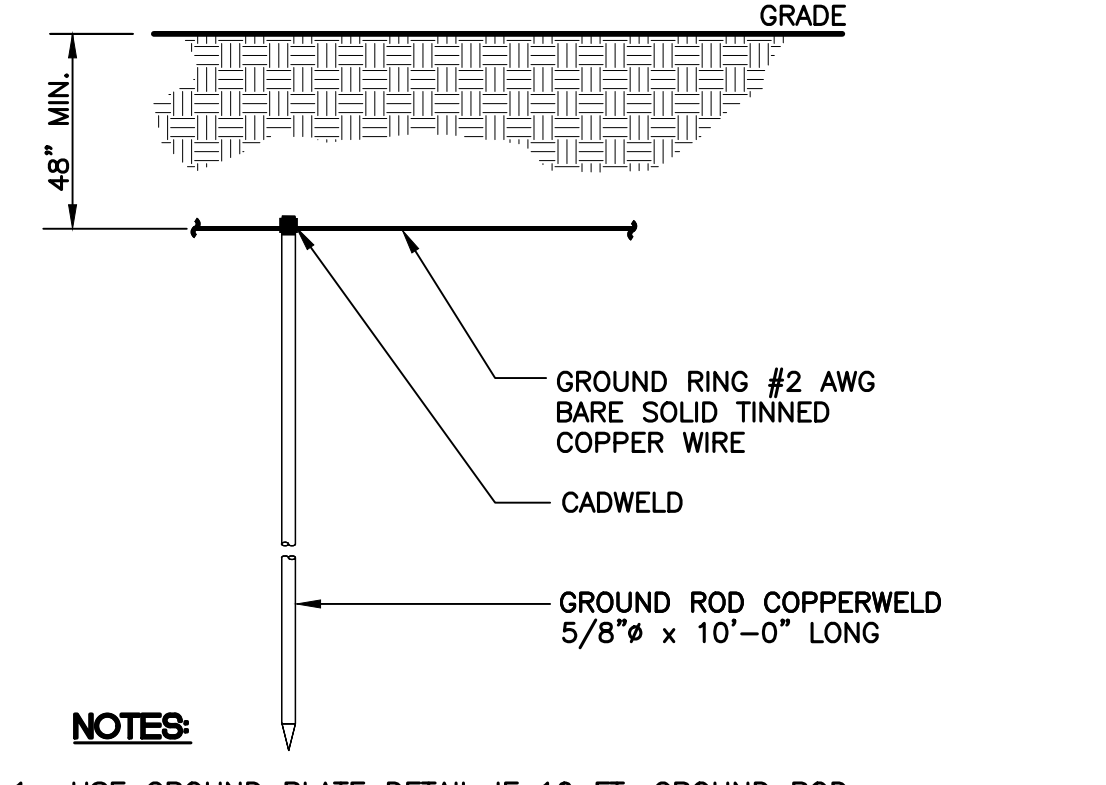


- NOTES**
- NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
 - A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

