

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

**NEW CINGULAR WIRELESS PCS, LLC (AT&T) : SUB-PETITION NO. \_\_\_\_\_**  
**SUB-PETITION FOR A DECLARATORY :  
RULING FOR COLLOCATION, MODIFICATION :  
AND EXTENSION OF THE EXISTING :  
TELECOMMUNICATIONS FACILITY ON :  
PROPERTY LOCATED AT 940 MERIDEN ROAD, :  
WATERBURY, CONNECTICUT. : May 3, 2022**

**SUB-PETITION FOR A DECLARATORY RULING**

**I. INTRODUCTION**

On behalf of New Cingular Wireless PCS LLC d/b/a AT&T (“AT&T”), we respectfully submit this sub-petition (the “Sub-Petition”) to the Connecticut Siting Council (the “Council”) for an administrative approval of a modification to an existing wireless telecommunications facility qualifying as an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation Act of 2012 (the “Spectrum Act”, codified at 47 U.S.C. §1455) and the Council’s ruling in Petition 1133 (the “Ruling”) by extending the existing 119’ above ground level (AGL”) monopole (the “Monopole”) to a height of 134’ AGL and collocating twelve (12) panel antennas at the 129’ AGL antenna centerline height on a fifteen foot (15’) tall extension (the “Extension”) to the existing Monopole, located on property with an address of 940 Meriden Road, Waterbury, Connecticut (the “Site”). **Attachment 1** contains a letter from SBA, the owner of the tower, authorizing AT&T to file this Sub-Petition. The Site is located within the RL (Low Density Residential) zoning district. The area surrounding the Site contains a mix of commercial and residential uses.

**II. DESCRIPTION OF WIRELESS SERVICES TO BE PROVIDED**

The modification and collocation will allow AT&T to provide wireless voice and data services to AT&T’s customers. These services will be provided via 4G and 5G technologies. AT&T will use the 850 MHz and 3500 MHz frequency bands to provide 5G services and the 700 MHz and 1900 MHz frequency bands to provide 4G services over LTE technology. These data networks are used by mobile devices for fast web browsing, media streaming, and other applications that require broadband connections. The mobile devices benefitting from these advanced data networks are not limited to basic handheld phones, but also include devices such as smartphones, tablets, and laptop air-cards. AT&T will also deploy FirstNet services at this facility. FirstNet is a federal agency with a mandate to create a nationwide, interoperable public safety broadband network for first responders using FirstNet’s Band 14 spectrum (20 MHz of the 700 MHz spectrum).

### III. HISTORY OF EXISTING TELECOMMUNICATIONS FACILITY

The Monopole is owned by SBA and was approved by the Council on February 27, 2007, in Docket No. 321 (please see the Decision at **Attachment 2**). An extension to the Monopole was approved on January 7, 2010, for Clearwire Corporation pursuant to Petition 927; the Staff Report is attached hereto as **Attachment 3**.

### IV. PROPOSED MODIFICATION

AT&T is licensed by the Federal Communications Commission ("FCC") to provide wireless services in this area of the State of Connecticut and proposes to extend the existing 119' Monopole to a height of 134' AGL and collocate twelve (12) panel antennas at the 129' AGL antenna centerline height, together with related amplifiers, cables, fiber and other associated antenna equipment, including, without limitation, remote radio heads, surge arrestors, and global positioning system antenna with associated electronic equipment in a walk-in-cabinet and an emergency backup power generator, on a concrete pads, and other appurtenances all located within an existing compound enclosed by a chain link fence (the "Facility") as depicted on the plans submitted with this Sub-Petition as **Attachment 4**.

The passing structural reports and analyses evidencing that the proposed modification will comply with applicable structural requirements and codes is provided in **Attachment 5**. Notice to the FAA is not required for the proposed modification as provided in **Attachment 6**. A visual assessment demonstrating the minimal visibility of the proposed modification to the Monopole is provided in **Attachment 7**.

Once AT&T receives all required approvals, the installation of the Facility will take approximately three (3) to four (4) weeks. AT&T intends to commence construction of the Facility this year. Construction will take place during normal business hours.

### V. SECTION 6409 OF THE SPECTRUM ACT

Section 6409(a) of the Spectrum Act mandates that state and local governments "may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station."<sup>1</sup> An eligible facilities request is defined in the Spectrum Act as any request to modify a Tower or Base Station that involves "collocations of new Transmission Equipment," "removal," or "replacement" of Transmission Equipment.<sup>2</sup>

Under this eligible facilities request, AT&T is proposing to install the Extension to the Monopole with a fifteen-foot (15') tower extension to a total height of 134' AGL and install the Facility as depicted on the plans submitted with this Sub-Petition. The modification proposed by AT&T in this Sub-Petition do not substantially change the physical dimensions of the Monopole

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<sup>1</sup> 47 U.S.C. §1455(a)(1).

<sup>2</sup> 47 U.S.C. §1455(a)(2).

in accordance with the Spectrum Act, as interpreted and implemented by regulations (the "Regulations")<sup>3</sup> promulgated by the FCC.

The equipment identified in this eligible facilities request to be collocated at the Site qualifies as transmission equipment pursuant to the FCC definition. The FCC has defined transmission equipment as "any equipment that facilitates transmission for any Commission-licensed or authorized wireless communication service, including, but not limited to, radio transceivers, antennas and other relevant equipment associated with and necessary to their operation, including coaxial or fiber-optic cable, and regular and back-up power supply. This definition includes equipment used in any technological configuration associated with any Commission-authorized wireless transmission, licensed or unlicensed, terrestrial or satellite, including commercial mobile, private mobile, broadcast and public safety services, as well as fixed wireless services such as microwave backhaul or fixed broadband."<sup>4</sup>

Pursuant to the Regulations, the FCC determined that any modification to an existing telecommunications tower that meets six (6) specified criteria does not substantially change the physical dimensions of the existing tower and, therefore, is an eligible facilities request, approval of which must be granted.<sup>5</sup> These six criteria and analysis of how this eligible facilities request satisfies each of the six (6) review criteria identified by the FCC are discussed below.

- 1. For towers not in the public rights-of-way, in this case the Monopole, the modification increases the height of the Monopole by more than 10% or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet (20'), whichever is greater. Changes in height should be measured from the dimensions of the tower, inclusive of originally approved appurtenances and any modifications that were approved prior to the passage of the Spectrum Act.**

As depicted on the Plans, AT&T's proposed modification does not increase the height of the Monopole by more than twenty feet (20') from the nearest existing antenna as approved by the Council prior to the passage of the Spectrum Act. Additionally, the FCC clarified in its recent Declaratory Ruling<sup>6</sup> that for purposes of this analysis, the height increase is measured from the top of the existing antenna to the bottom of the proposed antenna, which in this case is only three feet (3'). We note that the Monopole was originally approved at a height of 110' and that a ten-foot (10') extension was approved in 2010, prior to the passage of the Spectrum Act in 2012.

- 2. For towers not in the public rights-of-way, in this case the Monopole, the modification involves adding an appurtenance to the body of the Monopole that would protrude from the edge of the monopole by twenty feet (20') or more than the width of the Monopole at the level of the appurtenance, whichever is greater;**

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<sup>3</sup> 47 C.F.R. §1.6100

<sup>4</sup> 47 C.F.R. §1.6100(b)(8)

<sup>5</sup> 47 C.F.R. §1.6100(b)(7)

<sup>6</sup> *Declaratory Ruling and Notice of Proposed Rulemaking* –WT Docket No. 19-250 and RM-11849

As depicted on the Plans, AT&T's antennas and appurtenances will not protrude from the edge of the Monopole by more than twenty feet (20'). The outside face of the antenna is approximately six feet (6') from the edge of the Monopole and consistent with the existing antenna installation on the Monopole.

- 3. For any eligible support structure, in this case the Monopole, the modification involves installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets;**

AT&T proposes one walk-in equipment cabinet.

- 4. The modification entails any excavation or deployment outside of the current site, except that, for towers other than towers in the public rights-of-way, it entails any excavation or deployment of transmission equipment outside of the current site by more than 30 feet in any direction. The site boundary from which the 30 feet is measured excludes any access or utility easements currently related to the site;**

AT&T does not propose excavation or deployment outside the current Site.

- 5. The modification would defeat the concealment elements of the eligible support structure; or**

The Monopole does not incorporate concealment elements. The new panel antennas will be mounted in a similar fashion to the existing panel antennas currently attached to the Monopole.

- 6. The modification does not comply with conditions associated with the siting approval of the construction or modification of the eligible support structure or base station equipment, provided however that this limitation does not apply to any modification that is non-compliant only in a manner that would not exceed the thresholds identified in § 1.40001(b)(7)(i) through (iv).**

The modification is consistent with all applicable terms and conditions of the Council's approval in Docket 321.

## **VI. MAXIMUM PERMISSIBLE EXPOSURE COMPLIANCE**

The power density levels for AT&T's proposed Facility will not exceed 77.91% of the federally permitted emission standards for the public. Please refer to the Calculated Radio Frequency Emissions analysis submitted as **Attachment 8**. The total radio frequency power density will comply with the standards adopted by the Connecticut Department of Environmental Protection and the Maximum Permissible Exposure limits of the FCC.

## VII. NOTICE TO MUNICIPAL OFFICIALS AND ABUTTING PROPERTY OWNERS

Pursuant to the Ruling, AT&T sent notice of its filing of this Sub-Petition to the City of Waterbury and to each abutting property owner as listed in the City of Waterbury's Assessor records. The notice indicates that comments or concerns should be submitted to the Council within thirty (30) days of the date the notice was sent. A certification of such notice, a copy of the notice, the list of City officials and abutting property owners are submitted in **Attachment 9**. Additionally, a map produced from the City of Waterbury's GIS mapping data is included on Sheet C-1 of the plans.

## VIII. CONCLUSION

AT&T respectfully asserts that its proposed modification does not substantially change the physical dimensions of the Monopole at the Site as enumerated in the Spectrum Act and the Regulations, and therefore qualifies as an eligible facilities request. For the foregoing reasons, AT&T respectfully requests that the Council issue an order approving AT&T's proposed modification to the existing wireless telecommunications facility.

Respectfully submitted,

/s/ Thomas J. Regan  
Thomas J. Regan, Esq.

cc: Mayor Neil M. O'Leary  
City of Waterbury  
235 Grand Street  
Waterbury, CT 06702

Robert Nerney, City Planner  
City of Waterbury  
185 South Main Street, 5<sup>th</sup> Floor  
Waterbury, CT 06706

Michael J. Dalton, City Clerk  
City of Waterbury  
235 Grand Street  
Waterbury, CT 06702

# **ATTACHMENT 1**

Letter of Authorization



SBA Communications Corporation  
8051 Congress Avenue  
Boca Raton, FL 33487-1307

T + 561.995.7670  
F + 561.995.7626

[sbasite.com](http://sbasite.com)

## **LETTER OF AUTHORIZATION**

**SBA Site ID:** CT13070-A, Waterbury 4, CT

**Property Located at:** 940 Meriden Road, Waterbury, CT, 06705

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**THE CITY/COUNTY OF:** Waterbury / New Haven/Waterbury

### **APPLICATION FOR ZONING/USE/BUILDING PERMIT**

This letter authorizes AT&T and its authorized agents to file for all necessary zoning, planning and building permits (local, state and federal) for the purposes of installing, operating and maintaining a telecommunications facility on the existing tower on the property referenced above on behalf of Pine Grove Cemetery Association, Inc..

All approval conditions that may be granted to AT&T in connection with above referenced facility relating to this specific application are the sole responsibility of AT&T.

SBA Infrastructure, LLC

A handwritten signature in black ink, appearing to read 'Jason Silberstein', is written over a light blue horizontal line.

Jason Silberstein

Executive VP, Site Leasing

Date: 3/01/2022

# **ATTACHMENT 2**

Docket No. 321 – Decision & Order



DOCKET NO. 321 – Optasite, Inc. and Omnipoint } Connecticut  
Communications, Inc. application for a Certificate of }  
Environmental Compatibility and Public Need for the } Siting  
construction, maintenance and operation of a telecommunications }  
facility at 940 Meriden Road in Waterbury, Connecticut. } Council

February 27, 2007

### Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Optasite, Inc. for the construction, maintenance and operation of a wireless telecommunications facility to be located at 940 Meriden Road in Waterbury, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be designed as a steel monopole and shall be constructed no taller than 110 feet above ground level to provide telecommunications services to both public and private entities.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the City of Waterbury and all parties and intervenors, as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
  - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antenna mountings, equipment building, access road, utility line, and landscaping; and
  - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council in the event other carriers locate at this facility or if circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new state or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any City of Waterbury public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.
7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower 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 Final Decision shall not be counted in calculating this deadline.
8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the City of Waterbury. Any proposed modifications to this Decision and Order shall likewise be so served.
9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
10. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Waterbury Republican-American.

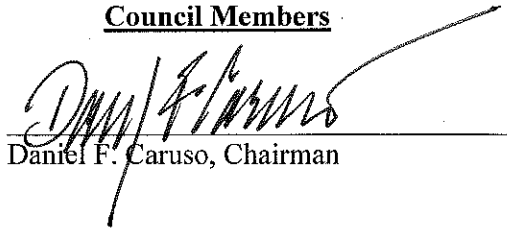
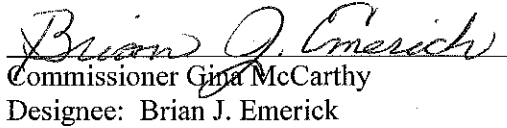
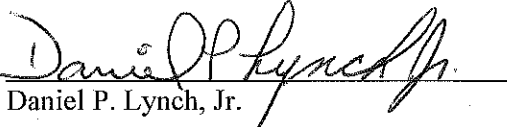
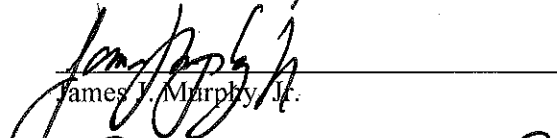

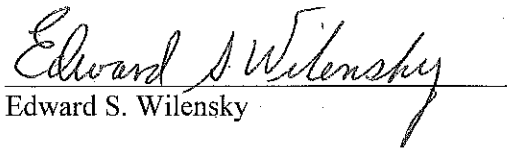
By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors in this proceeding are:

<b>Status Granted</b>	<b>Status Holder (name, address &amp; phone number)</b>	<b>Representative (name, address &amp; phone number)</b>
<b>Applicant</b>	Optasite, Inc. One Research Drive, Suite 200C Westborough, MA 01581  Omnipoint Communications, Inc. 100 Filley Street Bloomfield, CT 06002	Julie Kohler, Esq. Carrie L. Larson, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604 (203) 368-0211 (203) 394-9901 fax <a href="mailto:jkohler@cohenandwolf.com">jkohler@cohenandwolf.com</a> <a href="mailto:clarson@cohenandwolf.com">clarson@cohenandwolf.com</a>
<b>Intervenor</b> <i>(approved at the hearing on November 21, 2006)</i>	Sprint/Nextel Corporation	Thomas J. Regan Brown Rudnick Berlack Israels LLP CityPlace I, 185 Asylum Street Hartford, CT 06103-3402 (860) 509-6500 (860) 509-6501 fax

**CERTIFICATION**

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in DOCKET NO. 321 – Optasite, Inc. and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 940 Meriden Road in Waterbury, Connecticut, and voted as follows to approve the proposed site located at 940 Meriden Road in Waterbury, Connecticut:

<u>Council Members</u>	<u>Vote Cast</u>
 Daniel F. Caruso, Chairman	Yes
_____ Colin C. Tait, Vice Chairman	Absent
_____ Commissioner Donald W. Downes Designee: Gerald J. Heffernan	Absent
 Commissioner Gina McCarthy Designee: Brian J. Emerick	Yes
_____ Philip T. Ashton	Absent
 Daniel P. Lynch, Jr.	Yes
 James J. Murphy, Jr.	Yes
 Dr. Barbara Currier Bell	Yes
 Edward S. Wilensky	Yes

Dated at New Britain, Connecticut, February 27, 2007.

# **ATTACHMENT 3**

Petition No. 927 – Staff Report

Petition No. 927  
Clearwire  
Waterbury, Connecticut  
Staff Report  
January 7, 2010

On December 15, 2009, the Connecticut Siting Council (Council) received a petition from Clear Wireless LLC (Clearwire) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for proposed modifications to an existing 110-foot monopole telecommunications tower located in the Pine Grove Cemetery at 940 Meriden Road in Waterbury. Council member Ed Wilensky visited the site with staff member David Martin on December 29, 2009 to review the proposal. Tom Flynn represented Clearwire at the field review.

Clearwire seeks to install a 10-foot tower extension at the top of the existing tower in order to install three panel antennas, two microwave dishes, and three remote radio heads at a centerline height of 118 feet above ground level. Clearwire would also install an equipment cabinet on a six-foot by six-foot concrete pad within the existing 60-foot by 60-foot fenced compound.

Currently, the tower hosts antennas of T-Mobile (at a centerline height of 97 feet), Verizon (at a centerline height of 87 feet), and Pocket Wireless (at a centerline height of 77 feet). Nextel has leased the top of the existing tower and plans to install antennas at a centerline height of 107 feet.

The structural analysis for Clearwire's modifications indicates that the existing tower has the structural capacity to accommodate Clearwire's extension without the need for any reinforcement.

This tower's cumulative power density with the addition of Clearwire's antennas would be 63.3% of the FCC maximum permissible emission.

The existing tower is located behind the cemetery's maintenance building. It is visible from areas to the north and west of the cemetery. Areas to the west with visibility are mostly located along Meriden Road, which is predominantly commercial. The tower has very little visibility to east and south. The proposed ten-foot extension should not significantly increase the areas from which the tower is visible.

Clearwire notified abutting property owners by certified mail of its planned extension. Neither the Council nor the applicant has received any calls regarding this proposal.

**View of existing tower and compound**



(Photo taken October, 2007)

**View from Courtland Avenue at Beth Lane**



(Photo taken October, 2007)

**View Looking East Toward Cemetery on Meriden Road**



(Photo taken October, 2007)



# **ATTACHMENT 4**

Site Plans

**PROJECT INFORMATION**

SCOPE OF WORK: TELECOMMUNICATIONS FACILITY (NSB A EXISTING 119'-0" A.G.L. TALL MONOPOLE WITH PROPOSED 15'-0" EXTENSION. PROPOSED WALK-IN CABINET, AND GENERATOR WILL BE INSTALLED AT GRADE INSIDE A EXISTING FENCED-IN COMPOUND. PROPOSED TWELVE PANEL ANTENNAS AND ASSOCIATED EQUIPMENT WILL BE INSTALLED AT A HEIGHT OF 129'-0" A.G.L.):

SITE ADDRESS: 940 MERIDEN ROAD  
WATERBURY, CT 06705

APPLICANT: AT&T  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

SITE OWNER: PINE GROVE CEMETERY ASSOCIATION  
950 MERIDIAN ROAD  
WATERBURY, CT 06705

TOWER OWNER: SBA COMMUNICATIONS CORPORATION  
8051 CONGRESS AVENUE  
BOCA RATON, FL 33487-1307

LATITUDE: 41.55327 N, 41° 33' 11.8" N

LONGITUDE: 72.99337 W, 72° 59' 36.1" W

TYPE OF SITE: MONOPOLE/ WALK-IN CABINET

TOWER HEIGHT: 119'-0"±

PROPOSED TOWER HEIGHT: 134'-0"±

RAD CENTER: 129'-0"±



**SITE NUMBER: CT1374**

**SITE NAME: WATERBURY MERIDEN ROAD**

**FA CODE:13935185**

**PACE ID: MRCTB050600, MRCTB050601, MRCTB050615, MRCTB050617, MRCTB050619, MRCTB050345**

**PROJECT: NSB**

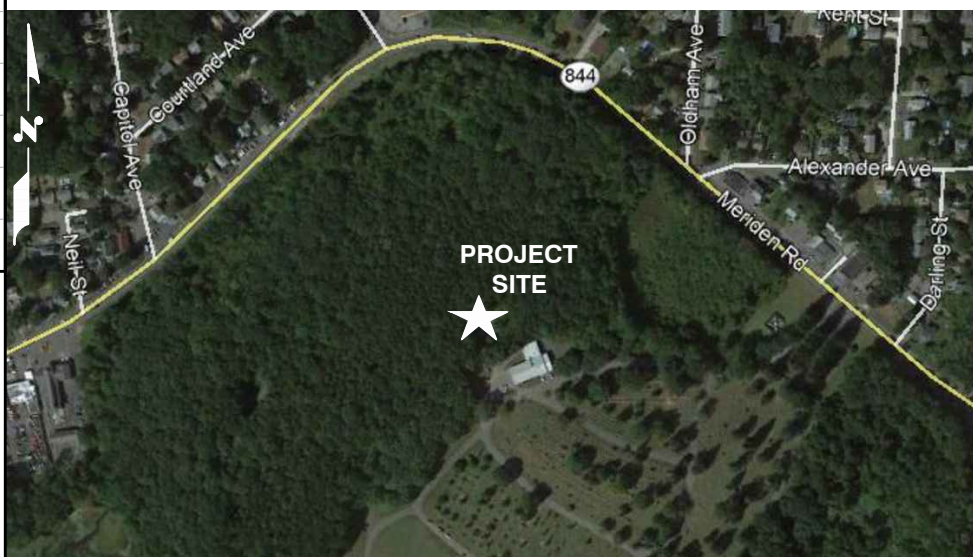
**DRAWING INDEX**

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	4
GN-1	GENERAL NOTES	4
SN-1	SPECIAL INSPECTIONS NOTES	4
C-1	PLOT PLAN	4
C-2	ABUTTERS LIST	4
A-1	COMPOUND & EQUIPMENT PLANS	4
A-2	ANTENNA LAYOUT & ELEVATION	4
A-3	DETAILS	4
A-4	DETAILS	4
E-1	ELECTRICAL NOTES & ONE-LINE DIAGRAM	4
G-1	GROUNDING DETAILS	4
RF-1	RF PLUMBING DIAGRAM	4

**SBA SITE ID: CT13070**  
**FCC#: 1258194**

**VICINITY MAP**

**DIRECTIONS TO SITE:**  
GET ON I-90 W, HEAD SOUTHWEST, TURN RIGHT TOWARD LEGGATT MCCALL CONN, TURN LEFT ONTO LEGGATT MCCALL CONN, CONTINUE ONTO BURR ST, TURN LEFT ONTO COCHITUATE RD, USE THE RIGHT LANE TO MERGE ONTO I-90 W VIA THE RAMP TO SPRINGFIELD, (TOLL ROAD), FOLLOW I-90 W AND I-84 TO CT-322 W IN SOUTHTON. TAKE EXIT 28 FROM I-84, MERGE ONTO I-90 W, (TOLL ROAD), KEEP LEFT TO STAY ON I-90 W, (TOLL ROAD), KEEP LEFT TO STAY ON I-90 W, (TOLL ROAD), USE THE RIGHT 2 LANES TO TAKE EXIT 78 FOR I-84 TOWARD HARTFORD CT/NEW YORK CITY, (TOLL ROAD), CONTINUE ONTO I-84, (TOLL ROAD), ENTERING CONNECTICUT, KEEP LEFT TO STAY ON I-84, KEEP LEFT TO STAY ON I-84, KEEP RIGHT TO STAY ON I-84, FOLLOW SIGNS FOR I-91 N/HARTFORD, KEEP RIGHT TO STAY ON I-84, TAKE EXIT 28 TOWARD CT-322 W, DRIVE TO STATE HWY , 844/MERIDEN RD IN WATERBURY, TURN LEFT ONTO CT-322 W, CONTINUE ONTO STATE HWY 844/MERIDEN RD



**GENERAL NOTES**

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

**72 HOURS**

**CALL BEFORE YOU DIG**  
CALL TOLL FREE 1-800-922-4455  
OR CALL 811

**UNDERGROUND SERVICE ALERT**

**H2G HUDSON Design Group LLC**  
45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

**S&I**  
12 INDUSTRIAL WAY  
SALEM, NH 03079

**SITE NUMBER: CT1374**  
**SITE NAME: WATERBURY MERIDEN ROAD**

940 MERIDEN ROAD  
WATERBURY, CT 06705  
NEW HAVEN COUNTY

**at&t**  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	04/22/22	ISSUED FOR CONSTRUCTION	EF	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CT	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH



AT&T	
TITLE SHEET (NSB)	
SITE NUMBER	DRAWING NUMBER
CT1374	T-1
REV	4

**GROUNDING NOTES**

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

**GENERAL NOTES**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR – SAI  
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL 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 CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. **APPLICABLE BUILDING CODES:**  
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

**BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS  
 ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)**

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

**AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;**

**AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;**

**TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL**

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

**ABBREVIATIONS**

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
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FAX: (978) 336-5586

12 INDUSTRIAL WAY  
SALEM, NH 03079

**SITE NUMBER: CT1374**  
**SITE NAME: WATERBURY MERIDEN ROAD**

940 MERIDEN ROAD  
WATERBURY, CT 06705  
NEW HAVEN COUNTY

550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

4	04/22/22	ISSUED FOR CONSTRUCTION	EQ	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: AR		

AT&T	
GENERAL NOTES (NSB)	
SITE NUMBER	DRAWING NUMBER
CT1374	GN-1
	REV
	4

**STRUCTURAL NOTES:**

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

**SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):**

**GENERAL:** WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

**NOTES:**

- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4" A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
- CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
- EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

**NOTES:**

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
- AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

**SPECIAL INSPECTION CHECKLIST**

**BEFORE CONSTRUCTION**

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS <sup>1</sup>
REQUIRED	MATERIAL SPECIFICATIONS REPORT <sup>2</sup>
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS <sup>3</sup>

ADDITIONAL TESTING AND INSPECTIONS:

**DURING CONSTRUCTION**

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS <sup>4</sup>
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION <sup>5</sup>
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT

ADDITIONAL TESTING AND INSPECTIONS:

**AFTER CONSTRUCTION**

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS <sup>6</sup>
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS

ADDITIONAL TESTING AND INSPECTIONS:



45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



12 INDUSTRIAL WAY  
SALEM, NH 03079

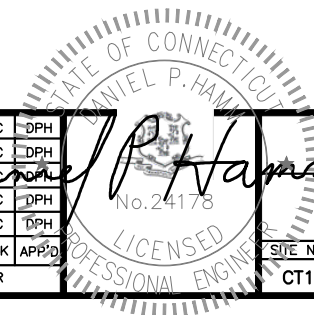
**SITE NUMBER: CT1374**  
**SITE NAME: WATERBURY MERIDEN ROAD**

940 MERIDEN ROAD  
WATERBURY, CT 06705  
NEW HAVEN COUNTY



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

4	04/22/22	ISSUED FOR CONSTRUCTION	EF	JC	DPH
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: AR		



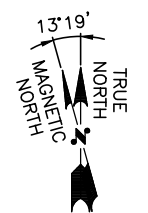
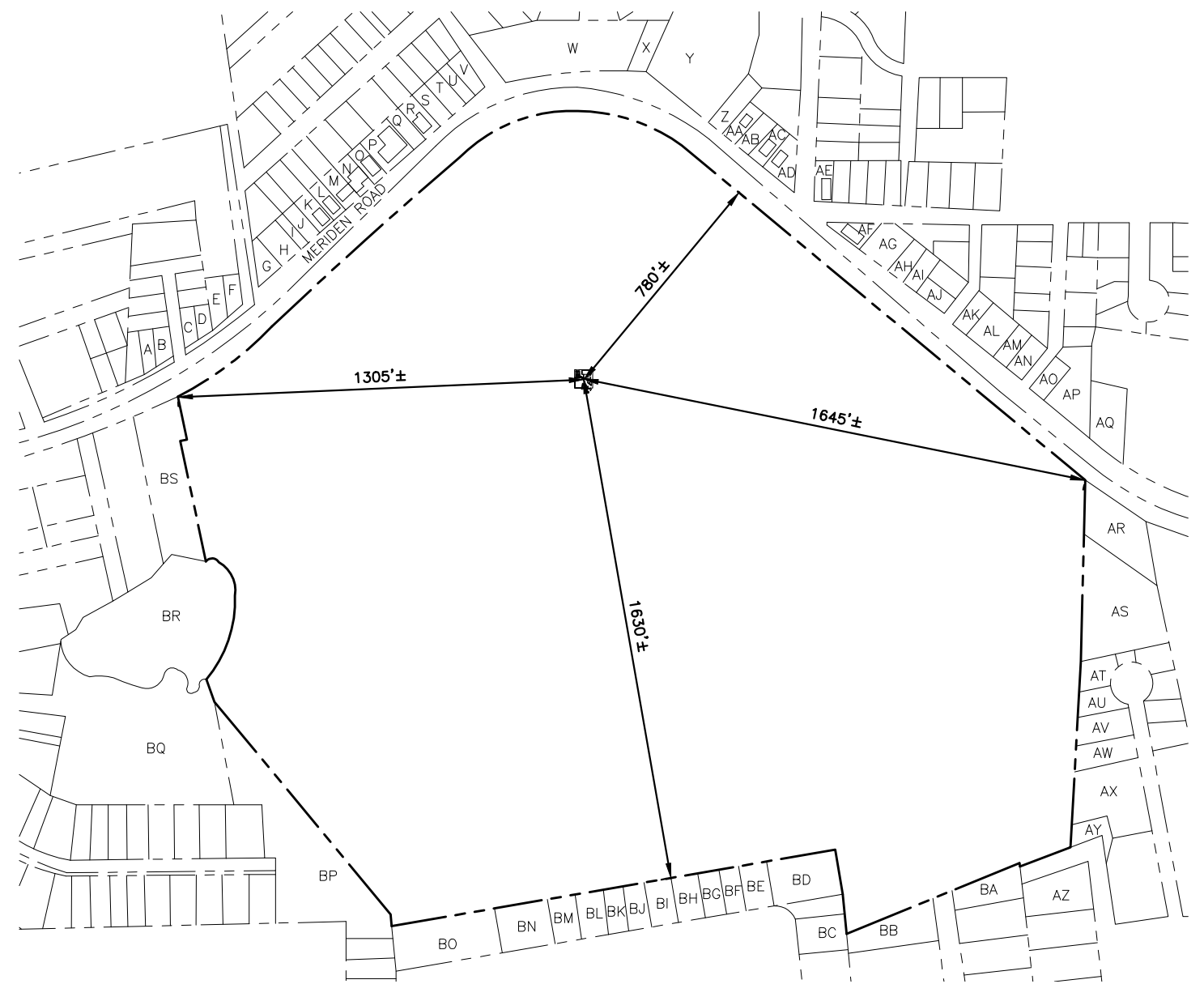
AT&T

SPECIAL INSPECTIONS NOTES  
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1374	SN-1	4

INFORMATION TAKEN FROM PLANS BY CONNECTICUT GIS

ZONING INFORMATION		
ZONING DISTRICT:	AGRICULTURAL & FORESTRY DISTRICT D	
DIMENSIONS REQUIREMENTS:	REQUIRED	PROPOSED
ANTENNA SETBACKS		
FRONT YARD SETBACK:	20'	780'±
SIDE YARD SETBACK:	6'	1645'± & 1305'±
REAR YARD SETBACK:	25'	1630'±
(ALL MEASUREMENTS ARE IN FEET ± UNLESS OTHERWISE NOTED) (SETBACK TO EXISTING EQUIPMENT SHELTER UNLESS OTHERWISE NOTED)		



**PLOT PLAN**  
 22x34 SCALE: 1"=250'  
 11x17 SCALE: 1"=500'

1  
C-1

0 125' 250' 500' 750'

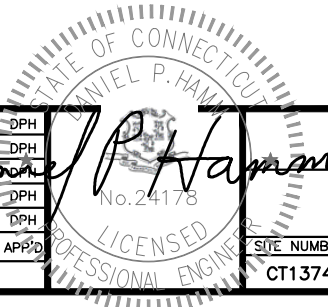
**HGD HUDSON**  
**Design Group LLC**  
 45 BEECHWOOD DRIVE  
 NORTH ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586

**S&I**  
 12 INDUSTRIAL WAY  
 SALEM, NH 03079

**SITE NUMBER: CT1374**  
**SITE NAME: WATERBURY MERIDEN ROAD**  
 940 MERIDEN ROAD  
 WATERBURY, CT 06705  
 NEW HAVEN COUNTY

**at&t**  
 550 COCHITUATE ROAD  
 FRAMINGHAM, MA 01701

4	04/22/22	ISSUED FOR CONSTRUCTION	EF	JC	DPH
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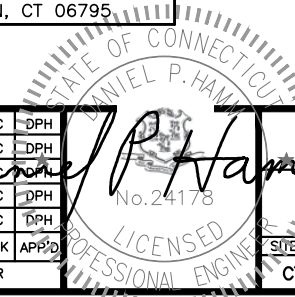


AT&T	
PLOT PLAN (NSB)	
SITE NUMBER	DRAWING NUMBER
CT1374	C-1
REV	4

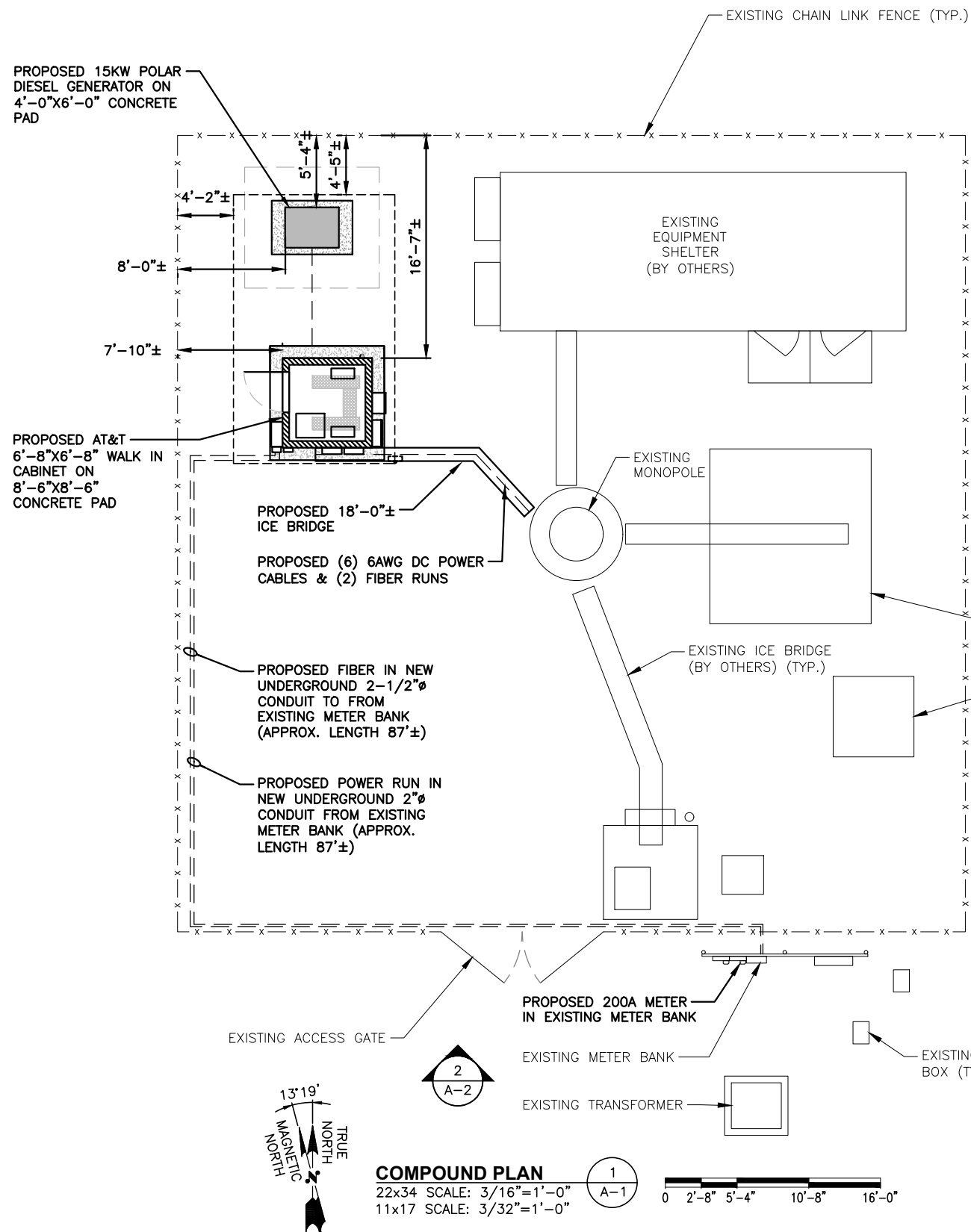
PARCEL OWNERS			
	PARCEL NUMBER	OWNER	ADDRESS
A	0302-0371-0036	SILVER STAR INVESTMENTS LLC	77 CENTRAL AVE #1 WATERTOWN, CT 06795
B	0302-0371-0037	PROFESSIONAL RENTALS LLC	P.O BOX 4400 WATERBURY, CT 06704
C	0302-0371-0044	RIVERA ESPERANZA	631 MERIDEN ROAD WATERBURY, CT 06705
D	0302-0371-0045	RIVERA ESPERANZA	631 MERIDEN ROAD WATERBURY, CT 06705
E	0302-0371-0046	ORELLANA GALO & MARIA C ALVAREZ-ESPINOZA	645 MERIDEN ROAD, WATERBURY, CT 06705
F	0302-0371-0047	PETRO STEPHANIE & JOSHUA RIVERA SURV	651 MERIDEN ROAD, WATERBURY, CT 06705
G	0302-0372-0063	SPAHIU SHKELQIM & ELIZABETA SURV	671 MERIDEN ROAD, WATERBURY, CT 06705
H	0302-0372-0064	WILLIAMS CHARLES JR & STELLA M SURV	673 MERIDEN ROAD, WATERBURY, CT 06705
I	0302-0372-0665	CAMPAGNA EVELYN K	683 MERIDEN ROAD, WATERBURY, CT 06705
J	0302-0372-0665	CAMPAGNA EVELYN K	683 MERIDEN ROAD, WATERBURY, CT 06705
K	0302-0372-0066	ROMAN FRANCISCO	685 MERIDEN ROAD, WATERBURY, CT 06705
L	0302-0372-0067	KIRLEY MORGAN E	691 MERIDEN ROAD, WATERBURY, CT 06705
M	0302-0372-0581	CARTA RICHARD A & JANICE SURV	705 MERIDEN ROAD, WATERBURY, CT 06705
N	0302-0372-0582	CARTA RICHARD A & JANICE SURV	616 NORTH CHURCH STREET NAUGATUCK, CT 06770
O	0302-0372-0068	GARCIA ELIZABETH	709 MERIDEN ROAD, WATERBURY, CT 06705
P	0302-0372-0991	ICE HOUSE FARM LLC	22 COURTLAND AVE, WATERBURY, CT 06705
Q	0302-0372-0691	GUERRERA MARIO	39 JERICHO RD, WATERTOWN, CT 06795
R	0302-0372-0069	GUERRERA MARIO	30 JERICHO RD, WATERTOWN, CT 06795
S	0282-0372-0692	GUERRERA MARIO	1 JERICHO RD, WATERTOWN, CT 06795
T	0282-0372-0100	MEGALO MEDIA INC	355 WASHINGTON AVE, NORTH HAVEN, CT 06473
U	0282-0372-1001	MEGALO MEDIA INC	355 WASHINGTON AVE, NORTH HAVEN, CT 06473
V	0282-0372-1002	MEGALO MEDIA INC	355 WASHINGTON AVE, NORTH HAVEN, CT 06473
W	0283-0394-0032	PATEL DARSHANA REALTY LLC	757 MERIDEN RD WATERBURY, CT 06705
X	0283-0394-0033	PERSON JACQUELINE AKA JACQUELINE HOGAN	200 MOSS FARM RD CHESIRE, CT 06705
Y	0283-0394-0034	EMMONS EDITH L	807 MERIDEN RD WATERBURY, CT 06705
Z	0303-0394-0110	NAZARIO JAMES & JAMES NAZARIO JR	817 MERIDEN RD WATERBURY, CT 06708
AA	0303-0394-0001	NAZARIO JAMES & JAMES NAZARIO JR	817 MERIDEN RD WATERBURY, CT 06708
AB	0303-0394-0111	NAZARIO JAMES & JAMES NAZARIO JR	817 MERIDEN RD WATERBURY, CT 06708
AC	0303-0394-0002	OLIVO DANIEL P	829 MERIDEN RD WATERBURY, CT 06708
AD	0303-0394-0003	ARZU LLC	835 MERIDEN RD WATERBURY, CT 06708
AE	0303-0395-0016	VASKO SANDOR & ROSALINDE SURV	132 WESTLEDGE DR TORRINGTON, CT 06790
AF	0303-0384-0017	WALL YVETTE & IRA SERVICES TRUST COMPANY	190 SPERRY ROAD, BETHANY, CT 06524
AG	0303-0384-0171	WALL YVETTE & IRA SERVICES TRUST COMPANY	190 SPERRY ROAD, BETHANY, CT 06524
AH	0303-0384-0018	SANCHEZ ALVARDO MARTINEZ	69 EDGEHILL AVE, WATERBURY, CT 06704
AI	0303-0384-0191	PANORA FAMILY LLC	17 SOUTH WELL AVE, DANBURY, CT 06810
AJ	0303-0384-0019	PANORA FAMILY LLC	17 SOUTH WELL AVE, DANBURY, CT 06810

PARCEL OWNERS			
	PARCEL NUMBER	OWNER	ADDRESS
AK	0303-0383-0023	IAGROSSI EST CARL	1299 MERIDEN RD WATERBURY, CT 06705
AL	0303-0383-0241	KALSI LLC	16 SPINDLE HILL #7G WOLCOTT, CT 06716
AM	0304-0383-0124	BURTONS MONUMENT SHOP LLC	927 MERIDEN RD WATERBURY, CT 06705
AN	0304-0383-0011	BURTONS MONUMENT SHOP LLC	927 MERIDEN RD WATERBURY, CT 06705
AO	0304-0382-0012	TAILLON JACQUELINE & MARC SURV	935 MERIDEN RD WATERBURY, CT 06705
AP	0304-0382-0122	TAMMARO JOSEPH	61 ESTHER AVE WATERBURY, CT 06708
AQ	0304-0382-0017	AVENUE RD APARTMENTS LLC	300 SCHRAFFTS DR UNIT 1 WATERBURY, CT 06705
AR	0329-0377-0001	RAZA MOHAMMAD	451 SCHOOL ST EAST HARTFORD, CT 06108
AS	0329-0377-0101	WASHINGTON STREET WATERBURY LLC	1023 WASHINGTON ST SUITE 1 HOBOKEN, NJ 07030
AT	0329-0377-0814	HARLAMON JAMES	88 REGENCY HILL DR WATERTOWN, CT 06795
AU	0329-0377-0813	ROSADO GLENDA WILLOUGHBY	65 STONEWALL LANE WATERBURY, CT 06705
AV	0329-0377-0812	B&V PROPERTIES LLC	57 BENHAM HILL, HAMDEN, CT 06514
AW	0329-0377-0811	TEIXEIRA JOSE F	18 VIDICH LN, NAUGATUCK, CT 06770
AX	0354-0460-0081	DEWBERRY GARDENS LLC	300 SCHRAFFTS DR UNIT 1 WATERBURY, CT 06705
AY	0354-0377-0028	RM 2 INVESTMENTS	1 TETLAK LANE, OXFORD, CT 06478
AZ	0354-0459-0001	LUCIAN CRAIG D & ARLENE SURV	170 MIDLAND RD WATERBURY, CT 06705
BA	0353-0459-0048	LUCIAN CRAIG D & ARLENE SURV	170 MIDLAND RD WATERBURY, CT 06705
BB	0353-0143-0472	RONCARTI EUGENIA M	159 MIDLAND RD WATERBURY, CT 06705
BC	0353-0143-0035	BLANCHARD IRENE E	200 MORELAND AVENUE, WATERBURY, CT 06705
BD	0353-0377-0010	AUCAY EDWIN G	159 ROCKAWAY AVE WATERBURY, CT 06705
BE	0353-0377-0009	GREEN HELEN	145 ROCKAWAY AVE WATERBURY, CT 06705
BF	0353-0377-0008	SEARLES HOPE	137 ROCKAWAY AVE WATERBURY, CT 06705
BG	0353-0377-0007	LYNCH CASSANDRA	127 ROCKAWAY AVE WATERBURY, CT 06705
BH	0353-0377-0006	YOVINA DOUGLAS P	115 ROCKAWAY AVE WATERBURY, CT 06705
BI	0353-0377-0005	COMMUNITY RESIDENCES INC	50 ROCKWELL RD NEWINGTON, CT 06111
BJ	0353-0377-0041	SPADER ANNETTE M & MICHAEL R SURV	97 ROCKAWAY AVE WATERBURY, CT 06705
BK	0353-0377-0004	ROY JUDITH A	89 ROCKAWAY AVE WATERBURY, CT 06708
BL	0353-0377-0003	DANIELE LINDA & ANNETTE SPADER SURV	79 ROCKAWAY AVE WATERBURY, CT 06705
BM	0353-0377-0002	DANIELE LINDA & ANNETTE SPADER SURV	79 ROCKAWAY AVE WATERBURY, CT 06705
BN	0353-0377-0001	DANIELE LINDA & ANNETTE SPADER SURV	79 ROCKAWAY AVE WATERBURY, CT 06705
BO	0352-0134-0113	BARBERI FREDERICK, FLORENCE MANCINO	57 WHEELER ST WATERTOWN, CT 06795
BP	0352-0377-0119	WATERBURY GARDENS HOLDINGS LLC	1165 LAKEWOOD FARMINGDALE RD HOWELL, NJ 07731
BQ	0327-0377-0017	ROSA DOMENIC JR	1 EXCHANGE PL WATERBURY, CT 06702
BR	0327-0377-0017	ROSA DOMENIC JR	1 EXCHANGE PL WATERBURY, CT 06702
BS	0302-0377-0071	SETARO ANTHONY G	102 WINDING BROOK FARM RD WATERTOWN, CT 06795

4	04/22/22	ISSUED FOR CONSTRUCTION	EP	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: AR		



AT&T	
ABUTTERS LIST (NSB)	
SITE NUMBER	DRAWING NUMBER
CT1374	C-2
REV	4



PROPOSED 15KW POLAR DIESEL GENERATOR ON 4'-0"X6'-0" CONCRETE PAD

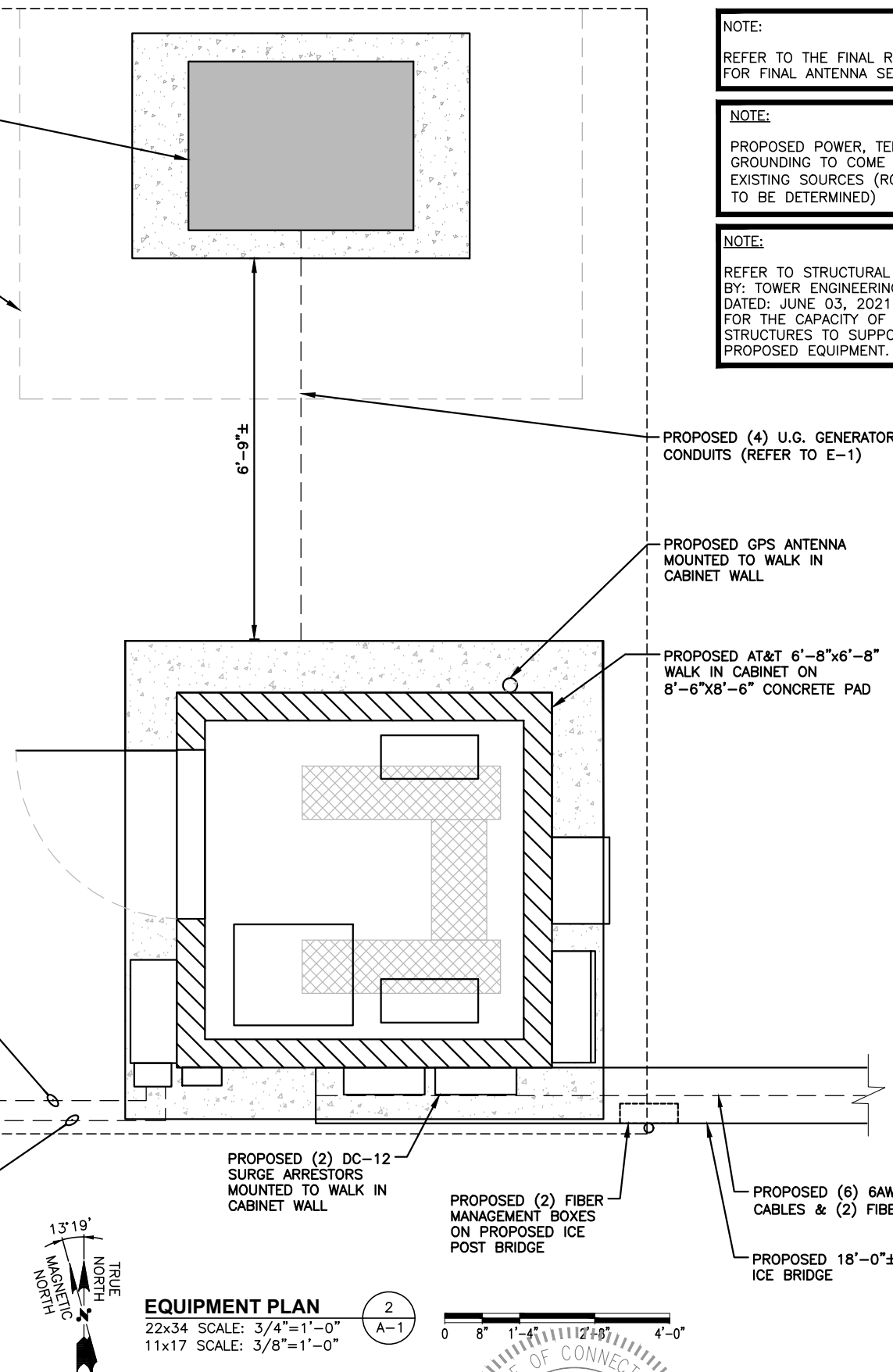
PROPOSED 3'-0" GENERATOR CLEARANCE

EXISTING EQUIPMENT ON CONCRETE PAD (BY OTHERS) (TYP.)

EXISTING EMPTY CONCRETE PAD

PROPOSED POWER RUN IN NEW UNDERGROUND 2"Ø CONDUIT FROM EXISTING METER BANK (APPROX. LENGTH 87'±)

PROPOSED FIBER IN NEW UNDERGROUND 2-1/2"Ø CONDUIT TO EXISTING FIBER DEMARC (APPROX. LENGTH 87'±)

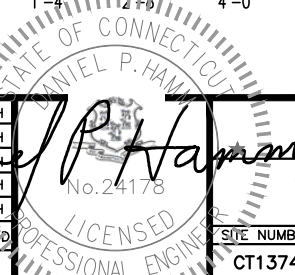


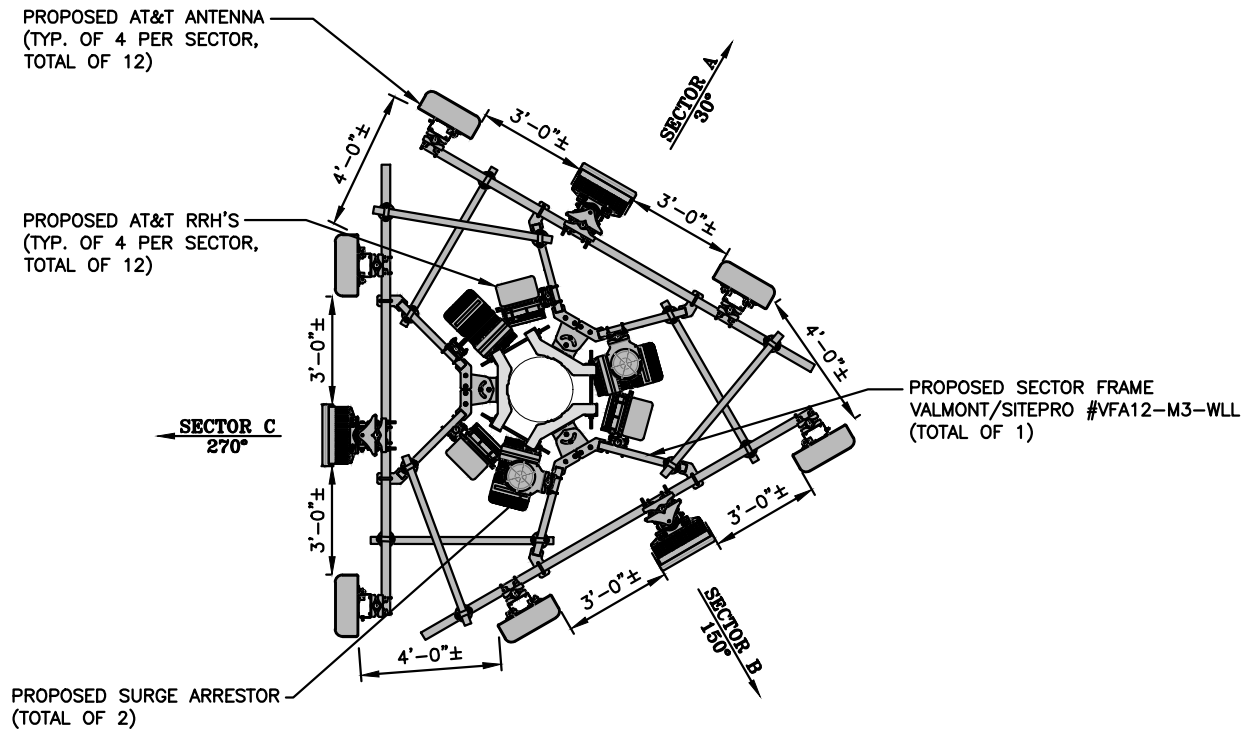
NOTE:  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:  
PROPOSED POWER, TELCO, & GROUNDING TO COME FROM EXISTING SOURCES (ROUTING TO BE DETERMINED)

NOTE:  
REFER TO STRUCTURAL ANALYSIS BY: TOWER ENGINEERING SOLUTIONS, DATED: JUNE 03, 2021 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

4	04/22/22	ISSUED FOR CONSTRUCTION	EF	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: AR		





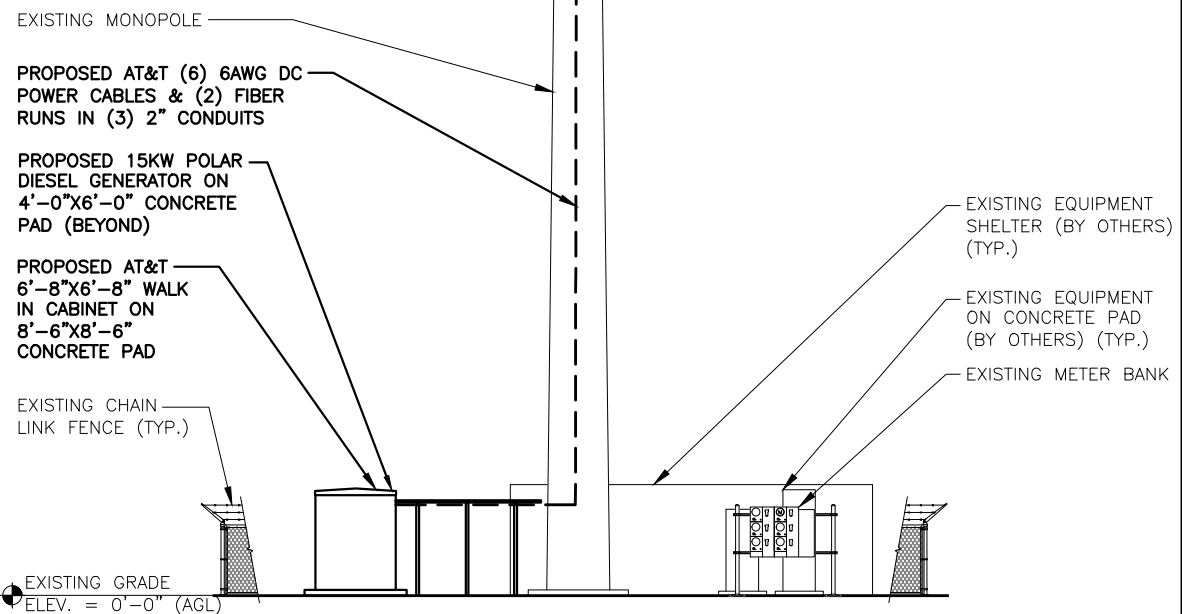
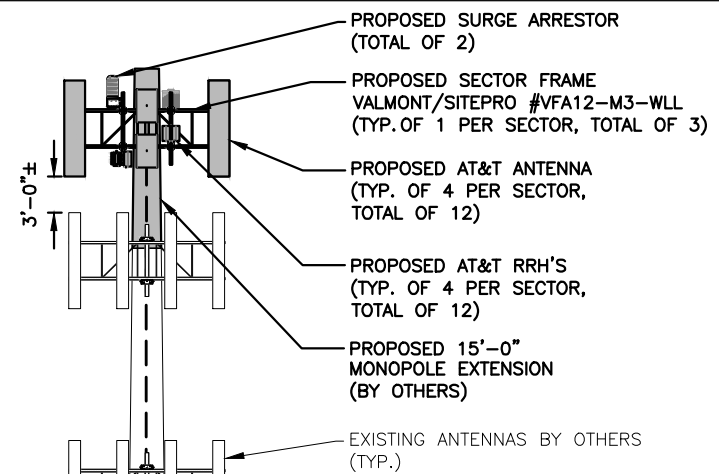
**PROPOSED ANTENNA LAYOUT** 1  
SCALE: N.T.S. A-2

**NOTE:**  
REFER TO STRUCTURAL ANALYSIS BY: TOWER ENGINEERING SOLUTIONS, DATED: JUNE 03, 2021 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

**NOTE:**  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JULY 29, 2021. (REV.1)

**NOTE:**  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

- TOP OF PROPOSED MONOPOLE EXTENSION  
ELEV. = 134'-0" (AGL)
- CL OF PROPOSED AT&T ANTENNAS  
ELEV. = 129'-0" (AGL)
- TOP OF EXISTING MONOPOLE  
ELEV. = 119'-0" (AGL)



**ELEVATION**  
22x34 SCALE: 1/8"=1'-0"  
11x17 SCALE: 1/16"=1'-0"

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	04/22/22	ISSUED FOR CONSTRUCTION	EF	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH



<b>AT&amp;T</b>	
<b>ANTENNA LAYOUT &amp; ELEVATION (NSB)</b>	
SITE NUMBER	DRAWING NUMBER
CT1374	A-2
SCALE: AS SHOWN	DESIGNED BY: JC
DRAWN BY: AR	REV 4

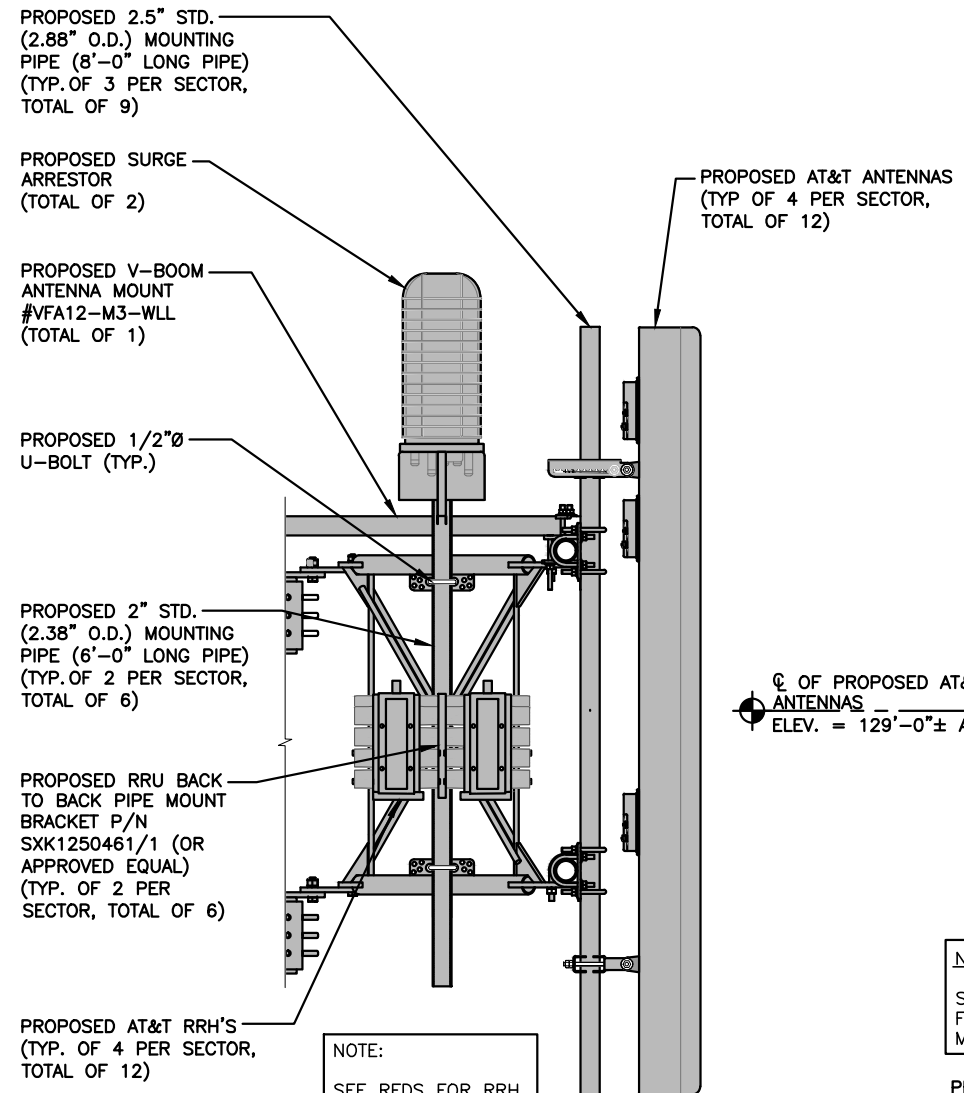


**NOTE:**  
REFER TO STRUCTURAL ANALYSIS BY: TOWER ENGINEERING SOLUTIONS, DATED: JUNE 03, 2021 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

**NOTE:**  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

**NOTE:**  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JULY 29, 2021. (REV.1)

ANTENNA SCHEDULE										
SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA CL HEIGHT	AZIMUTH	RRU	SIZE ( INCHES) (L x W x D)	FEEDER	RAYCAP
A1	PROPOSED	LTE B14/AWS/WCS	TPA65R-BU8DA-K	96X21X7.8	129'-0"	30°	(P) (1) 4478 B14 (P) (1) 4415 B30	18.1X13.4X8.3 14.9X13.2X5.4	(P) (6) DC 6AWG POWER CABLES (P) (2) FIBER RUN (APPROX. LENGTH 160'-0")	(P) (2) RAYCAP DC9-48-60-18-8C-EV
A2	PROPOSED	C-BAND C-BAND	AIR6449 B77D AIR6419 B77G	30.4X15.9X8.1 28X15.7X6.7	129'-0"	30° 30°	-	-		
A3	PROPOSED	LTE 700 BC/580/PCS	DMP65R-BU8DA-K	96X20.7X7.7	129'-0"	30°	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	14.9X13.2X10.4 14.9X13.2X10.9		
A4	-	-	-	-	-	-	-	-		
B1	PROPOSED	LTE B14/AWS/WCS	TPA65R-BU8DA-K	96X21X7.8	129'-0"	150°	(P) (1) 4478 B14 (P) (1) 4415 B30	18.1X13.4X8.3 14.9X13.2X5.4		
B2	PROPOSED	C-BAND C-BAND	AIR6449 B77D AIR6419 B77G	30.4X15.9X8.1 28X15.7X6.7	129'-0"	150° 150°	-	-		
B3	PROPOSED	LTE 700 BC/580/PCS	DMP65R-BU8DA-K	96X20.7X7.7	129'-0"	150°	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	14.9X13.2X10.4 14.9X13.2X10.9		
B4	-	-	-	-	-	-	-	-		
C1	PROPOSED	LTE B14/AWS/WCS	TPA65R-BU8DA-K	96X21X7.8	129'-0"	270°	(P) (1) 4478 B14 (P) (1) 4415 B30	18.1X13.4X8.3 14.9X13.2X5.4		
C2	PROPOSED	C-BAND C-BAND	AIR6449 B77D AIR6419 B77G	30.4X15.9X8.1 28X15.7X6.7	129'-0"	270° 270°	-	-		
C3	PROPOSED	LTE 700 BC/580/PCS	DMP65R-BU8DA-K	96X20.7X7.7	129'-0"	270°	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	14.9X13.2X10.4 14.9X13.2X10.9		
C4	-	-	-	-	-	-	-	-		



**PROPOSED SECTOR FRAME, ANTENNA, SURGE SUPPRESSOR & RRH'S MOUNTING DETAIL**  
SCALE: N.T.S.

CL OF PROPOSED AT&T ANTENNAS  
ELEV. = 129'-0" ± A.G.L.

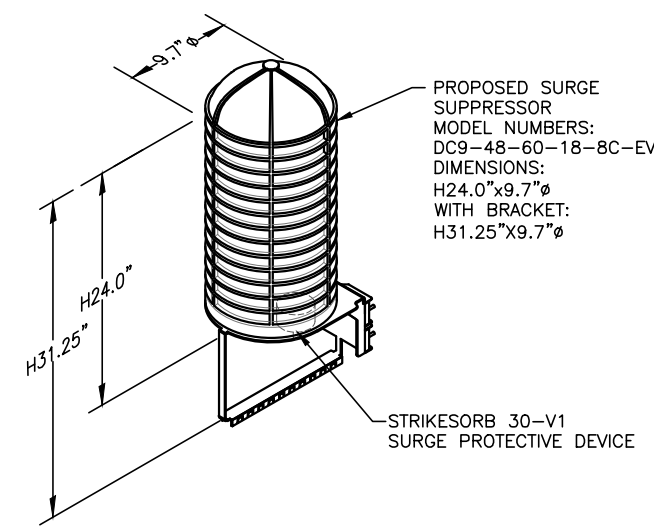
**NOTE:**  
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

**NOTE:**  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

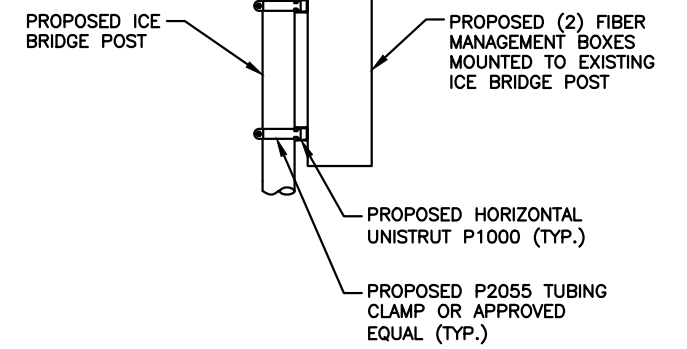
**PROPOSED RRU'S DETAIL**  
SCALE: N.T.S.

**FINAL ANTENNA SCHEDULE**  
SCALE: N.T.S.



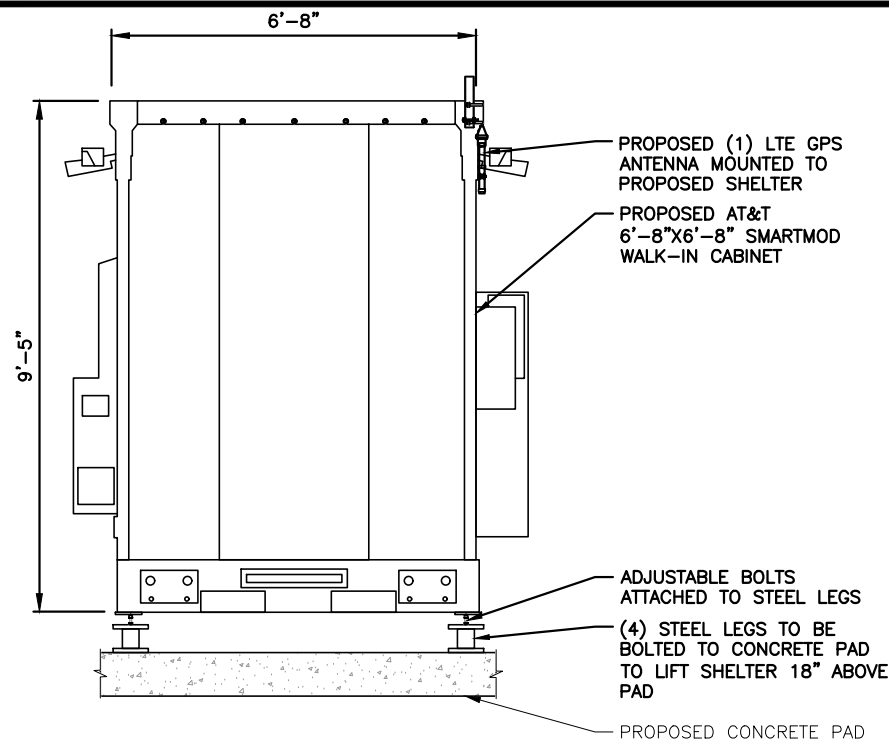
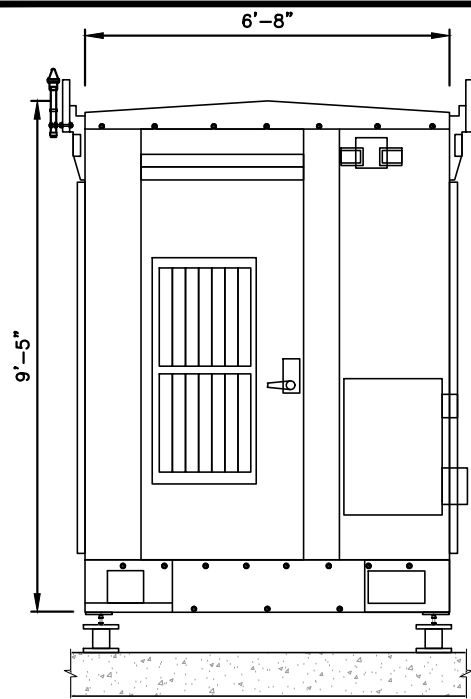
**NOTE:**  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**DC SURGE SUPPRESSOR DETAIL**  
SCALE: N.T.S.



**PROPOSED FIBER MANAGEMENT BOX MOUNTING DETAIL**  
SCALE: N.T.S.

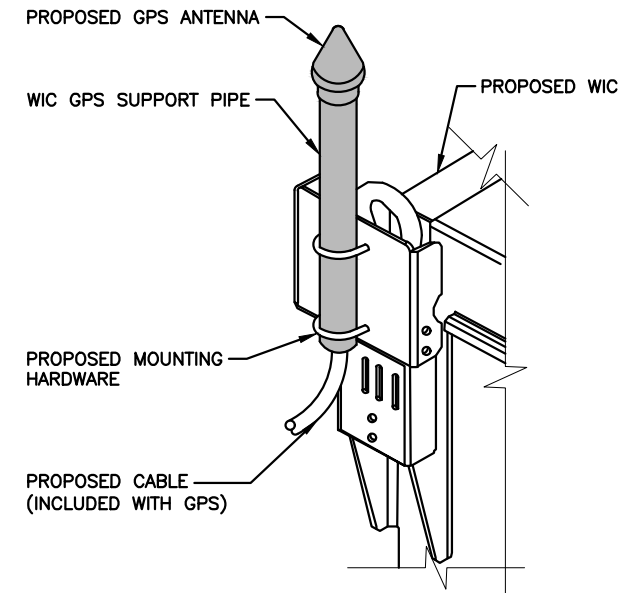
NO.	DATE	REVISIONS	BY	CHK	APP'D
4	04/22/22	ISSUED FOR CONSTRUCTION	EP	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH



NOTE: SHELTER SHALL BE MOUNTED PER MANUFACTURER'S SPECIFICATIONS.

**TYPICAL SHELTER DETAIL**  
SCALE: N.T.S.

1  
A-4

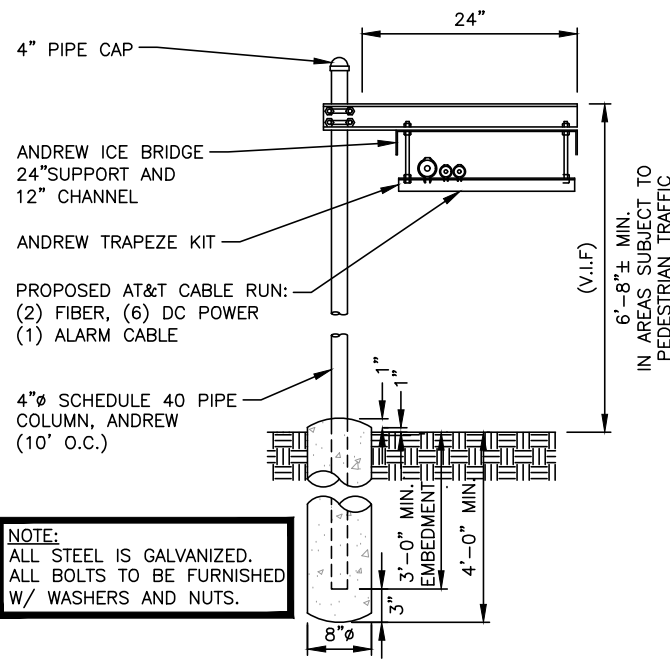


**GPS MOUNTING DETAIL**  
N.T.S.

2  
A-4

**FOUNDATION NOTES & CONCRETE SPECIFICATIONS:**

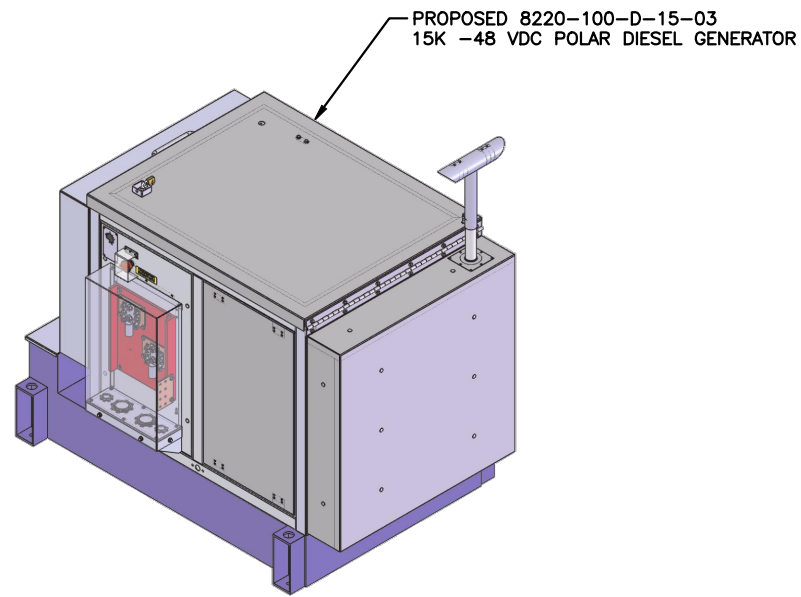
- FOUNDATION AREA SHALL BE EXCAVATED TO THE DEPTH AND DIMENSIONS SHOWN ON THE PLANS. EXISTING LEDGE AND ALL OTHER EXISTING UNSUITABLE MATERIAL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE. THE SUBGRADE SHALL BE ROLLED WITH A 1-TON, VIBRATORY, WALK-BEHIND ROLLER AT A SPEED OF LESS THAN 2 FPS, 6 PASSES MINIMUM, TO PROVIDE UNYIELDING SURFACE.
- UNDERCUT SOFT OR "WEAVING" AREAS A MINIMUM OF 12 INCHES DEEP. BACKFILL UNDERCUT AREA WITH FILL MEETING THE SPECIFICATIONS OF STRUCTURAL FILL.
- CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c)=4000 psi. CONCRETE TO BE AIR ENTRAINED, DESIRED AIR CONTENT TO BE 6% (PLUS OR MINUS 2%)
- REINFORCING BAR TO BE ASTM A615 GRADE 60.
- WELDED WIRE FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A185. WIRES FOR FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A82.
- COORDINATE WITH MANUFACTURER OF PREFABRICATED SHELTER FOR LOCATION OF ATTACHMENTS TO BASE SLAB.
- ALL REINFORCING TO HAVE MINIMUM CONCRETE COVER PER ACI SPECIFICATIONS.
- ALL CONCRETE MATERIALS AND WORKMANSHIP SHALL CONFORM TO LATEST EDITION OF ACI 318 AND APPLICABLE STATE BUILDING CODE.



NOTE: ALL STEEL IS GALVANIZED. ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.

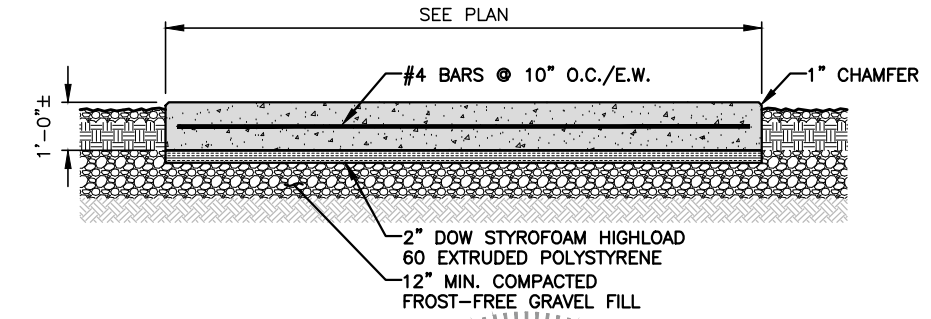
**ICE BRIDGE DETAIL**  
SCALE: N.T.S.

3  
A-4



**PROPOSED 15KW DIESEL POLAR GENERATOR**  
SCALE: N.T.S.

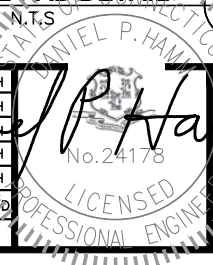
4  
A-4



**CONCRETE PAD DETAIL**  
22x34 SCALE: N.T.S.

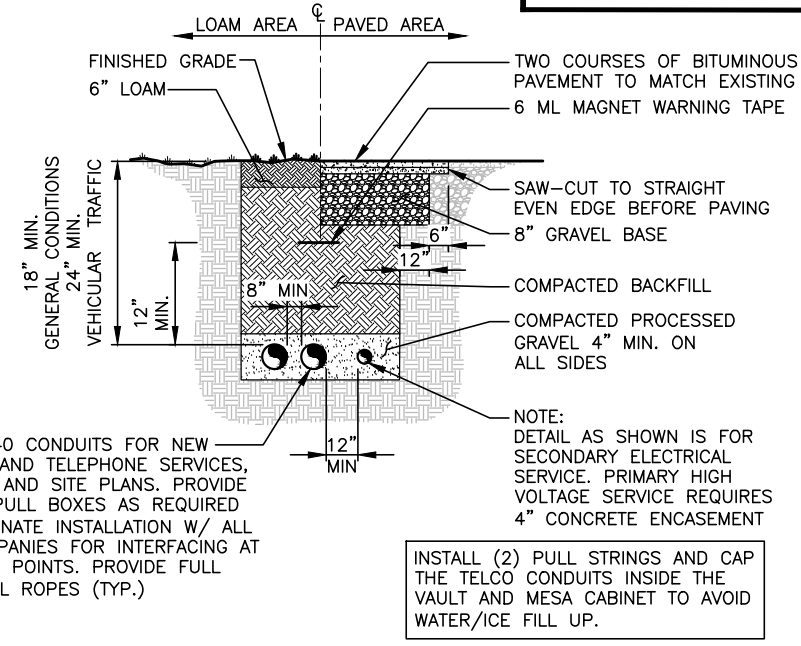
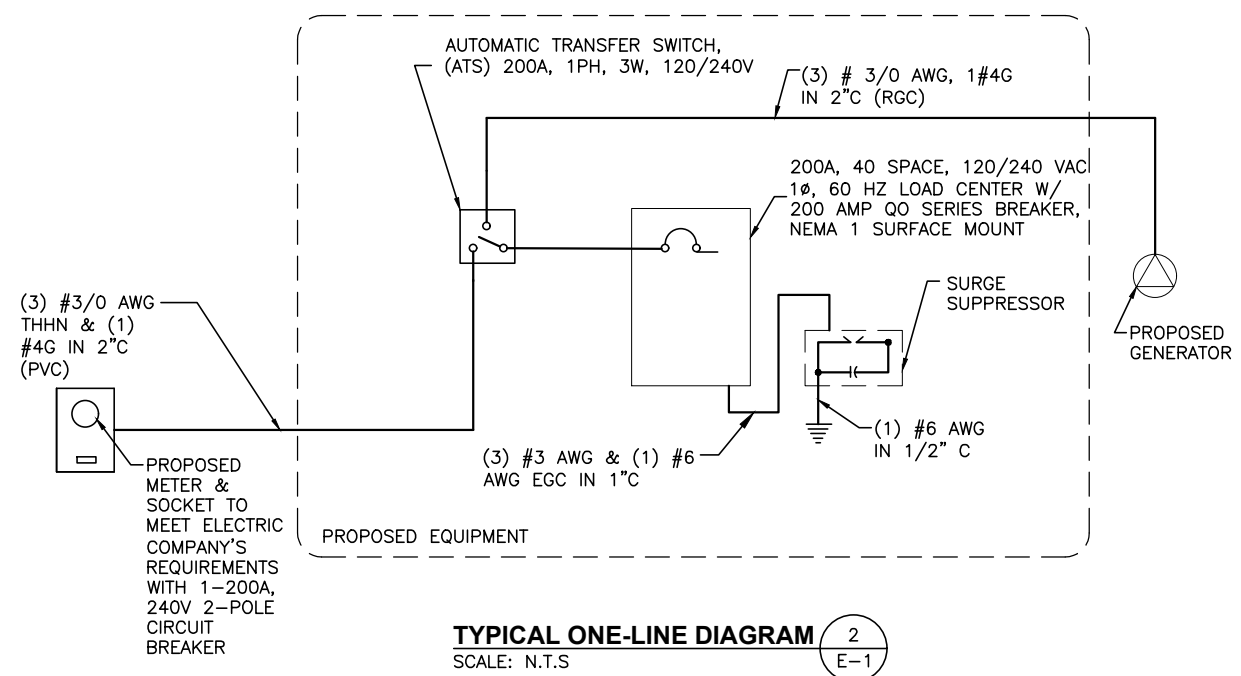
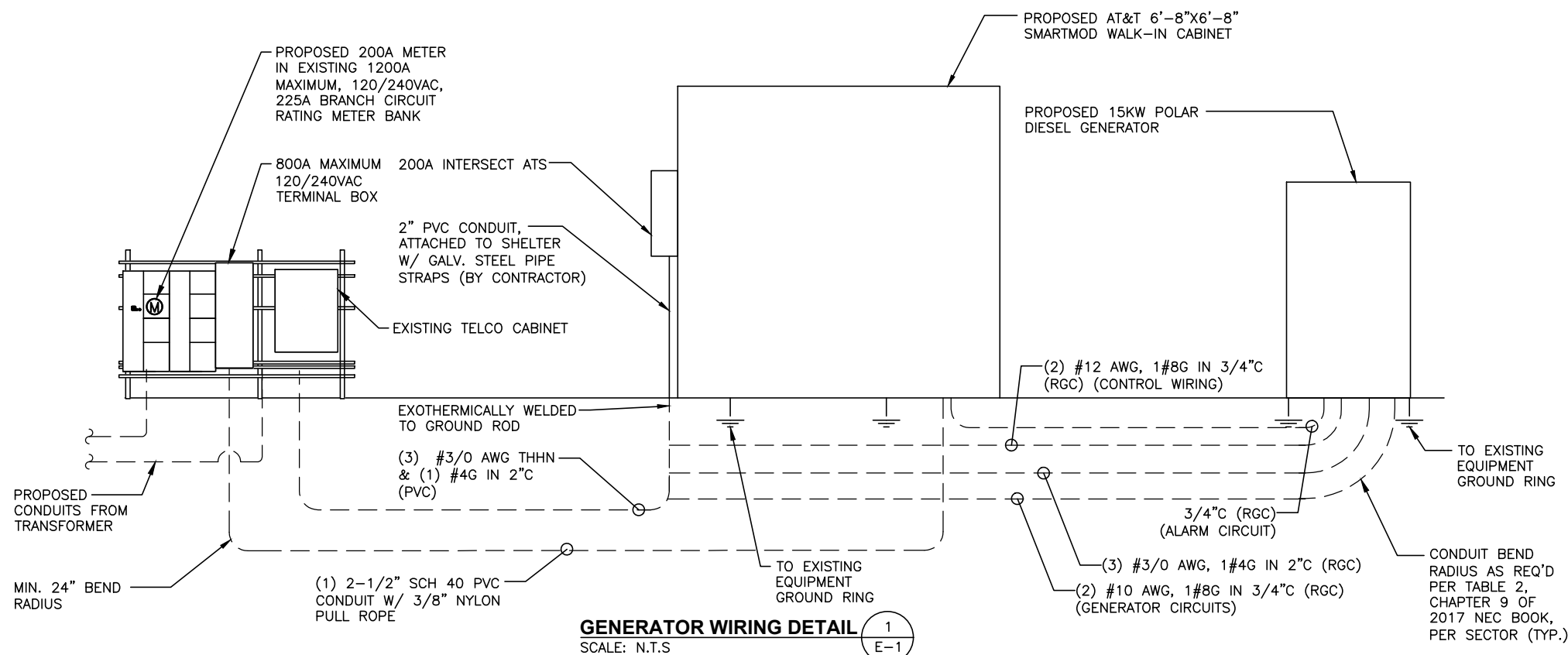
5  
A-4

4	04/22/22	ISSUED FOR CONSTRUCTION	EP	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: AR		



AT&T	
DETAILS (NSB)	
SITE NUMBER	DRAWING NUMBER
CT1374	A-4
REV	4

NOTES:  
 1. GROUND [ATS] TO EXISTING GROUND BAR  
 2. GROUND GENERATOR TO EXISTING GROUND RING WITH (2) #2 AWG GROUND WIRES.



### ELECTRICAL LEGEND & ABBREVIATIONS

	NEW PANEL BOARD, SURFACE MOUNTED
	EXISTING PANEL BOARD, SURFACE MOUNTED
	DRY TYPE TRANSFORMER
	METER
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
	FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED
	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
	EXPOSED WIRING
	HOME RUNS, MINIMUM 2#10 + 1#8G IN 3/4" CONDUIT U.O.N.
	A.F.F. ABOVE FINISHED FLOOR
	U.O.N. UNLESS OTHERWISE NOTED
	WP WEATHERPROOF
	GFI GROUND FAULT INTERRUPTER
	A AMPERE
	V VOLT
	KWH KILOWATT - HOUR
	C CONDUIT
	PVC POLYVINYL CHLORIDE
	HZ HERTZ
	PH # PHASE
	W WATTS
	NEC NATIONAL ELECTRIC CODE
	PPC POWER PROTECTION CABINET
	UL UNDERWRITER LABORATORIES
	PTS POWER TRANSFER SWITCH
	QO QUICK OPEN
	GRC GALVANIZED RIGID CONDUIT
	G GROUND
	⊥ GROUND
	MGB MASTER GROUND BAR
	EGB EQUIPMENT GROUND BAR
	G-C GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	COAXIAL CABLE
	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
	PF POWER FACTOR

- ### ELECTRICAL AND GROUNDING NOTES
- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
  - ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
  - THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
  - GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
  - ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
  - BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
  - ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
  - RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
  - RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
  - WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
  - ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
  - PPC SUPPLIED BY PROJECT OWNER.
  - GROUNDING SHALL COMPLY WITH NEC ART. 250.
  - GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
  - USE #6 AWG COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 AWG SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
  - ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
  - ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 AWG WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
  - CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
  - APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
  - BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
  - BOND ANTENNA EGB'S AND MGB TO GROUND RING.
  - CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MAXIMUM RESISTANCE REQUIRED.
  - CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
  - ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL, MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.

**HGD HUDSON Design Group LLC**  
 45 BEECHWOOD DRIVE  
 NORTH ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586

**S&I**  
 12 INDUSTRIAL WAY  
 SALEM, NH 03079

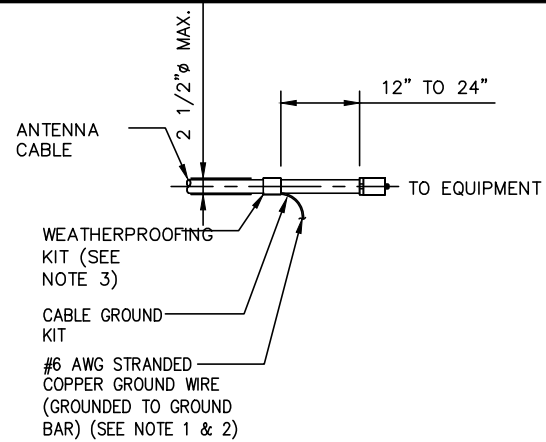
**SITE NUMBER: CT1374**  
**SITE NAME: WATERBURY MERIDEN ROAD**  
 940 MERIDEN ROAD  
 WATERBURY, CT 06705  
 NEW HAVEN COUNTY

**at&t**  
 550 COCHITUATE ROAD  
 FRAMINGHAM, MA 01701

4	04/22/22	ISSUED FOR CONSTRUCTION	EP	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: AR		

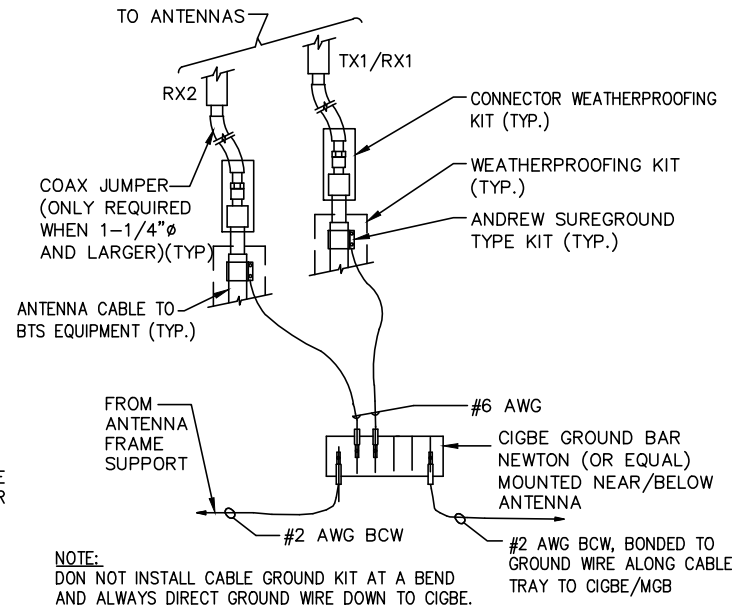
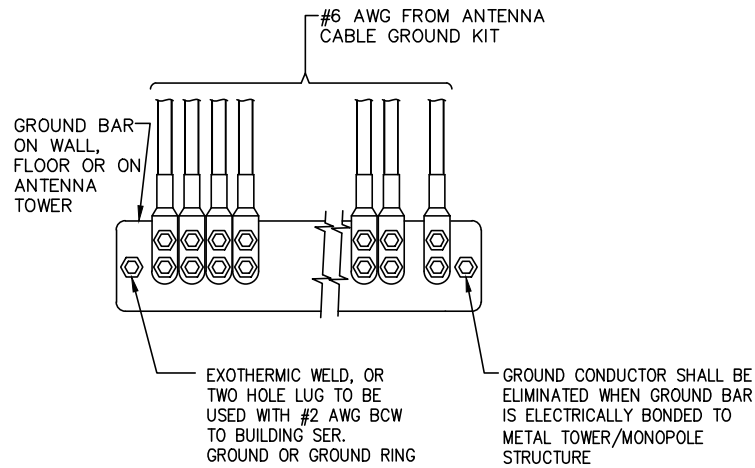


**AT&T**  
 ELECTRICAL NOTES & ONE-LINE DIAGRAM  
 (NSB)  
 SITE NUMBER: CT1374  
 DRAWING NUMBER: E-1  
 REV: 4



**NOTES:**

- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
- GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
- WEATHER PROOFING SHALL BE TWO-PART TAPE SUPPLIED WITH KIT. COLD SHRINK SHALL NOT BE USED.