8 ANTENNA CABLE GROUNDING
E-4 NOT TO SCALE

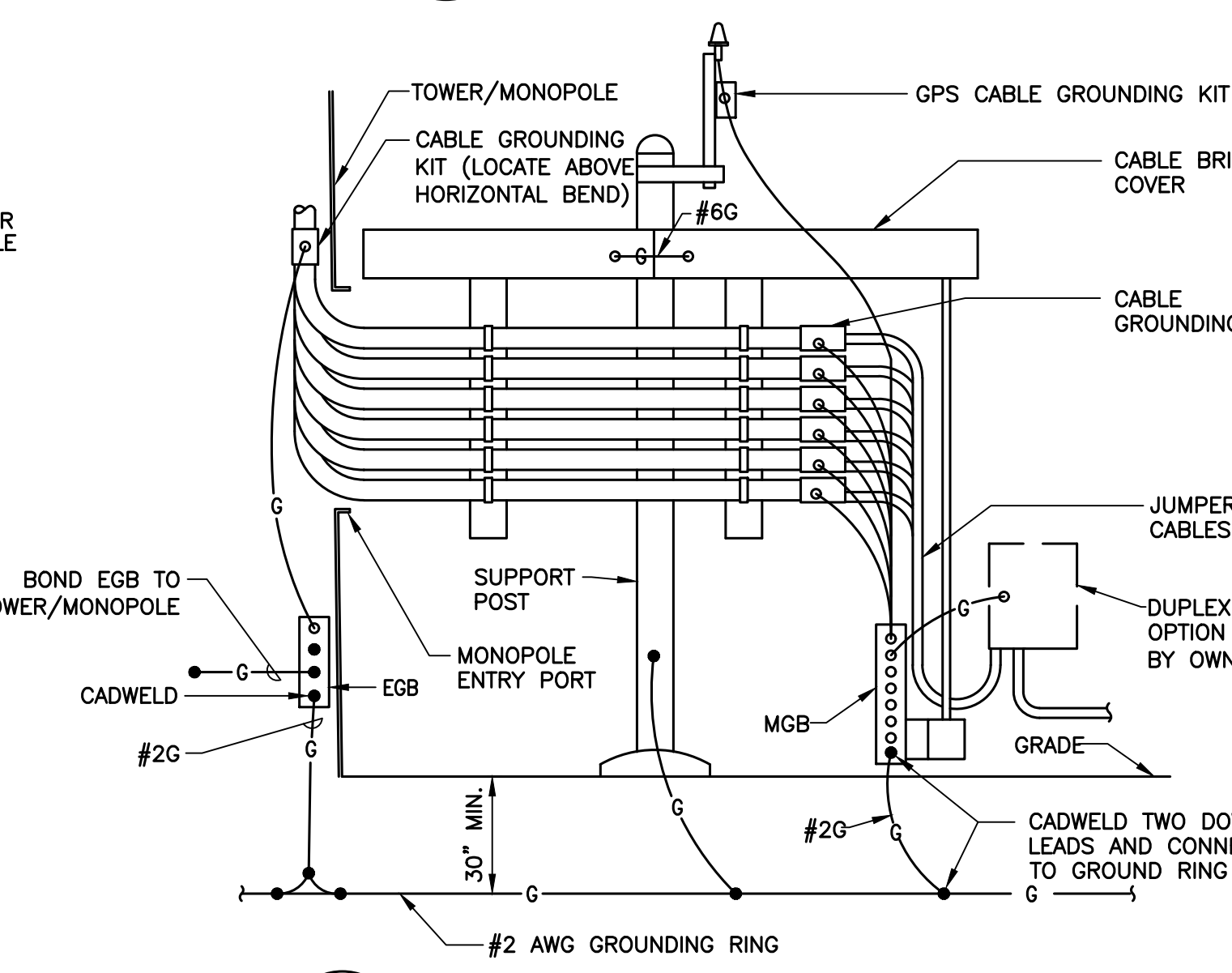


4 ICE BRIDGE BONDING DETAIL
E-4 NOT TO SCALE

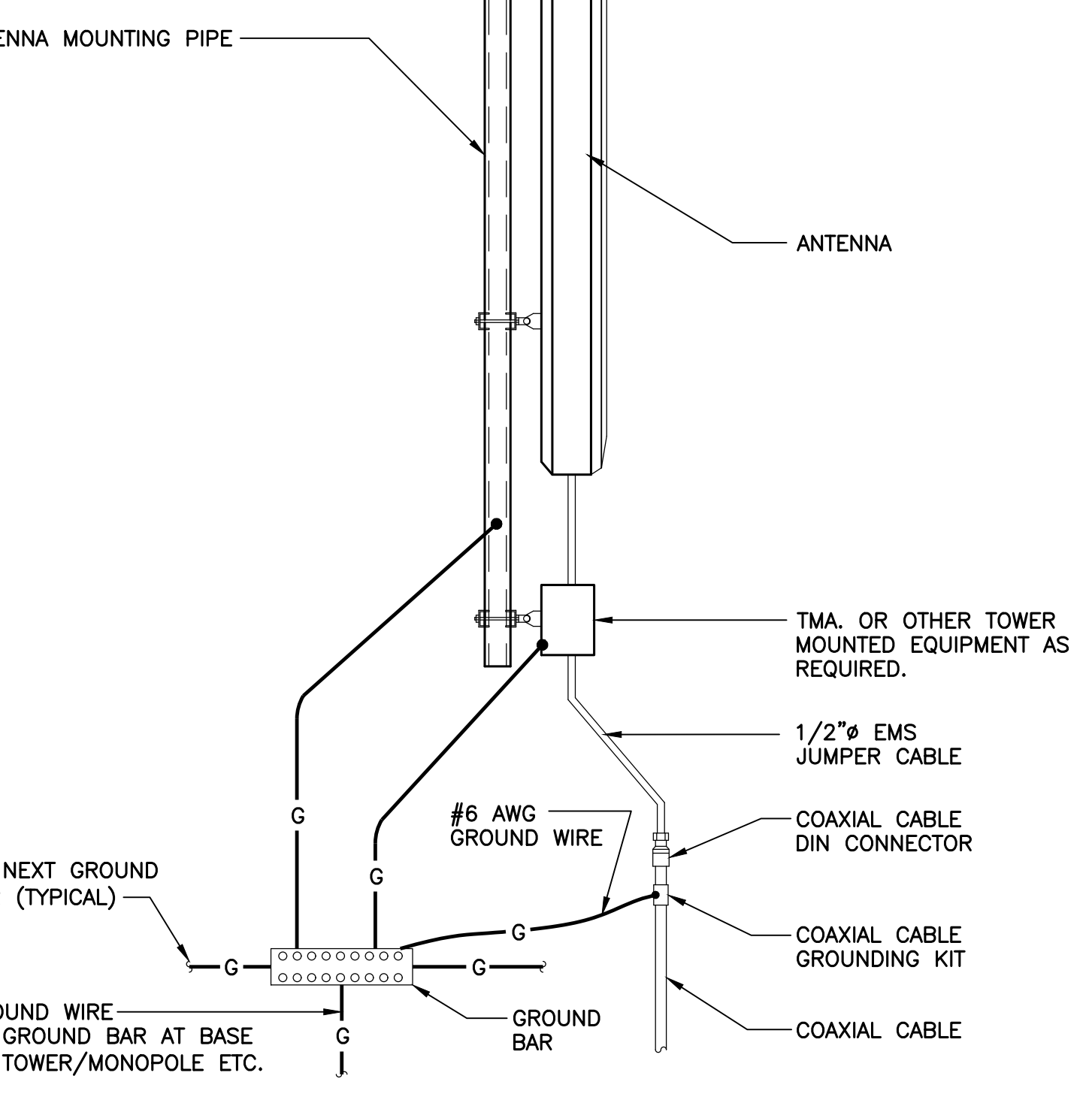


- NOTES**
- USE GROUND PLATE DETAIL IF 10 FT. GROUND ROD DEPTH CANNOT BE ACHIEVED DUE TO LEDGE CONDITION OR IF EXISTING TOWER FOUNDATION IS ENCOUNTERED.