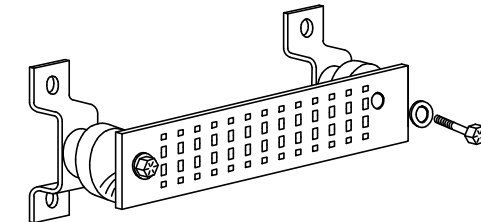
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

**SECTION "P" - SURGE PRODUCERS**

- CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
- +24V POWER SUPPLY RETURN BAR (#2 AWG)
- 48V POWER SUPPLY RETURN BAR (#2 AWG)
- RECTIFIER FRAMES.

**SECTION "A" - SURGE ABSORBERS**

- INTERIOR GROUND RING (#2 AWG)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
- BUILDING STEEL (IF AVAILABLE) (#2 AWG)



**CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE**

SCALE: N.T.S.

1  
G-1

**INSTALLATION OF GROUND WIRE TO GROUND BAR**

SCALE: N.T.S.

2  
G-1

**INSTALLATION OF GROUND WIRE TO GROUNDING BAR TOWER**

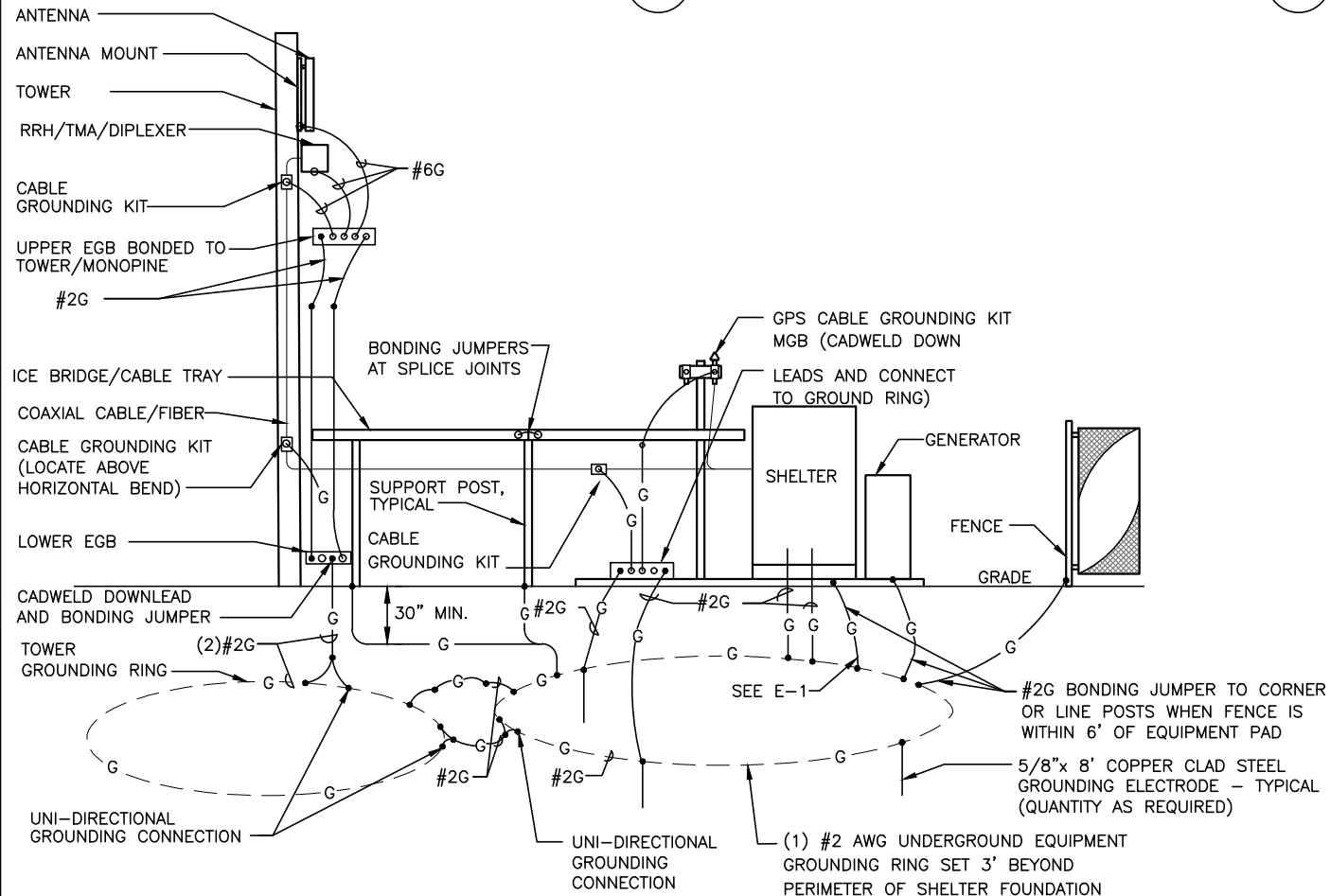
SCALE: N.T.S.

3  
G-1

**GROUND BAR - DETAIL**

SCALE: N.T.S.

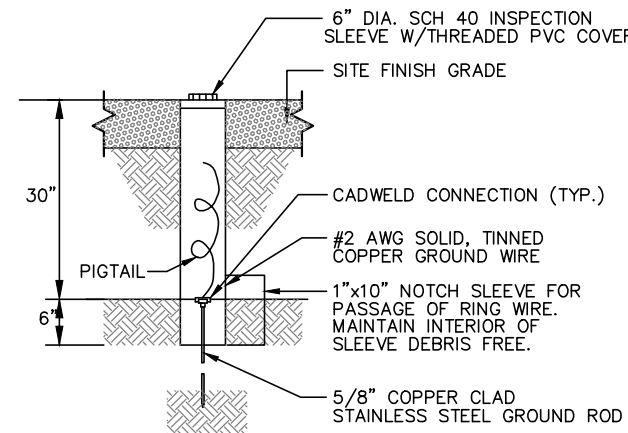
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G-1



**GROUNDING ONE-LINE DIAGRAM**

SCALE: N.T.S.

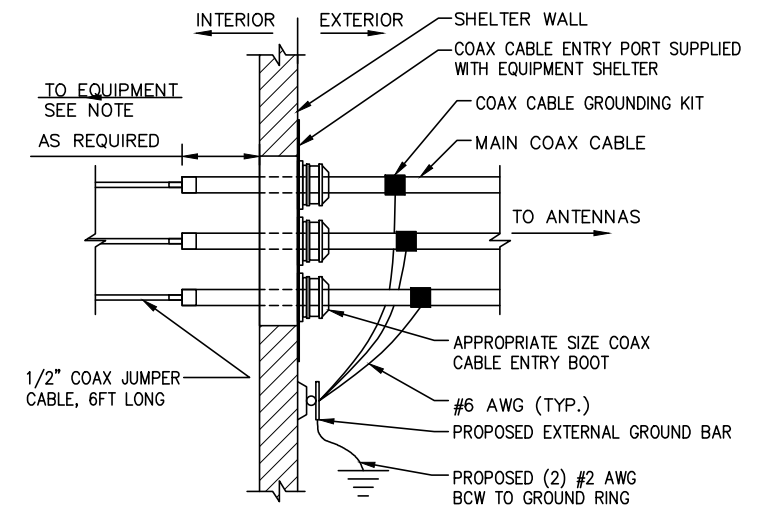
5  
G-1



**GROUND ROD TEST WELL DETAIL**

SCALE: N.T.S.

6  
G-1



**NOTE:**  
EXTEND MAIN COAXIAL CABLE AS CLOSE AS POSSIBLE TO BTS EQUIPMENT. MAX LENGTH OF BTS JUMPER IS 6 FT.

**INSTALLATION OF GROUND WIRE TO GROUND BAR**

SCALE: N.T.S.

7  
G-1



45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



12 INDUSTRIAL WAY  
SALEM, NH 03079

**SITE NUMBER: CT1374**  
**SITE NAME: WATERBURY MERIDEN ROAD**

940 MERIDEN ROAD  
WATERBURY, CT 06705  
NEW HAVEN COUNTY

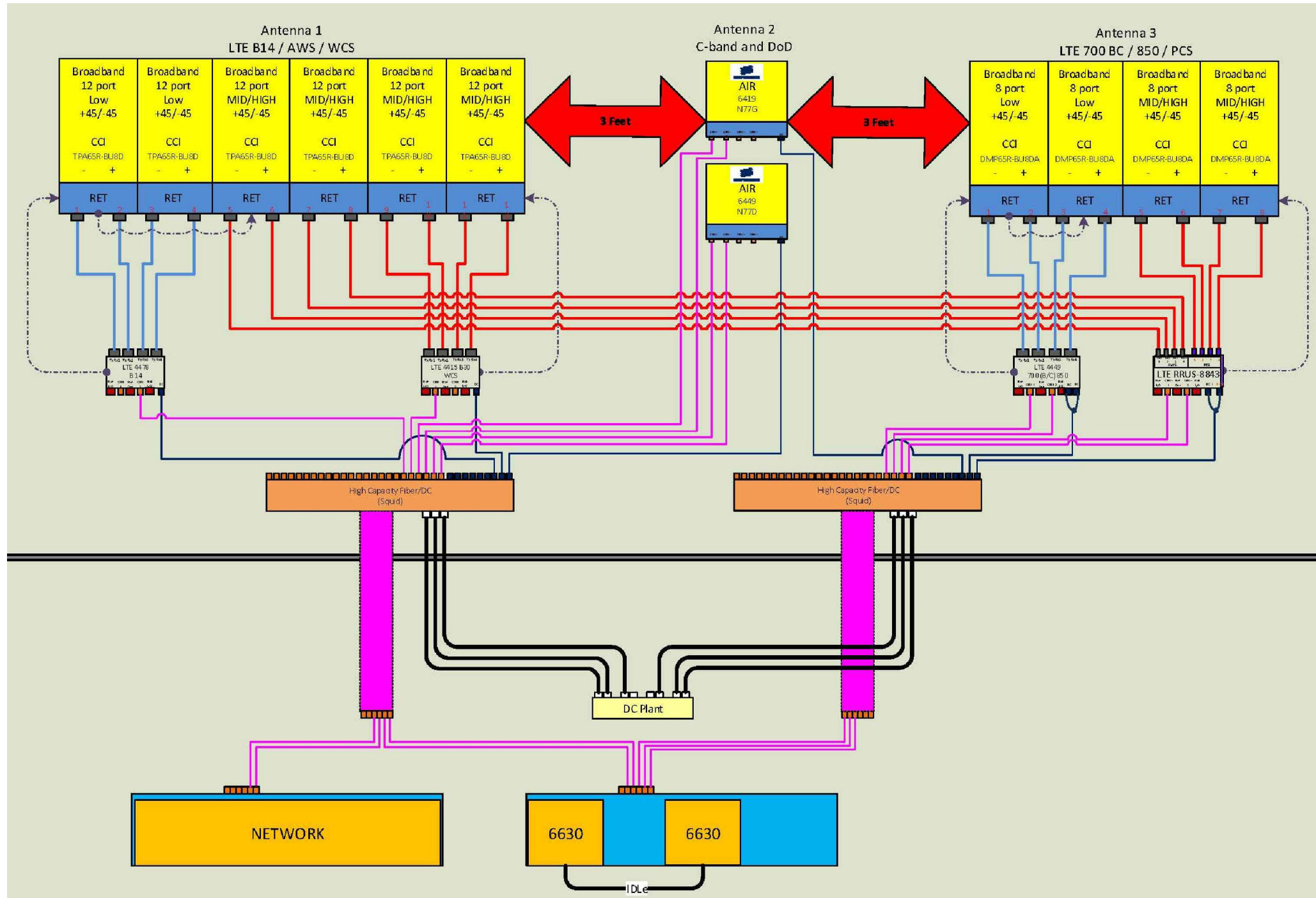


550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

4	04/22/22	ISSUED FOR CONSTRUCTION	EF	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
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1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: AR		

PROFESSIONAL ENGINEER  
DANIEL P. HAMAN  
No. 24178  
LICENSED

AT&T	
GROUNDING DETAILS (NSB)	
SITE NUMBER	DRAWING NUMBER
CT1374	G-1
REV	4



**NOTE:**  
 1. CONTRACTOR TO CONFIRM ALL PARTS.  
 2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

**NOTE:**  
 REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

**RF PLUMBING DIAGRAM** 1  
 SCALE: N.T.S. RF-1

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	04/22/22	ISSUED FOR CONSTRUCTION	ES	JC	DPH
3	01/19/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
2	01/04/22	ISSUED FOR REVIEW	AR	JC	DPH
1	10/18/21	ISSUED FOR REVIEW	CC	JC	DPH
0	08/24/21	ISSUED FOR REVIEW	AR	JC	DPH

SCALE: AS SHOWN    DESIGNED BY: JC    DRAWN BY: AR

AT&T		
RF PLUMBING DIAGRAM (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1374	RF-1	4

# **ATTACHMENT 5**

Structural Analysis Report



**Tower Engineering Solutions**

Phone (972) 483-0607, Fax (972) 975-9615  
1320 Greenway Drive, Suite 600, Irving, Texas 75038

---

## Post-Mod Structural Analysis Report

**Existing 119-ft SABRE Monopole Plus a 15-ft Extension**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT13070-A**

**Customer Site Name: Waterbury 4, CT**

**Carrier Name: AT&T (App#: 154603-3)**

**Carrier Site ID / Name: CT1374 / WATERBURY MERIDEN ROAD**

**Site Location: 940 Meriden Road**

**Waterbury, Connecticut**

**New Haven County**

**Latitude: 41.553278**

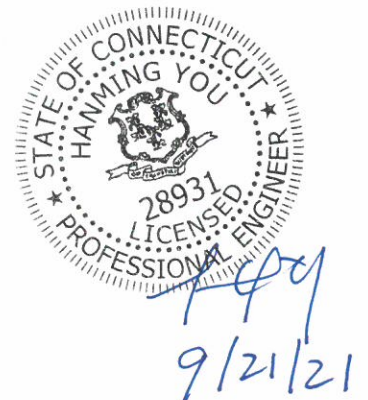
**Longitude: -72.993361**

**Analysis Result:**

**Max Structural Usage: 90.8% [Pass]**

**Max Foundation Usage: 91.0% [Pass]**

**Report Prepared By : Changzhi Zang**





**Tower Engineering Solutions**

Phone (972) 483-0607, Fax (972) 975-9615  
1320 Greenway Drive, Suite 600, Irving, Texas 75038

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**Carrier Site ID / Name: CT1374 / WATERBURY MERIDEN ROAD**

**Site Location: 940 Meriden Road**

**Waterbury, Connecticut**

**New Haven County**

**Latitude: 41.553278**

**Longitude: -72.993361**

### **Analysis Result:**

**Max Structural Usage: 90.8% [Pass]**

**Max Foundation Usage: 91.0% [Pass]**

**Report Prepared By : Changzhi Zang**



## Introduction

The purpose of this report is to summarize the analysis results on the existing 119-ft SABRE Monopole plus a proposed 15-ft extension to support the proposed antennas and transmission lines in addition to those currently installed. Any existing modification listed under Sources of Information was assumed completed and was included in this analysis.

The proposed modification by **TES** listed under Sources of Information was considered completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Tower Drawing prepared by Sabre, Job #07-03039 dated 4/23/07 Structural Analysis prepared by FDH, Project #12-06C54E S2 dated 6/17/11
<b>Foundation Drawing</b>	Foundatoin Drawing prepared by Sabre, Job #03039 dated 4/23/07
<b>Geotechnical Report</b>	Geotechnical Report prepared by Gemini Geotechnical Associates, Project #07023CT dated 3/13/07
<b>Mount Analysis</b>	Maser Consulting Connecticut, Project #: 21777081A, dated June 23, 2021
<b>Existing Modification</b>	Modification Drawing prepared by FDH, Project #09-01077E S3 dated 10/13/09
<b>Pending Modification</b>	TES, Job # 109880, dated June 17, 2021,
<b>Proposed Modification</b>	TES Job # 114884

## Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2. In accordance with this standard, the structure was analyzed using **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 125.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 97.0$ mph (3-Sec. Gust)
<b>Basic Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	SS = 0.189, S1 = 0.06

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

## Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
13	118.0	3	Nokia - AAHC - Panel	RMQP-4096-HK [Platform w/ Handrail]	(3) 1-1/4" Fiber (1) 1.689" Fiber (2) 1/2"	Sprint Nextel
14		3	Commscope - NNVV-65B-R4 - Panel			
15		2	Andrew - VHLP2.5-11 - Dish			
16		3	ALU - 1900 MHz RRH - RRU			
17		6	ALU - 800 MHz RRH - RRU			
18		3	ALU - TD-RRH8x20-25 - RRU			
19	99.0	3	RFS APX16DWW-16DWVS-E-A20	RMQP-4096-HK [Platform w/ Handrail]	(12) 1 5/8" (2) 1 5/8" Fiber (2) 1-1/4" Hybrid	T-Mobile
20		3	RFS APXVAARR24_43-U-NA20 (Octa)			
21		4	Ericsson Air 32 KRD901146-1_B66A_B2A (Octo)			
22		3	Ericsson AIR6449 B41			
23		3	Ericsson KRY 112 489/2			
24		3	Ericsson KRY 112 144/1			
25		3	Ericsson Radio 4449 B71 + B85			
26		3	Ericsson 4415 B25			
27	87.0	3	Antel - BXA-171063-12CF-EDIN-X - Panel	Low Profile Platform Modified with (3) VZWSMART-PLK3 [Support Rail Corner Bracket] (3) VZWSMART-MSK2 [Crossover Plate] (3) VZWSMART-MSK1 [Crossover Plate] Mount Pipes (3) Support Rail Corner Brackets (3) Support Rails	(18) 1 5/8" (2) 1 5/8" Hybri	Verizon
28		6	JMA Wireless - MX06FR0660-03 - Panel			
29		3	Samsung Telecommunications - MT6407-77A - Panel			
30		3	Samsung - B2/B66A RRH-BR049 - RRU			
31		3	Samsung - B5/B13 RRH-BR04C - RRU			
32		1	Raycap - RVZDC-6627-PF-48 - COVP			

## Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	129.0	3	Ericsson AIR 6419 B77G -Panel	(3) SitePro VFA12-M3-WLL (Sector Frame Mounts)	(2) 0.4" Fiber (6) 1" DC	AT&T
2		3	Cci Antennas TPA65R-BU8DA-K- Panel			
3		3	Ericsson Air 6449 N77- Panel			
4		3	Cci Antennas DMP65R-BU8DA-K-Panel			
5		3	Ericsson 4478 B14-RRU			
6		3	Ericsson 4415 B30-RRU			
7		3	Ericsson 4449 B5/B12-RRU			
8		3	Ericsson RRUS 8843 B2 B66A-RRU			
9		3	Ericsson Radio 2012 B29-RRU			
10		3	Ericsson RRUS 4415 B25-RRU			
11		3	Raycap DC9-48-60-24-8C-EV-OVP			
12		1	Raycap DC6-48-60-18-8C-EV-OVP			

See the attached coax layout for the line placement considered in the analysis.

## **Analysis Results**

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate	Flange Plate & Bolts @ 109 ft
Max. Usage:	<b>90.8%</b>	<b>88.9%</b>	<b>57.0%</b>	<b>49.9%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3594.7	35.6	47.1

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

## **Operational Condition (Rigidity):**

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.5334 degrees under the operational wind speed as specified in the Analysis Criteria.

## **Conclusions**

Based on the analysis results, the structure and its foundation will be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222-G-2 Standard after the following proposed modification include the pending modification by TES Job # 109880 is successfully completed.

- Proposed modification design drawing by TES Job # 114884

### **Pre-Mod Installation Determination**

We have also checked this tower to determine if the proposed AT&T equipment loading can be installed prior to the completion of the required modifications. We ran a reduced wind loading case as required by TIA-322 considering a construction period of no more than 6 months.

The tower and foundations passed, so the Carrier can proceed and install their proposed loading prior to the mods completion. Please be aware that this approval is being provided and is based on the method outlined in TIA-322. This approval is not a blanket approval and there is still a risk that the tower will experience a wind event that cannot be predicted by TIA-322 or our Engineers. In the event of an unforeseen wind event, Tower Engineering Solutions will not be liable nor responsible for damage to the tower or the Carriers equipment. Additionally, the tower cannot go beyond the 6 month construction period without the modifications being completed. If the modifications cannot be completed within 6 months from the completed installation of the Carrier's proposed equipment, TES must be notified immediately for further review.

## Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.
3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

# Usage Diagram - Max Ratio 90.82% at 0.0ft

**Structure:** CT13070-A-SBA  
**Site Name:** Waterbury 4, CT  
**Height:** 134.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Gh:** 1.1

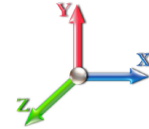
9/21/2021



Page: 1

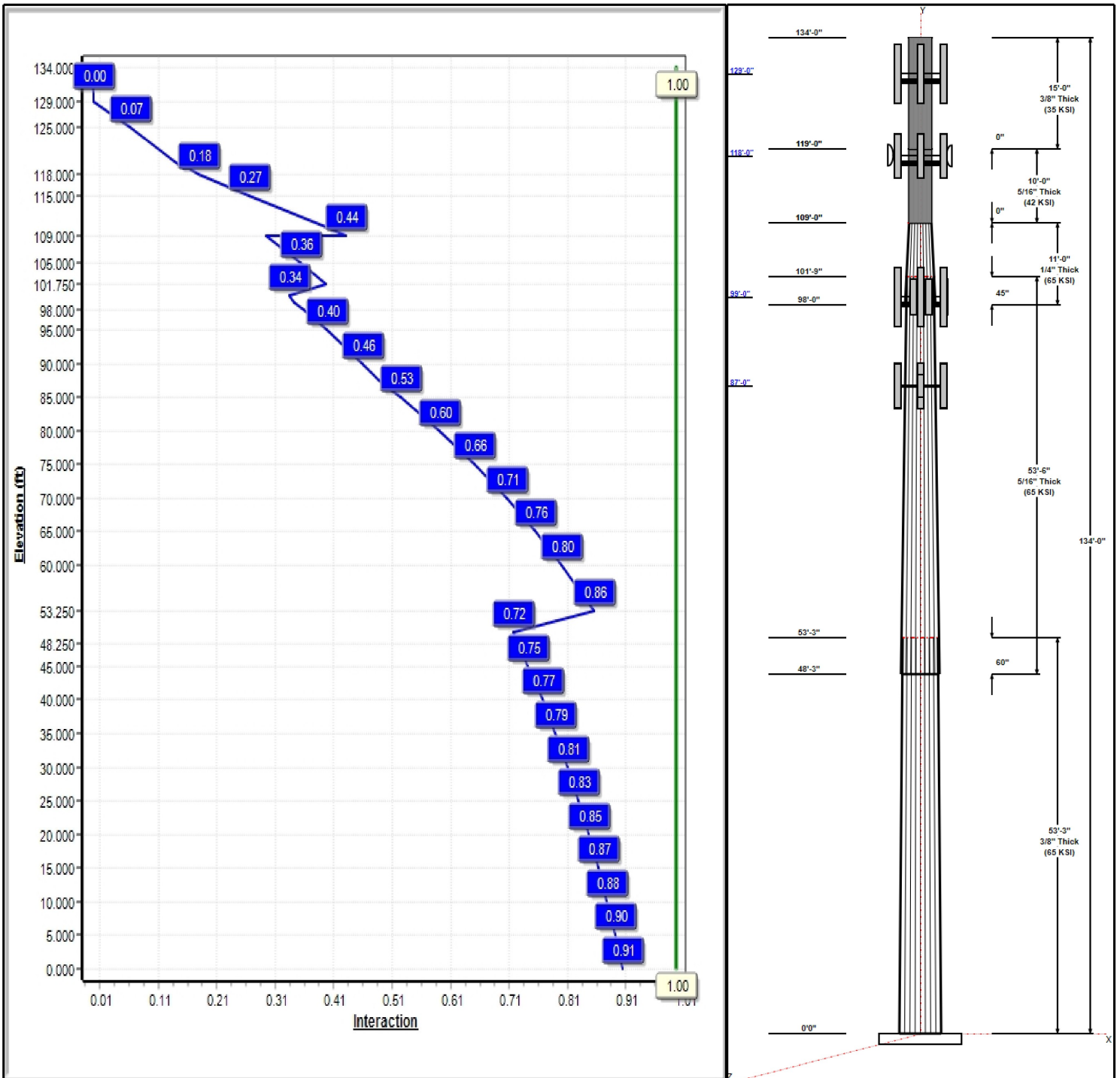
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

**Load Case : 1.2D + 1.6W 97 mph Wind**



**Iterations:** 25

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## Structure: CT13070-A-SBA

**Type:** Custom  
**Site Name:** Waterbury 4, CT  
**Height:** 134.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.21408

9/21/2021

Page: 2



### Shaft Properties

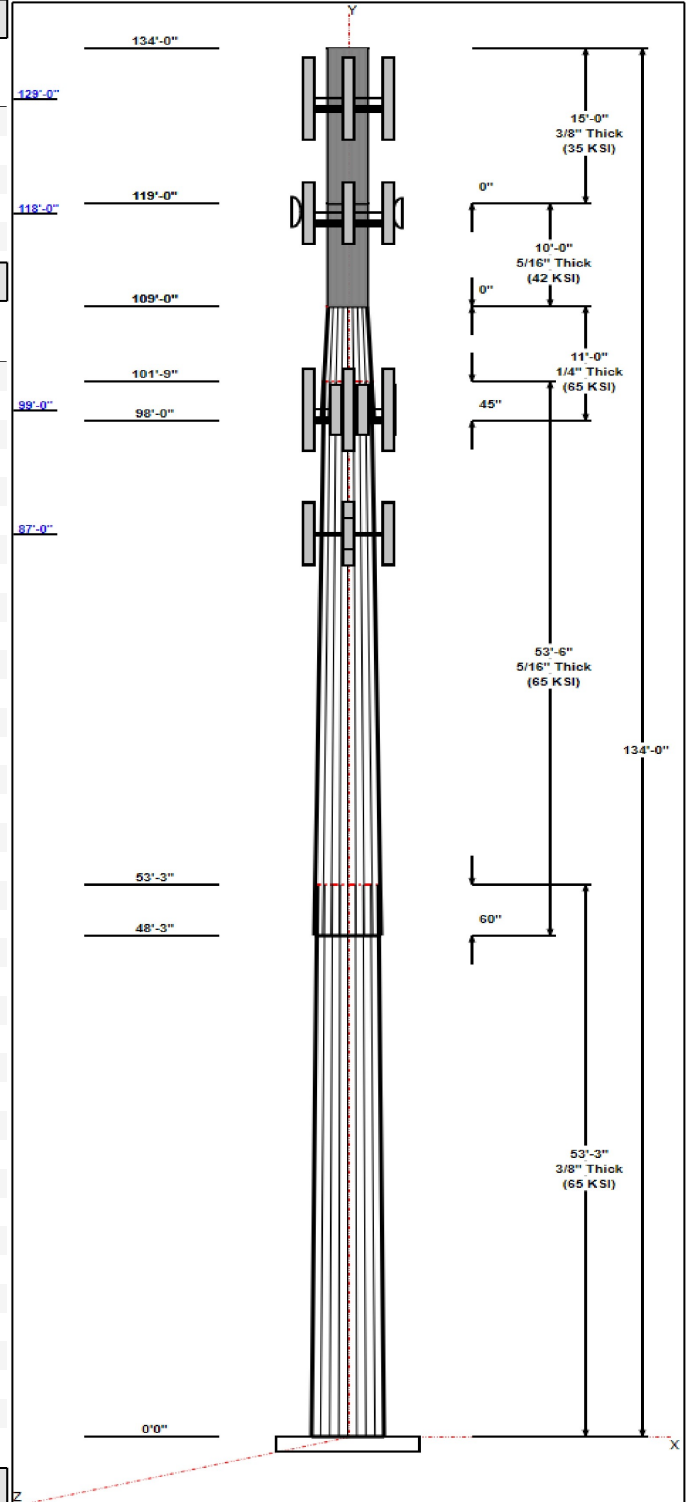
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	37.99	49.39	0.375		0.21408	65
2	53.50	28.23	39.69	0.313	Slip	0.21408	65
3	11.00	27.18	29.53	0.250	Slip	0.21408	65
4	10.00	26.00	26.00	0.312	Butt	0.00000	42
5	15.00	26.00	26.00	0.375	Butt	0.00000	35

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
134.00	134.00	1	Lightning rod	
129.00	129.00	1	(3) SitePro	AT&T
129.00	129.00	3	Ericsson AIR 6419 B77G	AT&T
129.00	129.00	3	Ericsson Radio 2012 B29	AT&T
129.00	129.00	3	RRUS 4415 B25	AT&T
129.00	129.00	3	TPA65R-BU8D	AT&T
129.00	129.00	3	AIR 6449 N77	AT&T
129.00	129.00	3	Cci Antennas	AT&T
129.00	129.00	3	RRUS 4478 B14	AT&T
129.00	129.00	3	Radio 4415 B30	AT&T
129.00	129.00	3	4449 B5/B12	AT&T
129.00	129.00	3	B2 B66A 8843	AT&T
129.00	129.00	3	DC9-48-60-24-8C-EV	AT&T
129.00	129.00	1	DC6-48-60-18-8C-EV	AT&T
118.00	118.00	2	VHLP2.5-11	Sprint Nextel
118.00	118.00	3	1900 MHz RRH	Sprint Nextel
118.00	118.00	6	800 MHz RRH	Sprint Nextel
118.00	118.00	3	TD-RRH8x20-25	Sprint Nextel
118.00	118.00	3	AAHC	Sprint Nextel
118.00	118.00	3	NNVV-65B-R4	Sprint Nextel
118.00	118.00	1	LP Platform w/ Handrail	Sprint Nextel
99.00	99.00	3	KRY 112 144/1	T-Mobile
99.00	99.00	1	LP Platform w/ Handrail	T-Mobile
99.00	99.00	3	APXVAARR24_43-U-NA20	T-Mobile
99.00	99.00	3	AIR 6449 B41	T-Mobile
99.00	99.00	3	APX16DWV-16DWV-S-E-	T-Mobile
99.00	99.00	3	RRUS 4415 B25	T-Mobile
99.00	99.00	4	Air 32	T-Mobile
99.00	99.00	3	KRY 112 489/2	T-Mobile
99.00	99.00	3	4449 B71+ B85	T-Mobile
87.00	87.00	3	BXA-171063-12CF-EDIN-X	Verizon
87.00	87.00	1	Low Profile	Verizon
87.00	87.00	6	MX06FR0660-03	Verizon
87.00	87.00	3	MT6407-77A	Verizon
87.00	87.00	3	B2/B66A RRH-BR049	Verizon
87.00	87.00	3	B5/B13 RRH-BR04C	Verizon
87.00	87.00	1	RVZDC-6627-PF-48	Verizon
87.00	87.00	1	HRK12 (Handrail Kit)	Verizon

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	129.00	Inside	0.4" Fiber	AT&T
0.00	129.00	Inside	1" DC	AT&T
0.00	118.00	Inside	1-1/4" Fiber	Sprint Nextel





**Structure: CT13070-A-SBA**

<b>Type:</b> Custom	<b>Base Shape:</b> 18 Sided	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Taper:</b> 0.00000	
<b>Height:</b> 134.00 (ft)		
<b>Base Elev:</b> 0.00 (ft)		Page: 3



0.00	118.00	Inside	1.689" Fiber	Sprint Nextel
0.00	118.00	Inside	1/2" Coax	Sprint Nextel
0.00	99.00	Inside	1 5/8" Coax	T-Mobile
0.00	99.00	Inside	1 5/8" Fiber	T-Mobile
0.00	99.00	Inside	1-1/4" Hybrid	T-Mobile
0.00	87.00	Inside	1 5/8" Coax	Verizon
0.00	87.00	Inside	1 5/8" Hybrid	Verizon

**Anchor Bolts**

Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Cluster

**Base Plate**

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.0000	53.3	60.0	Clipped

**Reactions**

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	3594.7	35.6	47.1
0.9D + 1.6W 97 mph Wind	3544.3	35.6	35.3
1.2D + 1.0Di + 1.0Wi 50 mph Wind	989.1	9.6	77.6
1.2D + 1.0E	242.1	2.1	47.2
0.9D + 1.0E	238.4	2.1	35.4
1.0D + 1.0W 60 mph Wind	853.2	8.5	39.3

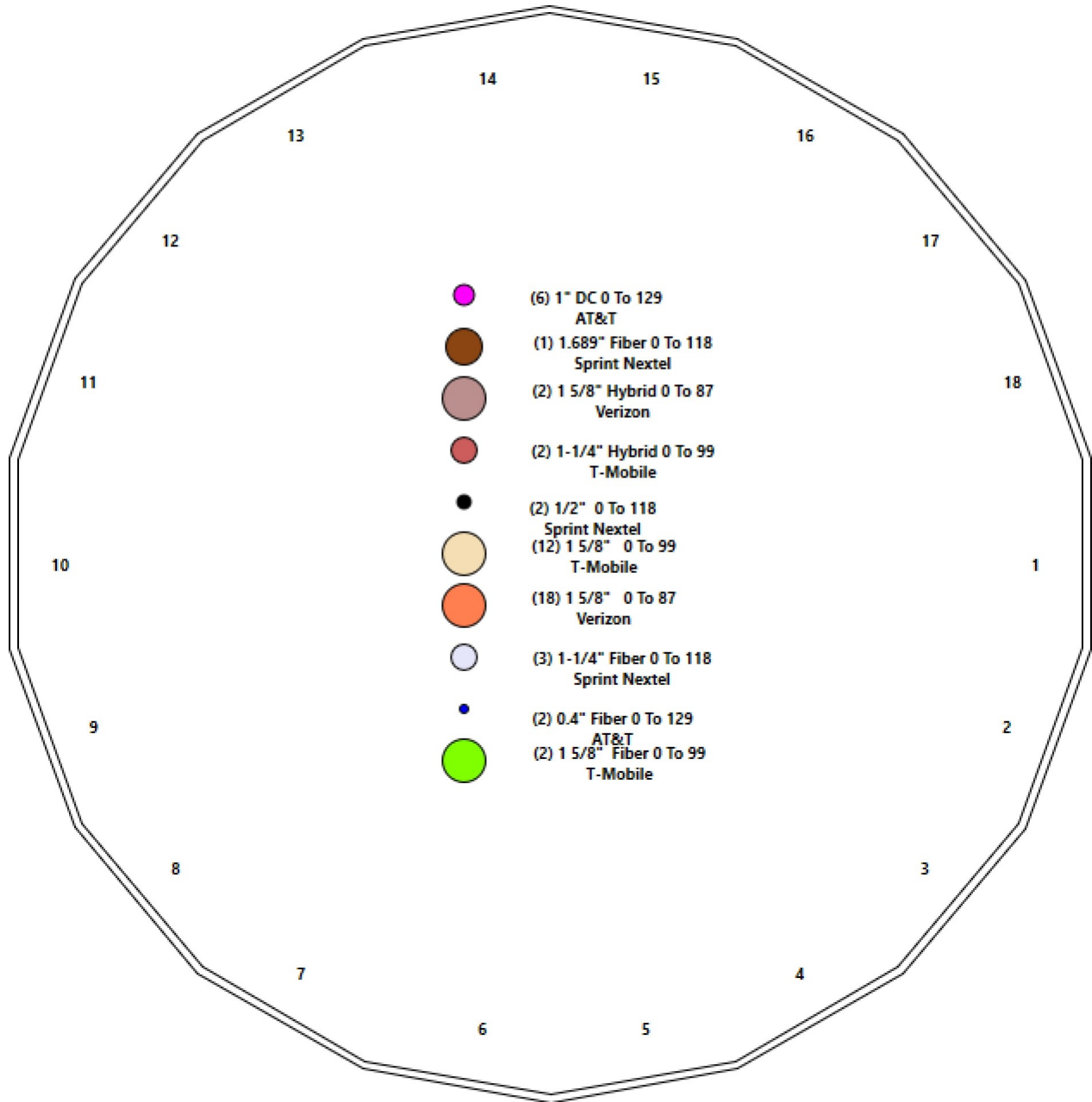
# Structure: CT13070-A-SBA - Coax Line Placement

**Type:** Monopole  
**Site Name:** Waterbury 4, CT  
**Height:** 134.00 (ft)

9/21/2021



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## Shaft Properties

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.250	0.3750	65		0.00	9,341
2	18	53.500	0.3125	65	Slip	60.00	6,075
3	18	11.000	0.2500	65	Slip	45.00	835
4	R	10.000	0.3120	42	Flange	0.00	857
5	R	15.000	0.3750	35	Flange	0.00	1,541
<b>Total Shaft Weight:</b>							<b>18,649</b>

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper
1	49.39	0.00	58.34	17707.72	21.81	131.71	37.99	53.25	44.77	8003.18	16.45	101.3	0.214083
2	39.69	48.25	39.05	7648.75	20.98	126.99	28.23	101.75	27.69	2727.23	14.52	90.34	0.214083
3	29.53	98.00	23.24	2517.77	19.42	118.14	27.18	109.00	21.37	1957.91	17.76	108.7	0.214083
4	26.00	109.0	25.18	2078.44	0.00	83.33	26.00	119.00	25.18	2078.44	0.00	83.33	0.000000
5	26.00	119.0	30.19	2479.79	0.00	69.33	26.00	134.00	30.19	2479.79	0.00	69.33	0.000000

## Load Summary

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	134.00	Lightning rod	1	6.50	0.38	1.00	42.39	1.455	0.00	0.00	0.00
2	129.00	(3) SitePro VFA12-M3-WLL	1	2999.58	50.70	1.00	5887.25	13.454	1.00	0.00	0.00
3	129.00	Ericsson AIR 6419 B77G	3	44.00	4.17	0.83	160.38	5.019	0.85	0.00	0.00
4	129.00	Ericsson Radio 2012 B29	3	43.00	1.86	0.67	104.47	2.415	0.67	0.00	0.00
5	129.00	RRUS 4415 B25	3	46.00	1.64	0.67	86.49	2.147	0.67	0.00	0.00
6	129.00	TPA65R-BU8D	3	145.00	17.87	0.72	831.58	19.640	0.72	0.00	0.00
7	129.00	AIR 6449 N77	3	101.60	4.13	0.85	236.71	4.974	0.85	0.00	0.00
8	129.00	Cci Antennas DMP65R-BU8DA-K	3	95.70	17.87	0.73	486.92	19.640	0.73	0.00	0.00
9	129.00	RRUS 4478 B14	3	59.40	1.65	0.67	100.25	2.161	0.67	0.00	0.00
10	129.00	Radio 4415 B30	3	46.00	1.86	0.67	105.61	2.415	0.67	0.00	0.00
11	129.00	4449 B5/B12	3	71.00	1.97	0.67	123.58	2.509	0.67	0.00	0.00
12	129.00	B2 B66A 8843	3	72.00	1.64	0.67	118.59	2.149	0.67	0.00	0.00
13	129.00	DC9-48-60-24-8C-EV	3	26.20	1.14	0.75	130.60	2.703	0.75	0.00	0.00
14	129.00	DC6-48-60-18-8C-EV	1	26.20	4.78	0.75	225.78	5.651	0.75	0.00	0.00
15	118.00	VHLP2.5-11	2	48.00	8.43	1.00	218.01	10.096	1.00	0.50	0.00
16	118.00	1900 MHz RRH	3	60.00	2.77	0.67	141.46	4.008	0.67	0.00	0.00
17	118.00	800 MHz RRH	6	53.00	2.49	0.67	125.21	3.607	0.67	0.00	0.00
18	118.00	TD-RRH8x20-25	3	70.00	4.05	0.67	177.31	4.842	0.67	0.00	0.00
19	118.00	AAHC	3	103.70	4.21	0.75	206.82	5.002	0.75	0.00	0.00
20	118.00	NNVV-65B-R4	3	84.70	12.27	0.74	389.78	13.692	0.74	0.00	0.00
21	118.00	LP Platform w/ Handrail	1	2448.72	46.00	1.00	4952.05	79.232	1.00	0.00	0.00
22	99.00	KRY 112 144/1	3	11.02	0.41	0.67	21.38	0.866	0.67	0.00	0.00
23	99.00	LP Platform w/ Handrail	1	2449.00	46.00	1.00	4909.05	76.805	1.00	0.00	0.00
24	99.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	526.85	22.060	0.70	0.00	0.00
25	99.00	AIR 6449 B41	3	133.20	6.53	0.70	289.53	7.554	0.70	0.00	0.00
26	99.00	APX16DWV-16DWV-S-E-A20	3	40.70	6.46	0.62	170.89	7.526	0.62	0.00	0.00
27	99.00	RRUS 4415 B25	3	46.00	1.64	0.67	85.43	2.134	0.67	0.00	0.00
28	99.00	Air 32 KRD901146-1_B66A_B2A	4	132.20	6.51	0.87	307.75	7.641	0.87	0.00	0.00
29	99.00	KRY 112 489/2	3	15.40	0.65	0.67	32.30	1.237	0.67	0.00	0.00
30	99.00	4449 B71+ B85	3	70.00	1.65	0.67	134.79	2.163	0.67	0.00	0.00
31	87.00	BXA-171063-12CF-EDIN-X	3	15.00	4.78	0.84	105.74	7.014	0.84	0.00	0.00
32	87.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	2739.52	38.725	1.00	0.00	0.00
33	87.00	MX06FR0660-03	6	71.00	9.87	0.88	323.65	11.169	0.88	0.00	0.00
34	87.00	MT6407-77A	3	79.40	4.69	0.70	191.34	5.585	0.70	0.00	0.00
35	87.00	B2/B66A RRH-BR049	3	84.40	1.87	0.67	155.97	2.410	0.67	0.00	0.00
36	87.00	B5/B13 RRH-BR04C (RFV01U-D2A)	3	70.30	1.87	0.67	135.09	2.410	0.67	0.00	0.00
37	87.00	RVZDC-6627-PF-48	1	32.00	4.06	1.00	139.89	4.838	1.00	0.00	0.00
38	87.00	HRK12 (Handrail Kit)	1	261.72	6.75	1.00	555.85	12.997	1.00	0.00	0.00
<b>Totals:</b>			<b>104</b>	<b>16,377.68</b>			<b>39,561.58</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	129.00	(2) 0.4" Fiber	0.00	Inside
0.00	129.00	(6) 1" DC	0.00	Inside
0.00	118.00	(3) 1-1/4" Fiber	0.00	Inside

## Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
0.00	118.00	(1) 1.689" Fiber		0.00							
0.00	118.00	(2) 1/2" Coax		0.00							
0.00	99.00	(12) 1 5/8" Coax		0.00							
0.00	99.00	(2) 1 5/8" Fiber		0.00							
0.00	99.00	(2) 1-1/4" Hybrid		0.00							
0.00	87.00	(18) 1 5/8" Coax		0.00							
0.00	87.00	(2) 1 5/8" Hybrid		0.00							

## Shaft Section Properties

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in <sup>3</sup> )	Weight (lb)
0.00		0.3750	49.390	58.338	17707.7	21.81	131.71	75.7	706.2	0.0
5.00		0.3750	48.320	57.064	16572.7	21.31	128.85	76.3	675.5	981.7
10.00		0.3750	47.249	55.790	15487.3	20.81	126.00	76.9	645.6	960.0
15.00		0.3750	46.179	54.516	14450.4	20.30	123.14	77.5	616.3	938.4
20.00		0.3750	45.108	53.242	13460.8	19.80	120.29	78.1	587.8	916.7
25.00		0.3750	44.038	51.968	12517.4	19.30	117.43	78.7	559.8	895.0
30.00		0.3750	42.968	50.694	11619.2	18.79	114.58	79.3	532.6	873.3
35.00		0.3750	41.897	49.420	10765.0	18.29	111.73	79.9	506.1	851.7
40.00		0.3750	40.827	48.146	9953.7	17.79	108.87	80.5	480.2	830.0
45.00		0.3750	39.756	46.872	9184.3	17.28	106.02	81.1	455.0	808.3
48.25	Bot - Section 2	0.3750	39.061	46.044	8706.0	16.96	104.16	81.5	439.0	513.8
50.00		0.3750	38.686	45.598	8455.5	16.78	103.16	81.7	430.5	504.3
53.25	Top - Section 1	0.3125	38.615	37.990	7041.7	20.38	123.57	0.0	0.0	923.6
55.00		0.3125	38.240	37.618	6837.1	20.17	122.37	77.7	352.2	225.1
60.00		0.3125	37.170	36.557	6274.4	19.56	118.94	78.4	332.5	631.0
65.00		0.3125	36.100	35.495	5743.5	18.96	115.52	79.1	313.4	612.9
70.00		0.3125	35.029	34.433	5243.4	18.35	112.09	79.8	294.8	594.9
75.00		0.3125	33.959	33.372	4773.2	17.75	108.67	80.5	276.8	576.8
80.00		0.3125	32.888	32.310	4332.0	17.15	105.24	81.2	259.4	558.8
85.00		0.3125	31.818	31.248	3918.8	16.54	101.82	81.9	242.6	540.7
87.00		0.3125	31.390	30.824	3761.2	16.30	100.45	82.2	236.0	211.2
90.00		0.3125	30.748	30.187	3532.8	15.94	98.39	82.5	226.3	311.4
95.00		0.3125	29.677	29.125	3173.0	15.33	94.97	82.5	210.6	504.6
98.00	Bot - Section 3	0.3125	29.035	28.488	2969.3	14.97	92.91	82.5	201.4	294.1
99.00		0.3125	28.821	28.276	2903.4	14.85	92.23	82.5	198.4	175.4
100.00		0.3125	28.607	28.063	2838.5	14.73	91.54	82.5	195.4	174.1
101.75	Top - Section 2	0.2500	28.732	22.600	2316.3	18.85	114.93	0.0	0.0	301.5
105.00		0.2500	28.036	22.048	2150.7	18.36	112.15	79.8	151.1	246.9
109.00	Top - Section 3	0.2500	27.180	21.368	1957.9	17.76	108.72	80.5	141.9	295.5
109.00	Bot - Section 4	0.3120	26.000	25.179	2078.4	14.23	87.12	41.2	159.9	
110.00		0.3120	26.000	25.179	2078.4	0.00	83.33	41.2	159.9	85.7
115.00		0.3120	26.000	25.179	2078.4	0.00	83.33	41.2	159.9	428.4
118.00		0.3120	26.000	25.179	2078.4	0.00	83.33	41.2	159.9	257.0
119.00	Top - Section 4	0.3120	26.000	25.179	2078.4	0.00	83.33	41.2	159.9	85.7
119.00	Bot - Section 5	0.3750	26.000	30.189	2479.8	0.00	69.33	35.0	190.8	
120.00		0.3750	26.000	30.189	2479.8	0.00	69.33	35.0	190.8	102.7
125.00		0.3750	26.000	30.189	2479.8	0.00	69.33	35.0	190.8	513.6
129.00		0.3750	26.000	30.189	2479.8	0.00	69.33	35.0	190.8	410.9
130.00		0.3750	26.000	30.189	2479.8	0.00	69.33	35.0	190.8	102.7
134.00		0.3750	26.000	30.189	2479.8	0.00	69.33	35.0	190.8	410.9

**18649.2**

## Wind Loading - Shaft

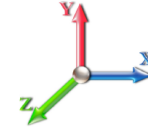
<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)	
0.00		1.00	0.85	19.450	21.40	373.76	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0	
5.00		1.00	0.85	19.450	21.40	365.66	0.650	0.000	5.00	20.670	13.44	459.9	0.0	1178.1	
10.00		1.00	0.85	19.450	21.40	357.55	0.650	0.000	5.00	20.217	13.14	449.9	0.0	1152.1	
15.00		1.00	0.85	19.450	21.40	349.45	0.650	0.000	5.00	19.764	12.85	439.8	0.0	1126.0	
20.00		1.00	0.90	20.638	22.70	351.62	0.650	0.000	5.00	19.312	12.55	455.9	0.0	1100.0	
25.00		1.00	0.95	21.630	23.79	351.43	0.650	0.000	5.00	18.859	12.26	466.7	0.0	1074.0	
30.00		1.00	0.98	22.477	24.72	349.54	0.650	0.000	5.00	18.406	11.96	473.3	0.0	1048.0	
35.00		1.00	1.01	23.218	25.54	346.40	0.650	0.000	5.00	17.953	11.67	476.9	0.0	1022.0	
40.00		1.00	1.04	23.880	26.27	342.33	0.650	0.000	5.00	17.500	11.37	478.1	0.0	996.0	
45.00		1.00	1.07	24.479	26.93	337.51	0.650	0.000	5.00	17.047	11.08	477.4	0.0	970.0	
48.25	Bot - Section 2	1.00	1.09	24.841	27.33	334.05	0.650	0.000	3.25	10.838	7.04	308.0	0.0	616.5	
50.00		1.00	1.09	25.029	27.53	332.09	0.650	0.000	1.75	5.849	3.80	167.5	0.0	605.2	
53.25	Top - Section 1	1.00	1.11	25.363	27.90	328.29	0.650	0.000	3.25	10.715	6.96	310.9	0.0	1108.4	
55.00		1.00	1.12	25.536	28.09	331.58	0.650	0.000	1.75	5.691	3.70	166.2	0.0	270.1	
60.00		1.00	1.14	26.008	28.61	325.26	0.650	0.000	5.00	15.953	10.37	474.6	0.0	757.2	
65.00		1.00	1.16	26.450	29.09	318.57	0.650	0.000	5.00	15.500	10.07	469.0	0.0	735.5	
70.00		1.00	1.17	26.866	29.55	311.54	0.650	0.000	5.00	15.047	9.78	462.5	0.0	713.9	
75.00		1.00	1.19	27.259	29.98	304.22	0.650	0.000	5.00	14.594	9.49	455.1	0.0	692.2	
80.00		1.00	1.21	27.632	30.39	296.64	0.650	0.000	5.00	14.141	9.19	447.0	0.0	670.5	
85.00		1.00	1.22	27.987	30.79	288.82	0.650	0.000	5.00	13.688	8.90	438.3	0.0	648.8	
87.00	Appurtenance(s)	1.00	1.23	28.124	30.94	285.64	0.650	0.000	2.00	5.349	3.48	172.1	0.0	253.5	
90.00		1.00	1.24	28.325	31.16	280.79	0.650	0.000	3.00	7.887	5.13	255.6	0.0	373.7	
95.00		1.00	1.25	28.650	31.51	272.56	0.650	0.000	5.00	12.783	8.31	419.0	0.0	605.5	
98.00	Bot - Section 3	1.00	1.26	28.838	31.72	267.54	0.650	0.000	3.00	7.452	4.84	245.9	0.0	352.9	
99.00	Appurtenance(s)	1.00	1.26	28.900	31.79	265.85	0.650	0.000	1.00	2.490	1.62	82.3	0.0	210.4	
100.00		1.00	1.27	28.961	31.86	264.16	0.650	0.000	1.00	2.472	1.61	81.9	0.0	208.9	
101.75	Top - Section 2	1.00	1.27	29.067	31.97	261.17	0.650	0.000	1.75	4.282	2.78	142.4	0.0	361.8	
105.00		1.00	1.28	29.260	32.19	260.22	0.650	0.000	3.25	7.806	5.07	261.3	0.0	296.3	
109.00	Top - Section 3	1.00	1.29	29.491	32.44	253.27	0.650	0.000	4.00	9.345	6.07	315.3	0.0	354.6	
110.00		1.00	1.29	29.548	32.50	238.82	0.600	0.000	1.00	2.167	1.30	67.6	0.0	102.8	
115.00		1.00	1.30	29.826	32.81	239.94	0.600	0.000	5.00	10.833	6.50	341.2	0.0	514.1	
118.00	Appurtenance(s)	1.00	1.31	29.988	32.99	240.59	0.600	0.000	3.00	6.500	3.90	205.8	0.0	308.4	
119.00	Top - Section 4	1.00	1.31	30.041	33.05	240.81	0.600	0.000	1.00	2.167	1.30	68.7	0.0	102.8	
120.00		1.00	1.32	30.094	33.10	241.02	0.600	0.000	1.00	2.167	1.30	68.9	0.0	123.3	
125.00		1.00	1.33	30.354	33.39	242.06	0.600	0.000	5.00	10.833	6.50	347.2	0.0	616.4	
129.00	Appurtenance(s)	1.00	1.34	30.556	33.61	242.86	0.600	0.000	4.00	8.667	5.20	279.6	0.0	493.1	
130.00		1.00	1.34	30.605	33.67	243.06	0.600	0.000	1.00	2.167	1.30	70.0	0.0	123.3	
134.00	Appurtenance(s)	1.00	1.35	30.801	33.88	243.83	0.600	0.000	4.00	8.667	5.20	281.9	0.0	493.1	
<b>Totals:</b>									<b>134.00</b>			<b>11,583.6</b>			<b>22,379.0</b>

## Discrete Appurtenance Forces

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	134.00	Lightning rod	1	30.801	33.881	1.00	1.00	0.38	7.80	0.000	0.000	20.60	0.00	0.00	
2	129.00	Cci Antennas	3	30.556	33.611	0.58	0.80	31.31	344.52	0.000	0.000	1683.69	0.00	0.00	
3	129.00	(3) SitePro	1	30.556	33.611	0.75	0.75	38.03	3599.50	0.000	0.000	2044.91	0.00	0.00	
4	129.00	Ericsson AIR 6419 B77G	3	30.556	33.611	0.66	0.80	8.29	158.40	0.000	0.000	445.64	0.00	0.00	
5	129.00	Ericsson Radio 2012 B29	3	30.556	33.611	0.54	0.80	2.99	154.80	0.000	0.000	160.84	0.00	0.00	
6	129.00	RRUS 4415 B25	3	30.556	33.611	0.54	0.80	2.64	165.60	0.000	0.000	141.82	0.00	0.00	
7	129.00	AIR 6449 N77	3	30.556	33.611	0.68	0.80	8.43	365.76	0.000	0.000	453.09	0.00	0.00	
8	129.00	TPA65R-BU8D	3	30.556	33.611	0.58	0.80	30.88	522.00	0.000	0.000	1660.63	0.00	0.00	
9	129.00	B2 B66A 8843	3	30.556	33.611	0.54	0.80	2.64	259.20	0.000	0.000	141.82	0.00	0.00	
10	129.00	DC6-48-60-18-8C-EV	1	30.556	33.611	0.60	0.80	2.87	31.44	0.000	0.000	154.24	0.00	0.00	
11	129.00	DC9-48-60-24-8C-EV	3	30.556	33.611	0.60	0.80	2.05	94.32	0.000	0.000	110.35	0.00	0.00	
12	129.00	RRUS 4478 B14	3	30.556	33.611	0.54	0.80	2.65	213.84	0.000	0.000	142.68	0.00	0.00	
13	129.00	4449 B5/B12	3	30.556	33.611	0.54	0.80	3.17	255.60	0.000	0.000	170.36	0.00	0.00	
14	129.00	Radio 4415 B30	3	30.556	33.611	0.54	0.80	2.99	165.60	0.000	0.000	160.84	0.00	0.00	
15	118.00	LP Platform w/ Handrail	1	29.988	32.986	1.00	1.00	46.00	2938.46	0.000	0.000	2427.80	0.00	0.00	
16	118.00	NNVV-65B-R4	3	29.988	32.986	0.55	0.75	20.43	304.92	0.000	0.000	1078.24	0.00	0.00	
17	118.00	AAHC	3	29.988	32.986	0.56	0.75	7.10	373.32	0.000	0.000	374.96	0.00	0.00	
18	118.00	TD-RRHx20-25	3	29.988	32.986	0.50	0.75	6.11	252.00	0.000	0.000	322.23	0.00	0.00	
19	118.00	800 MHz RRH	6	29.988	32.986	0.50	0.75	7.51	381.60	0.000	0.000	396.23	0.00	0.00	
20	118.00	1900 MHz RRH	3	29.988	32.986	0.50	0.75	4.18	216.00	0.000	0.000	220.39	0.00	0.00	
21	118.00	VHLP2.5-11	2	29.988	32.986	1.00	1.00	16.86	115.20	1.583	0.000	889.84	880.57	0.00	
22	99.00	APX16DWV-16DWV-S-E-	3	28.900	31.790	0.46	0.75	9.01	146.52	0.000	0.000	458.36	0.00	0.00	
23	99.00	KRY 112 144/1	3	28.900	31.790	0.50	0.75	0.62	39.67	0.000	0.000	31.44	0.00	0.00	
24	99.00	APXVAARR24_43-U-NA2	3	28.900	31.790	0.52	0.75	31.88	460.80	0.000	0.000	1621.42	0.00	0.00	
25	99.00	AIR 6449 B41	3	28.900	31.790	0.52	0.75	10.28	479.52	0.000	0.000	523.12	0.00	0.00	
26	99.00	LP Platform w/ Handrail	1	28.900	31.790	1.00	1.00	46.00	2938.80	0.000	0.000	2339.71	0.00	0.00	
27	99.00	Air 32	4	28.900	31.790	0.65	0.75	16.99	634.56	0.000	0.000	864.22	0.00	0.00	
28	99.00	KRY 112 489/2	3	28.900	31.790	0.50	0.75	0.98	55.44	0.000	0.000	49.84	0.00	0.00	
29	99.00	4449 B71+ B85	3	28.900	31.790	0.50	0.75	2.49	252.00	0.000	0.000	126.52	0.00	0.00	
30	99.00	RRUS 4415 B25	3	28.900	31.790	0.50	0.75	2.47	165.60	0.000	0.000	125.75	0.00	0.00	
31	87.00	MT6407-77A	3	28.124	30.936	0.52	0.75	7.39	285.84	0.000	0.000	365.63	0.00	0.00	
32	87.00	BXA-171063-12CF-EDIN-	3	28.124	30.936	0.63	0.75	9.03	54.00	0.000	0.000	447.18	0.00	0.00	
33	87.00	Low Profile	1	28.124	30.936	1.00	1.00	22.00	1800.00	0.000	0.000	1088.96	0.00	0.00	
34	87.00	MX06FR0660-03	6	28.124	30.936	0.66	0.75	39.09	511.20	0.000	0.000	1934.65	0.00	0.00	
35	87.00	RVZDC-6627-PF-48	1	28.124	30.936	0.75	0.75	3.04	38.40	0.000	0.000	150.72	0.00	0.00	
36	87.00	B2/B66A RRH-BR049	3	28.124	30.936	0.50	0.75	2.82	303.84	0.000	0.000	139.54	0.00	0.00	
37	87.00	B5/B13 RRH-BR04C	3	28.124	30.936	0.50	0.75	2.82	253.08	0.000	0.000	139.54	0.00	0.00	
38	87.00	HRK12 (Handrail Kit)	1	28.124	30.936	1.00	1.00	6.75	314.06	0.000	0.000	334.11	0.00	0.00	
<b>Totals:</b>									<b>19,653.22</b>						<b>23,941.90</b>



## Total Applied Force Summary

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		459.94	1442.48	0.00	0.00
10.00		449.86	1416.47	0.00	0.00
15.00		439.78	1390.46	0.00	0.00
20.00		455.93	1364.45	0.00	0.00
25.00		466.66	1338.44	0.00	0.00
30.00		473.27	1312.43	0.00	0.00
35.00		476.85	1286.42	0.00	0.00
40.00		478.08	1260.40	0.00	0.00
45.00		477.40	1234.39	0.00	0.00
48.25		307.99	788.41	0.00	0.00
50.00		167.47	697.70	0.00	0.00
53.25		310.90	1280.24	0.00	0.00
55.00		166.24	362.69	0.00	0.00
60.00		474.65	1021.63	0.00	0.00
65.00		469.01	999.95	0.00	0.00
70.00		462.46	978.27	0.00	0.00
75.00		455.11	956.60	0.00	0.00
80.00		447.02	934.92	0.00	0.00
85.00		438.26	913.25	0.00	0.00
87.00	(21) attachments	4772.41	3919.65	0.00	0.00
90.00		255.57	457.03	0.00	0.00
95.00		418.96	744.37	0.00	0.00
98.00		245.85	436.22	0.00	0.00
99.00	(26) attachments	6222.69	5411.12	0.00	0.00
100.00		81.90	216.89	0.00	0.00
101.75		142.40	375.80	0.00	0.00
105.00		261.29	322.31	0.00	0.00
109.00		315.27	386.64	0.00	0.00
110.00		67.61	110.83	0.00	0.00
115.00		341.20	554.16	0.00	0.00
118.00	(21) attachments	5915.52	4914.00	880.57	0.00
119.00		68.73	105.81	0.00	0.00
120.00		68.86	126.27	0.00	0.00
125.00		347.25	631.35	0.00	0.00
129.00	(35) attachments	7750.56	6835.66	0.00	0.00
130.00		70.03	123.27	0.00	0.00
134.00	(1) attachments	302.49	500.88	0.00	0.00
Totals:		35,525.46	47,151.86	880.57	0.00

## Calculated Forces

**Structure:** CT13070-A-SBA  
**Site Name:** Waterbury 4, CT  
**Height:** 134.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

9/21/2021  
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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Iterations** 25

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.06	-35.64	-0.86	-3594.6	-0.02	3594.65	3976.93	1988.46	8011.33	4011.62	0.00	0.000	0.000	0.908
5.00	-45.45	-35.41	-0.86	-3416.4	-0.02	3416.44	3920.48	1960.24	7723.84	3867.66	0.15	-0.282	0.000	0.895
10.00	-43.86	-35.17	-0.86	-3239.4	-0.02	3239.41	3862.67	1931.34	7438.74	3724.90	0.60	-0.567	0.000	0.881
15.00	-42.30	-34.92	-0.86	-3063.5	-0.02	3063.59	3803.51	1901.75	7156.21	3583.42	1.35	-0.857	0.000	0.866
20.00	-40.76	-34.65	-0.86	-2888.9	-0.03	2888.97	3742.99	1871.49	6876.43	3443.32	2.40	-1.150	0.000	0.850
25.00	-39.26	-34.36	-0.86	-2715.7	-0.03	2715.70	3681.11	1840.56	6599.58	3304.69	3.77	-1.446	0.000	0.833
30.00	-37.78	-34.05	-0.86	-2543.9	-0.03	2543.90	3617.88	1808.94	6325.84	3167.62	5.44	-1.745	0.000	0.814
35.00	-36.33	-33.72	-0.86	-2373.6	-0.03	2373.65	3553.28	1776.64	6055.40	3032.20	7.43	-2.046	-0.001	0.793
40.00	-34.91	-33.38	-0.86	-2205.0	-0.03	2205.03	3487.33	1743.67	5788.43	2898.52	9.74	-2.348	-0.001	0.771
45.00	-33.56	-33.00	-0.86	-2038.1	-0.03	2038.12	3420.03	1710.01	5525.12	2766.66	12.36	-2.651	-0.001	0.747
48.25	-32.70	-32.74	-0.86	-1930.8	-0.03	1930.88	3375.55	1687.77	5356.01	2681.98	14.23	-2.851	-0.001	0.730
50.00	-31.92	-32.62	-0.86	-1873.5	-0.03	1873.59	3351.36	1675.68	5265.64	2636.73	15.30	-2.960	-0.001	0.720
53.25	-30.57	-32.33	-0.86	-1767.5	-0.03	1767.56	2647.50	1323.75	4165.57	2085.88	17.38	-3.159	-0.001	0.860
55.00	-30.09	-32.26	-0.86	-1710.9	-0.04	1710.99	2630.02	1315.01	4097.26	2051.68	18.56	-3.267	-0.001	0.846
60.00	-28.92	-31.90	-0.86	-1549.6	-0.04	1549.69	2579.17	1289.59	3903.72	1954.76	22.16	-3.607	-0.001	0.805
65.00	-27.77	-31.52	-0.87	-1390.2	-0.04	1390.21	2526.96	1263.48	3712.68	1859.10	26.12	-3.940	-0.001	0.759
70.00	-26.65	-31.14	-0.87	-1232.6	-0.05	1232.61	2473.39	1236.70	3524.34	1764.79	30.42	-4.265	-0.002	0.710
75.00	-25.57	-30.75	-0.87	-1076.9	-0.05	1076.92	2418.47	1209.23	3338.88	1671.92	35.05	-4.578	-0.002	0.655
80.00	-24.52	-30.35	-0.87	-923.17	-0.05	923.17	2362.18	1181.09	3156.47	1580.58	40.00	-4.876	-0.002	0.595
85.00	-23.55	-29.91	-0.87	-771.43	-0.06	771.43	2304.54	1152.27	2977.30	1490.86	45.26	-5.154	-0.002	0.528
87.00	-20.03	-24.85	-0.87	-711.61	-0.06	711.61	2281.10	1140.55	2906.58	1455.45	47.44	-5.262	-0.003	0.498
90.00	-19.51	-24.62	-0.87	-637.06	-0.06	637.06	2242.72	1121.36	2798.02	1401.09	50.79	-5.415	-0.003	0.464
95.00	-18.74	-24.19	-0.87	-513.97	-0.07	513.97	2163.84	1081.92	2603.70	1303.79	56.58	-5.647	-0.003	0.403
98.00	-18.29	-23.93	-0.87	-441.41	-0.07	441.41	2116.52	1058.26	2490.47	1247.09	60.16	-5.775	-0.003	0.363
99.00	-13.52	-17.20	-0.87	-417.49	-0.07	417.49	2100.74	1050.37	2453.28	1228.47	61.38	-5.816	-0.003	0.347
100.00	-13.30	-17.11	-0.87	-400.29	-0.07	400.29	2084.97	1042.48	2416.38	1209.99	62.60	-5.856	-0.004	0.337
101.75	-12.91	-16.95	-0.87	-370.35	-0.07	370.35	1611.41	805.70	1884.17	943.49	64.75	-5.924	-0.004	0.401
105.00	-12.58	-16.68	-0.88	-315.27	-0.08	315.27	1583.50	791.75	1805.91	904.30	68.82	-6.040	-0.004	0.357
109.00	-12.21	-16.35	-0.88	-248.54	-0.08	248.54	1548.36	774.18	1710.93	856.74	73.94	-6.189	-0.005	0.298
109.00	-12.21	-16.35	-0.88	-248.54	-0.08	248.54	933.38	466.69	986.46	590.00	73.94	-6.189	-0.005	0.436
110.00	-12.08	-16.29	-0.88	-232.19	-0.08	232.19	933.38	466.69	986.46	590.00	75.24	-6.224	-0.005	0.408
115.00	-11.54	-15.91	-0.88	-150.75	-0.09	150.75	933.38	466.69	986.46	590.00	81.82	-6.355	-0.005	0.269
118.00	-7.31	-9.48	0.00	-103.04	0.01	103.04	933.38	466.69	986.46	590.00	85.82	-6.407	-0.006	0.183
119.00	-7.21	-9.41	0.00	-93.55	0.01	93.55	933.38	466.69	986.46	590.00	87.16	-6.421	-0.006	0.167
119.00	-7.21	-9.41	0.00	-93.55	0.01	93.55	950.95	475.47	1000.09	624.60	87.16	-6.421	-0.006	0.158
120.00	-7.09	-9.33	0.00	-84.15	0.01	84.15	950.95	475.47	1000.09	624.60	88.50	-6.433	-0.006	0.143
125.00	-6.50	-8.91	0.00	-37.52	0.00	37.52	950.95	475.47	1000.09	624.60	95.25	-6.468	-0.006	0.067
129.00	-0.58	-0.44	0.00	-1.87	0.00	1.87	950.95	475.47	1000.09	624.60	100.66	-6.477	-0.006	0.004
130.00	-0.46	-0.36	0.00	-1.43	0.00	1.43	950.95	475.47	1000.09	624.60	102.01	-6.477	-0.006	0.003
134.00	0.00	-0.30	0.00	0.00	0.00	0.00	950.95	475.47	1000.09	624.60	107.43	-6.477	-0.006	0.000

## Wind Loading - Shaft

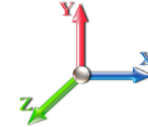
<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 97 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	373.76	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	365.66	0.650	0.000	5.00	20.670	13.44	459.9	0.0	883.5
10.00		1.00	0.85	19.450	21.40	357.55	0.650	0.000	5.00	20.217	13.14	449.9	0.0	864.0
15.00		1.00	0.85	19.450	21.40	349.45	0.650	0.000	5.00	19.764	12.85	439.8	0.0	844.5
20.00		1.00	0.90	20.638	22.70	351.62	0.650	0.000	5.00	19.312	12.55	455.9	0.0	825.0
25.00		1.00	0.95	21.630	23.79	351.43	0.650	0.000	5.00	18.859	12.26	466.7	0.0	805.5
30.00		1.00	0.98	22.477	24.72	349.54	0.650	0.000	5.00	18.406	11.96	473.3	0.0	786.0
35.00		1.00	1.01	23.218	25.54	346.40	0.650	0.000	5.00	17.953	11.67	476.9	0.0	766.5
40.00		1.00	1.04	23.880	26.27	342.33	0.650	0.000	5.00	17.500	11.37	478.1	0.0	747.0
45.00		1.00	1.07	24.479	26.93	337.51	0.650	0.000	5.00	17.047	11.08	477.4	0.0	727.5
48.25	Bot - Section 2	1.00	1.09	24.841	27.33	334.05	0.650	0.000	3.25	10.838	7.04	308.0	0.0	462.4
50.00		1.00	1.09	25.029	27.53	332.09	0.650	0.000	1.75	5.849	3.80	167.5	0.0	453.9
53.25	Top - Section 1	1.00	1.11	25.363	27.90	328.29	0.650	0.000	3.25	10.715	6.96	310.9	0.0	831.3
55.00		1.00	1.12	25.536	28.09	331.58	0.650	0.000	1.75	5.691	3.70	166.2	0.0	202.6
60.00		1.00	1.14	26.008	28.61	325.26	0.650	0.000	5.00	15.953	10.37	474.6	0.0	567.9
65.00		1.00	1.16	26.450	29.09	318.57	0.650	0.000	5.00	15.500	10.07	469.0	0.0	551.6
70.00		1.00	1.17	26.866	29.55	311.54	0.650	0.000	5.00	15.047	9.78	462.5	0.0	535.4
75.00		1.00	1.19	27.259	29.98	304.22	0.650	0.000	5.00	14.594	9.49	455.1	0.0	519.1
80.00		1.00	1.21	27.632	30.39	296.64	0.650	0.000	5.00	14.141	9.19	447.0	0.0	502.9
85.00		1.00	1.22	27.987	30.79	288.82	0.650	0.000	5.00	13.688	8.90	438.3	0.0	486.6
87.00	Appurtenance(s)	1.00	1.23	28.124	30.94	285.64	0.650	0.000	2.00	5.349	3.48	172.1	0.0	190.1
90.00		1.00	1.24	28.325	31.16	280.79	0.650	0.000	3.00	7.887	5.13	255.6	0.0	280.3
95.00		1.00	1.25	28.650	31.51	272.56	0.650	0.000	5.00	12.783	8.31	419.0	0.0	454.1
98.00	Bot - Section 3	1.00	1.26	28.838	31.72	267.54	0.650	0.000	3.00	7.452	4.84	245.9	0.0	264.7
99.00	Appurtenance(s)	1.00	1.26	28.900	31.79	265.85	0.650	0.000	1.00	2.490	1.62	82.3	0.0	157.8
100.00		1.00	1.27	28.961	31.86	264.16	0.650	0.000	1.00	2.472	1.61	81.9	0.0	156.7
101.75	Top - Section 2	1.00	1.27	29.067	31.97	261.17	0.650	0.000	1.75	4.282	2.78	142.4	0.0	271.3
105.00		1.00	1.28	29.260	32.19	260.22	0.650	0.000	3.25	7.806	5.07	261.3	0.0	222.2
109.00	Top - Section 3	1.00	1.29	29.491	32.44	253.27	0.650	0.000	4.00	9.345	6.07	315.3	0.0	265.9
110.00		1.00	1.29	29.548	32.50	238.82	0.600	0.000	1.00	2.167	1.30	67.6	0.0	77.1
115.00		1.00	1.30	29.826	32.81	239.94	0.600	0.000	5.00	10.833	6.50	341.2	0.0	385.6
118.00	Appurtenance(s)	1.00	1.31	29.988	32.99	240.59	0.600	0.000	3.00	6.500	3.90	205.8	0.0	231.3
119.00	Top - Section 4	1.00	1.31	30.041	33.05	240.81	0.600	0.000	1.00	2.167	1.30	68.7	0.0	77.1
120.00		1.00	1.32	30.094	33.10	241.02	0.600	0.000	1.00	2.167	1.30	68.9	0.0	92.5
125.00		1.00	1.33	30.354	33.39	242.06	0.600	0.000	5.00	10.833	6.50	347.2	0.0	462.3
129.00	Appurtenance(s)	1.00	1.34	30.556	33.61	242.86	0.600	0.000	4.00	8.667	5.20	279.6	0.0	369.8
130.00		1.00	1.34	30.605	33.67	243.06	0.600	0.000	1.00	2.167	1.30	70.0	0.0	92.5
134.00	Appurtenance(s)	1.00	1.35	30.801	33.88	243.83	0.600	0.000	4.00	8.667	5.20	281.9	0.0	369.8
<b>Totals:</b>									<b>134.00</b>			<b>11,583.6</b>		<b>16,784.3</b>

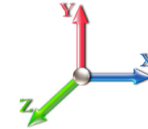
## Discrete Appurtenance Forces

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021	
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C		
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00		
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil		
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II	Page: 14



**Load Case:** 0.9D + 1.6W 97 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	134.00	Lightning rod	1	30.801	33.881	1.00	1.00	0.38	5.85	0.000	0.000	20.60	0.00	0.00
2	129.00	Cci Antennas	3	30.556	33.611	0.58	0.80	31.31	258.39	0.000	0.000	1683.69	0.00	0.00
3	129.00	(3) SitePro	1	30.556	33.611	0.75	0.75	38.03	2699.62	0.000	0.000	2044.91	0.00	0.00
4	129.00	Ericsson AIR 6419 B77G	3	30.556	33.611	0.66	0.80	8.29	118.80	0.000	0.000	445.64	0.00	0.00
5	129.00	Ericsson Radio 2012 B29	3	30.556	33.611	0.54	0.80	2.99	116.10	0.000	0.000	160.84	0.00	0.00
6	129.00	RRUS 4415 B25	3	30.556	33.611	0.54	0.80	2.64	124.20	0.000	0.000	141.82	0.00	0.00
7	129.00	AIR 6449 N77	3	30.556	33.611	0.68	0.80	8.43	274.32	0.000	0.000	453.09	0.00	0.00
8	129.00	TPA65R-BU8D	3	30.556	33.611	0.58	0.80	30.88	391.50	0.000	0.000	1660.63	0.00	0.00
9	129.00	B2 B66A 8843	3	30.556	33.611	0.54	0.80	2.64	194.40	0.000	0.000	141.82	0.00	0.00
10	129.00	DC6-48-60-18-8C-EV	1	30.556	33.611	0.60	0.80	2.87	23.58	0.000	0.000	154.24	0.00	0.00
11	129.00	DC9-48-60-24-8C-EV	3	30.556	33.611	0.60	0.80	2.05	70.74	0.000	0.000	110.35	0.00	0.00
12	129.00	RRUS 4478 B14	3	30.556	33.611	0.54	0.80	2.65	160.38	0.000	0.000	142.68	0.00	0.00
13	129.00	4449 B5/B12	3	30.556	33.611	0.54	0.80	3.17	191.70	0.000	0.000	170.36	0.00	0.00
14	129.00	Radio 4415 B30	3	30.556	33.611	0.54	0.80	2.99	124.20	0.000	0.000	160.84	0.00	0.00
15	118.00	LP Platform w/ Handrail	1	29.988	32.986	1.00	1.00	46.00	2203.85	0.000	0.000	2427.80	0.00	0.00
16	118.00	NNVV-65B-R4	3	29.988	32.986	0.55	0.75	20.43	228.69	0.000	0.000	1078.24	0.00	0.00
17	118.00	AAHC	3	29.988	32.986	0.56	0.75	7.10	279.99	0.000	0.000	374.96	0.00	0.00
18	118.00	TD-RRHx20-25	3	29.988	32.986	0.50	0.75	6.11	189.00	0.000	0.000	322.23	0.00	0.00
19	118.00	800 MHz RRH	6	29.988	32.986	0.50	0.75	7.51	286.20	0.000	0.000	396.23	0.00	0.00
20	118.00	1900 MHz RRH	3	29.988	32.986	0.50	0.75	4.18	162.00	0.000	0.000	220.39	0.00	0.00
21	118.00	VHLP2.5-11	2	29.988	32.986	1.00	1.00	16.86	86.40	1.583	0.000	889.84	880.57	0.00
22	99.00	APX16DWV-16DWV-S-E-	3	28.900	31.790	0.46	0.75	9.01	109.89	0.000	0.000	458.36	0.00	0.00
23	99.00	KRY 112 144/1	3	28.900	31.790	0.50	0.75	0.62	29.75	0.000	0.000	31.44	0.00	0.00
24	99.00	APXVAARR24_43-U-NA2	3	28.900	31.790	0.52	0.75	31.88	345.60	0.000	0.000	1621.42	0.00	0.00
25	99.00	AIR 6449 B41	3	28.900	31.790	0.52	0.75	10.28	359.64	0.000	0.000	523.12	0.00	0.00
26	99.00	LP Platform w/ Handrail	1	28.900	31.790	1.00	1.00	46.00	2204.10	0.000	0.000	2339.71	0.00	0.00
27	99.00	Air 32	4	28.900	31.790	0.65	0.75	16.99	475.92	0.000	0.000	864.22	0.00	0.00
28	99.00	KRY 112 489/2	3	28.900	31.790	0.50	0.75	0.98	41.58	0.000	0.000	49.84	0.00	0.00
29	99.00	4449 B71+ B85	3	28.900	31.790	0.50	0.75	2.49	189.00	0.000	0.000	126.52	0.00	0.00
30	99.00	RRUS 4415 B25	3	28.900	31.790	0.50	0.75	2.47	124.20	0.000	0.000	125.75	0.00	0.00
31	87.00	MT6407-77A	3	28.124	30.936	0.52	0.75	7.39	214.38	0.000	0.000	365.63	0.00	0.00
32	87.00	BXA-171063-12CF-EDIN-	3	28.124	30.936	0.63	0.75	9.03	40.50	0.000	0.000	447.18	0.00	0.00
33	87.00	Low Profile	1	28.124	30.936	1.00	1.00	22.00	1350.00	0.000	0.000	1088.96	0.00	0.00
34	87.00	MX06FR0660-03	6	28.124	30.936	0.66	0.75	39.09	383.40	0.000	0.000	1934.65	0.00	0.00
35	87.00	RVZDC-6627-PF-48	1	28.124	30.936	0.75	0.75	3.04	28.80	0.000	0.000	150.72	0.00	0.00
36	87.00	B2/B66A RRH-BR049	3	28.124	30.936	0.50	0.75	2.82	227.88	0.000	0.000	139.54	0.00	0.00
37	87.00	B5/B13 RRH-BR04C	3	28.124	30.936	0.50	0.75	2.82	189.81	0.000	0.000	139.54	0.00	0.00
38	87.00	HRK12 (Handrail Kit)	1	28.124	30.936	1.00	1.00	6.75	235.55	0.000	0.000	334.11	0.00	0.00
<b>Totals:</b>									<b>14,739.91</b>			<b>23,941.90</b>		

## Total Applied Force Summary

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 97 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		459.94	1081.86	0.00	0.00
10.00		449.86	1062.35	0.00	0.00
15.00		439.78	1042.84	0.00	0.00
20.00		455.93	1023.34	0.00	0.00
25.00		466.66	1003.83	0.00	0.00
30.00		473.27	984.32	0.00	0.00
35.00		476.85	964.81	0.00	0.00
40.00		478.08	945.30	0.00	0.00
45.00		477.40	925.79	0.00	0.00
48.25		307.99	591.31	0.00	0.00
50.00		167.47	523.28	0.00	0.00
53.25		310.90	960.18	0.00	0.00
55.00		166.24	272.02	0.00	0.00
60.00		474.65	766.22	0.00	0.00
65.00		469.01	749.96	0.00	0.00
70.00		462.46	733.71	0.00	0.00
75.00		455.11	717.45	0.00	0.00
80.00		447.02	701.19	0.00	0.00
85.00		438.26	684.93	0.00	0.00
87.00	(21) attachments	4772.41	2939.74	0.00	0.00
90.00		255.57	342.77	0.00	0.00
95.00		418.96	558.28	0.00	0.00
98.00		245.85	327.16	0.00	0.00
99.00	(26) attachments	6222.69	4058.34	0.00	0.00
100.00		81.90	162.67	0.00	0.00
101.75		142.40	281.85	0.00	0.00
105.00		261.29	241.74	0.00	0.00
109.00		315.27	289.98	0.00	0.00
110.00		67.61	83.12	0.00	0.00
115.00		341.20	415.62	0.00	0.00
118.00	(21) attachments	5915.52	3685.50	880.57	0.00
119.00		68.73	79.36	0.00	0.00
120.00		68.86	94.70	0.00	0.00
125.00		347.25	473.52	0.00	0.00
129.00	(35) attachments	7750.56	5126.74	0.00	0.00
130.00		70.03	92.45	0.00	0.00
134.00	(1) attachments	302.49	375.66	0.00	0.00
	<b>Totals:</b>	<b>35,525.46</b>	<b>35,363.89</b>	<b>880.57</b>	<b>0.00</b>

## Calculated Forces

**Structure:** CT13070-A-SBA  
**Site Name:** Waterbury 4, CT  
**Height:** 134.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

9/21/2021

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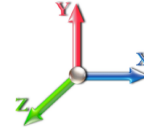


**Load Case:** 0.9D + 1.6W 97 mph Wind

**Iterations** 25

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-35.28	-35.61	-0.86	-3544.2	-0.02	3544.29	3976.93	1988.46	8011.33	4011.62	0.00	0.000	0.000	0.893
5.00	-34.02	-35.32	-0.86	-3366.2	-0.02	3366.22	3920.48	1960.24	7723.84	3867.66	0.15	-0.278	0.000	0.879
10.00	-32.79	-35.02	-0.86	-3189.6	-0.02	3189.64	3862.67	1931.34	7438.74	3724.90	0.59	-0.559	0.000	0.865
15.00	-31.58	-34.73	-0.86	-3014.5	-0.02	3014.54	3803.51	1901.75	7156.21	3583.42	1.33	-0.844	0.000	0.850
20.00	-30.39	-34.41	-0.86	-2840.9	-0.02	2840.90	3742.99	1871.49	6876.43	3443.32	2.37	-1.132	0.000	0.834
25.00	-29.22	-34.07	-0.86	-2668.8	-0.02	2668.87	3681.11	1840.56	6599.58	3304.69	3.71	-1.423	0.000	0.816
30.00	-28.08	-33.71	-0.86	-2498.5	-0.02	2498.53	3617.88	1808.94	6325.84	3167.62	5.36	-1.717	0.000	0.797
35.00	-26.96	-33.35	-0.86	-2329.9	-0.02	2329.96	3553.28	1776.64	6055.40	3032.20	7.32	-2.012	-0.001	0.776
40.00	-25.86	-32.97	-0.86	-2163.2	-0.02	2163.24	3487.33	1743.67	5788.43	2898.52	9.58	-2.309	-0.001	0.754
45.00	-24.82	-32.56	-0.86	-1998.4	-0.03	1998.41	3420.03	1710.01	5525.12	2766.66	12.16	-2.607	-0.001	0.730
48.25	-24.16	-32.28	-0.86	-1892.6	-0.03	1892.60	3375.55	1687.77	5356.01	2681.98	14.00	-2.803	-0.001	0.713
50.00	-23.56	-32.15	-0.86	-1836.1	-0.03	1836.10	3351.36	1675.68	5265.64	2636.73	15.05	-2.909	-0.001	0.704
53.25	-22.53	-31.85	-0.86	-1731.6	-0.03	1731.61	2647.50	1323.75	4165.57	2085.88	17.10	-3.104	-0.001	0.839
55.00	-22.15	-31.76	-0.86	-1675.8	-0.03	1675.87	2630.02	1315.01	4097.26	2051.68	18.26	-3.210	-0.001	0.826
60.00	-21.23	-31.36	-0.87	-1517.0	-0.03	1517.09	2579.17	1289.59	3903.72	1954.76	21.80	-3.542	-0.001	0.785
65.00	-20.34	-30.96	-0.87	-1360.2	-0.04	1360.29	2526.96	1263.48	3712.68	1859.10	25.68	-3.869	-0.002	0.740
70.00	-19.47	-30.55	-0.87	-1205.5	-0.04	1205.50	2473.39	1236.70	3524.34	1764.79	29.90	-4.186	-0.002	0.692
75.00	-18.64	-30.14	-0.87	-1052.7	-0.05	1052.74	2418.47	1209.23	3338.88	1671.92	34.45	-4.493	-0.002	0.638
80.00	-17.83	-29.73	-0.87	-902.03	-0.05	902.03	2362.18	1181.09	3156.47	1580.58	39.31	-4.784	-0.002	0.579
85.00	-17.09	-29.29	-0.87	-753.39	-0.05	753.39	2304.54	1152.27	2977.30	1490.86	44.46	-5.056	-0.002	0.513
87.00	-14.53	-24.30	-0.87	-694.82	-0.06	694.82	2281.10	1140.55	2906.58	1455.45	46.60	-5.161	-0.003	0.484
90.00	-14.13	-24.07	-0.87	-621.91	-0.06	621.91	2242.72	1121.36	2798.02	1401.09	49.89	-5.310	-0.003	0.451
95.00	-13.54	-23.64	-0.87	-501.58	-0.06	501.58	2163.84	1081.92	2603.70	1303.79	55.57	-5.536	-0.003	0.391
98.00	-13.21	-23.38	-0.87	-430.67	-0.07	430.67	2116.52	1058.26	2490.47	1247.09	59.08	-5.662	-0.003	0.352
99.00	-9.78	-16.79	-0.87	-407.29	-0.07	407.29	2100.74	1050.37	2453.28	1228.47	60.27	-5.702	-0.003	0.336
100.00	-9.61	-16.70	-0.87	-390.50	-0.07	390.50	2084.97	1042.48	2416.38	1209.99	61.47	-5.741	-0.004	0.328
101.75	-9.32	-16.55	-0.87	-361.27	-0.07	361.27	1611.41	805.70	1884.17	943.49	63.58	-5.807	-0.004	0.389
105.00	-9.06	-16.28	-0.88	-307.49	-0.07	307.49	1583.50	791.75	1805.91	904.30	67.57	-5.920	-0.004	0.346
109.00	-8.78	-15.95	-0.88	-242.35	-0.08	242.35	1548.36	774.18	1710.93	856.74	72.58	-6.066	-0.005	0.289
109.00	-8.78	-15.95	-0.88	-242.35	-0.08	242.35	933.38	466.69	986.46	590.00	72.58	-6.066	-0.005	0.421
110.00	-8.69	-15.89	-0.88	-226.40	-0.08	226.40	933.38	466.69	986.46	590.00	73.86	-6.100	-0.005	0.394
115.00	-8.29	-15.52	-0.88	-146.95	-0.08	146.95	933.38	466.69	986.46	590.00	80.31	-6.228	-0.005	0.259
118.00	-5.26	-9.24	0.00	-100.40	0.01	100.40	933.38	466.69	986.46	590.00	84.23	-6.278	-0.006	0.176
119.00	-5.19	-9.16	0.00	-91.16	0.01	91.16	933.38	466.69	986.46	590.00	85.54	-6.292	-0.006	0.160
119.00	-5.19	-9.16	0.00	-91.16	0.01	91.16	950.95	475.47	1000.09	624.60	85.54	-6.292	-0.006	0.152
120.00	-5.10	-9.09	0.00	-81.99	0.01	81.99	950.95	475.47	1000.09	624.60	86.86	-6.303	-0.006	0.137
125.00	-4.66	-8.69	0.00	-36.56	0.00	36.56	950.95	475.47	1000.09	624.60	93.47	-6.337	-0.006	0.064
129.00	-0.42	-0.42	0.00	-1.79	0.00	1.79	950.95	475.47	1000.09	624.60	98.77	-6.346	-0.006	0.003
130.00	-0.34	-0.34	0.00	-1.37	0.00	1.37	950.95	475.47	1000.09	624.60	100.10	-6.346	-0.006	0.003
134.00	0.00	-0.30	0.00	0.00	0.00	0.00	950.95	475.47	1000.09	624.60	105.40	-6.347	-0.006	0.000

## Wind Loading - Shaft

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



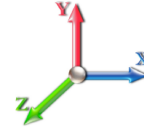
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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 24

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	21.705	26.05	148.1	381.7	1559.8
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	21.327	25.59	145.5	401.0	1553.0
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	20.920	25.10	142.7	408.8	1534.9
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	20.500	24.60	148.4	411.6	1511.7
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	20.074	24.09	152.3	411.5	1485.5
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	19.644	23.57	154.9	409.5	1457.5
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	19.210	23.05	156.4	406.0	1428.0
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	18.774	22.53	157.2	401.5	1397.5
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	18.336	22.00	157.4	396.2	1366.2
48.25	Bot - Section 2	1.00	1.09	6.600	7.26	0.00	1.200	1.558	3.25	11.682	14.02	101.8	255.0	871.6
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	1.75	6.305	7.57	55.3	138.7	743.8
53.25	Top - Section 1	1.00	1.11	6.739	7.41	0.00	1.200	1.574	3.25	11.568	13.88	102.9	254.8	1363.2
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	1.75	6.151	7.38	55.1	136.4	406.5
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	17.280	20.74	157.6	382.6	1139.8
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	16.838	20.21	156.2	375.2	1110.7
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	16.395	19.67	154.5	367.4	1081.2
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	15.951	19.14	152.5	359.2	1051.4
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	15.507	18.61	150.3	350.7	1021.2
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	15.062	18.07	147.8	342.0	990.9
87.00	Appurtenance(s)	1.00	1.23	7.473	8.22	0.00	1.200	1.653	2.00	5.899	7.08	58.2	135.4	388.9
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	3.00	8.716	10.46	86.6	199.8	573.5
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	14.172	17.01	142.4	323.9	929.4
98.00	Bot - Section 3	1.00	1.26	7.662	8.43	0.00	1.200	1.672	3.00	8.288	9.95	83.8	191.0	543.9
99.00	Appurtenance(s)	1.00	1.26	7.679	8.45	0.00	1.200	1.674	1.00	2.769	3.32	28.1	64.3	274.8
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	1.00	2.751	3.30	27.9	63.9	272.8
101.75	Top - Section 2	1.00	1.27	7.723	8.50	0.00	1.200	1.679	1.75	4.772	5.73	48.6	110.7	472.5
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	3.25	8.718	10.46	89.5	201.6	497.9
109.00	Top - Section 3	1.00	1.29	7.836	8.62	0.00	1.200	1.690	4.00	10.472	12.57	108.3	242.0	596.5
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	1.00	2.449	2.94	25.4	57.2	160.1
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	12.250	14.70	128.1	287.6	801.6
118.00	Appurtenance(s)	1.00	1.31	7.968	8.76	0.00	1.200	1.704	3.00	7.352	8.82	77.3	173.0	481.4
119.00	Top - Section 4	1.00	1.31	7.982	8.78	0.00	1.200	1.705	1.00	2.451	2.94	25.8	57.7	160.5
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	1.00	2.451	2.94	25.9	57.8	181.0
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	12.261	14.71	130.5	290.1	906.5
129.00	Appurtenance(s)	1.00	1.34	8.119	8.93	0.00	1.200	1.719	4.00	9.813	11.78	105.2	232.9	726.0
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	1.00	2.453	2.94	26.3	58.3	181.5
134.00	Appurtenance(s)	1.00	1.35	8.184	9.00	0.00	1.200	1.726	4.00	9.817	11.78	106.1	233.8	726.9
<b>Totals:</b>									<b>134.00</b>			<b>3,921.0</b>	<b>31,950.0</b>	