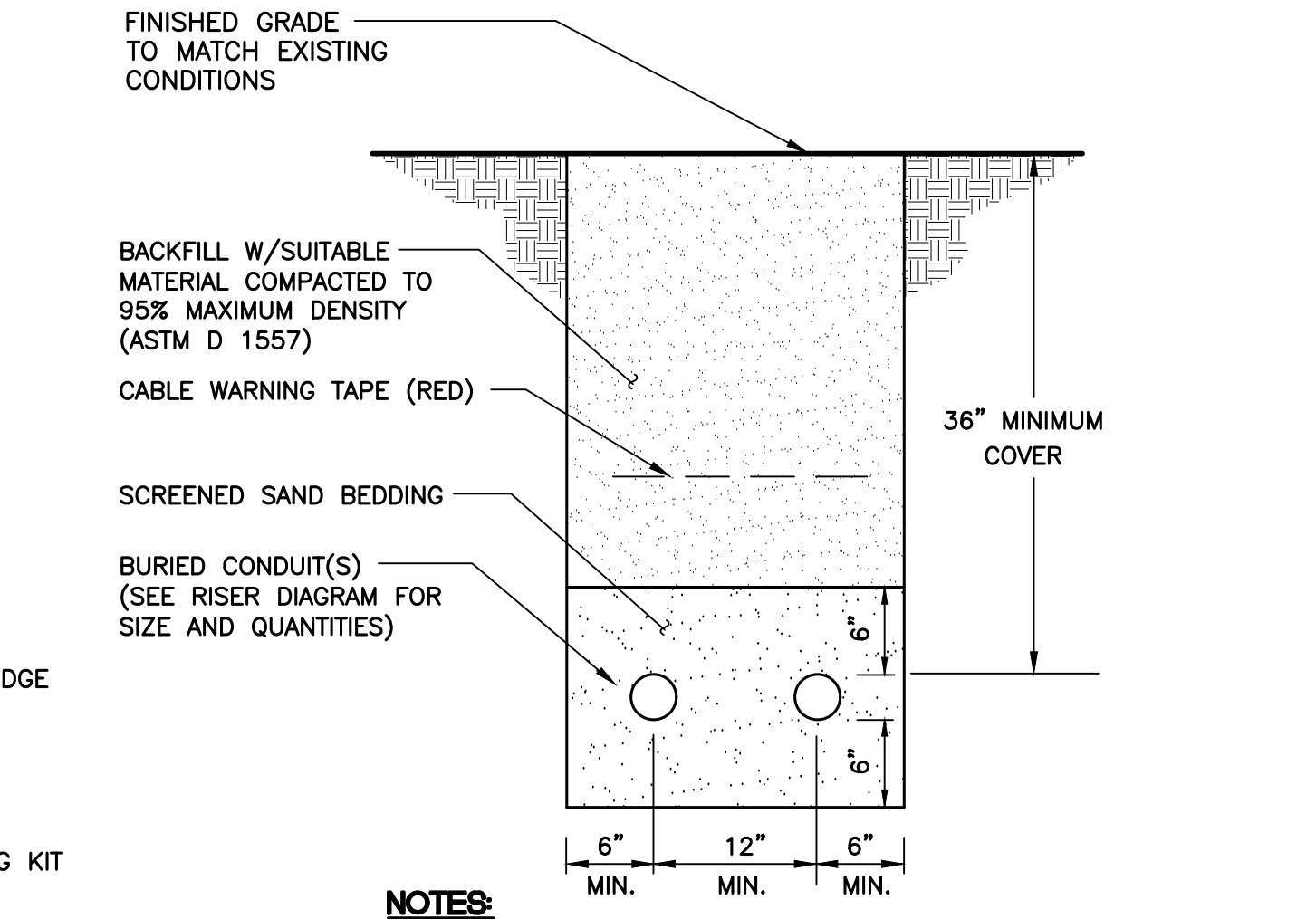
9 GROUND ROD DETAIL
E-4 NOT TO SCALE



10 CABLE BRIDGE GROUNDING DIAGRAM
E-4 SCALE: NOT TO SCALE



5 TYPICAL ANTENNA GROUNDING DETAIL
E-4 SCALE: NOT TO SCALE



- NOTES**
- 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.
 - WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.
 - WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN UTILITY SOURCE AND SERVICE EQUIPMENT, COORDINATE WITH UTILITY COMPANY FOR BURIAL DEPTH REQUIREMENTS.
 - COORDINATE WITH ELECTRICAL ENGINEER WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN SERVICE EQUIPMENT AND EQUIPMENT SHELTER.

11 TYPICAL ELECTRICAL TRENCH DETAIL
E-4 NOT TO SCALE

CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	DATE	07/28/22	CHECKED BY	JLD	DESCRIPTION
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	DATE	09/20/23	CHECKED BY	TJK	DESCRIPTION
CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION	TJK	DATE	08/29/23	CHECKED BY	TJK	DESCRIPTION
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	DATE	08/21/23	CHECKED BY	TJK	DESCRIPTION
CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW	TJR	DATE	08/01/23	CHECKED BY	TJK	DESCRIPTION
CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS	TJR	DATE	08/01/23	CHECKED BY	TJK	DESCRIPTION
CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW	TJR	DATE	07/28/22	CHECKED BY	JLD	DESCRIPTION

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SITE ID: C11426A
670 CHAPEL ST, CL+P POLE 1321
STRATFORD, CT 06614

DATE: 07/28/22
SCALE: AS NOTED
JOB NO. 22073.05

TYPICAL ELECTRICAL DETAILS

E-4
SHEET NO. 9 OF 10

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

- WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
 - INSTALL 200A, 240/120V, 1P, 3 WIRE ELECTRIC SERVICE WITH REVENUE METER AND 200A MAIN CIRCUIT BREAKER FOR OWNER AND ASSOCIATED DISTRIBUTION EQUIPMENT. (AS REQUIRED BY UTILITY CO.)
 - FEEDERS AND BRANCH CIRCUIT WIRING TO EQUIPMENT AS INDICATED OR NOTED ON PLANS.
 - CELLULAR GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, INTERIOR GROUNDING RING, GROUND BARS, ETC.
 - COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.
- LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:
 - SHUTDOWN OF SERVICE (COORDINATE WITH OWNER).
- CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.
- ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

1.02. GENERAL REQUIREMENTS

- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- 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.
- 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.
- 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.
- 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.
- ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
- ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.
- 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.
- PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.
- SHOP DRAWINGS:
 - 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.
 - CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.
- 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

- 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.
- 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.
- CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.
- PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS
- 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
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 LDTS 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

- 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:

LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE
- MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

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

- 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.
 - 15 MINUTE TIMER SWITCH – INTERMATIC #FF15M (INTERIOR LIGHTS)
 - DUPLEX RECEPTACLE – P&S #2095 (GFCI) SPECIFICATION GRADE
 - SINGLE POLE SWITCH – P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE
 - DUPLEX RECEPTACLE – P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE
- 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.
- OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

- 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

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

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

- CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.
- LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.
- IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16450

1.01. GROUNDING

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

- EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
- THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
- 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:

- GROUND BARS
- EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
- ANTENNA GROUND CONNECTIONS AND PLATES.

- 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.
- 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

- REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

- 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

- 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:

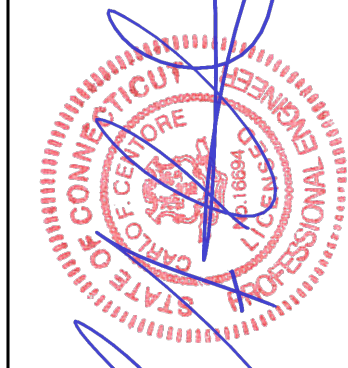
 - TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
 - CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
 - GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- THESE TESTS SHALL 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.
- 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.
- 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

- 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.
- 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.
- 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.

CONSTRUCTION DRAWINGS	REVISED PER CLIENT COMMENTS	TUR	DATE	DRAWN BY	CHECKED BY
CONSTRUCTION DRAWINGS	REVISED PER CLIENT COMMENTS	TUR		TGK	JLD
CONSTRUCTION DRAWINGS	ISSUED FOR CONSTRUCTION	TUR		TGK	JLD
CONSTRUCTION DRAWINGS	REVISED PER CLIENT COMMENTS	TUR		TGK	JLD
CONSTRUCTION DRAWINGS	ISSUED FOR CLIENT REVIEW	TUR		TGK	JLD
CONSTRUCTION DRAWINGS	ISSUED FOR CLIENT REVIEW	TUR		TGK	JLD







T-MOBILE NORTHEAST LLC

SITE NAME: STRATFORD/MP/JAMES FARM

SITE ID: C11426A

670 CHAPEL ST, CL+P POLE 1321

STRATFORD, CT 06614

DATE:	07/28/22
SCALE:	AS NOTED
JOB NO.	22073.05

ELECTRICAL SPECIFICATIONS

E-5

SHEET NO. 10 OF 10

Exhibit D

Structural Analysis Report

Structural Analysis of
Utility Pole

T-Mobile Site Ref: CT11426A

Eversource Structure No. 19520
125' Tall Electric Transmission Pole

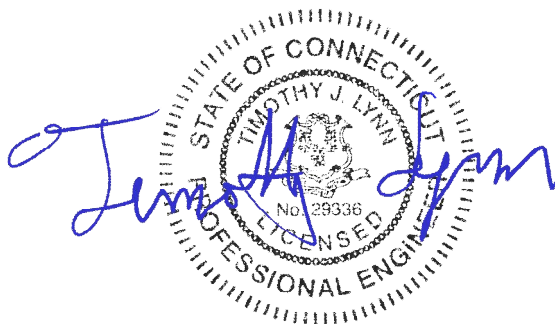
670 Chapel Street
Stratford, CT

CEN TEK Project No. 22073.05

~~*Date: July 10, 2023*~~

Rev 1: August 10, 2023

Max Stress Ratio = 96.7%



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

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- ANALYSIS
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Introduction

The purpose of this report is to analyze the 125' utility pole located in Stratford, CT for the proposed antenna and equipment upgrade by T-Mobile.