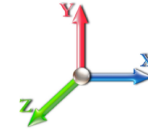
## Discrete Appurtenance Forces

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021	
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C		
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00		
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil		
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II	Page: 18



**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	134.00	Lightning rod	1	8.184	9.002	0.00	1.00	1.46	38.39	0.000	0.000	13.10	0.00	0.00
2	129.00	Cci Antennas	3	8.119	8.931	0.58	0.80	34.41	1805.28	0.000	0.000	307.29	0.00	0.00
3	129.00	(3) SitePro	1	8.119	8.931	0.75	0.75	85.09	6666.74	0.000	0.000	759.91	0.00	0.00
4	129.00	Ericsson AIR 6419 B77G	3	8.119	8.931	0.68	0.80	10.21	507.53	0.000	0.000	91.22	0.00	0.00
5	129.00	Ericsson Radio 2012 B29	3	8.119	8.931	0.54	0.80	3.88	339.22	0.000	0.000	34.68	0.00	0.00
6	129.00	RRUS 4415 B25	3	8.119	8.931	0.54	0.80	3.45	258.86	0.000	0.000	30.84	0.00	0.00
7	129.00	AIR 6449 N77	3	8.119	8.931	0.68	0.80	10.15	771.09	0.000	0.000	90.61	0.00	0.00
8	129.00	TPA65R-BU8D	3	8.119	8.931	0.58	0.80	33.94	2496.85	0.000	0.000	303.08	0.00	0.00
9	129.00	B2 B66A 8843	3	8.119	8.931	0.54	0.80	3.45	371.07	0.000	0.000	30.85	0.00	0.00
10	129.00	DC6-48-60-18-8C-EV	1	8.119	8.931	0.60	0.80	3.39	211.42	0.000	0.000	30.28	0.00	0.00
11	129.00	DC9-48-60-24-8C-EV	3	8.119	8.931	0.60	0.80	4.87	356.23	0.000	0.000	43.45	0.00	0.00
12	129.00	RRUS 4478 B14	3	8.119	8.931	0.54	0.80	3.47	308.18	0.000	0.000	31.03	0.00	0.00
13	129.00	4449 B5/B12	3	8.119	8.931	0.54	0.80	4.03	372.54	0.000	0.000	36.03	0.00	0.00
14	129.00	Radio 4415 B30	3	8.119	8.931	0.54	0.80	3.88	344.43	0.000	0.000	34.68	0.00	0.00
15	118.00	LP Platform w/ Handrail	1	7.968	8.765	1.00	1.00	79.23	4490.52	0.000	0.000	694.43	0.00	0.00
16	118.00	NNVV-65B-R4	3	7.968	8.765	0.55	0.75	22.80	1044.67	0.000	0.000	199.80	0.00	0.00
17	118.00	AAHC	3	7.968	8.765	0.56	0.75	8.44	607.67	0.000	0.000	73.98	0.00	0.00
18	118.00	TD-RRHx20-25	3	7.968	8.765	0.50	0.75	7.30	573.93	0.000	0.000	63.98	0.00	0.00
19	118.00	800 MHz RRH	6	7.968	8.765	0.50	0.75	10.87	688.24	0.000	0.000	95.31	0.00	0.00
20	118.00	1900 MHz RRH	3	7.968	8.765	0.50	0.75	6.04	388.67	0.000	0.000	52.96	0.00	0.00
21	118.00	VHLP2.5-11	2	7.968	8.765	1.00	1.00	20.19	357.23	1.583	0.000	176.98	280.21	0.00
22	99.00	APX16DWV-16DWV-S-E-	3	7.679	8.447	0.46	0.75	10.50	537.10	0.000	0.000	88.68	0.00	0.00
23	99.00	KRY 112 144/1	3	7.679	8.447	0.50	0.75	1.31	64.76	0.000	0.000	11.02	0.00	0.00
24	99.00	APXVAARR24_43-U-NA2	3	7.679	8.447	0.52	0.75	34.74	1657.35	0.000	0.000	293.47	0.00	0.00
25	99.00	AIR 6449 B41	3	7.679	8.447	0.52	0.75	11.90	948.52	0.000	0.000	100.50	0.00	0.00
26	99.00	LP Platform w/ Handrail	1	7.679	8.447	1.00	1.00	76.80	4608.85	0.000	0.000	648.74	0.00	0.00
27	99.00	Air 32	4	7.679	8.447	0.65	0.75	19.94	1336.77	0.000	0.000	168.46	0.00	0.00
28	99.00	KRY 112 489/2	3	7.679	8.447	0.50	0.75	1.87	94.57	0.000	0.000	15.75	0.00	0.00
29	99.00	4449 B71+ B85	3	7.679	8.447	0.50	0.75	3.26	446.36	0.000	0.000	27.55	0.00	0.00
30	99.00	RRUS 4415 B25	3	7.679	8.447	0.50	0.75	3.22	255.69	0.000	0.000	27.18	0.00	0.00
31	87.00	MT6407-77A	3	7.473	8.220	0.52	0.75	8.80	621.67	0.000	0.000	72.31	0.00	0.00
32	87.00	BXA-171063-12CF-EDIN-	3	7.473	8.220	0.63	0.75	13.26	243.73	0.000	0.000	108.97	0.00	0.00
33	87.00	Low Profile	1	7.473	8.220	1.00	1.00	38.73	2739.52	0.000	0.000	318.32	0.00	0.00
34	87.00	MX06FR0660-03	6	7.473	8.220	0.66	0.75	44.23	2027.09	0.000	0.000	363.56	0.00	0.00
35	87.00	RVZDC-6627-PF-48	1	7.473	8.220	0.75	0.75	3.63	121.09	0.000	0.000	29.83	0.00	0.00
36	87.00	B2/B66A RRH-BR049	3	7.473	8.220	0.50	0.75	3.63	518.55	0.000	0.000	29.87	0.00	0.00
37	87.00	B5/B13 RRH-BR04C	3	7.473	8.220	0.50	0.75	3.63	447.46	0.000	0.000	29.87	0.00	0.00
38	87.00	HRK12 (Handrail Kit)	1	7.473	8.220	1.00	1.00	13.00	869.91	0.000	0.000	106.84	0.00	0.00
<b>Totals:</b>								<b>40,537.76</b>				<b>5,635.40</b>		



## Total Applied Force Summary

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		148.07	1824.17	0.00	0.00
10.00		145.49	1817.44	0.00	0.00
15.00		142.71	1799.29	0.00	0.00
20.00		148.39	1776.09	0.00	0.00
25.00		152.29	1749.96	0.00	0.00
30.00		154.86	1721.90	0.00	0.00
35.00		156.43	1692.45	0.00	0.00
40.00		157.24	1661.93	0.00	0.00
45.00		157.43	1630.58	0.00	0.00
48.25		101.78	1043.42	0.00	0.00
50.00		55.35	836.38	0.00	0.00
53.25		102.90	1535.05	0.00	0.00
55.00		55.09	499.08	0.00	0.00
60.00		157.62	1404.26	0.00	0.00
65.00		156.20	1375.13	0.00	0.00
70.00		154.48	1345.63	0.00	0.00
75.00		152.50	1315.79	0.00	0.00
80.00		150.28	1285.67	0.00	0.00
85.00		147.85	1255.28	0.00	0.00
87.00	(21) attachments	1117.74	8083.64	0.00	0.00
90.00		86.59	656.87	0.00	0.00
95.00		142.40	1068.28	0.00	0.00
98.00		83.83	627.20	0.00	0.00
99.00	(26) attachments	1409.41	10252.49	0.00	0.00
100.00		27.95	280.83	0.00	0.00
101.75		48.65	486.54	0.00	0.00
105.00		89.47	523.94	0.00	0.00
109.00		108.31	628.59	0.00	0.00
110.00		25.38	168.07	0.00	0.00
115.00		128.14	841.72	0.00	0.00
118.00	(21) attachments	1434.77	8656.42	280.21	0.00
119.00		25.82	163.53	0.00	0.00
120.00		25.87	184.04	0.00	0.00
125.00		130.53	921.47	0.00	0.00
129.00	(35) attachments	1929.12	15547.42	0.00	0.00
130.00		26.34	181.54	0.00	0.00
134.00	(1) attachments	119.16	765.29	0.00	0.00
	Totals:	9,556.42	77,607.39	280.21	0.00

## Calculated Forces

**Structure:** CT13070-A-SBA  
**Site Name:** Waterbury 4, CT  
**Height:** 134.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

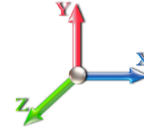
9/21/2021  
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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 24

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-77.60	-9.61	-0.28	-989.13	0.00	989.13	3976.93	1988.46	8011.33	4011.62	0.00	0.000	0.000	0.266
5.00	-75.76	-9.56	-0.28	-941.09	0.00	941.09	3920.48	1960.24	7723.84	3867.66	0.04	-0.078	0.000	0.263
10.00	-73.93	-9.52	-0.28	-893.27	0.00	893.27	3862.67	1931.34	7438.74	3724.90	0.17	-0.156	0.000	0.259
15.00	-72.12	-9.47	-0.28	-845.69	0.00	845.69	3803.51	1901.75	7156.21	3583.42	0.37	-0.236	0.000	0.255
20.00	-70.33	-9.41	-0.28	-798.34	0.00	798.34	3742.99	1871.49	6876.43	3443.32	0.66	-0.317	0.000	0.251
25.00	-68.57	-9.35	-0.28	-751.28	0.00	751.28	3681.11	1840.56	6599.58	3304.69	1.04	-0.399	0.000	0.246
30.00	-66.84	-9.28	-0.28	-704.54	0.00	704.54	3617.88	1808.94	6325.84	3167.62	1.50	-0.482	0.000	0.241
35.00	-65.13	-9.20	-0.28	-658.16	0.00	658.16	3553.28	1776.64	6055.40	3032.20	2.05	-0.565	0.000	0.235
40.00	-63.46	-9.12	-0.28	-612.17	0.00	612.17	3487.33	1743.67	5788.43	2898.52	2.69	-0.649	0.000	0.229
45.00	-61.82	-9.02	-0.28	-566.58	0.00	566.58	3420.03	1710.01	5525.12	2766.66	3.41	-0.733	0.000	0.223
48.25	-60.77	-8.95	-0.28	-537.28	0.00	537.28	3375.55	1687.77	5356.01	2681.98	3.93	-0.789	0.000	0.218
50.00	-59.93	-8.92	-0.28	-521.62	0.00	521.62	3351.36	1675.68	5265.64	2636.73	4.23	-0.819	0.000	0.216
53.25	-58.39	-8.84	-0.28	-492.62	-0.01	492.62	2647.50	1323.75	4165.57	2085.88	4.80	-0.875	0.000	0.258
55.00	-57.88	-8.84	-0.28	-477.15	-0.01	477.15	2630.02	1315.01	4097.26	2051.68	5.13	-0.905	0.000	0.255
60.00	-56.46	-8.75	-0.28	-432.94	-0.01	432.94	2579.17	1289.59	3903.72	1954.76	6.13	-0.999	0.000	0.243
65.00	-55.08	-8.66	-0.28	-389.17	-0.01	389.17	2526.96	1263.48	3712.68	1859.10	7.22	-1.093	0.000	0.231
70.00	-53.72	-8.56	-0.28	-345.86	-0.01	345.86	2473.39	1236.70	3524.34	1764.79	8.42	-1.184	-0.001	0.218
75.00	-52.40	-8.46	-0.28	-303.04	-0.01	303.04	2418.47	1209.23	3338.88	1671.92	9.71	-1.272	-0.001	0.203
80.00	-51.10	-8.36	-0.28	-260.73	-0.01	260.73	2362.18	1181.09	3156.47	1580.58	11.08	-1.356	-0.001	0.187
85.00	-49.85	-8.22	-0.28	-218.96	-0.01	218.96	2304.54	1152.27	2977.30	1490.86	12.55	-1.434	-0.001	0.169
87.00	-41.79	-6.93	-0.28	-202.51	-0.01	202.51	2281.10	1140.55	2906.58	1455.45	13.15	-1.465	-0.001	0.157
90.00	-41.13	-6.87	-0.28	-181.72	-0.01	181.72	2242.72	1121.36	2798.02	1401.09	14.09	-1.509	-0.001	0.148
95.00	-40.06	-6.73	-0.28	-147.40	-0.01	147.40	2163.84	1081.92	2603.70	1303.79	15.70	-1.575	-0.001	0.132
98.00	-39.43	-6.65	-0.28	-127.21	-0.01	127.21	2116.52	1058.26	2490.47	1247.09	16.71	-1.612	-0.001	0.121
99.00	-29.22	-4.95	-0.28	-120.56	-0.01	120.56	2100.74	1050.37	2453.28	1228.47	17.05	-1.624	-0.001	0.112
100.00	-28.94	-4.92	-0.28	-115.61	-0.01	115.61	2084.97	1042.48	2416.38	1209.99	17.39	-1.635	-0.001	0.109
101.75	-28.45	-4.88	-0.28	-106.99	-0.01	106.99	1611.41	805.70	1884.17	943.49	17.99	-1.655	-0.001	0.131
105.00	-27.93	-4.79	-0.28	-91.15	-0.01	91.15	1583.50	791.75	1805.91	904.30	19.13	-1.688	-0.001	0.118
109.00	-27.30	-4.67	-0.28	-71.99	-0.01	71.99	1548.36	774.18	1710.93	856.74	20.56	-1.731	-0.001	0.102
109.00	-27.30	-4.67	-0.28	-71.99	-0.01	71.99	933.38	466.69	986.46	590.00	20.56	-1.731	-0.001	0.151
110.00	-27.13	-4.66	-0.28	-67.32	-0.01	67.32	933.38	466.69	986.46	590.00	20.93	-1.742	-0.001	0.143
115.00	-26.29	-4.51	-0.28	-44.04	-0.01	44.04	933.38	466.69	986.46	590.00	22.77	-1.780	-0.002	0.103
118.00	-17.68	-2.81	0.00	-30.50	0.00	30.50	933.38	466.69	986.46	590.00	23.89	-1.795	-0.002	0.071
119.00	-17.52	-2.78	0.00	-27.68	0.00	27.68	933.38	466.69	986.46	590.00	24.27	-1.799	-0.002	0.066
119.00	-17.52	-2.78	0.00	-27.68	0.00	27.68	950.95	475.47	1000.09	624.60	24.27	-1.799	-0.002	0.063
120.00	-17.34	-2.75	0.00	-24.90	0.00	24.90	950.95	475.47	1000.09	624.60	24.65	-1.803	-0.002	0.058
125.00	-16.42	-2.60	0.00	-11.13	0.00	11.13	950.95	475.47	1000.09	624.60	26.54	-1.813	-0.002	0.035
129.00	-0.94	-0.18	0.00	-0.75	0.00	0.75	950.95	475.47	1000.09	624.60	28.06	-1.816	-0.002	0.002
130.00	-0.76	-0.14	0.00	-0.57	0.00	0.57	950.95	475.47	1000.09	624.60	28.44	-1.816	-0.002	0.002
134.00	0.00	-0.12	0.00	0.00	0.00	0.00	950.95	475.47	1000.09	624.60	29.96	-1.816	-0.002	0.000

## Seismic Segment Forces (Factored)

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0E						<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10			<b>Sds</b>	0.20	<b>Ss</b> 0.19
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.33	<b>SA</b>	0.03	<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		981.72	0.00	0.04	0.02	21.35	
10.00		960.04	0.01	0.06	0.03	29.25	
15.00		938.37	0.02	0.07	0.04	32.27	
20.00		916.69	0.04	0.07	0.04	33.28	
25.00		895.01	0.07	0.07	0.04	33.54	
30.00		873.34	0.09	0.07	0.04	33.63	
35.00		851.66	0.13	0.07	0.03	33.67	
40.00		829.99	0.17	0.07	0.03	33.47	
45.00		808.31	0.21	0.06	0.02	32.59	
48.25	Bot - Section 2	513.78	0.25	0.06	0.02	20.27	
50.00		504.30	0.26	0.05	0.02	19.46	
53.25	Top - Section 1	923.64	0.30	0.05	0.01	33.22	
55.00		225.12	0.32	0.04	0.01	7.64	
60.00		631.00	0.38	0.02	0.01	15.84	
65.00		612.94	0.44	0.00	0.01	7.16	
70.00		594.88	0.52	-0.02	0.01	-2.99	
75.00		576.81	0.59	-0.05	0.01	-12.48	
80.00		558.75	0.67	-0.08	0.03	-19.22	
85.00		540.69	0.76	-0.10	0.04	-22.15	
87.00	Appurtenance(s)	3178.2	0.80	-0.11	0.05	-132.40	
90.00		311.41	0.85	-0.12	0.07	-12.64	
95.00		504.56	0.95	-0.12	0.11	-16.83	
98.00	Bot - Section 3	294.07	1.01	-0.11	0.14	-7.59	
99.00	Appurtenance(s)	4486.1	1.03	-0.10	0.15	-102.08	
100.00		174.06	1.05	-0.09	0.16	-3.38	
101.75	Top - Section 2	301.47	1.09	-0.08	0.18	-3.93	
105.00		246.88	1.16	-0.03	0.23	0.25	
109.00	Top - Section 3	295.47	1.25	0.06	0.29	6.54	
110.00		85.68	1.27	0.09	0.31	2.40	
115.00		428.39	1.39	0.27	0.42	26.44	
118.00	Appurtenance(s)	4074.9	1.47	0.42	0.50	346.98	
119.00	Top - Section 4	85.68	1.49	0.48	0.53	8.01	
120.00		102.73	1.52	0.54	0.56	10.49	
125.00		513.63	1.64	0.92	0.73	76.80	
129.00	Appurtenance(s)	5686.3	1.75	1.33	0.90	1094.87	
130.00		102.73	1.78	1.44	0.94	20.96	
134.00	Appurtenance(s)	417.40	1.89	1.98	1.14	105.56	
<b>Totals:</b>		<b>35,026.9</b>				<b>1,750.2</b>	<b>Total Wind: 35,525.5</b>

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

**Structure:** CT13070-A-SBA  
**Site Name:** Waterbury 4, CT  
**Height:** 134.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

**Code:** EIA/TIA-222-G 9/21/2021  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II



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**Load Case:** 1.2D + 1.0E

**Iterations** 22

**Gust Response Factor** 1.10

**Sds** 0.20

**Ss** 0.19

**Dead Load Factor** 1.20

**Seismic Load Factor** 1.00

**Sd1** 0.10

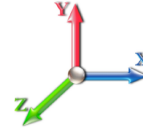
**S1** 0.06

**Wind Load Factor** 0.00

**Structure Frequency (f1)** 0.33

**SA** 0.03

**Seismic Importance Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.15	-2.09	0.00	-242.15	0.00	242.15	3976.93	1988.46	8011.33	4011.62	0.00	0.00	0.00	0.072
5.00	-45.71	-2.09	0.00	-231.68	0.00	231.68	3920.48	1960.24	7723.84	3867.66	0.01	-0.02	0.072	
10.00	-44.29	-2.07	0.00	-221.25	0.00	221.25	3862.67	1931.34	7438.74	3724.90	0.04	-0.04	0.071	
15.00	-42.90	-2.05	0.00	-210.89	0.00	210.89	3803.51	1901.75	7156.21	3583.42	0.09	-0.06	0.070	
20.00	-41.53	-2.03	0.00	-200.62	0.00	200.62	3742.99	1871.49	6876.43	3443.32	0.16	-0.08	0.069	
25.00	-40.20	-2.01	0.00	-190.45	0.00	190.45	3681.11	1840.56	6599.58	3304.69	0.26	-0.10	0.069	
30.00	-38.88	-1.99	0.00	-180.39	0.00	180.39	3617.88	1808.94	6325.84	3167.62	0.37	-0.12	0.068	
35.00	-37.60	-1.97	0.00	-170.43	0.00	170.43	3553.28	1776.64	6055.40	3032.20	0.51	-0.14	0.067	
40.00	-36.33	-1.95	0.00	-160.59	0.00	160.59	3487.33	1743.67	5788.43	2898.52	0.67	-0.16	0.066	
45.00	-35.10	-1.92	0.00	-150.86	0.00	150.86	3420.03	1710.01	5525.12	2766.66	0.85	-0.19	0.065	
48.25	-34.31	-1.90	0.00	-144.62	0.00	144.62	3375.55	1687.77	5356.01	2681.98	0.98	-0.20	0.064	
50.00	-33.61	-1.89	0.00	-141.29	0.00	141.29	3351.36	1675.68	5265.64	2636.73	1.06	-0.21	0.064	
53.25	-32.33	-1.86	0.00	-135.15	0.00	135.15	2647.50	1323.75	4165.57	2085.88	1.21	-0.22	0.077	
55.00	-31.97	-1.86	0.00	-131.89	0.00	131.89	2630.02	1315.01	4097.26	2051.68	1.29	-0.23	0.076	
60.00	-30.95	-1.85	0.00	-122.60	0.00	122.60	2579.17	1289.59	3903.72	1954.76	1.55	-0.26	0.075	
65.00	-29.95	-1.86	0.00	-113.34	0.00	113.34	2526.96	1263.48	3712.68	1859.10	1.83	-0.29	0.073	
70.00	-28.97	-1.86	0.00	-104.06	0.00	104.06	2473.39	1236.70	3524.34	1764.79	2.15	-0.31	0.071	
75.00	-28.01	-1.87	0.00	-94.74	0.00	94.74	2418.47	1209.23	3338.88	1671.92	2.49	-0.34	0.068	
80.00	-27.07	-1.88	0.00	-85.39	0.00	85.39	2362.18	1181.09	3156.47	1580.58	2.86	-0.37	0.065	
85.00	-26.16	-1.88	0.00	-75.99	0.00	75.99	2304.54	1152.27	2977.30	1490.86	3.26	-0.39	0.062	
87.00	-22.24	-1.86	0.00	-72.23	0.00	72.23	2281.10	1140.55	2906.58	1455.45	3.42	-0.40	0.059	
90.00	-21.78	-1.86	0.00	-66.66	0.00	66.66	2242.72	1121.36	2798.02	1401.09	3.68	-0.42	0.057	
95.00	-21.04	-1.86	0.00	-57.34	0.00	57.34	2163.84	1081.92	2603.70	1303.79	4.14	-0.44	0.054	
98.00	-20.60	-1.86	0.00	-51.75	0.00	51.75	2116.52	1058.26	2490.47	1247.09	4.42	-0.46	0.051	
99.00	-15.19	-1.82	0.00	-49.88	0.00	49.88	2100.74	1050.37	2453.28	1228.47	4.52	-0.46	0.048	
100.00	-14.97	-1.82	0.00	-48.06	0.00	48.06	2084.97	1042.48	2416.38	1209.99	4.61	-0.47	0.047	
101.75	-14.60	-1.82	0.00	-44.87	0.00	44.87	1611.41	805.70	1884.17	943.49	4.79	-0.48	0.057	
105.00	-14.27	-1.82	0.00	-38.95	0.00	38.95	1583.50	791.75	1805.91	904.30	5.12	-0.49	0.052	
109.00	-13.89	-1.82	0.00	-31.66	0.00	31.66	1548.36	774.18	1710.93	856.74	5.54	-0.51	0.046	
109.00	-13.89	-1.82	0.00	-31.66	0.00	31.66	933.38	466.69	986.46	590.00	5.54	-0.51	0.069	
110.00	-13.78	-1.82	0.00	-29.84	0.00	29.84	933.38	466.69	986.46	590.00	5.64	-0.51	0.065	
115.00	-13.22	-1.79	0.00	-20.76	0.00	20.76	933.38	466.69	986.46	590.00	6.19	-0.53	0.049	
118.00	-8.31	-1.39	0.00	-15.40	0.00	15.40	933.38	466.69	986.46	590.00	6.53	-0.54	0.035	
119.00	-8.20	-1.39	0.00	-14.01	0.00	14.01	933.38	466.69	986.46	590.00	6.64	-0.54	0.033	
119.00	-8.20	-1.39	0.00	-14.01	0.00	14.01	950.95	475.47	1000.09	624.60	6.64	-0.54	0.031	
120.00	-8.08	-1.38	0.00	-12.62	0.00	12.62	950.95	475.47	1000.09	624.60	6.76	-0.54	0.029	
125.00	-7.45	-1.29	0.00	-5.74	0.00	5.74	950.95	475.47	1000.09	624.60	7.33	-0.55	0.017	
129.00	-0.62	-0.13	0.00	-0.57	0.00	0.57	950.95	475.47	1000.09	624.60	7.79	-0.55	0.002	
130.00	-0.50	-0.11	0.00	-0.44	0.00	0.44	950.95	475.47	1000.09	624.60	7.90	-0.55	0.001	
134.00	0.00	-0.11	0.00	0.00	0.00	0.00	950.95	475.47	1000.09	624.60	8.36	-0.55	0.000	

## Seismic Segment Forces (Factored)

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.0E				<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.20	<b>Ss</b> 0.19
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.33	<b>SA</b> 0.03
				<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		981.72	0.00	0.04	0.02	21.35	
10.00		960.04	0.01	0.06	0.03	29.25	
15.00		938.37	0.02	0.07	0.04	32.27	
20.00		916.69	0.04	0.07	0.04	33.28	
25.00		895.01	0.07	0.07	0.04	33.54	
30.00		873.34	0.09	0.07	0.04	33.63	
35.00		851.66	0.13	0.07	0.03	33.67	
40.00		829.99	0.17	0.07	0.03	33.47	
45.00		808.31	0.21	0.06	0.02	32.59	
48.25	Bot - Section 2	513.78	0.25	0.06	0.02	20.27	
50.00		504.30	0.26	0.05	0.02	19.46	
53.25	Top - Section 1	923.64	0.30	0.05	0.01	33.22	
55.00		225.12	0.32	0.04	0.01	7.64	
60.00		631.00	0.38	0.02	0.01	15.84	
65.00		612.94	0.44	0.00	0.01	7.16	
70.00		594.88	0.52	-0.02	0.01	-2.99	
75.00		576.81	0.59	-0.05	0.01	-12.48	
80.00		558.75	0.67	-0.08	0.03	-19.22	
85.00		540.69	0.76	-0.10	0.04	-22.15	
87.00	Appurtenance(s)	3178.2	0.80	-0.11	0.05	-132.40	
90.00		311.41	0.85	-0.12	0.07	-12.64	
95.00		504.56	0.95	-0.12	0.11	-16.83	
98.00	Bot - Section 3	294.07	1.01	-0.11	0.14	-7.59	
99.00	Appurtenance(s)	4486.1	1.03	-0.10	0.15	-102.08	
100.00		174.06	1.05	-0.09	0.16	-3.38	
101.75	Top - Section 2	301.47	1.09	-0.08	0.18	-3.93	
105.00		246.88	1.16	-0.03	0.23	0.25	
109.00	Top - Section 3	295.47	1.25	0.06	0.29	6.54	
110.00		85.68	1.27	0.09	0.31	2.40	
115.00		428.39	1.39	0.27	0.42	26.44	
118.00	Appurtenance(s)	4074.9	1.47	0.42	0.50	346.98	
119.00	Top - Section 4	85.68	1.49	0.48	0.53	8.01	
120.00		102.73	1.52	0.54	0.56	10.49	
125.00		513.63	1.64	0.92	0.73	76.80	
129.00	Appurtenance(s)	5686.3	1.75	1.33	0.90	1094.87	
130.00		102.73	1.78	1.44	0.94	20.96	
134.00	Appurtenance(s)	417.40	1.89	1.98	1.14	105.56	
<b>Totals:</b>		<b>35,026.9</b>				<b>1,750.2</b>	<b>Total Wind: 35,525.5</b>

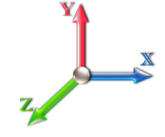
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 0.9D + 1.0E							<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10				<b>Sds</b>	0.20	<b>Ss</b> 0.19
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10		<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.33	<b>SA</b>	0.03	<b>Seismic Importance Factor</b>	1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-35.36	-2.09	0.00	-238.35	0.00	238.35	3976.93	1988.46	8011.33	4011.62	0.00	0.00	0.00	0.068
5.00	-34.28	-2.08	0.00	-227.90	0.00	227.90	3920.48	1960.24	7723.84	3867.66	0.01	-0.02	0.068	
10.00	-33.22	-2.06	0.00	-217.49	0.00	217.49	3862.67	1931.34	7438.74	3724.90	0.04	-0.04	0.067	
15.00	-32.17	-2.04	0.00	-207.18	0.00	207.18	3803.51	1901.75	7156.21	3583.42	0.09	-0.06	0.066	
20.00	-31.15	-2.02	0.00	-196.98	0.00	196.98	3742.99	1871.49	6876.43	3443.32	0.16	-0.08	0.066	
25.00	-30.15	-1.99	0.00	-186.90	0.00	186.90	3681.11	1840.56	6599.58	3304.69	0.25	-0.10	0.065	
30.00	-29.16	-1.97	0.00	-176.94	0.00	176.94	3617.88	1808.94	6325.84	3167.62	0.37	-0.12	0.064	
35.00	-28.20	-1.94	0.00	-167.10	0.00	167.10	3553.28	1776.64	6055.40	3032.20	0.50	-0.14	0.063	
40.00	-27.25	-1.92	0.00	-157.39	0.00	157.39	3487.33	1743.67	5788.43	2898.52	0.66	-0.16	0.062	
45.00	-26.32	-1.89	0.00	-147.81	0.00	147.81	3420.03	1710.01	5525.12	2766.66	0.84	-0.18	0.061	
48.25	-25.73	-1.87	0.00	-141.66	0.00	141.66	3375.55	1687.77	5356.01	2681.98	0.97	-0.20	0.060	
50.00	-25.21	-1.86	0.00	-138.39	0.00	138.39	3351.36	1675.68	5265.64	2636.73	1.04	-0.21	0.060	
53.25	-24.25	-1.82	0.00	-132.36	0.00	132.36	2647.50	1323.75	4165.57	2085.88	1.19	-0.22	0.073	
55.00	-23.98	-1.82	0.00	-129.16	0.00	129.16	2630.02	1315.01	4097.26	2051.68	1.27	-0.23	0.072	
60.00	-23.21	-1.81	0.00	-120.05	0.00	120.05	2579.17	1289.59	3903.72	1954.76	1.52	-0.25	0.070	
65.00	-22.46	-1.81	0.00	-110.98	0.00	110.98	2526.96	1263.48	3712.68	1859.10	1.80	-0.28	0.069	
70.00	-21.72	-1.82	0.00	-101.91	0.00	101.91	2473.39	1236.70	3524.34	1764.79	2.11	-0.31	0.067	
75.00	-21.00	-1.83	0.00	-92.81	0.00	92.81	2418.47	1209.23	3338.88	1671.92	2.44	-0.33	0.064	
80.00	-20.30	-1.83	0.00	-83.68	0.00	83.68	2362.18	1181.09	3156.47	1580.58	2.81	-0.36	0.062	
85.00	-19.62	-1.83	0.00	-74.53	0.00	74.53	2304.54	1152.27	2977.30	1490.86	3.20	-0.39	0.059	
87.00	-16.68	-1.82	0.00	-70.86	0.00	70.86	2281.10	1140.55	2906.58	1455.45	3.36	-0.40	0.056	
90.00	-16.33	-1.82	0.00	-65.42	0.00	65.42	2242.72	1121.36	2798.02	1401.09	3.61	-0.41	0.054	
95.00	-15.77	-1.82	0.00	-56.32	0.00	56.32	2163.84	1081.92	2603.70	1303.79	4.06	-0.44	0.050	
98.00	-15.45	-1.82	0.00	-50.86	0.00	50.86	2116.52	1058.26	2490.47	1247.09	4.34	-0.45	0.048	
99.00	-11.39	-1.79	0.00	-49.03	0.00	49.03	2100.74	1050.37	2453.28	1228.47	4.43	-0.45	0.045	
100.00	-11.23	-1.79	0.00	-47.24	0.00	47.24	2084.97	1042.48	2416.38	1209.99	4.53	-0.46	0.044	
101.75	-10.94	-1.79	0.00	-44.11	0.00	44.11	1611.41	805.70	1884.17	943.49	4.70	-0.47	0.054	
105.00	-10.70	-1.79	0.00	-38.30	0.00	38.30	1583.50	791.75	1805.91	904.30	5.02	-0.48	0.049	
109.00	-10.41	-1.78	0.00	-31.13	0.00	31.13	1548.36	774.18	1710.93	856.74	5.43	-0.50	0.043	
109.00	-10.41	-1.78	0.00	-31.13	0.00	31.13	933.38	466.69	986.46	590.00	5.43	-0.50	0.064	
110.00	-10.33	-1.78	0.00	-29.35	0.00	29.35	933.38	466.69	986.46	590.00	5.54	-0.50	0.061	
115.00	-9.91	-1.75	0.00	-20.44	0.00	20.44	933.38	466.69	986.46	590.00	6.08	-0.52	0.045	
118.00	-6.23	-1.37	0.00	-15.18	0.00	15.18	933.38	466.69	986.46	590.00	6.41	-0.53	0.032	
119.00	-6.15	-1.37	0.00	-13.80	0.00	13.80	933.38	466.69	986.46	590.00	6.52	-0.53	0.030	
119.00	-6.15	-1.37	0.00	-13.80	0.00	13.80	950.95	475.47	1000.09	624.60	6.52	-0.53	0.029	
120.00	-6.06	-1.35	0.00	-12.44	0.00	12.44	950.95	475.47	1000.09	624.60	6.63	-0.53	0.026	
125.00	-5.58	-1.27	0.00	-5.66	0.00	5.66	950.95	475.47	1000.09	624.60	7.19	-0.54	0.015	
129.00	-0.47	-0.13	0.00	-0.57	0.00	0.57	950.95	475.47	1000.09	624.60	7.64	-0.54	0.001	
130.00	-0.37	-0.11	0.00	-0.44	0.00	0.44	950.95	475.47	1000.09	624.60	7.75	-0.54	0.001	
134.00	0.00	-0.11	0.00	0.00	0.00	0.00	950.95	475.47	1000.09	624.60	8.20	-0.54	0.000	

## Wind Loading - Shaft

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

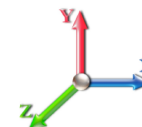


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



**Iterations** 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	231.19	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	226.18	0.650	0.000	5.00	20.670	13.44	110.0	0.0	981.7
10.00		1.00	0.85	7.442	8.19	221.17	0.650	0.000	5.00	20.217	13.14	107.6	0.0	960.0
15.00		1.00	0.85	7.442	8.19	216.16	0.650	0.000	5.00	19.764	12.85	105.2	0.0	938.4
20.00		1.00	0.90	7.896	8.69	217.50	0.650	0.000	5.00	19.312	12.55	109.0	0.0	916.7
25.00		1.00	0.95	8.276	9.10	217.38	0.650	0.000	5.00	18.859	12.26	111.6	0.0	895.0
30.00		1.00	0.98	8.600	9.46	216.21	0.650	0.000	5.00	18.406	11.96	113.2	0.0	873.3
35.00		1.00	1.01	8.883	9.77	214.27	0.650	0.000	5.00	17.953	11.67	114.0	0.0	851.7
40.00		1.00	1.04	9.137	10.05	211.75	0.650	0.000	5.00	17.500	11.37	114.3	0.0	830.0
45.00		1.00	1.07	9.366	10.30	208.77	0.650	0.000	5.00	17.047	11.08	114.2	0.0	808.3
48.25	Bot - Section 2	1.00	1.09	9.505	10.46	206.63	0.650	0.000	3.25	10.838	7.04	73.7	0.0	513.8
50.00		1.00	1.09	9.576	10.53	205.42	0.650	0.000	1.75	5.849	3.80	40.0	0.0	504.3
53.25	Top - Section 1	1.00	1.11	9.704	10.67	203.06	0.650	0.000	3.25	10.715	6.96	74.3	0.0	923.6
55.00		1.00	1.12	9.770	10.75	205.10	0.650	0.000	1.75	5.691	3.70	39.8	0.0	225.1
60.00		1.00	1.14	9.951	10.95	201.19	0.650	0.000	5.00	15.953	10.37	113.5	0.0	631.0
65.00		1.00	1.16	10.120	11.13	197.05	0.650	0.000	5.00	15.500	10.07	112.2	0.0	612.9
70.00		1.00	1.17	10.279	11.31	192.71	0.650	0.000	5.00	15.047	9.78	110.6	0.0	594.9
75.00		1.00	1.19	10.430	11.47	188.18	0.650	0.000	5.00	14.594	9.49	108.8	0.0	576.8
80.00		1.00	1.21	10.572	11.63	183.49	0.650	0.000	5.00	14.141	9.19	106.9	0.0	558.8
85.00		1.00	1.22	10.708	11.78	178.65	0.650	0.000	5.00	13.688	8.90	104.8	0.0	540.7
87.00	Appurtenance(s)	1.00	1.23	10.761	11.84	176.68	0.650	0.000	2.00	5.349	3.48	41.2	0.0	211.2
90.00		1.00	1.24	10.838	11.92	173.69	0.650	0.000	3.00	7.887	5.13	61.1	0.0	311.4
95.00		1.00	1.25	10.962	12.06	168.60	0.650	0.000	5.00	12.783	8.31	100.2	0.0	504.6
98.00	Bot - Section 3	1.00	1.26	11.034	12.14	165.49	0.650	0.000	3.00	7.452	4.84	58.8	0.0	294.1
99.00	Appurtenance(s)	1.00	1.26	11.057	12.16	164.44	0.650	0.000	1.00	2.490	1.62	19.7	0.0	175.4
100.00		1.00	1.27	11.081	12.19	163.39	0.650	0.000	1.00	2.472	1.61	19.6	0.0	174.1
101.75	Top - Section 2	1.00	1.27	11.121	12.23	161.55	0.650	0.000	1.75	4.282	2.78	34.1	0.0	301.5
105.00		1.00	1.28	11.195	12.31	160.96	0.650	0.000	3.25	7.806	5.07	62.5	0.0	246.9
109.00	Top - Section 3	1.00	1.29	11.284	12.41	156.66	0.650	0.000	4.00	9.345	6.07	75.4	0.0	295.5
110.00		1.00	1.29	11.305	12.44	147.72	0.600	0.000	1.00	2.167	1.30	16.2	0.0	85.7
115.00		1.00	1.30	11.412	12.55	148.42	0.600	0.000	5.00	10.833	6.50	81.6	0.0	428.4
118.00	Appurtenance(s)	1.00	1.31	11.474	12.62	148.82	0.600	0.000	3.00	6.500	3.90	49.2	0.0	257.0
119.00	Top - Section 4	1.00	1.31	11.494	12.64	148.95	0.600	0.000	1.00	2.167	1.30	16.4	0.0	85.7
120.00		1.00	1.32	11.514	12.67	149.08	0.600	0.000	1.00	2.167	1.30	16.5	0.0	102.7
125.00		1.00	1.33	11.614	12.78	149.73	0.600	0.000	5.00	10.833	6.50	83.0	0.0	513.6
129.00	Appurtenance(s)	1.00	1.34	11.691	12.86	150.22	0.600	0.000	4.00	8.667	5.20	66.9	0.0	410.9
130.00		1.00	1.34	11.710	12.88	150.34	0.600	0.000	1.00	2.167	1.30	16.7	0.0	102.7
134.00	Appurtenance(s)	1.00	1.35	11.785	12.96	150.83	0.600	0.000	4.00	8.667	5.20	67.4	0.0	410.9
<b>Totals:</b>									<b>134.00</b>			<b>2,770.0</b>		<b>18,649.2</b>

## Discrete Appurtenance Forces

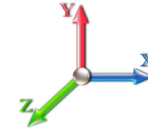
<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	134.00	Lightning rod	1	11.785	12.963	1.00	1.00	0.38	6.50	0.000	0.000	4.93	0.00	0.00	
2	129.00	Cci Antennas	3	11.691	12.860	0.58	0.80	31.31	287.10	0.000	0.000	402.63	0.00	0.00	
3	129.00	(3) SitePro	1	11.691	12.860	0.75	0.75	38.03	2999.58	0.000	0.000	489.00	0.00	0.00	
4	129.00	Ericsson AIR 6419 B77G	3	11.691	12.860	0.66	0.80	8.29	132.00	0.000	0.000	106.57	0.00	0.00	
5	129.00	Ericsson Radio 2012 B29	3	11.691	12.860	0.54	0.80	2.99	129.00	0.000	0.000	38.46	0.00	0.00	
6	129.00	RRUS 4415 B25	3	11.691	12.860	0.54	0.80	2.64	138.00	0.000	0.000	33.91	0.00	0.00	
7	129.00	AIR 6449 N77	3	11.691	12.860	0.68	0.80	8.43	304.80	0.000	0.000	108.35	0.00	0.00	
8	129.00	TPA65R-BU8D	3	11.691	12.860	0.58	0.80	30.88	435.00	0.000	0.000	397.11	0.00	0.00	
9	129.00	B2 B66A 8843	3	11.691	12.860	0.54	0.80	2.64	216.00	0.000	0.000	33.91	0.00	0.00	
10	129.00	DC6-48-60-18-8C-EV	1	11.691	12.860	0.60	0.80	2.87	26.20	0.000	0.000	36.88	0.00	0.00	
11	129.00	DC9-48-60-24-8C-EV	3	11.691	12.860	0.60	0.80	2.05	78.60	0.000	0.000	26.39	0.00	0.00	
12	129.00	RRUS 4478 B14	3	11.691	12.860	0.54	0.80	2.65	178.20	0.000	0.000	34.12	0.00	0.00	
13	129.00	4449 B5/B12	3	11.691	12.860	0.54	0.80	3.17	213.00	0.000	0.000	40.74	0.00	0.00	
14	129.00	Radio 4415 B30	3	11.691	12.860	0.54	0.80	2.99	138.00	0.000	0.000	38.46	0.00	0.00	
15	118.00	LP Platform w/ Handrail	1	11.474	12.621	1.00	1.00	46.00	2448.72	0.000	0.000	580.57	0.00	0.00	
16	118.00	NNVV-65B-R4	3	11.474	12.621	0.55	0.75	20.43	254.10	0.000	0.000	257.84	0.00	0.00	
17	118.00	AAHC	3	11.474	12.621	0.56	0.75	7.10	311.10	0.000	0.000	89.66	0.00	0.00	
18	118.00	TD-RRHx20-25	3	11.474	12.621	0.50	0.75	6.11	210.00	0.000	0.000	77.06	0.00	0.00	
19	118.00	800 MHz RRH	6	11.474	12.621	0.50	0.75	7.51	318.00	0.000	0.000	94.75	0.00	0.00	
20	118.00	1900 MHz RRH	3	11.474	12.621	0.50	0.75	4.18	180.00	0.000	0.000	52.70	0.00	0.00	
21	118.00	VHLP2.5-11	2	11.474	12.621	1.00	1.00	16.86	96.00	1.583	0.000	212.79	336.92	0.00	
22	99.00	APX16DWV-16DWV-S-E-	3	11.057	12.163	0.46	0.75	9.01	122.10	0.000	0.000	109.61	0.00	0.00	
23	99.00	KRY 112 144/1	3	11.057	12.163	0.50	0.75	0.62	33.06	0.000	0.000	7.52	0.00	0.00	
24	99.00	APXVAARR24_43-U-NA2	3	11.057	12.163	0.52	0.75	31.88	384.00	0.000	0.000	387.73	0.00	0.00	
25	99.00	AIR 6449 B41	3	11.057	12.163	0.52	0.75	10.28	399.60	0.000	0.000	125.09	0.00	0.00	
26	99.00	LP Platform w/ Handrail	1	11.057	12.163	1.00	1.00	46.00	2449.00	0.000	0.000	559.50	0.00	0.00	
27	99.00	Air 32	4	11.057	12.163	0.65	0.75	16.99	528.80	0.000	0.000	206.66	0.00	0.00	
28	99.00	KRY 112 489/2	3	11.057	12.163	0.50	0.75	0.98	46.20	0.000	0.000	11.92	0.00	0.00	
29	99.00	4449 B71+ B85	3	11.057	12.163	0.50	0.75	2.49	210.00	0.000	0.000	30.25	0.00	0.00	
30	99.00	RRUS 4415 B25	3	11.057	12.163	0.50	0.75	2.47	138.00	0.000	0.000	30.07	0.00	0.00	
31	87.00	MT6407-77A	3	10.761	11.837	0.52	0.75	7.39	238.20	0.000	0.000	87.43	0.00	0.00	
32	87.00	BXA-171063-12CF-EDIN-	3	10.761	11.837	0.63	0.75	9.03	45.00	0.000	0.000	106.93	0.00	0.00	
33	87.00	Low Profile	1	10.761	11.837	1.00	1.00	22.00	1500.00	0.000	0.000	260.41	0.00	0.00	
34	87.00	MX06FR0660-03	6	10.761	11.837	0.66	0.75	39.09	426.00	0.000	0.000	462.64	0.00	0.00	
35	87.00	RVZDC-6627-PF-48	1	10.761	11.837	0.75	0.75	3.04	32.00	0.000	0.000	36.04	0.00	0.00	
36	87.00	B2/B66A RRH-BR049	3	10.761	11.837	0.50	0.75	2.82	253.20	0.000	0.000	33.37	0.00	0.00	
37	87.00	B5/B13 RRH-BR04C	3	10.761	11.837	0.50	0.75	2.82	210.90	0.000	0.000	33.37	0.00	0.00	
38	87.00	HRK12 (Handrail Kit)	1	10.761	11.837	1.00	1.00	6.75	261.72	0.000	0.000	79.90	0.00	0.00	
<b>Totals:</b>									<b>16,377.68</b>						<b>5,725.29</b>