The loads consist of the following:

- **AT&T (Final Configuration):**
Antennas: Three (3) CCI TPA65R-BU6D panel antennas, three (3) Ericsson AIR6419 panel antennas, three (3) Ericsson AIR6449 panel antennas, three (3) CCI OPA65R-BU6D panel antennas, three (3) Kaelus TMA2124F03V5-2D TMAs, six (6) CCI TMABPD7823VG12A TMAs and one (1) DC6-48-60-18 surge arrester mounted on one (1) Platform (SitePro p/n RMQLP-4120-H10) to the utility pole with a RAD center elevation of 124-ft above grade.
Cables: Twenty-four (24) 1-5/8" \varnothing coax cables, one (1) fiber cable and two (2) DC cables mounted to the outside of the pole as indicated in Section 4 of this report.
- **T-MOBILE (Final Configuration):**
Antennas: Three (3) RFS APXVAALL24_43 panel antennas and three (3) Commscope VV65A-R1 panel antennas mounted on one (1) Platform (SitePro p/n RMQLP-496-HK) to the utility pole with a RAD center elevation of 110-ft above grade.
Cables: Twenty-four (24) 1-5/8" \varnothing 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.

A n a l y s i s

Structural analysis of the utility pole was independently completed using the current version of PLSPole computer program licensed to CEN TEK 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.

D e s i g n B a s i s

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, Section 25, Rule 250C: Extreme Wind Loading,
1.25 x Gust Response Factor (wind speed: 3-second gust)

Results

▪ 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 **88.39%** occurs in the utility pole 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 3	53.00' -100.00' (AGL)	88.39%	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	69.6%	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	86.1%	PASS
Flange Plate	Bending	79.4%	PASS

▪ FOUNDATION AND ANCHORS

The base of the tower is connected to the foundation by means of (24) 2.25"Ø, 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/Eversource prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	36.14 kips	129.01 kips	3100.26 ft-kips
NESC Extreme Wind	67.65 kips	69.52 kips	5820.07 ft-kips
NESC Extreme Ice w/ Wind	24.19 kips	114.43 kips	2097.68 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	72.3%	PASS

FOUNDATION:

Force	Original Design Loading	Proposed Loading	Result
Moment	6,621 ft-kips	6,402 ft-kips	PASS
Shear	78.6 kips	74.4 kips	PASS

Note 1: Taken from Sabre design calculations.

Note 2: 10% increase applied to PLS base reactions used in foundation verification per OTRM 051.

Conclusion

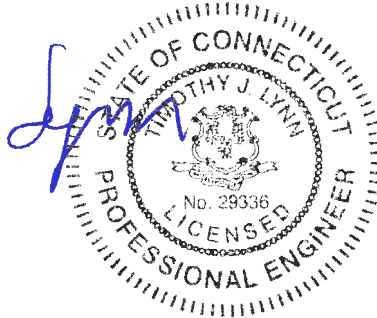
This analysis shows that the subject utility pole **is adequate** to support the proposed equipment upgrade.

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

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

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

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

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

| Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

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

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

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

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

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

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

Overhead Transmission Standards

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
	NESCH 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
	NESCH 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					
NESCH 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

Communication Antennas on Transmission Structures

Eversource Approved by: CPS (CT/WMA) JCC (NH/EMA)	Design	OTRM 059	Rev. 1 11/19/2018
		Page 8 of 10	

Overhead Transmission Standards

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.

Communication Antennas on Transmission Structures			
Eversource Approved by: CPS (CT/WMA) JCC (NH/EMA)	Design	OTRM 059	Rev. 1 11/19/2018
		Page 3 of 10	

1/30/2023 2:20 PM - MS:sonant - \\bmcch\dms\Clients\TND\NUSC\131736-1580-15607616\Design\Overhead\CADD\Working\Structure Drawings\Seg 2 & 3\Original\CADD\483-1545\01520-4001p001-002.dwg - LOADS 1

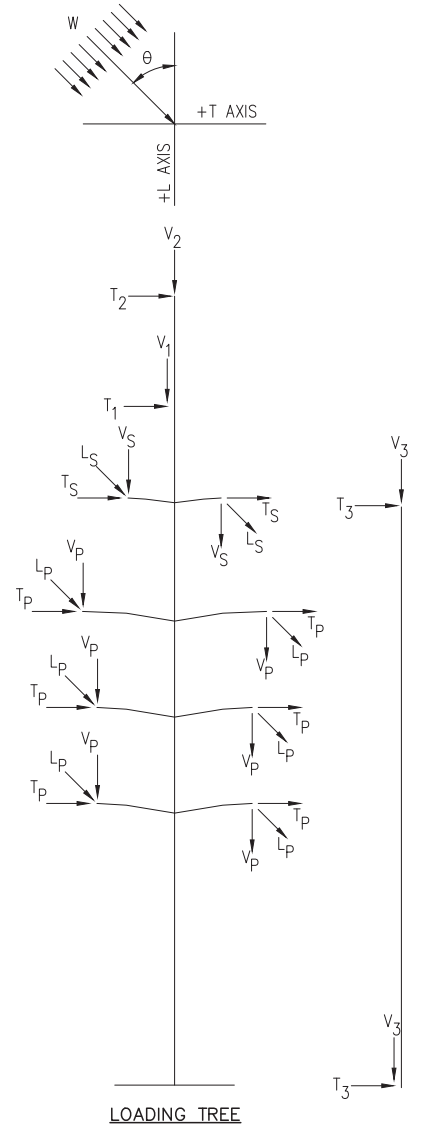
LOAD TABLE 9: 115kV TANGENT
 115-kV CONDUCTOR: 1-1590 ACSS FALCON CONDUCTOR
 SHIELD WIRE: 1-96 FIBER OPGW 16.4MM
 RULING SPAN: 500-900FT.
 WIND SPAN: 1000FT.
 WEIGHT SPAN (SW ICED, SW UNICED, COND ICED, COND UNICED): 1200FT, 2700FT, 1200FT, 1700FT.
 TENSION LIMIT (SW, COND): 6750LBS, 14100LBS @ NESC B Creep
 LINE ANGLE: 0°-2°