## Total Applied Force Summary

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		109.99	1202.07	0.00	0.00
10.00		107.58	1180.39	0.00	0.00
15.00		105.17	1158.72	0.00	0.00
20.00		109.03	1137.04	0.00	0.00
25.00		111.59	1115.36	0.00	0.00
30.00		113.17	1093.69	0.00	0.00
35.00		114.03	1072.01	0.00	0.00
40.00		114.32	1050.34	0.00	0.00
45.00		114.16	1028.66	0.00	0.00
48.25		73.65	657.01	0.00	0.00
50.00		40.05	581.42	0.00	0.00
53.25		74.35	1066.87	0.00	0.00
55.00		39.75	302.24	0.00	0.00
60.00		113.50	851.35	0.00	0.00
65.00		112.16	833.29	0.00	0.00
70.00		110.59	815.23	0.00	0.00
75.00		108.83	797.16	0.00	0.00
80.00		106.90	779.10	0.00	0.00
85.00		104.80	761.04	0.00	0.00
87.00	(21) attachments	1141.24	3266.38	0.00	0.00
90.00		61.12	380.86	0.00	0.00
95.00		100.19	620.31	0.00	0.00
98.00		58.79	363.52	0.00	0.00
99.00	(26) attachments	1488.05	4509.27	0.00	0.00
100.00		19.59	180.74	0.00	0.00
101.75		34.05	313.16	0.00	0.00
105.00		62.48	268.59	0.00	0.00
109.00		75.39	322.20	0.00	0.00
110.00		16.17	92.36	0.00	0.00
115.00		81.59	461.80	0.00	0.00
118.00	(21) attachments	1414.60	4095.00	336.92	0.00
119.00		16.44	88.18	0.00	0.00
120.00		16.47	105.23	0.00	0.00
125.00		83.04	526.13	0.00	0.00
129.00	(35) attachments	1853.41	5696.38	0.00	0.00
130.00		16.75	102.73	0.00	0.00
134.00	(1) attachments	72.34	417.40	0.00	0.00
	Totals:	8,495.30	39,293.22	336.92	0.00

## Calculated Forces

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

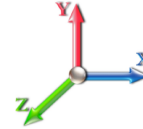


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 23

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-39.29	-8.52	-0.34	-853.17	0.00	853.17	3976.93	1988.46	8011.33	4011.62	0.00	0.000	0.000	0.223
5.00	-38.08	-8.45	-0.34	-810.58	0.00	810.58	3920.48	1960.24	7723.84	3867.66	0.04	-0.067	0.000	0.219
10.00	-36.89	-8.39	-0.34	-768.32	0.00	768.32	3862.67	1931.34	7438.74	3724.90	0.14	-0.135	0.000	0.216
15.00	-35.72	-8.32	-0.34	-726.38	0.00	726.38	3803.51	1901.75	7156.21	3583.42	0.32	-0.203	0.000	0.212
20.00	-34.57	-8.25	-0.34	-684.78	0.00	684.78	3742.99	1871.49	6876.43	3443.32	0.57	-0.273	0.000	0.208
25.00	-33.45	-8.17	-0.34	-643.54	0.00	643.54	3681.11	1840.56	6599.58	3304.69	0.89	-0.343	0.000	0.204
30.00	-32.34	-8.09	-0.34	-602.67	0.00	602.67	3617.88	1808.94	6325.84	3167.62	1.29	-0.414	0.000	0.199
35.00	-31.26	-8.01	-0.34	-562.21	0.00	562.21	3553.28	1776.64	6055.40	3032.20	1.76	-0.485	0.000	0.194
40.00	-30.20	-7.92	-0.34	-522.17	0.00	522.17	3487.33	1743.67	5788.43	2898.52	2.31	-0.557	0.000	0.189
45.00	-29.17	-7.83	-0.34	-482.55	0.00	482.55	3420.03	1710.01	5525.12	2766.66	2.93	-0.628	0.000	0.183
48.25	-28.51	-7.77	-0.34	-457.11	0.00	457.11	3375.55	1687.77	5356.01	2681.98	3.38	-0.676	0.000	0.179
50.00	-27.92	-7.74	-0.34	-443.52	0.00	443.52	3351.36	1675.68	5265.64	2636.73	3.63	-0.701	0.000	0.177
53.25	-26.85	-7.67	-0.34	-418.38	0.00	418.38	2647.50	1323.75	4165.57	2085.88	4.12	-0.749	0.000	0.211
55.00	-26.54	-7.65	-0.34	-404.96	0.00	404.96	2630.02	1315.01	4097.26	2051.68	4.40	-0.774	0.000	0.208
60.00	-25.68	-7.56	-0.34	-366.73	0.00	366.73	2579.17	1289.59	3903.72	1954.76	5.26	-0.855	-0.001	0.198
65.00	-24.84	-7.47	-0.34	-328.95	0.00	328.95	2526.96	1263.48	3712.68	1859.10	6.19	-0.933	-0.001	0.187
70.00	-24.02	-7.37	-0.34	-291.62	0.00	291.62	2473.39	1236.70	3524.34	1764.79	7.21	-1.010	-0.001	0.175
75.00	-23.21	-7.28	-0.34	-254.76	0.00	254.76	2418.47	1209.23	3338.88	1671.92	8.31	-1.084	-0.001	0.162
80.00	-22.43	-7.18	-0.34	-218.37	0.00	218.37	2362.18	1181.09	3156.47	1580.58	9.48	-1.155	-0.001	0.148
85.00	-21.66	-7.08	-0.34	-182.46	-0.01	182.46	2304.54	1152.27	2977.30	1490.86	10.73	-1.221	-0.001	0.132
87.00	-18.42	-5.88	-0.34	-168.30	-0.01	168.30	2281.10	1140.55	2906.58	1455.45	11.25	-1.246	-0.001	0.124
90.00	-18.03	-5.82	-0.34	-150.66	-0.01	150.66	2242.72	1121.36	2798.02	1401.09	12.04	-1.282	-0.001	0.116
95.00	-17.41	-5.72	-0.34	-121.55	-0.01	121.55	2163.84	1081.92	2603.70	1303.79	13.42	-1.337	-0.001	0.101
98.00	-17.05	-5.66	-0.34	-104.38	-0.01	104.38	2116.52	1058.26	2490.47	1247.09	14.27	-1.367	-0.001	0.092
99.00	-12.58	-4.07	-0.34	-98.72	-0.01	98.72	2100.74	1050.37	2453.28	1228.47	14.55	-1.377	-0.001	0.086
100.00	-12.39	-4.05	-0.34	-94.66	-0.01	94.66	2084.97	1042.48	2416.38	1209.99	14.84	-1.387	-0.001	0.084
101.75	-12.08	-4.01	-0.34	-87.58	-0.01	87.58	1611.41	805.70	1884.17	943.49	15.35	-1.403	-0.001	0.100
105.00	-11.81	-3.95	-0.34	-74.55	-0.01	74.55	1583.50	791.75	1805.91	904.30	16.32	-1.430	-0.002	0.090
109.00	-11.49	-3.87	-0.34	-58.77	-0.01	58.77	1548.36	774.18	1710.93	856.74	17.53	-1.465	-0.002	0.076
109.00	-11.49	-3.87	-0.34	-58.77	-0.01	58.77	933.38	466.69	986.46	590.00	17.53	-1.465	-0.002	0.112
110.00	-11.40	-3.85	-0.34	-54.90	-0.01	54.90	933.38	466.69	986.46	590.00	17.84	-1.474	-0.002	0.105
115.00	-10.94	-3.76	-0.34	-35.64	-0.01	35.64	933.38	466.69	986.46	590.00	19.40	-1.505	-0.002	0.072
118.00	-6.88	-2.24	0.00	-24.35	0.00	24.35	933.38	466.69	986.46	590.00	20.35	-1.517	-0.002	0.049
119.00	-6.79	-2.22	0.00	-22.11	0.00	22.11	933.38	466.69	986.46	590.00	20.67	-1.520	-0.002	0.045
119.00	-6.79	-2.22	0.00	-22.11	0.00	22.11	950.95	475.47	1000.09	624.60	20.67	-1.520	-0.002	0.043
120.00	-6.69	-2.20	0.00	-19.89	0.00	19.89	950.95	475.47	1000.09	624.60	20.99	-1.523	-0.002	0.039
125.00	-6.16	-2.11	0.00	-8.87	0.00	8.87	950.95	475.47	1000.09	624.60	22.59	-1.531	-0.002	0.021
129.00	-0.52	-0.10	0.00	-0.44	0.00	0.44	950.95	475.47	1000.09	624.60	23.87	-1.533	-0.002	0.001
130.00	-0.42	-0.08	0.00	-0.33	0.00	0.33	950.95	475.47	1000.09	624.60	24.19	-1.533	-0.002	0.001
134.00	0.00	-0.07	0.00	0.00	0.00	0.00	950.95	475.47	1000.09	624.60	25.48	-1.534	-0.002	0.000

## Final Analysis Summary

<b>Structure:</b> CT13070-A-SBA	<b>Code:</b> EIA/TIA-222-G	9/21/2021
<b>Site Name:</b> Waterbury 4, CT	<b>Exposure:</b> C	
<b>Height:</b> 134.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	35.6	0.00	47.06	0.02	0.86	3594.65
0.9D + 1.6W 97 mph Wind	35.6	0.00	35.28	0.02	0.86	3544.29
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.6	0.00	77.60	0.00	0.28	989.13
1.2D + 1.0E	2.1	0.00	47.15	0.00	0.00	242.15
0.9D + 1.0E	2.1	0.00	35.36	0.00	0.00	238.35
1.0D + 1.0W 60 mph Wind	8.5	0.00	39.29	0.00	0.34	853.17

### Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-47.06	-35.64	-0.86	-3594.6	-0.02	-3594.6	3976.93	1988.4	8011.33	4011.62	0.00	0.908
0.9D + 1.6W 97 mph Wind	-35.28	-35.61	-0.86	-3544.2	-0.02	-3544.2	3976.93	1988.4	8011.33	4011.62	0.00	0.893
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-77.60	-9.61	-0.28	-989.13	0.00	-989.13	3976.93	1988.4	8011.33	4011.62	0.00	0.266
1.2D + 1.0E	-32.33	-1.86	0.00	-135.15	0.00	-135.15	2647.50	1323.7	4165.57	2085.88	53.25	0.077
0.9D + 1.0E	-24.25	-1.82	0.00	-132.36	0.00	-132.36	2647.50	1323.7	4165.57	2085.88	53.25	0.073
1.0D + 1.0W 60 mph Wind	-39.29	-8.52	-0.34	-853.17	0.00	-853.17	3976.93	1988.4	8011.33	4011.62	0.00	0.223



# Monopole Mat Foundation Design

Date

8/25/2021

<b>Customer Name:</b>	AT&T	<b>EIA/TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	134
<b>Site Number:</b>	CT13070-A-SBA	<b>Engineer Name:</b>	S. Hesselbeir
<b>Engr. Number:</b>	114884	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Mapping Operation

**Structure Type:**

Monopole

**Analysis or Design?**

Analysis

**Base Reactions (Factored):**

Axial Load (Kips):	47.1	Shear Force (Kips):	35.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3594.7

Allowable overstress %: 5.0%

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	5.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	22	Width of Pad (ft.):	22

Final Length of pad (ft)	22.0	Final width of pad (ft):	22.0
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**Material Properties and Rebar Info:**

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	35	Qty. of Rebar in Pad (W):	35
---------------------------	----	---------------------------	----

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	35	Qty. of Rebar in Pad (W):	35
---------------------------	----	---------------------------	----

Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

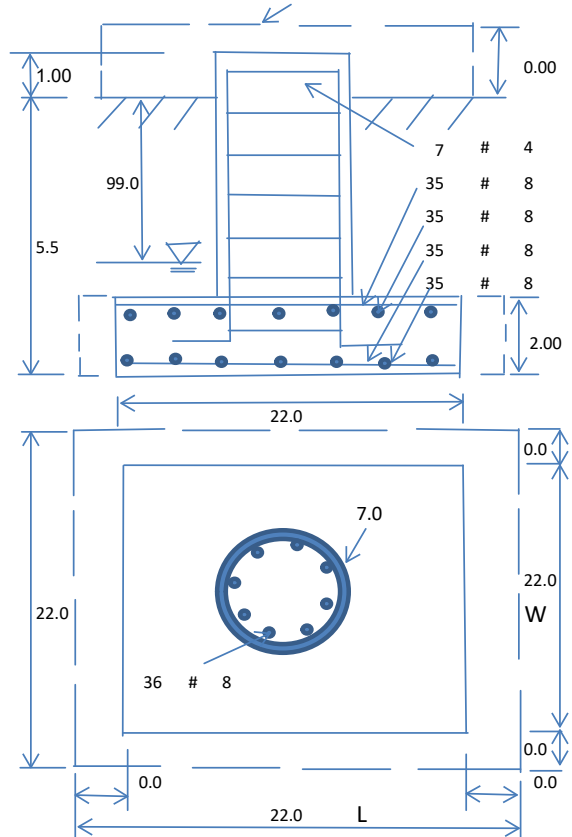
Soil Unit Weight (pcf):	130.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	16000	Ultimate Skin Friction:		Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

**Foundation Analysis and Design:**

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	1559.30	Total Dry Soil Weight (Kips):	202.71
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	202.71	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1141.18	Total Dry Concrete Weight (Kips):	171.18
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	171.18	Total Vertical Load on Base (Kips):	420.99

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	4692	<	Allowable Factored Soil Bearing (psf):	12000	0.39	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	4219.6	>	Design Factored Momont (kips-ft):	3826	0.91	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.10					OK!



**Check the capacities of Reinforcing Concrete:**

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00

**(1) Concrete Pier:**

				Load/ Capacity Ratio	
Vertical Steel Rebar Area (sq. in./each):	0.79	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	4845.7	> Design Factored Moment (Mu, Kips-F	3754.9	0.77	OK!
Calculated Shear Capacity (Kips):	660.1	> Design Factored Shear (Kips):	35.6	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	1535.8	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9747.6	> Design Factored Axial Load (Pu Kips):	47.1	0.00	OK!
Moment & Axial Strength Combination:	0.77	OK! Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is satisfied per ACI			

**(2).Concrete Pad:**

One-Way Design Shear Capacity (L-Direction, Kips):	513.4	> One-Way Factored Shear (L-D. Kips):	265.6	0.52	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	513.4	> One-Way Factored Shear (W-D., Kips)	265.6	0.52	OK!
One-Way Design Shear Capacity (Corner-Corner, Kips):	483.0	> One-Way Factored Shear (C-C, Kips):	277.8	0.58	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0051	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0051		
Lower Steel Pad Moment Capacity (L-Direction, Kips-ft):	2435.7	> Moment at Bottom ( L-Dir. K-Ft):	1065.9	0.44	OK!
Lower Steel Pad Moment Capacity (W-Direction, Kips-ft):	2435.7	> Moment at Bottom ( W-Dir. K-Ft):	1065.9	0.44	OK!
Lower Steel Pad Moment Capacity (Corner-Corner, K-ft):	3397.4	> Moment at Bottom ( C-C Dir. K-Ft):	1507.4	0.44	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0051	OK! Upper Steel Reinf. Ratio (W-Dir. ):	0.0051		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2435.7	> Moment at the top (L-Dir K-Ft):	508.3	0.21	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2435.7	> Moment at the top (W-Dir K-Ft):	508.3	0.21	OK!
Upper Steel Pad Moment Capacity (Corner-Corner, K-ft):	3397.4	> Moment at the top (C-C Dir. K-Ft):	479.9	0.14	OK!

**(3).Check Punching Shear Capacity due to Moment in the Pier:**

Moment transferred by punching shear:	1437.9	k-ft.	Max. factored shear stress $v_{u,CD}$ :	4.0	Psi
Max. factored shear stress $v_{u,AB}$ :	15.7	Psi	Factored shear Strength $\phi v_n$ :	189.7	Psi
Max. factored shear stress $v_u$ :	15.7	Psi	Check Usage of Punching Shear Capacity:	0.08	OK!

PER THE INTERNATIONAL BUILDING CODE THIS STRUCTURE IS CLASSIFIED AS:

1. CONSTRUCTION TYPE II-B (TABLE 601)
2. GROUP U OCCUPANCY (SECTION 312.1 UNOCCUPIED TOWER SITE)

# MODIFICATION AND DESIGN DRAWINGS FOR AN EXISTING 119' SABRE MONOPOLE TOWER W/ PROPOSED 15' EXTENSION

PROPOSED CARRIER: AT&T

SITE: CT13070-A-SBA / WATERBURY 4, CT  
COORDINATES (LATITUDE: 41.553278°, LONGITUDE: -72.993361°)

### CONSTRUCTION CLASS

THE RIGGING PLAN FOR THIS SITE WOULD BE A  
MINIMUM OF A CLASS III AND THE CONTRACTOR  
SHALL MAKE FINAL DETERMINATION

PLEASE NOTE THIS SET OF DRAWINGS IS FOR INSTALLATION AND ASSEMBLY ONLY. FABRICATION DETAIL DRAWINGS ARE NOT PROVIDED AND MUST BE COMPLETED BY THE STEEL FABRICATOR SELECTED. TES CAN PROVIDE THE FABRICATION DETAIL DRAWINGS FOR AN ADDITIONAL FEE.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	TOWER PROFILE	0
A-2	INSTALLATION OF NEW ANCHOR ROD DETAILS	0
A-3	MONOPOLE EXTENSION INSTALLATION DETAILS	0
SPEC-1	NEXGEN2 BLIND BOLT ASSEMBLY INSTALLATION GUIDE	0
SPEC-2	NEXGEN2 BLIND BOLT ASSEMBLY INSTALLATION GUIDE	0

**NOTE:**

1. THE MODIFICATION DRAWINGS ARE BASED ON THE  
TES PROJECT NO. 113810, DATED 08/25/2021.



**Tower Engineering Solutions**  
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IRVING, TX 75038  
PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW  
BOCA RATON, FL 33487  
(800)-487-SITE

TES JOB NO:  
114884

CUSTOMER SITE NO:  
CT13070-A-SBA  
CUSTOMER SITE NAME:  
WATERBURY 4, CT  
940 MERIDEN ROAD  
WATERBURY, CT 06705



AD  
9/22/21

DRAWN BY: LU      CHECKED BY: AD/CZ

REV.	DESCRIPTION	BY	DATE
△ 1	FIRST ISSUE	LU	09/22/21
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SHEET NUMBER: <span style="font-size: 2em;">T-1</span>	REV #: <span style="font-size: 2em;">0</span>
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**GENERAL NOTES**

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, 2018 CONNECTICUT STATE BUILDING CODE AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER ANSI/ASSP A10.48, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.

**FABRICATION**

1. ALL STEEL SHALL MEET OR EXCEED THE MINIMUM STRENGTH AS SPECIFIED IN THE DRAWINGS. IF YIELD STRENGTH WAS NOT NOTED IN THE DRAWINGS, CONTRACTORS SHALL CONTACT TES FOR DIRECTION.
2. ALL FIELD CUT EDGES SHALL BE GROUND SMOOTH. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

**WELDING**

1. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNO. (E70XX UNLESS NOTED OTHERWISE).
2. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5" BEYOND THE PROPOSED FIELD WELD SURFACES.
3. ALL WELDS SHALL BE INSPECTED VISUALLY. A MINIMUM OF 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. 100% OF WELDS SHALL BE INSPECTED IF DEFECTS ARE FOUND.
4. WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
5. AFTER INSPECTION, ALL FIELD WELDED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

**BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS**

1. ALL HIGH STRENGTH BOLTS SHALL CONFORM TO THE PROVISIONS OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS AS APPROVED BY THE RCSC.
2. FLANGE BOLTS SHALL BE TIGHTENED BY THE AISC "TURN-OF-THE-NUT" METHOD. THE FOLLOWING TABLE SHOULD BE USED FOR THE "TURN-OF-THE-NUT" TIGHTENING.
3. SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
4. THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY EITHER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
5. HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

**VERIFICATION AND INSPECTION**

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2015 SECTION 1705 - FOR STEEL CONSTRUCTION & TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

**POST INSTALLED EPOXY INJECTED ANCHOR BOLTS:**

1. CONCRETE MUST BE A MINIMUM OF 28 DAYS OLD.
2. FOLLOW MANUFACTURER'S REQUIREMENTS FOR CURE TIME VS. AMBIENT TEMPERATURE.
3. DRILL HOLE TO REQUIRED DIAMETER AND DEPTH. ALL WATER, DIRT, OIL, DEBRIS, GREASE OR DUST MUST BE REMOVED FROM EACH CORE HOLE. FOLLOW MANUFACTURER'S RECOMMENDATION FOR CORRECT TYPE OF CORE BIT. AVOID DAMAGING EXISTING REINFORCING STEEL OR OTHER EMBEDDED ITEMS. NOTIFY TES ENGINEERING IF VOIDS IN THE CONCRETE, REINFORCING STEEL OR OTHER EMBEDDED ITEMS ARE ENCOUNTERED. STOP CORING IMMEDIATELY IF THIS OCCURS.
4. A HOLE ROUGHENING DEVICE FROM EITHER HILTI OR ALLFASTENERS SHALL BE USED WITH ALL HOLES. FOLLOW ALL MANUFACTURER'S RECOMMENDED CORING AND INSTALLATION INSTRUCTIONS.
5. AFTER CORING AND ROUGHENING, FLUSH EACH HOLE WITH RUNNING WATER TO REMOVE ANY SLURRY OR DEBRIS. REMOVE ALL WATER FROM THE HOLE BY MECHANICAL PUMPING.
6. BRUSH EACH HOLE WITH AN APPROPRIATE SIZED NYLON BRUSH AND FLUSH WITH RUNNING WATER A SECOND TIME. REMOVE ALL WATER FROM THE HOLE.
7. AFTER THE SECOND WATER FLUSH BRUSH THE HOLE AGAIN WITH THE APPROPRIATE SIZED NYLON BRUSH.
8. BLOW EACH HOLE WITH COMPRESSED AIR TWO TIMES MINIMUM.
9. CONFIRM THAT EACH HOLE IS PROPERLY ROUGHED AND DRY.
10. NO EPOXY INJECTION SHALL TAKE PLACE IN RAINY CONDITIONS.
11. EPOXY SHOULD BE VISIBLE AT THE TOP OF THE CORE HOLE AFTER INSTALLATION.
12. CONTRACTOR TO SUPPLY ONE PHOTO OF EACH ROUGHED AND CLEANED HOLE IN CLOSEOUT PHOTO PACKAGE.

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING<sup>a,b</sup>

BOLT LENGTH <sup>f</sup>	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20 <sup>d</sup>	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS <sup>d</sup>
NOT MORE THAN 4d <sub>b</sub>	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN 4d <sub>b</sub> BUT NOT MORE THAN 8d <sub>b</sub>	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN 8d <sub>b</sub> BUT NOT MORE THAN 12d <sub>b</sub>	2/3 TURN	5/6 TURN	1 TURN

<sup>a</sup> NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR REQUIRED NUT ROTATIONS OF 1/2 TURN AND LESS, THE TOLERANCE IS PLUS OR MINUS 30 DEGREES; FOR REQUIRED NUT ROTATIONS OF 2/3 TURN AND MORE, THE TOLERANCE IS PLUS OR MINUS 45 DEGREES.

<sup>b</sup> APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

<sup>c</sup> WHEN THE BOLT LENGTH EXCEEDS 12d<sub>b</sub>, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

<sup>d</sup> BEVELED WASHER NOT USED.

SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004 RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS

**INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:**

1. HB12 HOLLO BOLT: 59 FT-LBS
2. HB16 HOLLO BOLT: 140 FT-LBS
3. HB20 HOLLO BOLT: 221 FT-LBS
4. M20 AJAX BOLT: 280 FT-LBS.

**FIELD HOT WORK PLAN NOTES:**

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

1. CONTRACTOR'S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
2. HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
3. CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
4. CONTRACTOR SHALL MAKE SURE THAT CELL PHONE COVERAGE IS AVAILABLE IN THE TOWER SITE. IF CELL COVERAGE IS NOT AVAILABLE, AN IMMEDIATE AVAILABLE MEANS OF DIRECT COMMUNICATION WITH THE FIRE DEPARTMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION START.
5. ALL CONSTRUCTION SHALL BE PERFORMED UNDER WIND SPEED LESS THAN 10 MPH ON THE GROUND LEVEL. IF WIND SPEED INCREASE, CONTRACTOR MUST DETERMINE IF CONSTRUCTION SHALL BE DISCONTINUED.
6. FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
7. CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
8. ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
9. IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
10. PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.



**Tower Engineering Solutions**

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5900 BROKEN SOUND PARKWAY, NW  
BOCA RATON, FL 33487  
(800)-487-SITE

TES JOB NO:  
114884

CUSTOMER SITE NO:  
CT13070-A-SBA  
CUSTOMER SITE NAME:  
WATERBURY 4, CT  
940 MERIDEN ROAD  
WATERBURY, CT 06705

DRAWN BY: LU | CHECKED BY: AD/CZ

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1	FIRST ISSUE	LU	09/22/21

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**NOTES:**

1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE MONOPOLE AND ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.

**SCOPE OF WORK**

1. INSTALL NEW (3) ANCHOR ROD REINFORCEMENTS. SEE SHEET A-2 FOR DETAILS.
2. INSTALL NEW 26" O.D. X 15'-0" (3/8" THICK) MONOPOLE EXTENSION FROM ±119' TO ±134' ELEV. SEE SHEET A-3 FOR DETAILS.
3. RELOCATE EXISTING LIGHTNING ROD TO THE TOP OF NEW POLE SECTION AND FIELD CUT AS REQUIRED TO MEET FAA HEIGHT APPROVAL. SEE DETAIL 1.
4. INSTALL NEW SAFETY CLIMB ASSEMBLY TO THE TOP OF NEW EXTENSION. INSTALL PER MANUFACTURER'S INSTRUCTIONS.  
NOTE: CONTRACTOR TO FIELD VERIFY AND INSTALL NEW TUF-TUG CABLE GUIDE (PART #115-203) TO EXISTING ANTENNA MOUNTS AT ±118' ELEV. TO AVOID RUBBING SAFETY CABLE AS REQUIRED.
5. APPLY FOUNDATION COATING
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.

**INSTALLATION NOTE:**

VERTICAL ALIGNMENT IS REQUIRED FOR ALL THE EXTENSION PROJECTS, TOWERS OR POLES



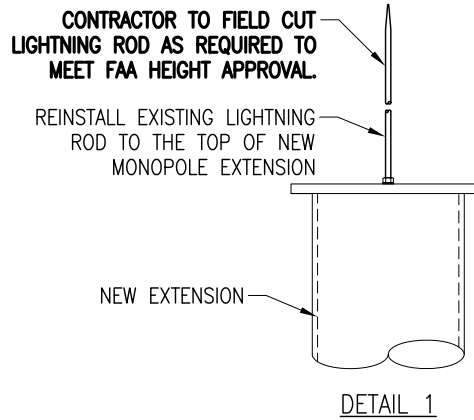
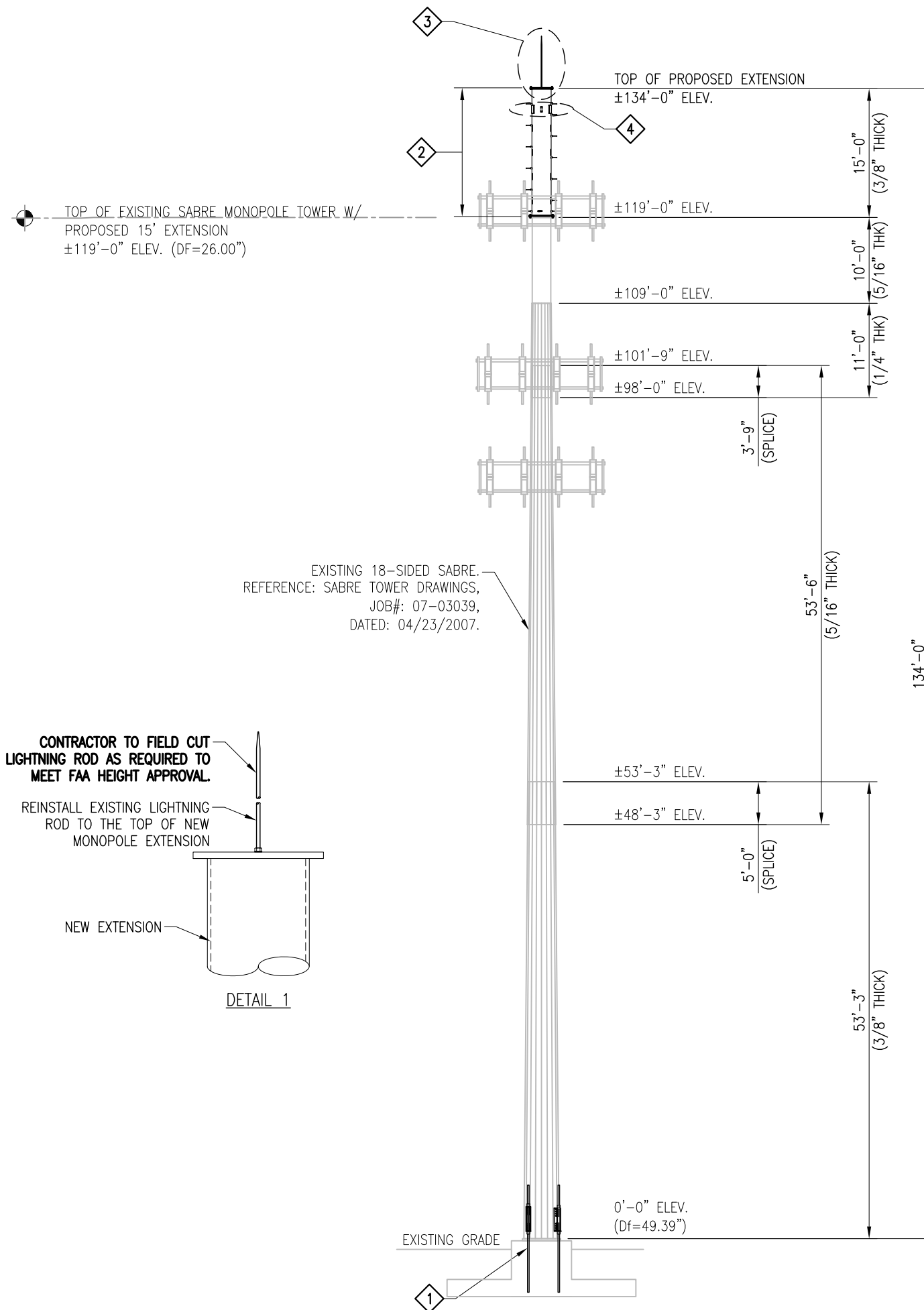
PHOTO 1



PHOTO 2

**FOUNDATION COATING NOTES:**

1. THE COATING MATERIALS SHALL BE LANCO WHITE ACRYLIC ELASTOMERIC COATING AND SEALER, OR HYDRO ARMOR COATING.
2. THE COATING CAN BE PLACED AT LEAST (2) DAYS AFTER THE PLACEMENT OF THE CONCRETE FOR FOUNDATION REINFORCEMENT, AND MINIMUM (4) DAYS FOR NEW FOUNDATION CONSTRUCTION.
3. THE CONCRETE SURFACE SHALL BE CLEAN AND DRY PRIOR TO THE APPLICATION OF THE COATING.
4. THE COATING SHALL BE APPLIED TO ALL THE SURFACES OF THE CONCRETE ABOVE THE GROUND AND 6" BELOW THE GRADE SURFACE IF APPLICABLE.
5. MINIMUM 30 MILS COATING IS REQUIRED.
6. APPLY COLD GALVANIZE AT LEAST 2'-3' ABOVE FOUNDATION.



EXISTING 18-SIDED SABRE.  
REFERENCE: SABRE TOWER DRAWINGS,  
JOB#: 07-03039,  
DATED: 04/23/2007.



**Tower Engineering Solutions**

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PHONE: (972) 483-0607



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BOCA RATON, FL 33487  
(800)-487-SITE

TES JOB NO:  
114884

CUSTOMER SITE NO:  
CT13070-A-SBA  
CUSTOMER SITE NAME:  
WATERBURY 4, CT  
940 MERIDEN ROAD  
WATERBURY, CT 06705

DRAWN BY: LU | CHECKED BY: AD/CZ

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	LU	09/22/21

SHEET TITLE:

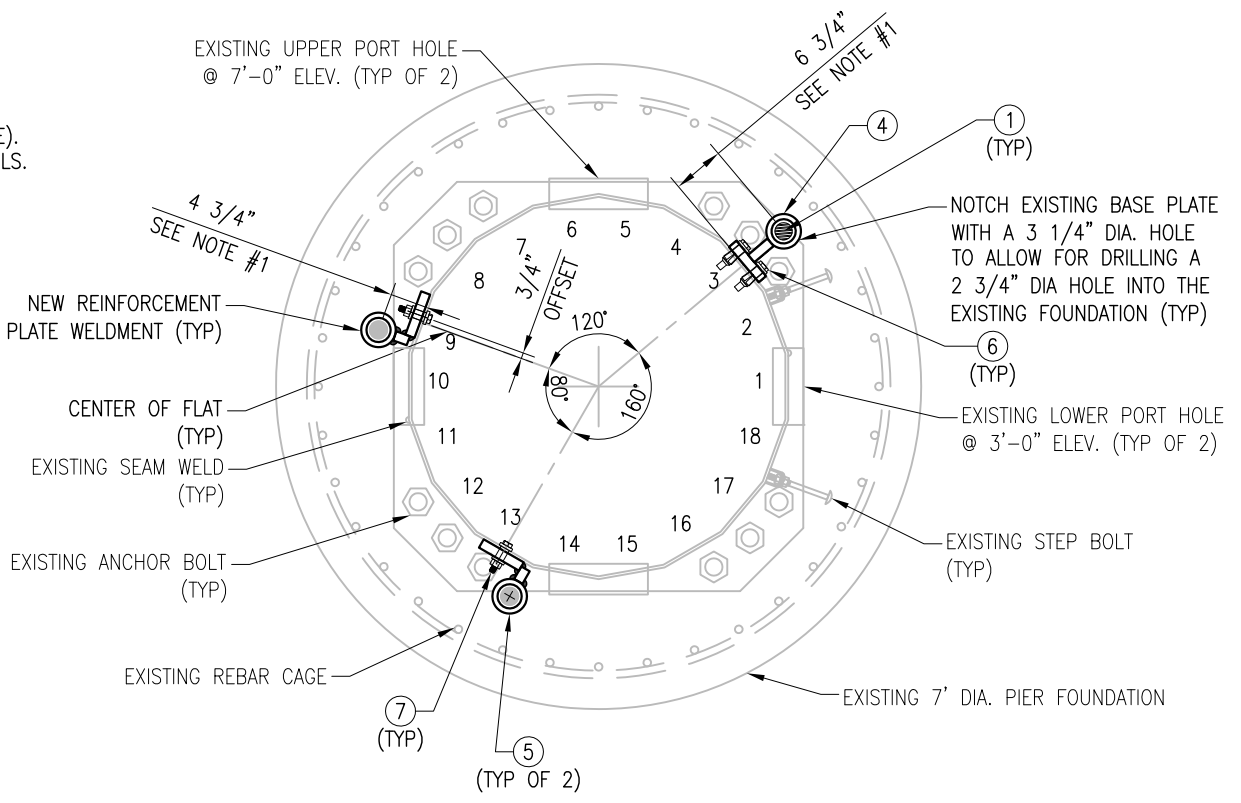
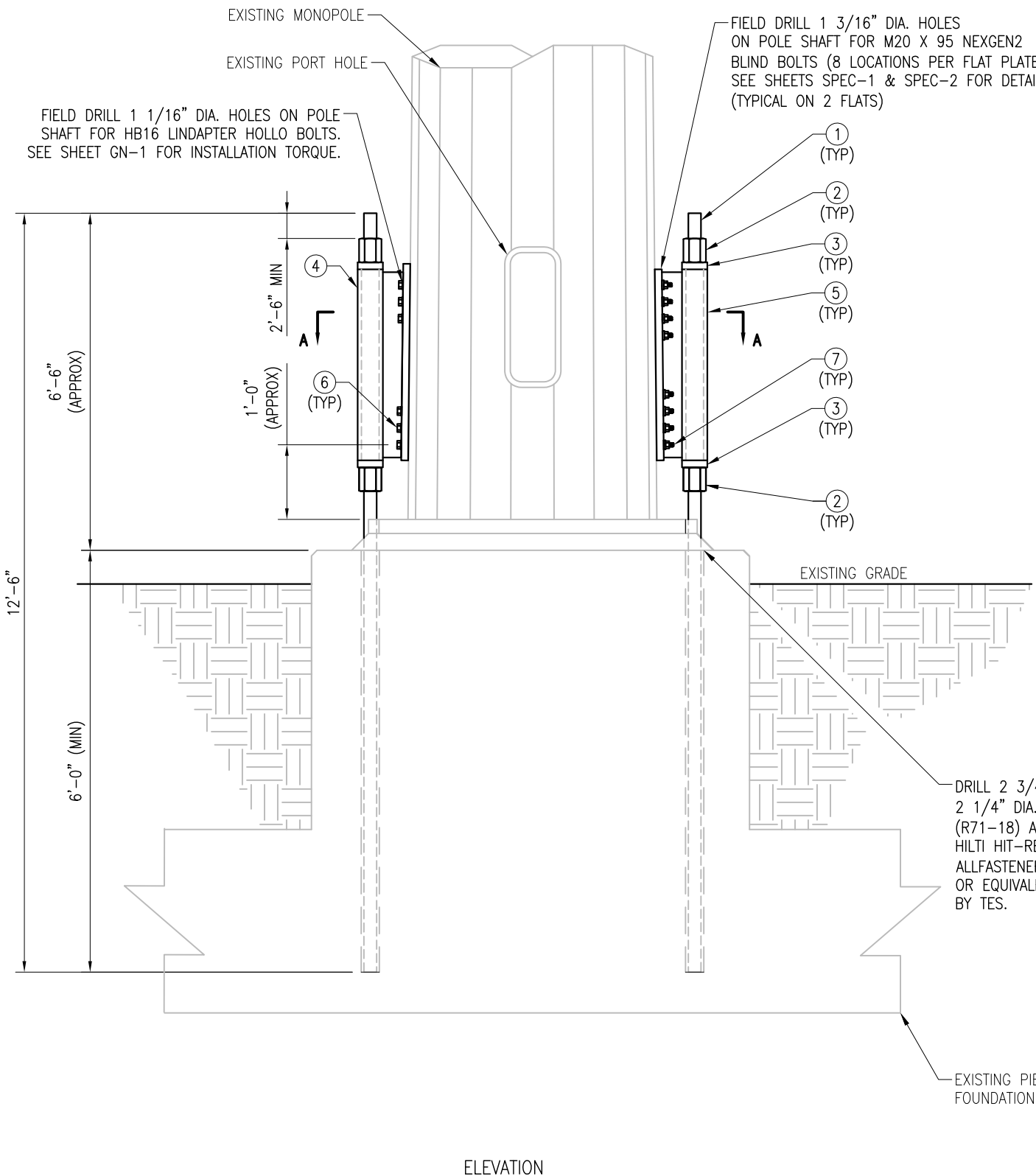
TOWER PROFILE

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A-1 | 0

**US PATENT 9,714,520 B1**



DRILL 2 3/4" DIA. HOLE TO ACCOMMODATE 2 1/4" DIA. WILLIAMS ALL-THREAD ROD (R71-18) AS SHOWN. GROUT USING HILTI HIT-RE 500 V3 EPOXY OR ALLFASTENERS 12AF35LVE EPOXY (TYP) OR EQUIVALENT MATERIAL APPROVED BY TES.

**INSTALLATION NOTES:**

1. USE WELDED REINFORCEMENT BRACKET ASSEMBLY TO SET THE POSITION OF THE ALL-THREAD ROD.
2. DRILL NEW 2 3/4" DIA. HOLES INTO EXISTING FOUNDATION FOR ALL-THREAD ROD.
3. INSTALL REINFORCEMENT BRACKET AND CONFIRM FIT WITH MONOPOLE REINFORCEMENT PLATES.
4. TIGHTEN NUTS ON THE ALL-THREAD ROD LOCKING IT INTO POSITION.
5. APPLY (2) COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS TO ALL FIELD CUT AND EXPOSED AREAS.
6. DRILLING CONTRACTOR TO EXERCISE EXTREME CARE TO AVOID DAMAGING THE EXISTING REINFORCING TIES IN THE CONCRETE PIER. IF REBAR IS ENCOUNTERED IN THE CONCRETE WHILE DRILLING, CONTRACTOR TO STOP DRILLING AND INFORM **TES** FOR SOLUTION.
7. CONTRACTOR PLEASE NOTE-WHILE DRILLING PREPARE TO DRILL THROUGH ANCHOR BOLT TEMPLATE.
8. SEE SHEETS SPEC-1 & 2 FOR NEXGEN2 BLIND BOLT INSTALLATION. IT IS REQUIRED THAT THE CONTRACTOR TAKE PHOTOS OF THE INSTALLED BOLT FOR VERIFICATION OF PROPER INSTALLATION.

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	R71-18	12'-6" WILLIAMS 2 1/4" DIA. ALL-THREAD ROD (150 KSI)
2	6	R73-18	2 1/4" NUT (WILLIAMS R73-18) (TYP)
3	6	PLW-1	PL 1 1/4" X 4 1/2" FLAT WASHER, A572-65
4	1	APL-6X125-B	ANCHOR REINFORCEMENT WELDMENT
5	2	APL-6X125-BR4.75	ANCHOR REINFORCEMENT WELDMENT
6	12	HB16-2	LINDAPTER 5/8" TYPE HB HOLLO-BOLT (HCF)
7	16	2NG2048	M20 X 95 NEXGEN2 BLIND BOLT ASSEMBLY

**NOTE:**  
SEE NOTES ON SHEET GN-1 FOR POST-INSTALLED EPOXY INJECTED ANCHOR BOLTS



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SHEET TITLE:  
**INSTALLATION OF NEW ANCHOR ROD DETAILS**

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SHEET NUMBER:  
**A-2**      REV #:  
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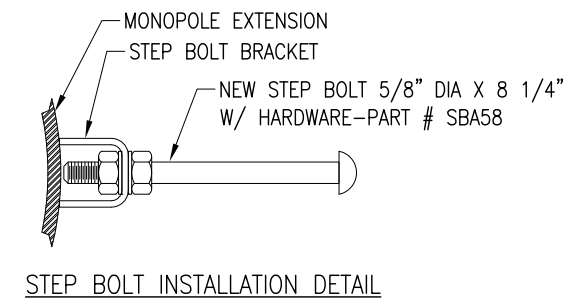
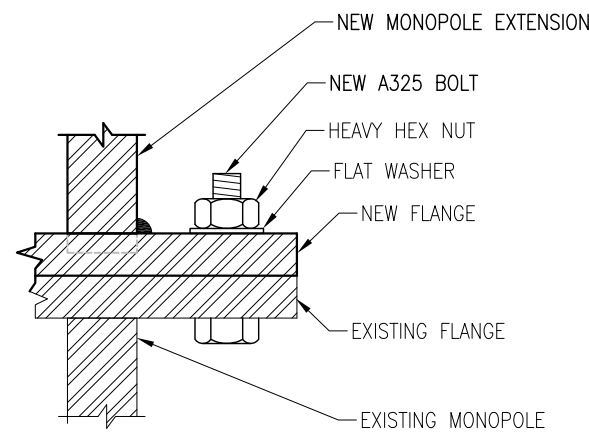
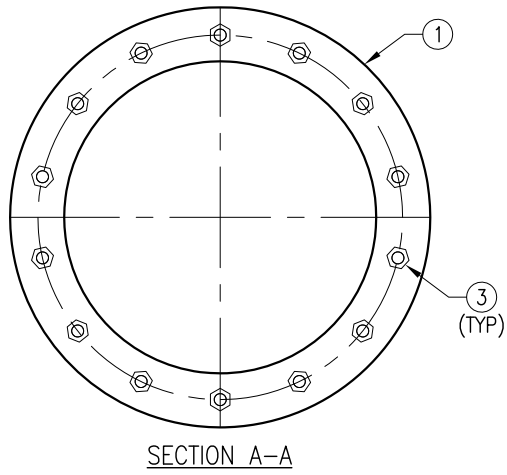
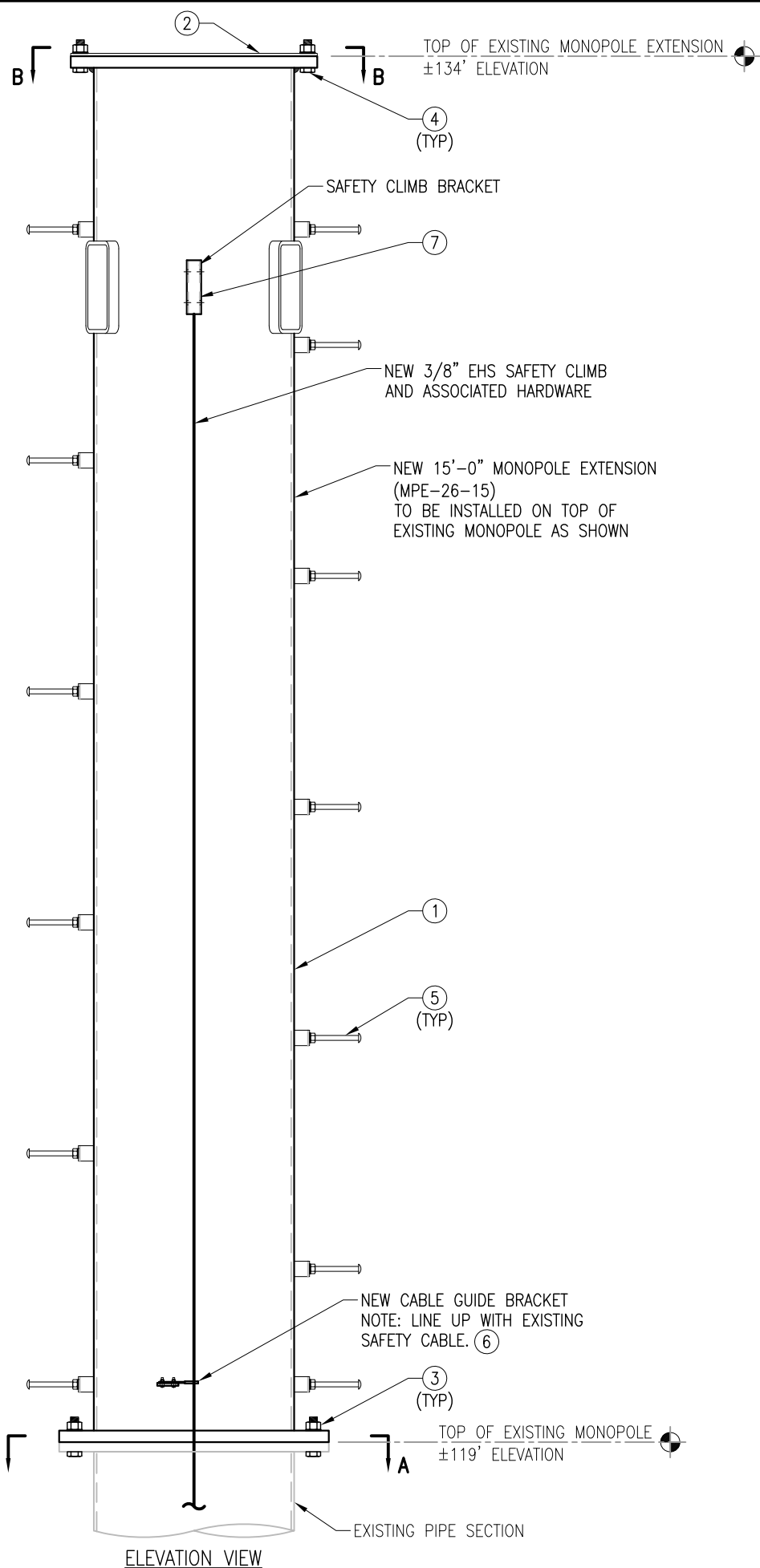
SHEET TITLE:

**MONOPOLE EXTENSION  
INSTALLATION DETAILS**

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A-3      0



**NEW FLANGE PLATE AND  
BOLT INSTALLATION DETAIL**

NOTE:  
TIGHTEN FLANGE BOLTS PER NOTES  
ON SHEET GN-1. TABLE 8.2.

FIELD NOTE:  
DO NOT USE A LOCKWASHER WITH  
THIS CONNECTION.

ITEM NO.	QTY.	PART NO.	DESCRIPTION
7	1	115-300	TUF-TUG HEAD ASSEMBLY & STAINLESS STEEL SAFETY CABLE WITH FACTORY SWAGED FITTING (140 FT)
6	1	115-303	SAFETY CLIMB CABLE GUIDE L- STYLE (TUF-TUG OR EQUIV W/ HARDWARE)
5	13	SBA58	STEP BOLT 5/8" X 8 1/4" (SITEPRO OR EQUIV. W/ HARDWARE)
4	2	---	BOLT 1" X 3 1/2" A325 W/ NUT-FW EA.
3	14	---	BOLT 1" X 4 1/2" A325 W/ NUT-FW EA.
2	1	CPL-26	TOP CAP PLATE PL 3/16" X 2'-8 1/2" DIA A36
1	1	MPE-26-15	MONOPOLE EXTENSION WELDMENT (26" DIA. X 15'-0") A53 GR-B

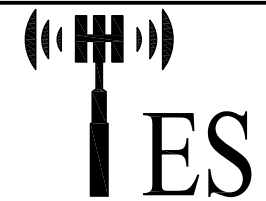
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# NEXGEN2

## BLIND BOLT ASSEMBLY

### INSTALLATION GUIDE



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#### PRE-INSTALL BOLT ON INSTALL TOOL:



1 Thread the installation tool tip into the splined end of the bolt.



2 Remove the nut, the face washer and the spring shear sleeve and slide along the handle of the tool.



3 Move the collapsible washer to the correct location on the tool and fold in place.

#### INSTALLATION:



1 Install the bolt into the hole followed by the collapsible washer.



2 Rotate the tool 180°.



3 Pulling back, rock the tool side-to-side to engage the collapsible washer.



4 Engage the spring shear sleeve into the shear plane.



5 Slide the face washer forward and move the nut up to fasten to the bolt. Tighten the nut snug tight at this point.



6 Remove the tool by unscrewing it from bolt (counterclockwise).



7 Using the shear wrench engage the outer socket with the splined end of the bolt. Press the trigger until correct tension has been achieved (the bolt spline separates from the bolt).



8 Press the small trigger on the shear wrench to eject the bolt spline. The application is now complete.

THIS INSTALLATION GUIDE WAS CREATED BY ALLFASTENERS.  
 IT WAS ATTACHED FOR REFERENCE ONLY.

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SHEET TITLE:  
 NEXGEN2 BLIND BOLT  
 ASSEMBLY INSTALLATION  
 GUIDE

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SHEET NUMBER: SPEC-1 REV #: 0



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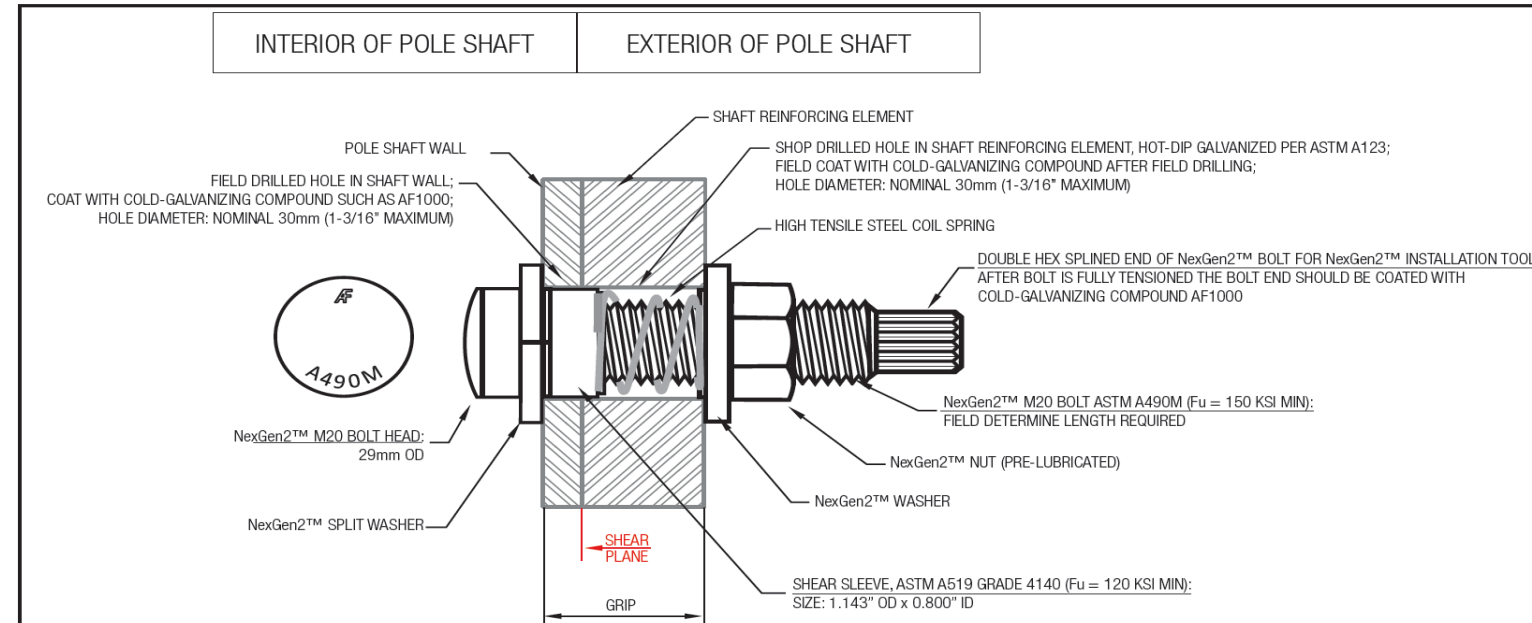
Pre-Tension



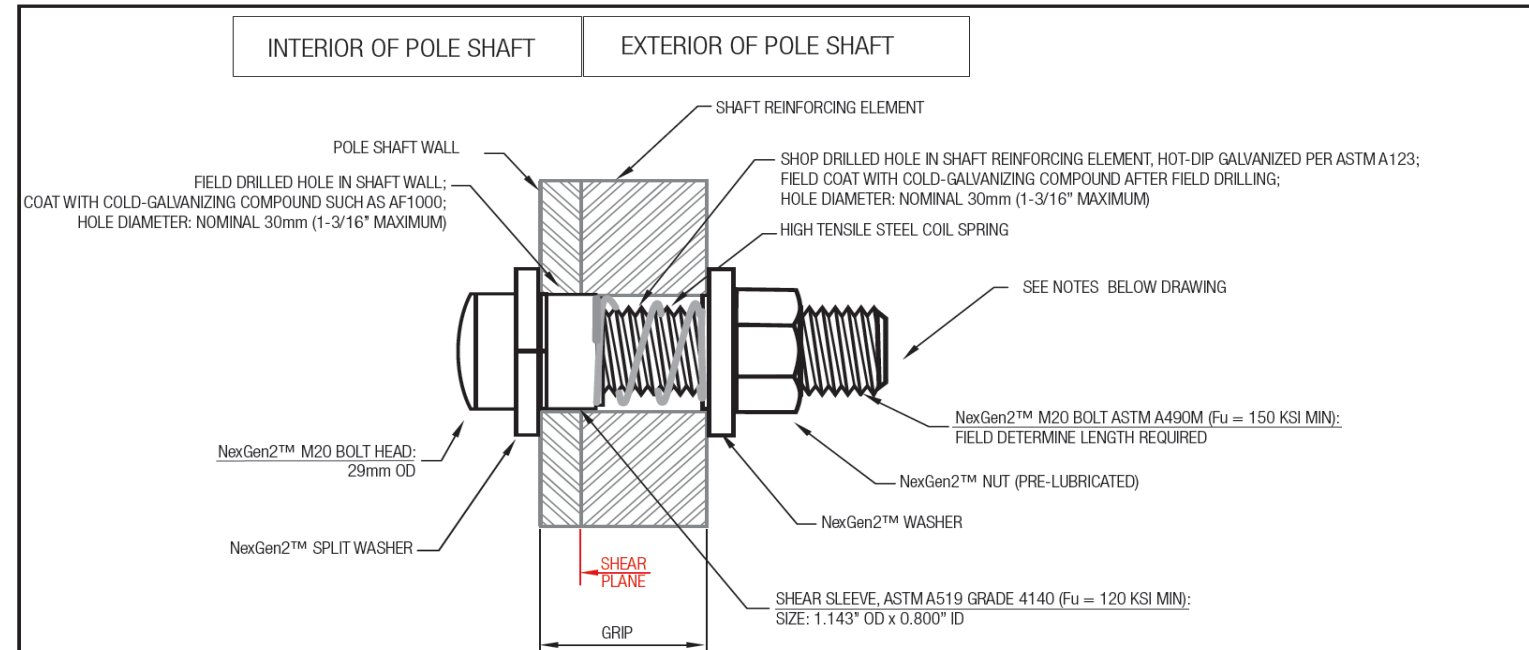
Post-Tension



TYPICAL NG2™ BOLT DETAIL: **PRE-TENSION**



TYPICAL NG2™ BOLT DETAIL: **POST-TENSION**



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SHEET TITLE:  
 NEXGEN2 BLIND BOLT  
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SHEET NUMBER: SPEC-2 | REV #: 0

# **ATTACHMENT 6**

FAA Report



Mail Processing Center  
Federal Aviation Administration  
Southwest Regional Office  
Obstruction Evaluation Group  
10101 Hillwood Parkway  
Fort Worth, TX 76177

Aeronautical Study No.  
2021-ANE-2257-OE  
Prior Study No.  
2009-ANE-1142-OE

Issued Date: 05/11/2021

Clinton Papenfuss  
SBA Towers  
8051 Congress Avenue  
Boca Raton, FL 33487-1310

**\*\* DETERMINATION OF NO HAZARD TO AIR NAVIGATION \*\***

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Antenna Tower CT 13070-A  
Location: Waterbury, CT  
Latitude: 41-33-11.80N NAD 83  
Longitude: 72-59-36.10W  
Heights: 611 feet site elevation (SE)  
138 feet above ground level (AGL)  
749 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 11/11/2022 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.
- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

**NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.**

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

This determination cancels and supersedes prior determinations issued for this structure.

If we can be of further assistance, please contact our office at (816) 329-2525, or [natalie.schmalbeck@faa.gov](mailto:natalie.schmalbeck@faa.gov). On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2021-ANE-2257-OE.

**Signature Control No: 478129413-480459360**

( DNE )

Natalie Schmalbeck  
Technician

Attachment(s)  
Frequency Data  
Map(s)

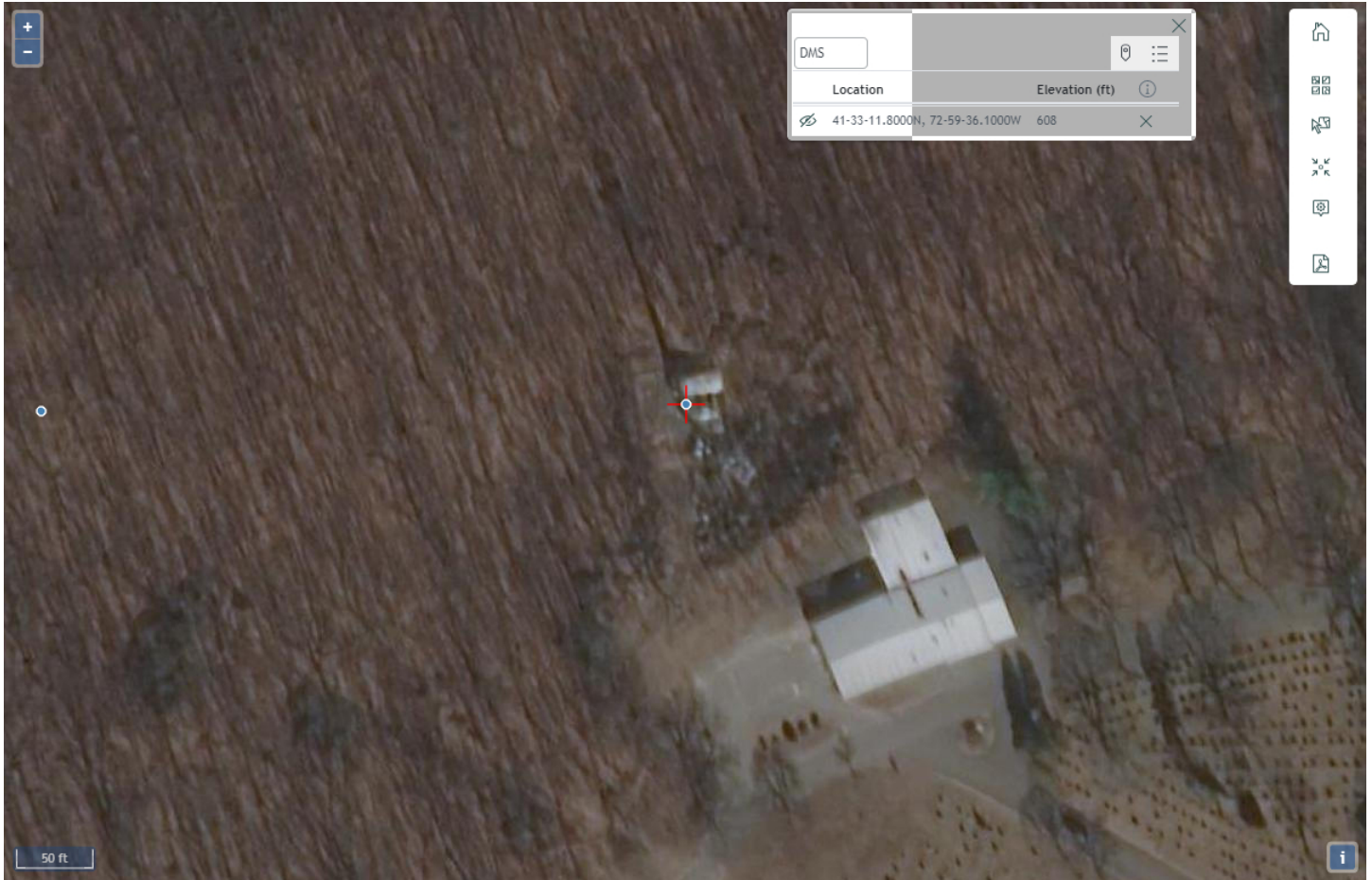
cc: FCC



Frequency Data for ASN 2021-ANE-2257-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
6	7	GHz	55	dBW
6	7	GHz	42	dBW
10	11.7	GHz	55	dBW
10	11.7	GHz	42	dBW
17.7	19.7	GHz	55	dBW
17.7	19.7	GHz	42	dBW
21.2	23.6	GHz	55	dBW
21.2	23.6	GHz	42	dBW
614	698	MHz	1000	W
614	698	MHz	2000	W
698	806	MHz	1000	W
806	901	MHz	500	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
929	932	MHz	3500	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1670	1675	MHz	500	W
1710	1755	MHz	500	W
1850	1910	MHz	1640	W
1850	1990	MHz	1640	W
1930	1990	MHz	1640	W
1990	2025	MHz	500	W
2110	2200	MHz	500	W
2305	2360	MHz	2000	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W
2496	2690	MHz	500	W

Verified Map for ASN 2021-ANE-2257-OE



# **ATTACHMENT 7**

Visual Assessment

# Visual Assessment & Photo-Simulations

CT1347  
WATERBURY MERIDEN ROAD  
940 MERIDEN ROAD  
WATERBURY, CT

*Prepared in January 2022 by:*  
All-Points Technology Corporation, P.C.  
567 Vauxhall Street Extension – Suite 311  
Waterford, CT 06320

*Prepared for AT&T*



## **VISUAL ASSESSMENT & PHOTO-SIMULATIONS**

New Cingular Wireless PCS, LLC d/b/a AT&T ("AT&T") is seeking approval for the extension of an existing wireless communications facility (the "Facility") at 940 Meriden Road in Waterbury, Connecticut (the "Host Property"). At the request of AT&T, All-Points Technology Corporation, P.C. ("APT") completed this assessment to evaluate the potential visual effects of the proposed extended Facility from within a two-mile radius (the "Study Area"). The Study Area includes portions of the neighboring municipalities of Wolcott to the north and east, Cheshire to the east, and Prospect to the south.

### **Project Setting**

The Host Property is a ±104-acre parcel located on the southern side of Meriden Road that is occupied by the New Pine Grove Cemetery and the Facility. The surrounding area consists primarily of high-density residential development. The topography within the Study Area consists of relatively hilly terrain. Ground elevations range from approximately 290 feet above mean sea level ("AMSL") in the western portion of the Study Area to approximately 837 feet AMSL in its northwestern portion. Tree cover within the Study Area (consisting primarily of mixed deciduous hardwoods with interspersed stands of conifers) occupies approximately 3,893 acres (or ±48.4%) of the 8,042-acre Study Area.

### **Project Undertaking**

The Facility consists of an existing 119' tall steel monopole tower (the "existing tower") and an associated fenced compound. AT&T is proposing to extend the existing tower by 15', bringing the top of the modified monopole to a height of ±134' above ground level ("AGL"). AT&T would install 12 panel antennas (four per sector)<sup>1</sup>, 12 remote radio heads ("RRHs"), and two (2) surge arrestors on a new frame at an approximate centerline height of 129' AGL. A 6'8" by 6'8" walk-in cabinet and a 15kW diesel fueled emergency backup generator would be installed within the existing fenced compound on new concrete pads.

Please refer to the current Site Drawings prepared by Hudson Design Group, LLC, dated January 19, 2022, and provided under separate cover, for details regarding the proposed installation.

---

<sup>1</sup> Each sector will include four (4) antennas on three (3) mounts; the middle position will contain two (2) antennas.

## Methodology

APT used the combination of a predictive computer model, in-field analysis, and a review of various data sources to evaluate the visibility associated with the proposed extended Facility on both a quantitative and qualitative basis. The predictive model provides a measurable assessment of visibility throughout the entire Area, including private properties and other areas inaccessible for direct observations. The in-field analysis consisted of a field reconnaissance of the Study Area to record existing conditions, verify results of the model, inventory seasonal and year-round view locations, and provide photographic documentation from publicly accessible areas. A description of the procedures used in the analysis is provided below.

### Preliminary Computer Modeling

To conduct this assessment, a predictive computer model was developed specifically for this project using ESRI's ArcMap GIS<sup>2</sup> software and available GIS data. The predictive model incorporates Project and Study Area-specific data, including the Facility location, its ground elevation and the proposed extended tower height, as well as the surrounding topography, existing vegetation, and structures (the primary features that can block direct lines of sight).

A digital surface model ("DSM"), capturing both the natural and built features on the Earth's surface, was generated for the extent of the Study Area utilizing State of Connecticut 2016 LiDAR<sup>3</sup> LAS<sup>4</sup> data points. LiDAR is a remote-sensing technology that develops elevation data by measuring the time it takes for laser light to return from the surface to the instrument's sensors. The varying reflectivity of objects also means that the "returns" can be classified based on the characteristics of the reflected light, normally into categories such as "bare earth," "vegetation," "road," "surface water" or "building." Derived from the 2016 LiDAR data, the LAS datasets contain the corresponding elevation point data and return classification values. The Study Area DSM incorporates the first return LAS dataset values that are associated with the highest feature in the landscape, typically a treetop, top of a building, and/or the highest point of other tall structures.

Once the DSM was generated, ESRI's Viewshed Tool was utilized to identify locations within the Study Area where the extended tower may be visible. ESRI's Viewshed Tool predicts visibility by identifying those cells<sup>5</sup> within the DSM that can be seen from an observer location. Cells where visibility was indicated were extracted and converted from a raster dataset to a polygon feature

---

<sup>2</sup> ArcMap is a Geographic Information System desktop application developed by the Environmental Systems Research Institute for creating maps, performing spatial analysis, and managing geographic data.

<sup>3</sup> Light Detection and Ranging

<sup>4</sup> An LAS file is an industry-standard binary format for storing airborne LiDAR data.

<sup>5</sup> Each DSM cell size is 1 square meter.

which was then overlaid onto aerial photograph and topographic base maps. Since the DSM includes the highest relative feature in the landscape, isolated “visible” cells are often indicated within heavily forested areas (e.g., from the top of the highest tree) or on building rooftops during the initial processing. It is recognized that these areas do not represent typical viewer locations and overstate visibility. As such, the resulting polygon feature is further refined by extracting those areas. The viewshed results are also cross-checked against the most current aerial photographs to assess whether significant changes (a new housing development, for example) have occurred since the time the LiDAR-based LAS datasets were captured.

The results of the preliminary analysis are intended to provide a representation of those areas where portions of the extended tower may potentially be visible to the human eye without the aid of magnification, based on a viewer eye-height of five (5) feet above the ground and the combination of intervening topography, trees and other vegetation, and structures. However, it may not necessarily be visible from all locations within those areas identified by the predictive model, which has its limitations. For instance, the computer model cannot account for mass density, tree diameters and branching variability of trees, or the degradation of views that occur with distance. As a result, some areas depicted on the viewshed maps as theoretically offering potential visibility of the extended tower may be over-predictive because the quality of those views is not sufficient for the human eye to recognize the Facility or discriminate it from other surrounding or intervening objects.

### **Seasonal Visibility**

Visibility also varies seasonally with increased, albeit obstructed, views occurring during “leaf-off” conditions. Beyond the variabilities associated with density of woodland stands found within any given Study Area, each individual tree also has its own unique trunk, pole timber and branching patterns that provide varying degrees of screening in leafless conditions which, as introduced above, cannot be precisely modeled. Seasonal visibility is therefore estimated based on a combination of factors including the type, size, and density of trees within a given area; topographic constraints; and other visual obstructions that may be present. Taking into account these considerations, areas depicting seasonal visibility on the viewshed maps are intended to represent locations from where there is a potential for views through intervening trees, as opposed to indicating that leaf-off views will exist from within an entire seasonally-shaded area.

## **Balloon Float and Field Reconnaissance**

To supplement and fine tune the results of the computer modeling efforts, APT completed in-field verification activities consisting of vehicular and pedestrian reconnaissance, and photo-documentation. The field reconnaissance was completed on December 20, 2021. Weather conditions were favorable for the in-field activities with mostly clear skies.

APT conducted a Study Area reconnaissance by driving along local and State roads and other publicly accessible locations to document and inventory where the existing tower could be seen above and through the tree canopy and other visual obstructions. Visual observations from the reconnaissance were also used to evaluate the results of the preliminary visibility mapping and identify any discrepancies in the initial modeling.

## **Photographic Documentation and Simulations**

During the Study Area reconnaissance, APT obtained photo-documentation of representative locations where the Facility was – and was not - visible. At each photo location, the geographic coordinates of the camera’s position were logged using global positioning system (“GPS”) technology. Photographs were taken with a Canon EOS 6D digital camera body<sup>6</sup> and Canon EF 24 to 105 millimeter (“mm”) zoom lens. APT typically uses a standard focal length of 50mm to present a consistent field of view. On occasion, photos are taken at lower focal lengths to provide a greater depth of field and to provide context to the scene by including surrounding features within the photograph. During this evaluation, two (2) photographs were taken at a 35mm focal length as noted in Table 1 – Photo Locations.

Photographic simulations were generated to portray scaled renderings of the proposed extended tower from 18 locations presented herein where it may be recognizable above or through the trees. Using field data, site plan information and 3-dimensional (3D) modeling software, spatially referenced models of the existing Facility and proposed extension were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo-simulations were then created using a combination of renderings generated in the 3D model and photo-rendering software programs, which were ultimately composited and merged with the existing conditions photographs (using Adobe Photoshop image editing software). The scale of the subjects in the photograph (the existing tower) and the corresponding simulation (the extended Facility) is proportional to their surroundings.

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<sup>6</sup> The Canon EOS 6D is a full-framed camera which includes a lens receptor of the same size as the film used in 35mm cameras. As such, the images produced are comparable to those taken with a conventional 35mm camera.



For presentation purposes in this report, the photographs were produced in an approximate 7-inch by 10.5-inch format. When reproducing the images in this format size, we believe it is important to present the largest view while providing key contextual landscape elements (existing developments, street signs, utility poles, etc.) so that the viewer can determine the proportionate scale of each object within the scene. Photo-documentation of the field reconnaissance and photo-simulations of the proposed extended Facility are presented in the attachment at the end of this report. All simulations were created to represent the proposed monopole extension and additional antennas and infrastructure. The photo-simulations are intended to provide the reader with a general understanding of the different view characteristics associated with the Facility modifications from various locations. Photographs were taken from publicly accessible areas and unobstructed view lines were chosen wherever possible.

Table 1 – Photo Locations summarizes the photographs and simulations presented in the attachment to this report, and includes a description of each location, view orientation, distance from where the photo was taken relative to the Facility location, and the general characteristics of the view. The photo locations are depicted on the photolog and viewshed maps provided as attachments to this report.

**Table 1 – Photo Locations**

<b>Photo</b>	<b>Location</b>	<b>Orientation</b>	<b>Distance to Facility</b>	<b>Visibility</b>
1	New Pine Grove Cemetery	North	± 0.20 Mile	Year Round
2	Meriden Road at Webster Street	West	± 0.20 Mile	Year Round
3	Alexander Avenue	Southwest	± 0.23 Mile	Not Visible
4	Alexander Avenue	Southwest	± 0.18 Mile	Year Round
5	Oldham Avenue	Southwest	± 0.24 Mile	Year Round
6	National Avenue	Southeast	± 0.38 Mile	Seasonal
7	National Avenue at Meriden Road	Southeast	± 0.17 Mile	Year Round
8	Capitol Avenue*	Southeast	± 0.22 Mile	Not Visible
9	Capitol Avenue	Southeast	± 0.21 Mile	Year Round
10	Capitol Avenue at Meriden Road	Southeast	± 0.19 Mile	Seasonal
11	Frost Road	Northeast	± 0.11 Mile	Seasonal
12	Meriden Road	East	± 0.12 Mile	Year Round
13	Meriden Road	East	± 0.55 Mile	Year Round
14	Meriden Road	East	± 0.66 Mile	Year Round
15	Mansfield Road	Southeast	± 0.75 Mile	Year Round
16	Mansfield Road	Southeast	± 0.69 Mile	Year Round
17	Woodtick Road*	Southeast	± 0.62 Mile	Not Visible
18	Woodtick Road	Southeast	± 0.61 Mile	Year Round
19	Melchizedek Cemetery	Northeast	± 1.28 Miles	Year Round
20	Farrell Road	Northeast	± 1.40 Miles	Year Round
21	Calvary Cemetery	Northeast	± 0.99 Mile	Year Round

*\*Photograph was taken at 35 mm focal length.*

## **Final Visibility Mapping**

Information obtained during the field reconnaissance was incorporated into the mapping data layers, including observations of the field reconnaissance, the photograph locations, areas that experienced recent land use changes and those places where the initial model was found to over or under-predict visibility. Once the additional data was integrated into the model, APT recalculated the visibility of the proposed extended Facility within the Study Area.

### **Conclusions**

The proposed extended Facility is not predicted to significantly increase the visibility of the Facility as compared to the existing tower. Based on the results of the viewshed analysis, year-round visibility of the existing tower is predicted to increase  $\pm 10$  acres in total with the proposed extension; from  $\pm 56$  acres to  $\pm 66$  acres. The proposed extended Facility would not substantially change the extent of seasonal visibility ( $\pm 78$  acres). Collectively, the extended tower may be visible from a total of  $\pm 143$  acres.

Currently, year-round visibility of the Facility occurs generally in three areas: within  $\pm 0.5$  mile south of the Facility; to the west along Meriden Road between  $\pm 0.5$  mile and  $\pm 0.75$  mile from the Facility; and, along portions of the Interstate 84 ("I-84") corridor that bisects the southern portion of the Study Area from east to west. As presented on the attached viewshed maps, the 15-foot extension of the tower would increase year-round visibility in a few isolated areas. However, the slight increase in visibility would not significantly alter the characteristics of the area. Photos 2, 5, and 7 depict representative year-round views within  $\pm 0.25$  of the Facility. Photos 12, 13, and 14 depict representative year-round views along Meriden Road to the west. Photos 19 and 20 depict representative views from locations adjacent to the I-84 corridor.

Similar to existing conditions, seasonal views would extend primarily to locations within  $\pm 0.25$  to  $\pm 0.5$ -mile of the Facility. Photos 6, 9 and 11 depict representative seasonal views within the Study Area.

### **Proximity to Schools And Commercial Child Day Care Centers**

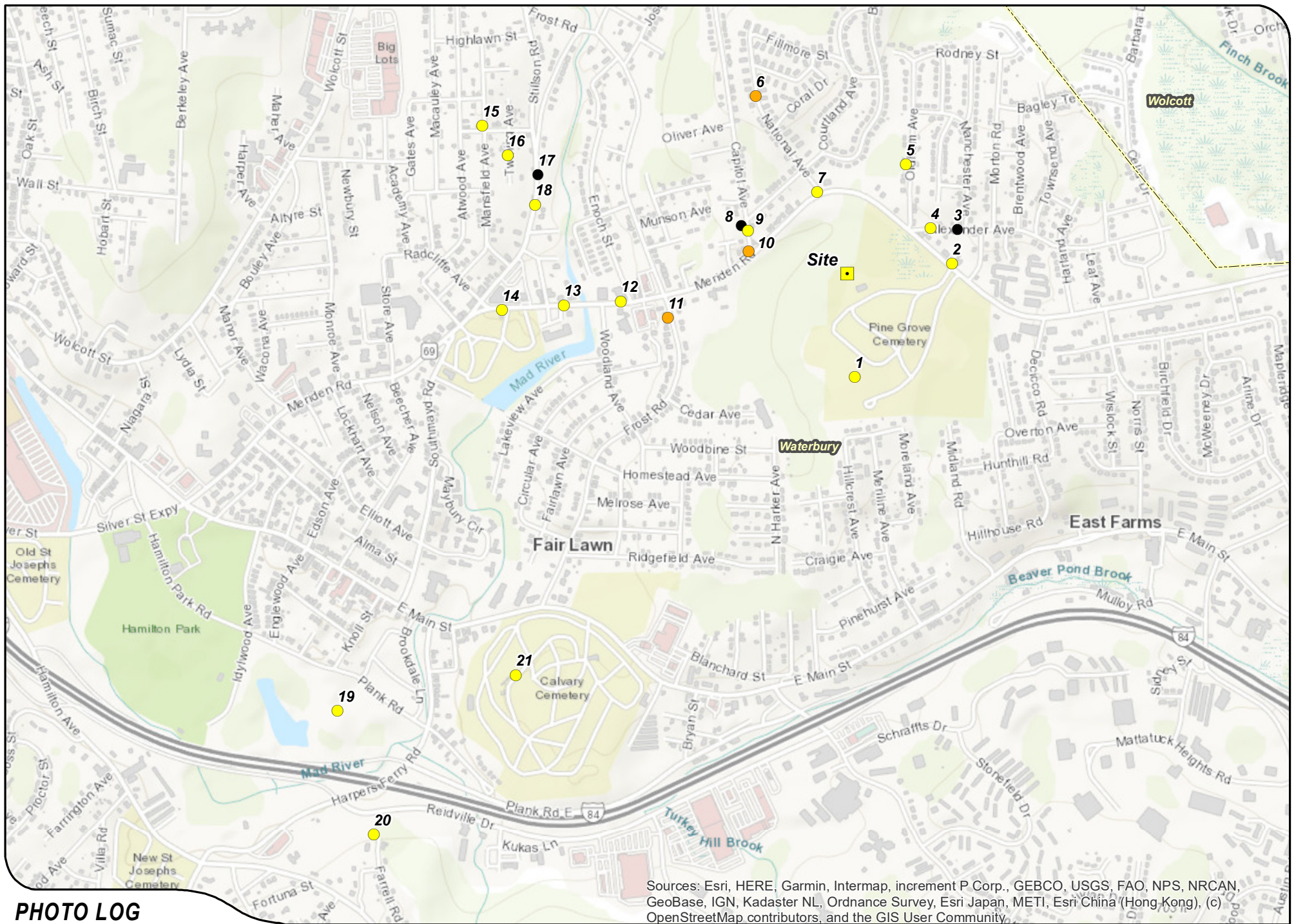
No schools or commercial day care centers are located within 250 feet of the Facility. Chase Elementary School is located approximately 0.6 mile west at 40 Woodtick Road in Waterbury. Visibility of the existing tower occurs in the vicinity of the school along Meriden Road (see Photo 14 which was taken immediately south of the school property). The nearest commercial child care center, It Takes A Village Child Care, is located approximately 0.53 mile to the south of the Facility at 102 Meriline Avenue in Waterbury. No visibility is predicted from or in the vicinity of the day care center.

## **Limitations**

The viewshed maps presented in the attachment to this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of five (5) feet above the ground and intervening topography, tree canopy, and structures. This analysis may not account for all visible locations, as it is based on the combination of computer modeling, incorporating aerial photographs, and in-field observations from publicly accessible locations. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

The photo-simulations provide a representation of the Facility under similar settings as those encountered during the field review and reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the field review included mostly sunny skies.

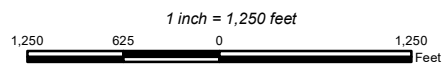
## **ATTACHMENTS**



# PHOTO LOG

## Legend

- Site
- Year-Round
- Seasonal
- Not Visible
- Municipal Boundary





PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

1

LOCATION

**NEW PINE GROVE CEMETERY**

ORIENTATION

**NORTH**

DISTANCE TO SITE

**+/- 0.20 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	<b>NEW PINE GROVE CEMETERY</b>	<b>NORTH</b>	<b>+/- 0.20 MILE</b>	<b>YEAR ROUND</b>





PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	MERIDEN ROAD AT WEBSTER STREET	WEST	+/- 0.20 MILE	YEAR ROUND



**PROPOSED**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	MERIDEN ROAD AT WEBSTER STREET	WEST	+/- 0.20 MILE	YEAR ROUND



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	ALEXANDER AVENUE	SOUTHWEST	+/- 0.23 MILE	NOT VISIBLE



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

4

LOCATION

**ALEXANDER AVENUE**

ORIENTATION

**SOUTHWEST**

DISTANCE TO SITE

**+/- 0.18 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO

4

LOCATION

**ALEXANDER AVENUE**

ORIENTATION

**SOUTHWEST**

DISTANCE TO SITE

**+/- 0.18 MILE**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2017

**EXISTING**

PHOTO

5

LOCATION

**OLDHAM AVENUE**

ORIENTATION

**SOUTHWEST**

DISTANCE TO SITE

**+/- 0.24 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO

5

LOCATION

**OLDHAM AVENUE**

ORIENTATION

**SOUTHWEST**

DISTANCE TO SITE

**+/- 0.24 MILE**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

6

LOCATION

**NATIONAL AVENUE**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.38 MILE**

VISIBILITY

**SEASONAL**





**PROPOSED**

PHOTO

6

LOCATION

**NATIONAL AVENUE**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.38 MILE**

VISIBILITY

**SEASONAL**



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

7

LOCATION

**NATIONAL AVENUE AT MERIDEN ROAD**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.17 MILE**

VISIBILITY

**YEAR ROUND**





**PROPOSED**

PHOTO

7

LOCATION

**NATIONAL AVENUE AT MERIDEN ROAD**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.17 MILE**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2021 35mm focal length

**EXISTING**

PHOTO

8

LOCATION

**CAPITOL AVENUE**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.22 MILE**

VISIBILITY

**NOT VISIBLE**



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

9

LOCATION

**CAPITOL AVENUE**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.21 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	CAPITOL AVENUE	SOUTHEAST	+/- 0.21 MILE	YEAR ROUND



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

**10**

LOCATION

**CAPITOL AVENUE AT MERIDEN ROAD**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.19 MILE**

VISIBILITY

**SEASONAL**



**PROPOSED**

PHOTO

**10**

LOCATION

**CAPITOL AVENUE AT MERIDEN ROAD**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.19 MILE**

VISIBILITY

**SEASONAL**





PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

11

LOCATION

**FROST ROAD**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 0.11 MILE**

VISIBILITY

**SEASONAL**



**PROPOSED**

PHOTO

11

LOCATION

FROST ROAD

ORIENTATION

NORTHEAST

DISTANCE TO SITE

+/- 0.11 MILE

VISIBILITY

SEASONAL



PHOTOGRAPHED ON 12/20/2017

**EXISTING**

PHOTO

12

LOCATION

**MERIDEN ROAD**

ORIENTATION

**EAST**

DISTANCE TO SITE

**+/- 0.12 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO

12

LOCATION

**MERIDEN ROAD**

ORIENTATION

**EAST**

DISTANCE TO SITE

**+/- 0.12 MILE**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

13

LOCATION

**MERIDEN ROAD**

ORIENTATION

**EAST**

DISTANCE TO SITE

**+/- 0.55 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO

13

LOCATION

**MERIDEN ROAD**

ORIENTATION

**EAST**

DISTANCE TO SITE

**+/- 0.55 MILE**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2017

**EXISTING**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	MERIDEN ROAD	EAST	+/- 0.66 MILE	YEAR ROUND



**PROPOSED**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	MERIDEN ROAD	EAST	+/- 0.66 MILE	YEAR ROUND





PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

15

LOCATION

**MANSFIELD AVENUE**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.75 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO

15

LOCATION

**MANSFIELD AVENUE**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.75 MILE**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2017

**EXISTING**

PHOTO

16

LOCATION

**MANSFIELD AVENUE**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.69 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO

16

LOCATION

**MANSFIELD AVENUE**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.69 MILE**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2021  
35mm focal length

**EXISTING**

PHOTO

17

LOCATION

WOODTICK ROAD

ORIENTATION

SOUTHEAST

DISTANCE TO SITE

+/- 0.62 MILE

VISIBILITY

NOT VISIBLE



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

18

LOCATION

WOODTICK ROAD

ORIENTATION

SOUTHEAST

DISTANCE TO SITE

+/- 0.61 MILE

VISIBILITY

YEAR ROUND



**PROPOSED**

PHOTO

**18**

LOCATION

**WOODTICK ROAD**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 0.61 MILE**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2017

**EXISTING**

PHOTO

19

LOCATION

**MELCHIZEDEK CEMETERY**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 1.28 MILES**

VISIBILITY

**YEAR ROUND**





**PROPOSED**

PHOTO

19

LOCATION

**MELCHIZEDEK CEMETERY**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 1.28 MILES**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

20

LOCATION

**FARRELL ROAD**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 1.40 MILES**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO

20

LOCATION

**FARRELL ROAD**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 1.40 MILES**

VISIBILITY

**YEAR ROUND**



PHOTOGRAPHED ON 12/20/2021

**EXISTING**

PHOTO

21

LOCATION

**CALVARY CEMETERY**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 0.99 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**

PHOTO

21

LOCATION

**CALVARY CEMETERY**

ORIENTATION

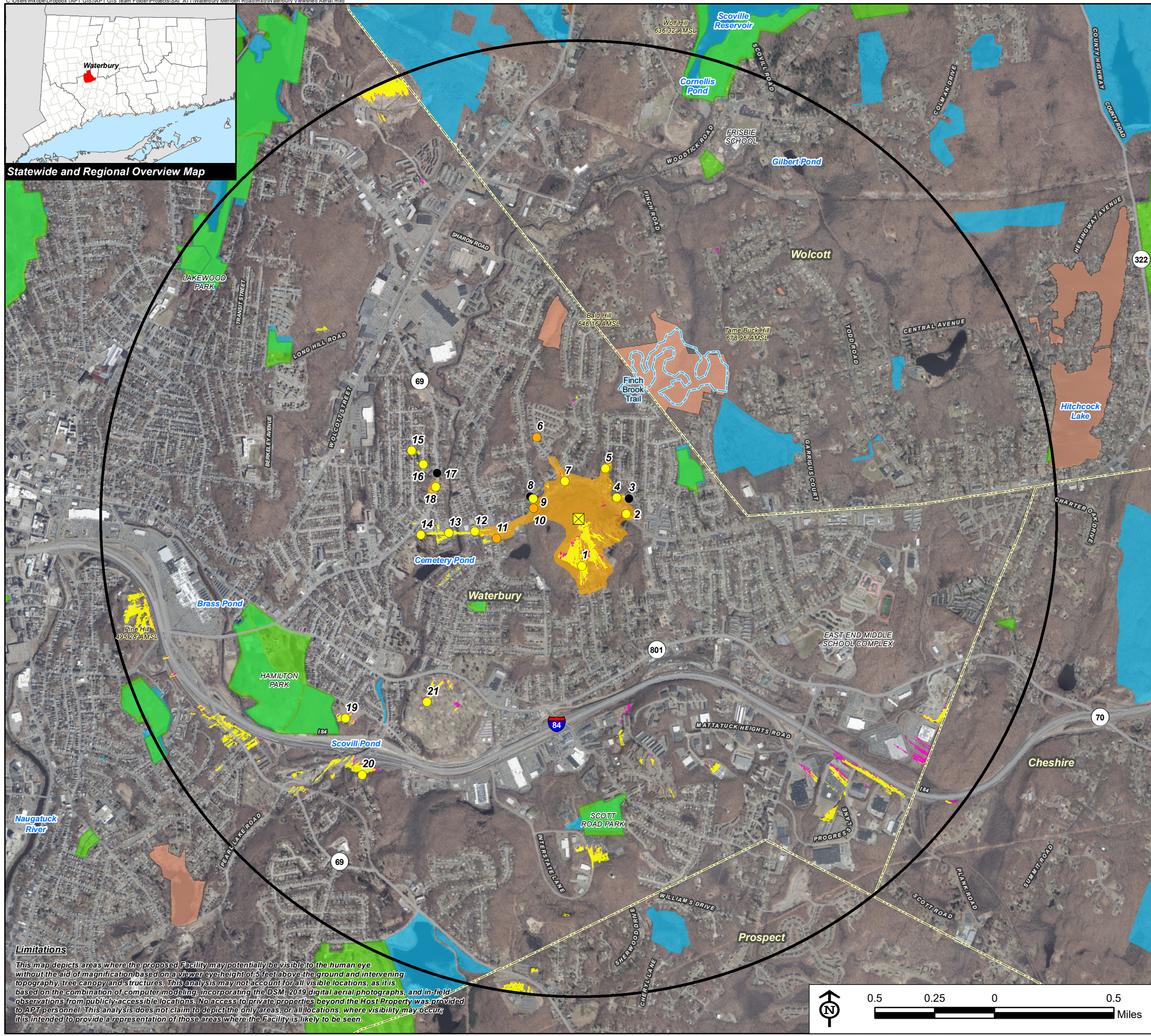
**NORTHEAST**

DISTANCE TO SITE

**+/- 0.99 MILE**

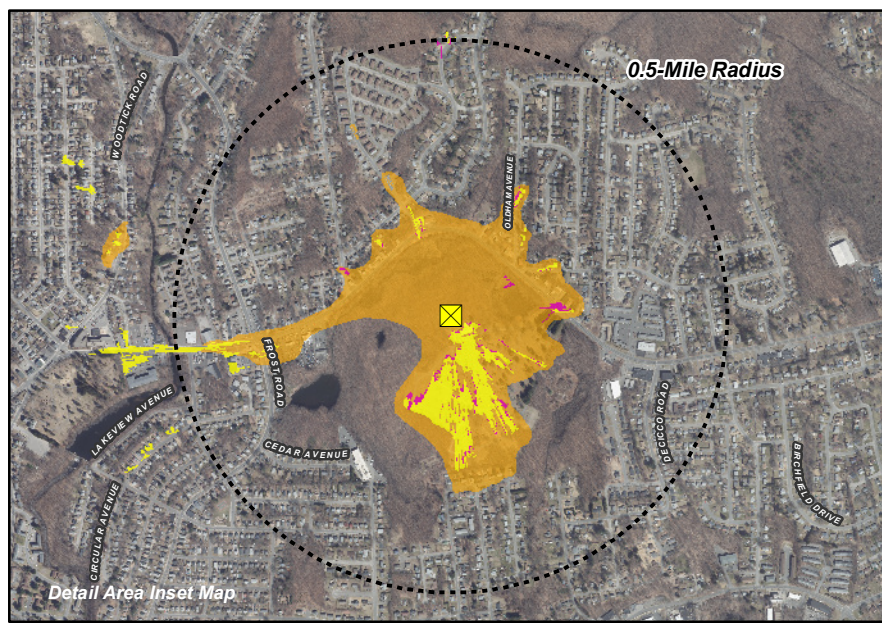
VISIBILITY

**YEAR ROUND**



Statewide and Regional Overview Map

**Limitations**  
 This map depicts areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground and intervening topography, tree canopy and structures. This analysis may not account for all visible locations, as it is based on the combination of computer modeling, incorporating the DSM, 2019 digital aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties beyond the Host Property was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.