DESCRIPTION	LOADING CASE								DESIGN LOADS													
	Wind (mph)	Wind (psf)	Structure Wind (mph)	Structure Wind (psf)	θ	Ice	Temp	I/C	VS (k)	TS (k)	LS (k)	VP (k)	TP (k)	LP (k)	T1 (k)	V1 (k)	T2 (k)	V2 (k)	T3 (k)	V3 (k)	W (PSF)	K
1 NESC Rule 250B	39.5	4.0	39.5	4.0	90.0	0.5	0.0	C	2.2	2.0	0.0	6.5	3.3	0.0	6.0	2.0	6.0	2.0	0.2	2.1	10.0	1.5
2 NESC Rule 250C (115-165)	113.5	33.0	121.8	38.0	90.0	0.0	60.0	C	1.4	2.1	0.0	3.8	5.1	0.0	2.9	8.1	2.9	8.1	0.5	0.5	38.0	1.0
3 NESC Rule 250C (w/o wires) (115-165)	0.0	0.0	121.8	38.0	90.0	0.0	60.0	C	0.1	0.0	0.0	0.3	0.0	0.0	2.9	8.1	2.9	8.1	0.5	0.5	38.0	1.0
4 NESC Rule 250D	40.0	4.1	40.0	4.1	90.0	1.0	15.0	C	3.1	1.4	0.0	6.7	2.1	0.0	4.5	2.2	4.5	2.2	0.1	2.0	4.1	1.0
5 Deflection	0.0	0.0	0.0	0.0	90.0	0.0	60.0	C	1.4	0.2	0.0	3.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
6 Broken Wire	39.5	4.0	39.5	4.0	90.0	0.5	0.0	C	2.2	1.7	-11.1	6.5	2.7	-23.2	6.0	2.0	6.0	2.0	0.2	2.1	10.0	1.5

STRUCTURES IN LOAD GROUP: 19520.

NOTES:

- ALL INDICATED LOADS ARE ULTIMATE AND INCLUDE ALL OVERLOAD FACTORS.
- V, T & L ARE IN KIPS AND ARE THE LOADS IN THE DIRECTION OF THE STRUCTURES VERTICAL, TRANSVERSE, AND LONGITUDINAL AXIS RESPECTIVELY.
- W IS THE DESIGN WIND PRESSURE TO APPLY TO THE STRUCTURE. A SHAPE FACTOR OF 1.6 SHALL BE APPLIED TO MEMBERS WITH FEWER THAN 8 SIDES. FOR MEMBERS WITH SIDES 8 TO 12 SIDES, A SHAPE FACTOR OF 1.3 SHALL BE APPLIED. FOR MEMBERS WITH MORE THAN 12 SIDES, A SHAPE FACTOR OF 1.0 SHALL BE APPLIED.
- APPLY ALL TRANSVERSE LOADS IN BOTH THE NEGATIVE AND POSITIVE TRANSVERSE DIRECTION.
- THETA IS THE ANGLE IN DEGREES BETWEEN THE L-AXIS AND THE WIND DIRECTION AS SHOWN ON THE LOADING TREE DIAGRAM.
- THE DEAD LOAD OF THE STRUCTURE SHALL BE MULTIPLIED BY K.
- STRUCTURE SHALL BE DESIGNED FOR THE FOLLOWING CRITERIA OPTIONS:
 - ALL CONDUCTORS AND GROUND WIRES INSTALLED UNDER ALL LOAD CASES EXCEPT LOAD CASE 3.
 - APPLY LOAD CASE 6 TO ONE SHIELD WIRE ATTACHMENT OR ONE CONDUCTOR ATTACHMENT IN ONE DIRECTION WITH LOAD CASE 1 APPLIED TO ALL OTHER ATTACHMENTS. DO THIS FOR EVERY SHIELD WIRE AND CONDUCTOR.
 - DOUBLE CIRCUIT STRUCTURES WILL BE DESIGNED FOR ONE CIRCUIT INSTALLATION WITH TWO SHIELD WIRES FOR THE FOLLOWING LOAD CASES: L1, L2, L4, L5, L6
- STRUCTURES SHALL BE FABRICATED FROM WEATHERING STEEL
- STRUCTURES SHALL BE DESIGNED FOR ECCENTRIC MOMENT LOADING DUE TO DEFLECTED SHAPE OF STRUCTURE PLUS A FOUNDATION ROTATION OF 1.5DEG FOR ALL LOAD CASES EXCEPT LOAD CASES 5 (DEFLECTION).
- POLE SECTIONS SHALL BE EQUIPPED WITH SLIP TYPE CONNECTIONS. FLANGE CONNECTIONS MAY ALSO BE REQUIRED IF SUPPLIER IS NOTIFIED BY ENGINEER.
- MINIMUM ANCHOR BOLT PROJECTION SHALL BE 12 INCHES WITH THE ANCHOR BOLT THREADED LENGTH BEING SUFFICIENT TO ACCOMMODATE STRUCTURE RAKING. PROVIDE ONE (1) BOLT DIAMETER OF THREAD PROJECTING ABOVE THE TOP NUT.
- STRUCTURES SHALL BE DESIGNED CONSIDERING A 2% DEFLECTION LIMIT UNDER LOAD CASE 5.
- COAX CABLE LOADS V3 & T3 APPLIED AT 10' INCREMENTS ALONG POLE.



DRAWING NOT TO SCALE

ISSUED FOR CONSTRUCTION

NO.	DATE	DESIGN REVISIONS	BY	CHK	APP	APP
B	11/22/22	ISSUED FOR 100% DESIGN	MSS	AAM	CNM	ACR
A	10/03/22	ISSUED FOR 70% DESIGN	RVD	CNM	ACR	

BURNS & MCDONNELL

132498

date	10/03/2022	detailed	MSS
designed	RVD	checked	CNM

NO.	DATE	AS BUILT REVISIONS	BY	CHK	APP	APP
-	-	-	-	-	-	-

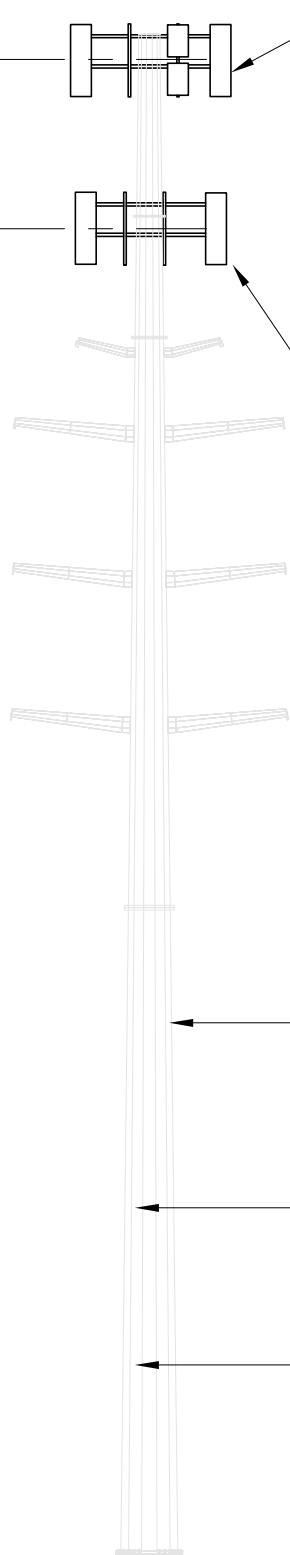
EVERSOURCE ENERGY

DEVON S/S - TRAP FALL S/S
 115-kV TRANSMISSION LINE
 DOUBLE CIRCUIT VERTICAL MONOPOLE 0°-2° CELL TOWER STR. 19520
 SHELTON & STRATFORD, CT

BY	BMcD	CHKD	-	APP	-	APP	-
DATE	02/14/2022	DATE		DATE		DATE	
PI-SCALE	N/A	SHEET	D	FIELD BOOK & PAGES			
PI-SCALE	N/A	V.S.		R.E. DWG			
R.E. PROJ. NUMBER		DWG NO.	01250-40011p002				

⊕ AT&T ANTENNAS
EL. ±124'-0" AGL

⊕ T-MOBILE ANTENNAS
EL. ±110'-0" AGL



AT&T (FINAL CONFIG.):
THREE (3) CCI TPA65R-BU6DA PANEL ANTENNAS, THREE (3) ERICSSON AIR6419 PANEL ANTENNAS, THREE (3) ERICSSON AIR6449 PANEL ANTENNAS, THREE (3) CCI OPA65R-BU6D PANEL ANTENNAS, THREE (3) TMA2124F03V5-2D TMAs, SIX (6) TMABPD7823VG12A TMAs AND ONE (1) DC6 SURGE ARRESTOR MOUNTED ON SITEPRO RMQLP-4120-H10 PLATFORM.

T-MOBILE (FINAL CONFIG.):
THREE (3) RFS APXVAALL24_43 PANEL ANTENNAS AND THREE (3) COMMSCOPE VV-65A-R1 PANEL ANTENNAS MOUNTED ON SITEPRO RMQLP-496-HK PLATFORM.

← 125' TALL STEEL UTILITY POLE STRUCTURE NO. 19520

← AT&T (24) 1-5/8" ϕ COAX CABLES, (1) FIBER CABLE AND (2) DC CABLES MOUNTED ON CLUSTER SUPPORT BRACKETS

← T-MOBILE (24) 1-5/8" ϕ COAX CABLES MOUNTED ON CLUSTER SUPPORT BRACKETS

1
SK-1

TOWER ELEVATION

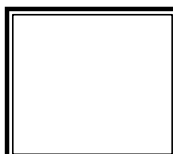
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REVISIONS		
00	7/10/23	ISSUED FOR REVIEW
01	8/10/23	CONSTRUCTION

CEN TEK engineering
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(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road, Branford, CT 06405

CT11426A
STRUCTURE 19520
670 CHAPEL STREET
STRATFORD, CT

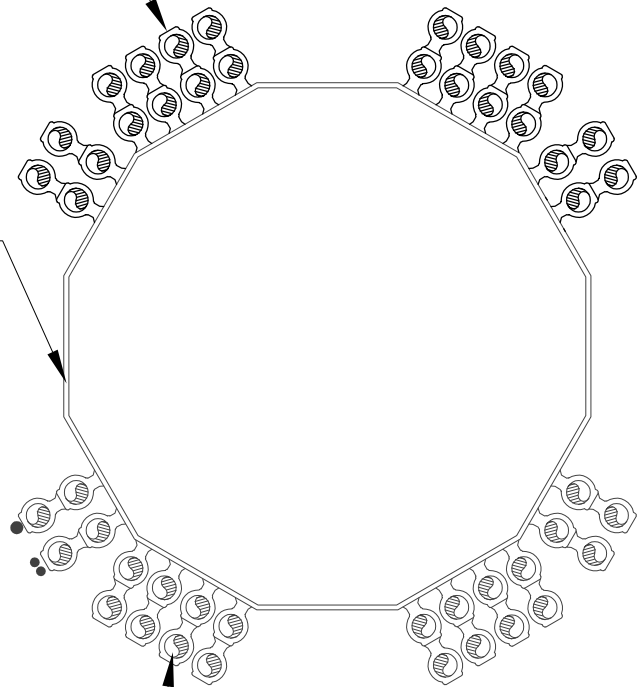
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DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	7/10/23



TOWER ELEVATION
SK-1
DWG. 1 OF 1

T-MOBILE (24) 1-5/8" \emptyset COAX CABLES MOUNTED ON CLUSTER SUPPORT BRACKETS

125' TALL STEEL UTILITY POLE STRUCTURE NO. 19520



AT&T (24) 1-5/8" \emptyset COAX CABLES, ONE (1) FIBER CABLE AND TWO (2) DC CABLES MOUNTED ON CLUSTER SUPPORT BRACKETS

1
SK-2

COAX CABLE PLAN

SCALE: NOT TO SCALE

REVISIONS		
00	7/10/23	ISSUED FOR REVIEW
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CT11426A
 STRUCTURE 19520
 670 CHAPEL STREET
 STRATFORD, CT

PROJECT NO: 22073.05
 DRAWN BY: TJL
 CHECKED BY: CFC
 SCALE: AS NOTED
 DATE: 7/10/23

FEELINE
 PLAN
SK-2
 DWG. 2 OF 1

RAN Template: 67E998E 6160	A&L Template: 4Sec-67E998E_1QP_1OP
--------------------------------------	--

CT11426A_L600_5_draft

Print Name: Standard
PORs: L600_L600 Coverage

Section 1 - Site Information

Site ID: CT11426A	Site Name: Stratford/MP/James Farm	Latitude: 41.23785
Status: Draft	Site Class: Utility Lattice Tower	Longitude: -73.12244
Version: 5	Site Type: Structure Non Building	Address: 670 Chapel St, CL&P Pole 1321
Project Type: L600	Plan Year:	City, State: Stratford, CT
Approved: Not approved	Market: CONNECTICUT CT	Region: NORTHEAST
Approved By: Not approved	Vendor: Ericsson	
Last Modified: 07/28/2023 3:04:18 PM	Landlord: Northeast Utilities	
Last Modified By: Hansraj.Rana4@T-Mobile.com		

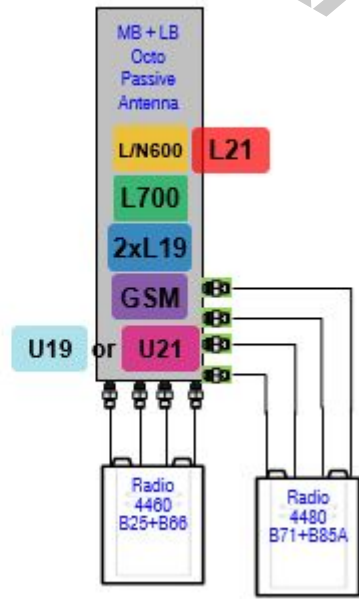
RAN Template: 67E998E 6160	AL Template: 4Sec-67E998E_1QP_1OP			
Sector Count: 3	Antenna Count: 6	Coax Line Count: 24	TMA Count: 0	RRU Count: 6

Section 2 - Existing Template Images

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

4Sec-67E998E_1QP.JPG

One-sector view from



Notes:

Section 4 - Siteplan Images

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DRAFT



Section 5 - RAN Equipment

Existing RAN Equipment

Template: 94DB Outdoor (evolved from 4B)

Enclosure	1	2
Enclosure Type	RBS 6102	Ancillary Equipment (Ericsson)
Radio	RUS01 B2 (x3) L1900 G1900 RUS01 B2 (x3) L1900 RUS01 B4 (x3) L2100 RUS01 B4 (x3) U2100 (DECOMMISSIONED)	
Baseband	BB 6630 L1900 L2100 DUG20 DUW30 (x2)	
Hybrid Cable System		Ericsson 6x12 HCS *Select Length & AWG*

Proposed RAN Equipment

Template: 67E998E 6160

Enclosure	1	2
Enclosure Type	Enclosure 6160 AC V1	B160
Baseband	BB 6648 N600 L600 L700 L1900 L2100 DUG20 G1900	
Transport System	CSR IXRe V2 (Gen2)	
Hybrid Cable System	Hybrid Trunk 6/24 4AWG 20m (x4)	PSU 4813 vR4A (Kit)

RAN Scope of Work:

Section 6 - A&L Equipment

Existing Template: 94B_1QP_SIMO
Proposed Template: 4Sec-67E998E_1QP_1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	70	
M. Tilt	0	
Height (ft)	109	
Ports	P1	P2
Active Tech	L1900 G1900	L2100
Dark Tech		
Restricted Tech		
Decomm. Tech	U1900	U2100
E. Tilt	2	2
Cables	1-1/4" Coax - 120 ft.	1-1/4" Coax - 120 ft.
TMAS	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners		
Radio		
Sector Equipment		
Unconnected Equipment:		
Scope of Work:		
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>		

Sector 1 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)			Commscope_VV-65A-R1 (Quad)		
Azimuth	70			70		
M. Tilt						
Height (ft)	109			109		
Ports	P1	P2	P3	P4	P5	P6
Active Tech	N600 L600 L700	N600 L600 L700			L2100 N1900 G1900 L1900	L2100 L1900 N1900
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)			Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)
TMA's						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

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

Sector 2 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	230	
M. Tilt	0	
Height (ft)	109	
Ports	P1	P2
Active Tech	L1900 G1900	L2100
Dark Tech		
Restricted Tech		
Decomm. Tech	U1900	U2100
E. Tilt	2	2
Cables	1-1/4" Coax - 120 ft.	1-1/4" Coax - 120 ft.
TMA's	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners		
Radio		
Sector Equipment		
Unconnected Equipment:		
Scope of Work:		

Sector 2 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)			Commscope_VV-65A-R1 (Quad)		
Azimuth	230			230		
M. Tilt						
Height (ft)	109			109		
Ports	P1	P2	P3	P4	P5	P6
Active Tech	L600 N600 L700	L600 N600 L700			L1900 L2100 G1900 N1900	L1900 L2100 N1900
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)			Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)
TMA's						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						
*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.						

Sector 3 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	330	
M. Tilt	0	
Height (ft)	109	
Ports	P1	P2
Active Tech	L1900 G1900	L2100
Dark Tech		
Restricted Tech		
Decomm. Tech	U1900	U2100
E. Tilt	2	2
Cables	1-1/4" Coax - 120 ft.	1-1/4" Coax - 120 ft.
TMA	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners		
Radio		
Sector Equipment		
Unconnected Equipment:		
Scope of Work:		

Sector 3 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)			Commscope_VV-65A-R1 (Quad)		
Azimuth	330			330		
M. Tilt						
Height (ft)	109			109		
Ports	P1	P2	P3	P4	P5	P6
Active Tech	N600 L700 L600	N600 L700 L600			G1900 L2100 L1900 N1900	L2100 L1900 N1900
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)			Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)	Coax Jumper (x2) CABLE 1 5/8IN FOAM PREMIUM - 150 ft. (x2)
TMA's						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						
*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.						

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		



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

VV-65A-R1



4-port sector antenna, 4x 1695–2690 MHz, 65° HPBW, 1x RET, The two high band arrays utilize a common tilt.

- The RET interface comprises one pair of AISG input/output ports

General Specifications

Antenna Type	Sector
Band	Single band
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage
Radome Material	PVC, UV resistant
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, total	4

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	1 female 1 male
Input Voltage	10–30 Vdc
Internal RET	High band (1)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	10 W
Protocol	3GPP/AISG 2.0

Dimensions

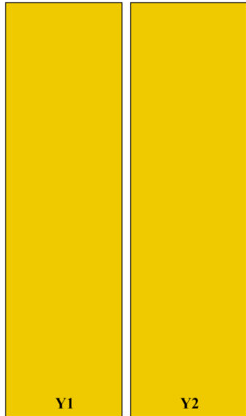
Width	307 mm 12.087 in
Depth	118 mm 4.646 in
Length	1390 mm 54.724 in

VV-65A-R1

Net Weight, without mounting kit

10.8 kg | 23.81 lb

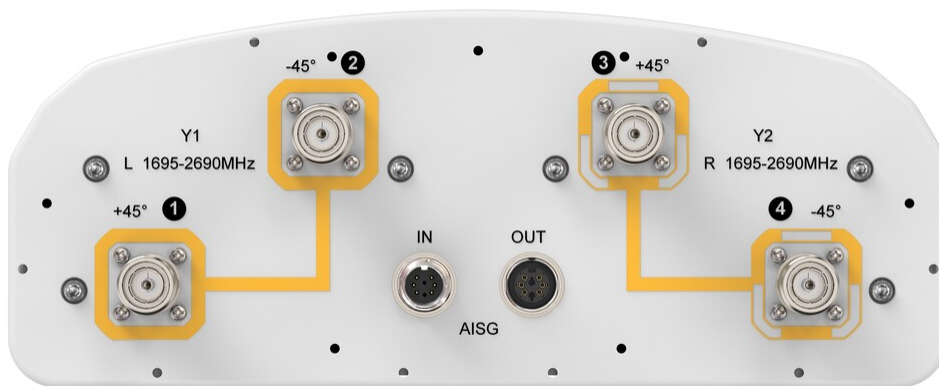
Array Layout



Array ID	Frequency (MHz)	RF Connector	HPBW	RET (SRET)	AISG No.	AISG RET UID
Y1	1695-2690	1 - 2	65°	1	AISG1	CPxxxxxxxxxxxxxxxxxY1
Y2	1695-2690	3 - 4	65°			

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

Port Configuration



Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2690 MHz
Polarization	±45°
Total Input Power, maximum	400 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	1695–1880	1850–1990	1920–2200	2300–2500	2490–2690
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1545 Pidco Drive
 Plymouth, IN 46563
 Phone: 574.936.4221
 Fax: 574.936.8925
 Email: SP1Engineering@valmont.com
 www.sitepro1.com

A **valmont** COMPANY

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

Antenna Mount Analysis
Report

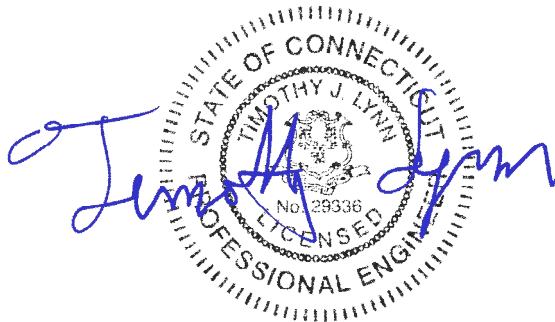
Site Ref: CT11426

670 Chapel Street
Stratford, CT

Centek Project No. 22073.05

~~Date: June 14, 2023~~
Rev 1: October 3, 2023

Max Stress Ratio = 39%



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

Table of Contents

SECTION 1 – REPORT

- ANTENNA AND APPURTENANCE SUMMARY
- STRUCTURE LOADING
- CONCLUSION

SECTION 2 – CALCULATIONS

- WIND LOAD ON APPURTENANCES
- RISA3D OUTPUT REPORT
- CONNECTION

SECTION 3 – REFERENCE MATERIALS

- RF DATA SHEET

October 3, 2023

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

Re: *Structural Letter ~ Antenna Mount*
T-Mobile – Site Ref: CT11426A
670 Chapel Street
Stratford, CT

Centek Project No. 22073.05

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 and three (3) Commscope VV-65A-R1 panel antennas mounted on one (1) Platform to the utility pole with a RAD center elevation of 110-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 120 mph for Stratford 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

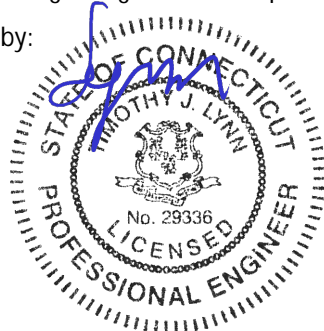


Exhibit F

Power Density/RF Emissions Report



FOX HILL TELECOM

Radio Frequency Emissions Analysis Report



Site ID: CT11426A

Stratford/MP/James Farm
670 Chapel St, CL&P Pole 19520
Stratford, CT 06614

October 12, 2023

Fox Hill Telecom Project Number: 231004

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	10.12 %



October 12, 2023

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

Emissions Analysis for Site: **CT11426A – Stratford/MP/James Farm**

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **670 Chapel St, CL&P Pole 19520, Stratford, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report the percentage of MPE rather than power density.



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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 **670 Chapel St, CL&P Pole 19520, Stratford, 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

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

S = Power Density (in $\mu\text{w}/\text{cm}^2$)

ERP = Effective Radiated Power from antenna (watts)

R = Distance from the antenna (meters)

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



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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE / 5G NR	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	4	40

Table 1: Channel Data Table



FOX HILL TELECOM

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 APXVAALL24_43-U-NA20	110
A	2	Commscope VV-65A-R1	110
B	1	RFS APXVAALL24_43-U-NA20	110
B	2	Commscope VV-65A-R1	110
C	1	RFS APXVAALL24_43-U-NA20	110
C	2	Commscope VV-65A-R1	110

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 APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.28
Antenna A2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	1.11
Sector A Composite MPE%							2.39
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.28
Antenna B2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	1.11
Sector B Composite MPE%							2.39
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.28
Antenna C2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	1.11
Sector C Composite MPE%							2.39

Table 3: T-MOBILE Emissions Levels



FOX HILL TELECOM

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	2.39 %
AT&T	7.73 %
Site Total MPE %:	10.12 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	2.39 %
T-MOBILE Sector B Total:	2.39 %
T-MOBILE Sector C Total:	2.39 %
Site Total:	10.12 %

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 ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	110	4.00	600 MHz	400	1.00%
T-Mobile 700 MHz LTE	2	485.32	110	1.31	700 MHz	467	0.28%
T-Mobile 1900 MHz (PCS) LTE / 5G NR	4	1,435.69	110	5.30	1900 MHz (PCS)	1000	0.53%
T-Mobile 1900 MHz (PCS) GSM	1	538.38	110	0.50	1900 MHz (PCS)	1000	0.05%
T-Mobile 2100 MHz (AWS) LTE	4	1,610.87	110	5.30	2100 MHz (AWS)	1000	0.53%
						Total:	2.39 %

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:	2.39 %
Sector B:	2.39 %
Sector C:	2.39 %
T-MOBILE Maximum Total (per sector):	2.39 %
Site Total:	10.12 %
Site Compliance Status:	COMPLIANT

The estimated composite MPE value for this site assuming all carriers present is **10.12 %** 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



56 Prospect Street,
Hartford, CT 06103

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

October 10, 2023

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

RE: T-Mobile Antenna Site CT11426A, Chapel St, Stratford CT, Eversource Structure 19520.

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 Gelinias 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 (203) 623-0409.

Sincerely,


Masie Hartt

Masie Hartt
Transmission Line Engineering

Ref: 2023-0810 - CT11426A - Structural Analysis Rev1(22073.05)
2023-1003 - CT11426A - Mount Analysis Rev1 (22073.05)
2023-1009_22073.05 CT11426A – Rev2 CDs (S&S)

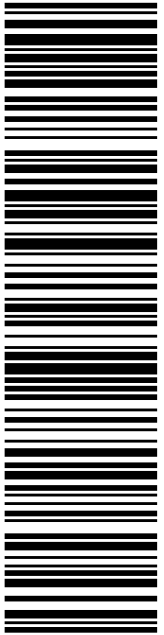
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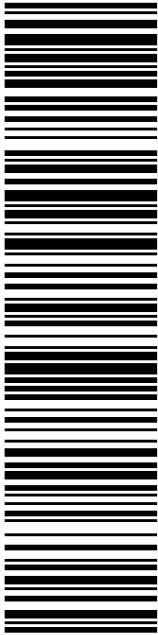
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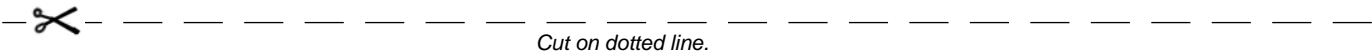
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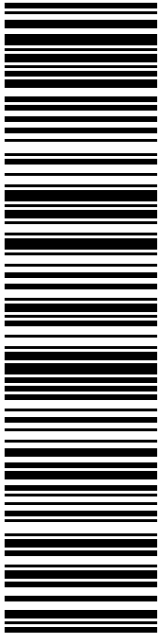
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Grand Total: \$0.00

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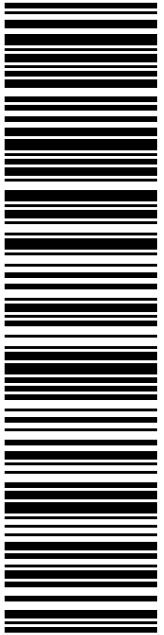
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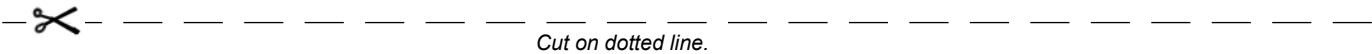
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