## Comparative Viewshed Analysis Map

Proposed Wireless Telecommunications Facility Extension  
 CT1374 - Waterbury Meriden Road  
 940 Meriden Road  
 Waterbury, Connecticut

Existing facility height is 119 feet AGL; Proposed facility height is 134 feet AGL.  
 Forest canopy height is derived from LiDAR data.  
 Study area encompasses a two-mile radius and includes 8,042 acres.  
 Existing conditions field verified by APT on December 20, 2021  
 Base Map Source: 2019 Aerial Photograph (CTECO)  
 Map Date: January 2022

**Legend**

- Facility Location
- Study Area (2-Mile Radius)
- Year-Round Visibility 119' AGL and 134' AGL (56 Acres)
- Additional Year-Round Visibility 134' AGL (10 Acres)
- Areas of Potential Seasonal Visibility - 119' AGL and/or 134' AGL (78 Acres)
- Not Visible
- Seasonal
- Year-Round
- Municipal Boundary
- Trail
- Scenic Highway
- DEEP Boat Launches
- Municipal and Private Open Space Property
- State Forest/Park
- Protected Open Space Property**
- Federal
- Land Trust
- Municipal
- Private
- State

**Data Sources:**

**Physical Geography / Background Data**  
 A digital surface model (DSM) was created from the State of Connecticut 2016 LiDAR LAS data points. The DSM captures the natural and built features on the Earth's surface.

Municipal Open Space, State Recreation Areas, Trails, County Recreation Areas, and Town Boundary data obtained from CT DEEP. Scenic Roads: CTDOT State Scenic Highways (2015); Municipal Scenic Roads (compiled by APT)

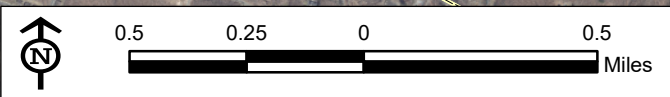
**Dedicated Open Space & Recreation Areas**  
 Connecticut Department of Energy and Environmental Protection (DEEP): DEEP Property (May 2007); Federal Open Space (1997); Municipal and Private Open Space (1997); DEEP Boat Launches (1994)

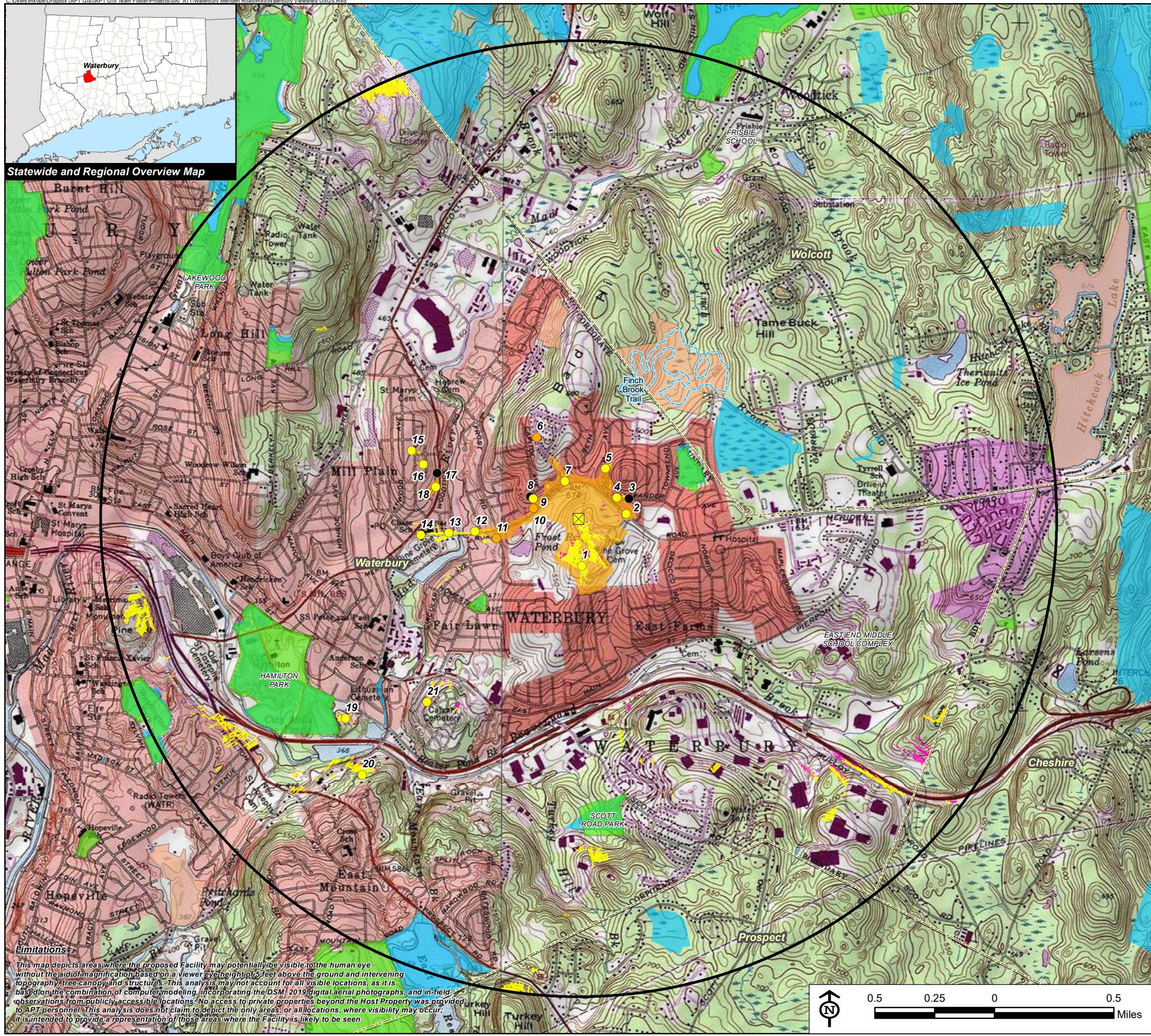
Connecticut Forest & Parks Association, Connecticut Walk Books East & West

**Other**  
 CTDOT Scenic Strips (based on Department of Transportation data)

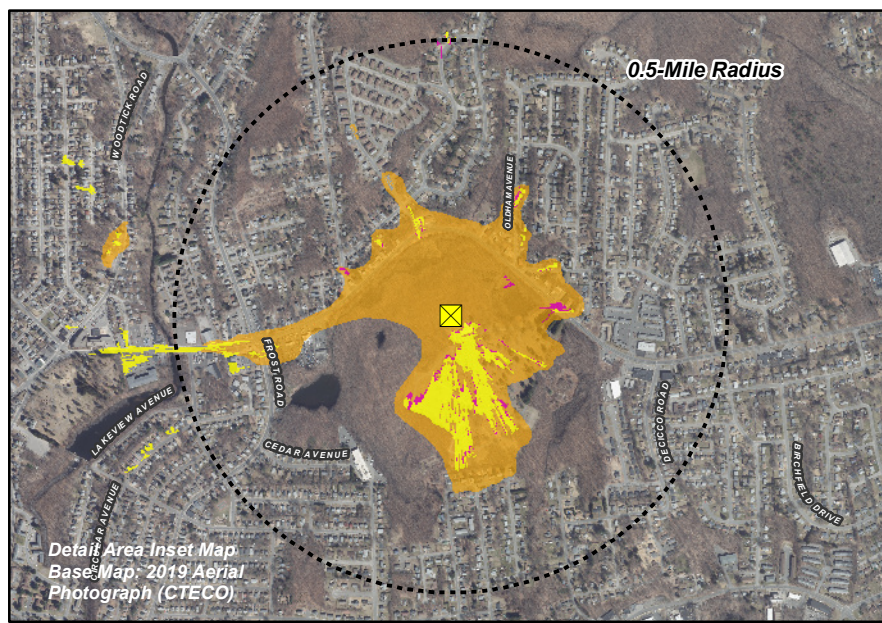
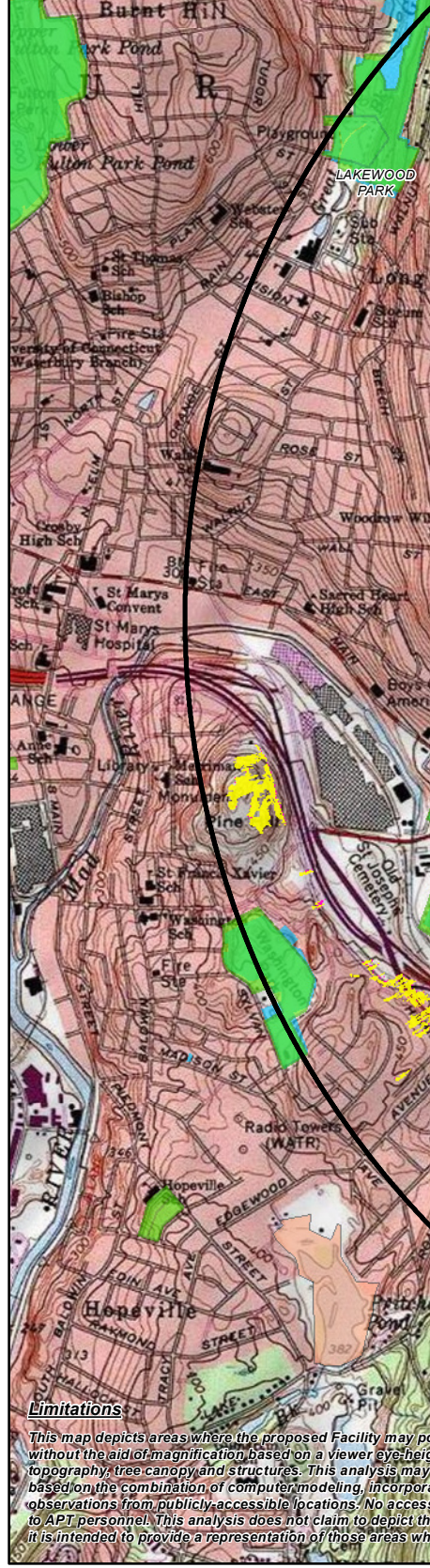
**Notes**

\*\*Not all the sources listed above appear on the Viewshed Maps. Only those features within the scale of the graphic are shown.





**Statewide and Regional Overview Map**



**Comparative Viewshed Analysis Map**

Proposed Wireless Telecommunications Facility Extension  
 CT1374 - Waterbury Meriden Road  
 940 Meriden Road  
 Waterbury, Connecticut

Existing facility height is 119 feet AGL; Proposed facility height is 134 feet AGL.  
 Forest canopy height is derived from LIDAR data.  
 Study area encompasses a two-mile radius and includes 8,042 acres.  
 Existing conditions field verified by APT on December 20, 2021  
 Base Map Source: USGS 7.5 Minute Topographic Quadrangle Maps, Southington, CT (1992) and Waterbury, CT (1984)  
 Map Date: January 2022

**Legend**

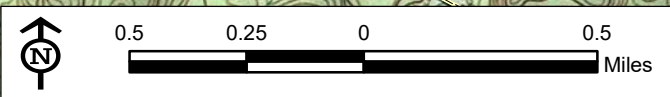
- Facility Location
- Study Area (2-Mile Radius)
- Year-Round Visibility 119' AGL and 134' AGL (56 Acres)
- Additional Year-Round Visibility 134' AGL (10 Acres)
- Areas of Potential Seasonal Visibility - 119' AGL and/or 134' AGL (78 Acres)
- Municipal Boundary
- Trail
- Scenic Highway
- DEEP Boat Launches
- Municipal and Private Open Space Property
- State Forest/Park
- Protected Open Space Property**
- Federal
- Land Trust
- Municipal
- Private
- State

**Photo Locations (December 20, 2021)**

- Not Visible
  - Seasonal
  - Year-Round
  - Municipal Boundary
  - Not Visible
  - Seasonal
  - Year-Round
  - Municipal Boundary
- Data Sources:**  
**Physical Geography / Background Data**  
 A digital surface model (DSM) was created from the State of Connecticut 2016 LIDAR LAS data points. The DSM captures the natural and built features on the Earth's surface.  
 Municipal Open Space, State Recreation Areas, Trails, County Recreation Areas, and Town Boundary data obtained from CT DEEP. Scenic Roads: CTDOT State Scenic Highways (2015); Municipal Scenic Roads (compiled by APT)  
**Dedicated Open Space & Recreation Areas**  
 Connecticut Department of Energy and Environmental Protection (DEEP): DEEP Property (May 2007); Federal Open Space (1997); Municipal and Private Open Space (1997); DEEP Boat Launches (1994)  
 Connecticut Forest & Parks Association, Connecticut Walk Books East & West  
**Other**  
 CTDOT Scenic Strips (based on Department of Transportation data)

**Notes**  
 \*\*Not all the sources listed above appear on the Viewshed Maps. Only those features within the scale of the graphic are shown.

**Limitations**  
 This map depicts areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye height of 5 feet above the ground and intervening topography, tree canopy and structures. This analysis may not account for all visible locations, as it is based on the combination of computer modeling, incorporating the DSM, 2019 digital aerial photographs, and in-field observations from publicly accessible locations. No access to private properties beyond the Host Property was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.



# **ATTACHMENT 8**

RF Exposure Analysis





C Squared Systems, LLC  
65 Dartmouth Drive  
Auburn, NH 03032  
603-644-2800  
[support@csquaredsystems.com](mailto:support@csquaredsystems.com)

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## Calculated Radio Frequency Exposure



CT1374

940 Meriden Road, Waterbury, CT

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March 30, 2022

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## 1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of AT&T antenna arrays on an extension of the existing tower located off 940 Meriden Road in Waterbury CT. The coordinates of the existing tower are 41-33-11.77 N, 72-59-36.15 W.

AT&T is proposing the following:

- 1) Install twelve (12) multi-band antennas (four (4) per sector) to support its commercial LTE network and the FirstNet National Public Safety Broadband Network (“NPSBN”).

This report considers the planned antenna configuration for AT&T<sup>1</sup> to derive the resulting % Maximum Permissible Exposure of its proposed installation.

## 2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm<sup>2</sup>). The general population exposure limits for the various frequency ranges are defined in the attached “FCC Limits for Maximum Permissible Exposure (MPE)” in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

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<sup>1</sup> As referenced to AT&T’s Radio Frequency Design Sheet dated 3/10/2021.

### 3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

$$\text{Power Density} = \left( \frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

ERP = Effective Radiated Power

R = Radial Distance =  $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not consider actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

## 4. Calculation Results

Table 1 below outlines the cumulative power density information for the AT&T modification on the existing tower at the site. The proposed antennas are directional in nature; therefore, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm <sup>2</sup> )	Limit	% MPE
Nextel	107	851	12	50	0.0212	0.567	0.37%
Clearwire	117	11 GHz	1	211	0.0062	1.000	0.06%
Sprint	117	850	1	433	0.0126	0.567	0.22%
Clearwire	117	850	2	433	0.0253	0.567	0.45%
Clearwire	117	1900	5	536	0.0782	1.000	0.78%
Clearwire	117	1900	2	1340	0.0782	1.000	0.78%
Clearwire	117	2500	8	640	0.1494	1.000	1.49%
MetroPCS	77	2135	3	727	0.1556	1.000	1.56%
MetroPCS	77	2130	1	1200	0.0856	1.000	0.86%
T-Mobile	99	1900	4	1167	0.1941	1.000	1.94%
T-Mobile	99	1900	2	1167	0.0970	1.000	0.97%
T-Mobile	99	2100	2	1167	0.0970	1.000	0.97%
T-Mobile	99	600	2	592	0.0492	0.400	1.23%
T-Mobile	99	600	1	1578	0.0656	0.400	1.64%
T-Mobile	99	700	2	649	0.0540	0.467	1.16%
T-Mobile	99	1900	2	2204	0.1833	1.000	1.83%
T-Mobile	99	2500	2	6413	0.5333	1.000	5.33%
T-Mobile	99	2500	2	6413	0.5333	1.000	5.33%
T-Mobile	99	1900	2	2057	0.1711	1.000	1.71%
T-Mobile	99	2100	2	2308	0.1919	1.000	1.92%
Verizon	87	751	4	623	0.1366	0.501	2.73%
Verizon	87	874	4	616	0.1351	0.583	2.32%
Verizon	87	1975	4	1428	0.3131	1.000	3.13%
Verizon	87	2120	4	1496	0.3280	1.000	3.28%
Verizon	87	3730	4	6531	1.4319	1.000	14.32%
AT&T	129	739	1	3156	0.0075	0.493	1.52%
AT&T	129	763	1	3541	0.0084	0.509	1.66%
AT&T	129	885	1	3883	0.0092	0.590	1.56%
AT&T	129	1900	1	5877	0.0140	1.000	1.40%
AT&T	129	2100	1	9890	0.0235	1.000	2.35%
AT&T	129	2300	1	6153	0.0146	1.000	1.46%
AT&T	130.67	3500	1	24286	0.0562	1.000	5.62%
AT&T	127.25	3500	1	24286	0.0594	1.000	5.94%
<b>Total</b>							<b>77.91%</b>

**Table 1: Carrier Information<sup>2</sup>**

<sup>2</sup> The power density information for Verizon, Sprint, Nextel, Clearwire, Metro PCS, and T-Mobile was taken directly from the CSC database dated 01/21/2022. Please note that % MPE values listed are rounded to two decimal points and the total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total value reflected in the table.

## 5. Conclusion

The above analysis concludes that RF exposure at ground level from the proposed facility will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the highest expected percent of Maximum Permissible Exposure at ground level is **77.91% of the FCC General Population/Uncontrolled limit.**

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

## 6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in FCC OET Bulletin 65 Edition 97-01, ANSI/IEEE Std. C95.1 and ANSI/IEEE Std. C95.3.



March 30, 2022

Date

Reviewed/Approved By: Martin J. Lavin  
Senior RF Engineer  
C Squared Systems, LLC

### **Attachment A: References**

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

**Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)**

**(A) Limits for Occupational/Controlled Exposure<sup>3</sup>**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

**(B) Limits for General Population/Uncontrolled Exposure<sup>4</sup>**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz \* Plane-wave equivalent power density

**Table 2: FCC Limits for Maximum Permissible Exposure (MPE)**

<sup>3</sup> Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

<sup>4</sup> General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure



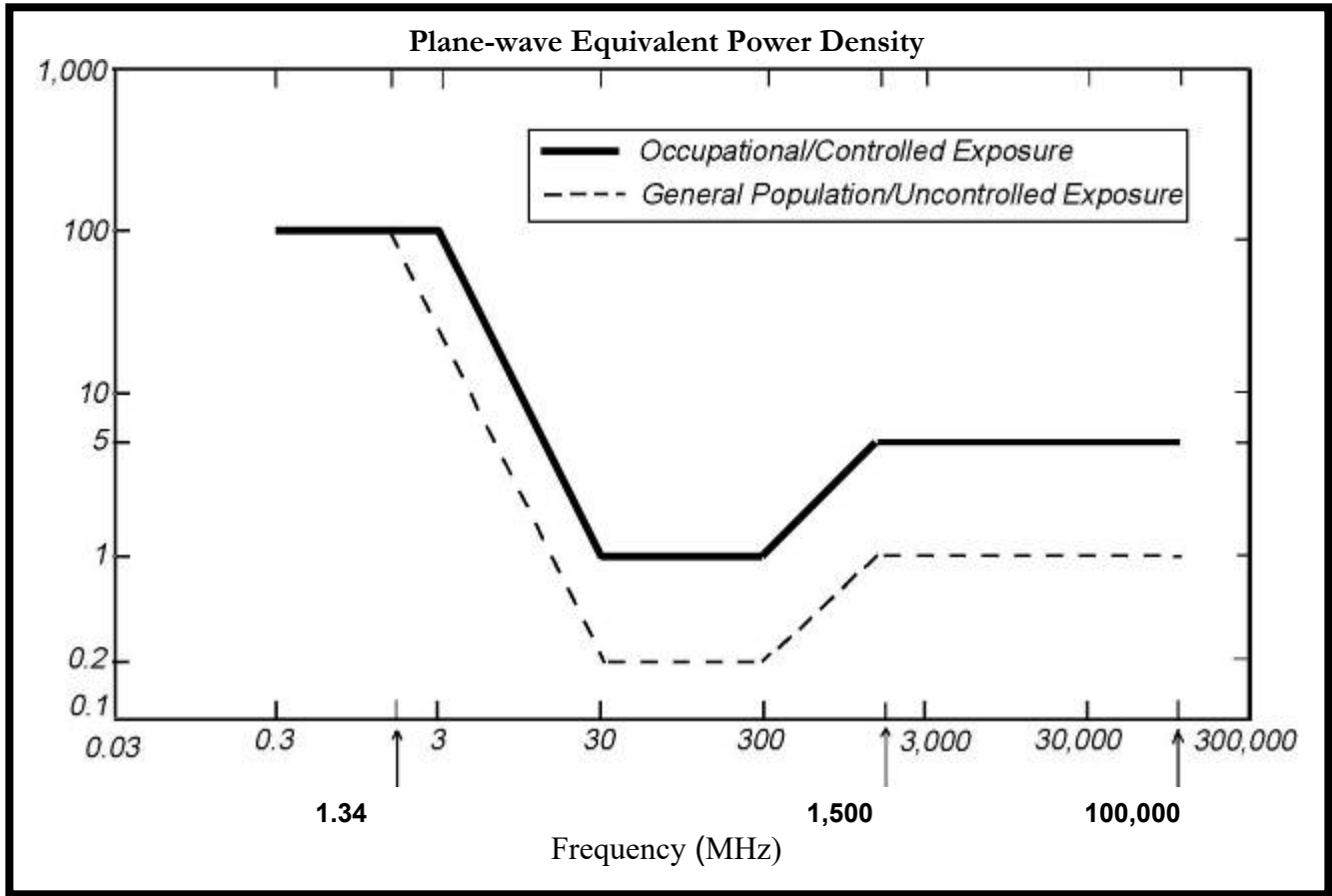
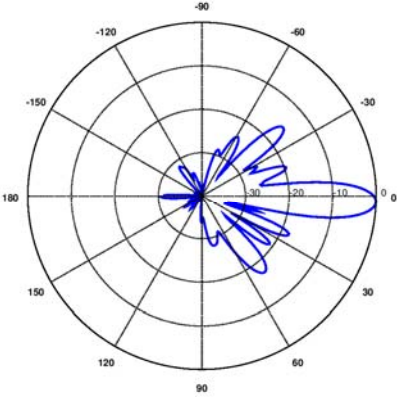
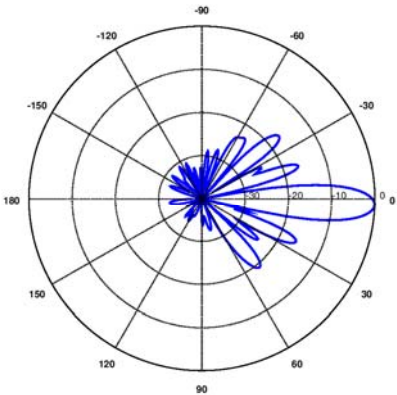
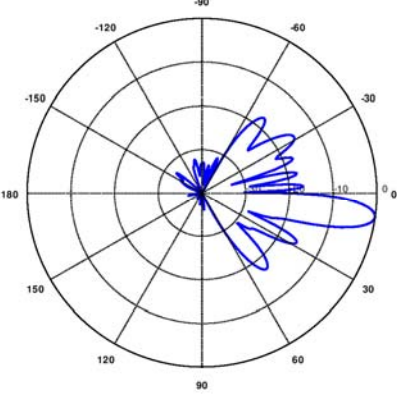
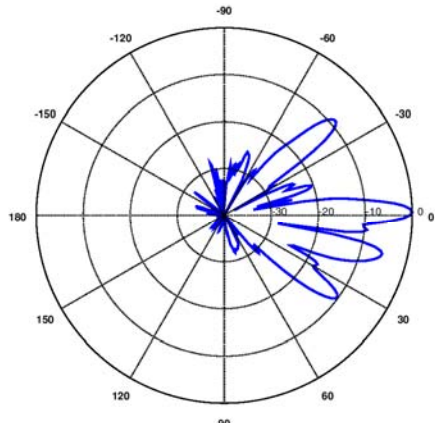
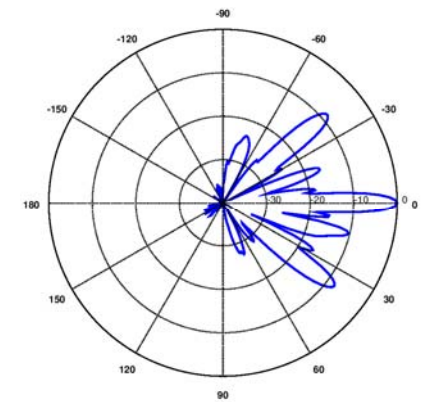
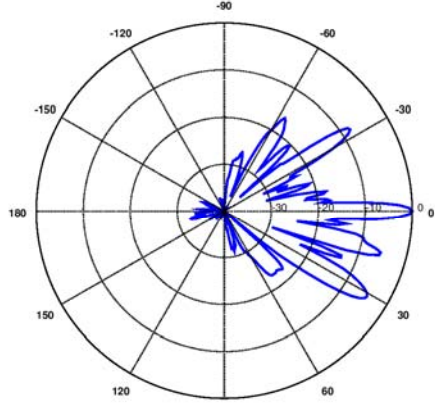


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

**Attachment C: AT&T Antenna Data Sheets and Electrical Patterns**

<p><b>700 MHz</b></p> <p>Manufacturer: CCI Products            Model #: TPA65R-BU8D            Frequency Band: 698-798 MHz            Gain: 15.6 dBi            Vertical Beamwidth: 9.5°            Horizontal Beamwidth: 74°            Polarization: Dual Linear 45°            Size L x W x D: 96.0" x 20.7" x 7.7"</p>	
<p><b>700 MHz</b></p> <p>Manufacturer: CCI Products            Model #: DMP65R-BU8D            Frequency Band: 698 - 806MHz            Gain: 15.1 dBi            Vertical Beamwidth: 9.5°            Horizontal Beamwidth: 75°            Polarization: Dual Linear 45°            Size L x W x D: 96.0" x 20.7" x 7.7"</p>	
<p><b>885 MHz</b></p> <p>Manufacturer: CCI Products            Model #: DMP65R-BU8D            Frequency Band: 824 - 896 MHz            Gain: 16.0 dBi            Vertical Beamwidth: 8.0°            Horizontal Beamwidth: 64°            Polarization: Dual Linear 45°            Size L x W x D: 96.0" x 20.7" x 7.7"</p>	

<p><b>1900 MHz</b></p> <p>Manufacturer: CCI Products            Model #: DMP65R-BU8D            Frequency Band: 1850-1990 MHz            Gain: 17.8 dBi            Vertical Beamwidth: 5.1°            Horizontal Beamwidth: 68°            Polarization: Dual Linear 45°            Size L x W x D: 96.0" x 20.7" x 7.7"</p>	 <p>A polar plot showing the radiation pattern for 1900 MHz. The plot is circular with concentric rings representing gain levels and radial lines representing angles from 0 to 180 degrees. The main beam is centered at 0 degrees, extending to approximately 30 degrees on either side. There are several smaller side lobes, with the largest ones located between 30 and 60 degrees.</p>
<p><b>2100 MHz</b></p> <p>Manufacturer: CCI Products            Model #: TPA65R-BU8D            Frequency Band: 1920-2180 MHz            Gain: 18.3 dBi            Vertical Beamwidth: 4.7°            Horizontal Beamwidth: 67°            Polarization: Dual Linear 45°            Size L x W x D: 96.0" x 20.7" x 7.7"</p>	 <p>A polar plot showing the radiation pattern for 2100 MHz. The plot is circular with concentric rings representing gain levels and radial lines representing angles from 0 to 180 degrees. The main beam is centered at 0 degrees, extending to approximately 30 degrees on either side. There are several smaller side lobes, with the largest ones located between 30 and 60 degrees.</p>
<p><b>2300 MHz</b></p> <p>Manufacturer: CCI Products            Model #: TPA65R-BU8D            Frequency Band: 2300-2400 MHz            Gain: 18.1 dBi            Vertical Beamwidth: 4.1°            Horizontal Beamwidth: 54°            Polarization: Dual Linear 45°            Size L x W x D: 96.0" x 20.7" x 7.7"</p>	 <p>A polar plot showing the radiation pattern for 2300 MHz. The plot is circular with concentric rings representing gain levels and radial lines representing angles from 0 to 180 degrees. The main beam is centered at 0 degrees, extending to approximately 27 degrees on either side. There are several smaller side lobes, with the largest ones located between 30 and 60 degrees.</p>

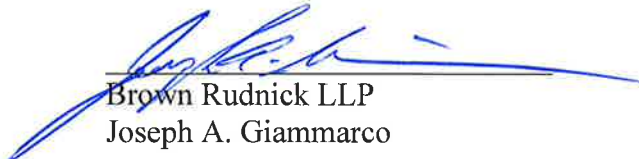
# **ATTACHMENT 9**

Certificate of Services

## CERTIFICATE OF SERVICE

I hereby certify that on the 3rd day of May, 2022, a copy of the following letter and Sub-Petition for a declaratory ruling filed with the Connecticut Siting Council was sent by certified mail, return receipt requested, to the attached list of City officials:

Dated: May 3, 2022

  
Brown Rudnick LLP  
Joseph A. Giammarco

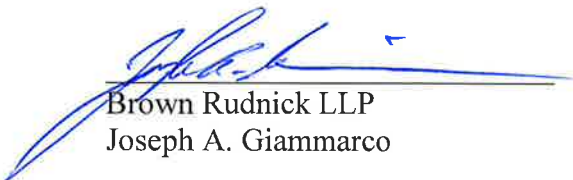
### City of Waterbury

Mayor Neil M. O'Leary City Hall 235 Grand Street Waterbury, CT 06702	Robert Nerney, City Planner 185 South Main Street, 5 <sup>th</sup> Floor Waterbury, CT 06706
Michael J. Dalton, City Clerk City Hall 235 Grand Street Waterbury, CT 06702	

## CERTIFICATE OF SERVICE

I hereby certify that on the 3rd day of May, 2022, a copy of the following letter and Sub-Petition for a declaratory ruling filed with the Connecticut Siting Council was sent by certified mail, return receipt requested, to the attached list of abutting property owners:

Dated: May 3, 2022

  
Brown Rudnick LLP  
Joseph A. Giammarco

SILVER STAR INVESTMENTS LLC 77 CENTRAL AVE #1 WATERTOWN, CT 06792 Parcel ID 0302-0371-0036 <i>Identified as parcel A on Abutters Map</i>	PROFESSIONAL RENTALS LLC P.O. BOX 4400 WATERBURY, CT 06704 Parcel ID 0302-0371-0037 <i>Identified as parcel B on Abutters Map</i>
RIVERA, ESPERANZA 631 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0371-0044 <i>Identified as parcel C on Abutters Map</i>  Parcel ID 0302-0371-0045 <i>Identified as parcel D on Abutters Map</i>	ORELLANA GALO & MARIA C. ALVAREZ-ESPINOZA 645 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0371-0046 <i>Identified as parcel E on Abutters Map</i>
PETRO, STEPHANIE & JOSHUA RIVERA SURV 651 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0371-0047 <i>Identified as parcel F on Abutters Map</i>	SPAHIU SHKELQIM & ELIZABETH SURV 671 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0372-0063 <i>Identified as parcel G on Abutters Map</i>
WILLIAMS, CHARLES JR & STELLA M SURV 673 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0372-0064 <i>Identified as parcel H on Abutters Map</i>	CAMPAGNA, EVELYN K. 683 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0372-0665 <i>Identified as parcel I on Abutters Map</i>  Parcel ID 0302-0372-0065 <i>Identified as parcel J on Abutters Map</i>
ROMAN, FRANCISCO 685 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0372-0066 <i>Identified as parcel K on Abutters Map</i>	KIRLEY, MORGAN E. 692 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0372-0067 <i>Identified as parcel L on Abutters Map</i>

<p>CARTA, RICHARD A. &amp; JANICE SURV 705 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0372-0581 <i>Identified as Parcel M on Abutters Map</i></p> <p>Parcel ID 0302-0372-0582 <i>Identified as parcel N on Abutters Map</i></p>	<p>GARCIA, ELIZABETH 709 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0302-0372-0068 <i>Identified as parcel O on Abutters Map</i></p>
<p>ICE HOUSE FARM LLC 22 COURTLAND AVENUE WATERBURY, CT 06705 Parcel ID 0302-0372-0991 <i>Identified as parcel P on Abutters Map</i></p>	<p>GUERRERA, MARIO 39 JERICHO ROAD WATERTOWN, CT 06705 Parcel ID 0302-0372-0691 <i>Identified as parcel Q on Abutters Map</i></p> <p>Parcel ID 0302-0372-0069 <i>Identified as parcel R on Abutters Map</i></p> <p>Parcel ID 0282-0372-0692 <i>Identified as parcel S on Abutters Map</i></p>
<p>MEGALO MEDIA INC. 355 WASHINGTON AVENUE NORTH HAVEN, CT 06473 Parcel ID 0282-0372-0100 <i>Identified as parcel T on Abutters Map</i></p> <p>Parcel ID 0282-0372-1001 <i>Identified as parcel U on Abutters Map</i></p> <p>Parcel ID 0282-0372-1002 <i>Identified as parcel V on Abutters Map</i></p>	<p>PATEL DARSHANA REALTY LLC 757 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0283-0394-0032 <i>Identified as parcel W on Abutters Map</i></p>
<p>PERSON, JACQUELINE AKA JACQUELINE HOGAN 200 MOSS FARM ROAD CHESHIRE, CT 06705 Parcel ID 0283-0394-0033 <i>Identified as parcel X on Abutters Map</i></p>	<p>EMMONS, EDITH L. 807 MERIDEN ROAD WATERBURY, CT 06705 Parcel ID 0283-0394-0034 <i>Identified as parcel Y on Abutters Map</i></p>
<p>NAZARIO, JAMES &amp; JAMES NAZARIO JR. 817 MERIDEN ROAD WATERBURY, CT 067708 Parcel ID 0303-0394-0110 <i>Identified as parcel Z on Abutters Map</i></p> <p>Parcel ID 0303-0394-0001 <i>Identified as parcel AA on Abutters Map</i></p> <p>Parcel ID 0303-0394-0111 <i>Identified as parcel AB on Abutters Map</i></p>	<p>OLIVO, DANIEL P. 829 MERIDEN ROAD WATERBURY, CT 06708 Parcel ID 0303-0394-0002 <i>Identified as parcel AC on Abutters Map</i></p>

<p>ARZU LLC  835 MERIDEN ROAD  WATERBURY, CT 06708  Parcel ID 0303-0394-0003  <i>Identified as parcel <b>AD</b> on Abutters Map</i></p>	<p>VASKO SANDOR &amp; ROSALINDE SURV  132 WESTLEDGE DRIVE  TORRINGTON, CT 06790  Parcel ID 0303-0395-0016  <i>Identified as parcel <b>AE</b> on Abutters Map</i></p>
<p>WALL, YVETTE &amp; IRA SERVICES  TRUST COMPANY  190 SPERRY ROAD  BETHANY, CT 06524  Parcel ID 0303-0384-0017  <i>Identified as parcel <b>AF</b> on Abutters Map</i></p> <p>Parcel ID 0303-0384-0171  <i>Identified as parcel <b>AG</b> on Abutters Map</i></p>	<p>SANCHEZ, ALVARDO MARTINEZ  69 EDGEHILL AVENUE  WATERBURY, CT 06704  Parcel ID 0303-0384-0018  <i>Identified as parcel <b>AH</b> on Abutters Map</i></p>
<p>PANORA FAMILY LLC  17 SOUTH WELL AVENUE  DANBURY, CT 06810  Parcel ID 0303-0384-0191  <i>Identified as parcel <b>AI</b> on Abutters Map</i></p> <p>Parcel ID 0303-0384-0019  <i>Identified as parcel <b>AJ</b> on Abutters Map</i></p>	<p>IAGROSSI EST CARL  1299 MERIDEN ROAD  WATERBURY, CT 06705  Parcel ID 0303-0383-0023  <i>Identified as parcel <b>AK</b> on Abutters Map</i></p>
<p>KALSI LLC  16 SPINDLE HILL #7G  WOLCOTT, CT 06716  Parcel ID 0303-0383-0241  <i>Identified as parcel <b>AL</b> on Abutters Map</i></p>	<p>BURTONS MONUMENT SHOP LLC  927 MERIDEN ROAD  WATERBURY, CT 06705  Parcel ID 0304-0383-0124  <i>Identified as parcel <b>AM</b> on Abutters Map</i></p> <p>Parcel ID 0304-0383-0011  <i>Identified as parcel <b>AN</b> on Abutters Map</i></p>
<p>TAILLON, JACQUELINE &amp; MARC SURV  935 MERIDEN ROAD  WATERBURY, CT 06705  Parcel ID 0304-0382-0012  <i>Identified as parcel <b>AO</b> on Abutters Map</i></p>	<p>TAMMARO, JOSEPH  61 ESTHER AVENUE  WATERBURY, CT 06708  Parcel ID 0304-0382-0122  <i>Identified as parcel <b>AP</b> on Abutters Map</i></p>
<p>AVENUE RD APARTMENTS LLC  300 SCHRAFFTS DRIVE, UNIT 1  WATERBURY, CT 06705  Parcel ID 0304-0382-0017  <i>Identified as parcel <b>AQ</b> on Abutters Map</i></p>	<p>RAZA, MOHAMMAD  451 SCHOOL STREET  EAST HARTFORD, CT 06108  Parcel ID 0329-0377-0001  <i>Identified as parcel <b>AR</b> on Abutters Map</i></p>



<p>WASHINGTON STREET WATERBURY LLC  1023 WASHINGTON STREET, SUITE 1  HOBOKEN, NJ 07030  Parcel ID 0329-0377-0101  <i>Identified as parcel <b>AS</b> on Abutters Map</i></p>	<p>HARLAMON, JAMES  88 REGENCY HILL DRIVE  WATERTOWN, CT 06795  Parcel ID 0329-0377-0814  <i>Identified as parcel <b>AT</b> on Abutters Map</i></p>
<p>ROSADO, GLENDA WILLOUGHBY  65 STONEWALL LANE  WATERBURY, CT 06705  Parcel ID 0329-0377-0813  <i>Identified as parcel <b>AU</b> on Abutters Map</i></p>	<p>B&amp;V PROPERTIES LLC  57 BENHAM HILL  HAMDEN, CT 06514  Parcel ID 0329-0377-0812  <i>Identified as parcel <b>AV</b> on Abutters Map</i></p>
<p>TEIXEIRA, JOSE F.  18 VIDICH LANE  NAUGATUCK, CT 06770  Parcel ID 0329-0377-0811  <i>Identified as parcel <b>AW</b> on Abutters Map</i></p>	<p>DEWBERRY GARDENS LLC  300 SCHRAFFTS DRIVE, UNIT 1  WATERBURY, CT 06705  Parcel ID 0354-0460-0081  <i>Identified as parcel <b>AX</b> on Abutters Map</i></p>
<p>RM 2 INVESTMENTS  1 TETLAK LANE  OXFORD, CT 06478  Parcel ID 0354-0377-0028  <i>Identified as parcel <b>AY</b> on Abutters Map</i></p>	<p>LUCIAN, CRAIG D. &amp; ARLENE SURV  170 MIDLAND ROAD  WATERBURY, CT 06705  Parcel ID 0354-0459-0001  <i>Identified as parcel <b>AZ</b> on Abutters Map</i>   Parcel ID 0353-0459-0048  <i>Identified as parcel <b>BA</b> on Abutters Map</i></p>
<p>RONCARTI, EUGENIA M.  159 MIDLAND ROAD  WATERBURY, CT 06705  Parcel ID 0353-0143-0472  <i>Identified as parcel <b>BB</b> on Abutters Map</i></p>	<p>BLANCHARD, IRENE E.  200 MORELAND AVENUE  WATERBURY, CT 06705  Parcel ID 0353-0143-0035  <i>Identified as parcel <b>BC</b> on Abutters Map</i></p>
<p>AUCAY, EDWIN G.  159 ROCKAWAY AVENUE  WATERBURY, CT 06705  Parcel ID 0353-0377-0010  <i>Identified as parcel <b>BD</b> on Abutters Map</i></p>	<p>GREEN, HELEN  145 ROCKAWAY AVENUE  WATERBURY, CT 06705  Parcel ID 0353-0377-0009  <i>Identified as parcel <b>BE</b> on Abutters Map</i></p>
<p>SEARLES, HOPE  137 ROCKAWAY AVENUE  WATERBURY, CT 06705  Parcel ID 0353-0377-0008  <i>Identified as parcel <b>BF</b> on Abutters Map</i></p>	<p>LYNCH, CASSANDRA  127 ROCKAWAY AVENUE  WATERBURY, CT 06705  Parcel ID 0353-0377-0007  <i>Identified as parcel <b>BG</b> on Abutters Map</i></p>

<p>YOVINA, DOUGLAS P.  115 ROCKAWAY AVENUE  WATERBURY, CT 06705  Parcel ID 0353-0377-0006  <i>Identified as parcel <b>BH</b> on Abutters Map</i></p>	<p>COMMUNITY RESIDENCES INC.  50 ROCKWELL ROAD  NEWINGTON, CT 06111  Parcel ID 0353-0377-0005  <i>Identified as parcel <b>BI</b> on Abutters Map</i></p>
<p>SPADER, ANNETTE M. &amp; MICHAEL R.  SURV  97 ROCKAWAY AVENUE  WATERBURY, CT 06705  Parcel ID 0353-0377-0041  <i>Identified as parcel <b>BJ</b> on Abutters Map</i></p>	<p>ROY, JUDITH A.  89 ROCKAWAY AVENUE  WATERBURY, CT 06708  Parcel ID 0353-0377-0004  <i>Identified as parcel <b>BK</b> on Abutters Map</i></p>
<p>DANIELE, LINDA &amp; ANNETTE SPADER  SURV  79 ROCKAWAY AVENUE  WATERBURY, CT 06705  Parcel ID 0353-0377-0003  <i>Identified as parcel <b>BL</b> on Abutters Map</i></p> <p>Parcel ID 0353-0377-0002  <i>Identified as parcel <b>BM</b> on Abutters Map</i></p> <p>Parcel ID 0353-0377-0001  <i>Identified as parcel <b>BN</b> on Abutters Map</i></p>	<p>BARBERI, FREDERICK, FLORENCE  MANCINO  57 WHEELER STREET  WATERTOWN, CT 06795  Parcel ID 0352-0134-0113  <i>Identified as parcel <b>BO</b> on Abutters Map</i></p>
<p>WATERBURY GARDENS HOLDINGS  LLC  1165 LAKEWOOD FARMINGDALE  ROAD  HOWELL, NJ 07731  Parcel ID 0352-0377-0119  <i>Identified as parcel <b>BP</b> on Abutters Map</i></p>	<p>ROSA, DOMENIC JR.  1 EXCHANGE PLACE  WATERBURY, CT 06702  Parcel ID 0327-0377-0017  <i>Identified as parcels <b>BQ</b> and <b>BR</b> on Abutters  Map</i></p>
<p>SETARO, ANTHONY G.  102 WINDING BROOK FARM ROAD  WATERTOWN, CT 06795  Parcel ID 0302-0377-0071  <i>Identified as parcel <b>BS</b> on Abutters Map</i></p>	

May 3, 2022

**VIA CERTIFIED MAIL/  
RETURN RECEIPT REQUESTED**

[Insert Abutter/Official  
Name and Address]

**Re: New Cingular Wireless PCS, LLC (“AT&T”) – Connecticut Siting Council  
Sub-Petition for a Declaratory Ruling -- Modification and Extension of an  
Existing Monopole and Collocation of a Wireless Telecommunications  
Facility at 940 Meriden Road, Waterbury, Connecticut**

To Whom it May Concern:

On behalf of our client New Cingular Wireless PCS, LLC (“AT&T”), we are providing this notice to you with respect to the above referenced matter pursuant to the Connecticut Siting Council’s (the “Siting Council”) ruling in Petition No. 1133. AT&T is filing this sub-petition (the “Sub-Petition”) for a declaratory ruling from the Siting Council for approval to collocate a new wireless telecommunications facility (the “Facility”) on the existing monopole tower located at 940 Meriden Road, Waterbury, Connecticut. The Facility consists of twelve (12) panel antennas at the 129’ above ground level (“AGL”) antenna centerline height on a fifteen foot (15’) extension to the existing monopole (the “Monopole”) together with related amplifiers, cables, fiber and other associated antenna equipment, including, without limitation, remote radio heads, surge arrestors, and global positioning system antenna with associated electronic equipment in a walk-in cabinet and an emergency backup power generator on concrete pads, and other appurtenances all located within an existing compound enclosed by a chain link fence, all as depicted on the plans submitted with the Sub-Petition. The Monopole is owned by SBA. The Monopole is currently 119’ tall and, after modification, will be 134’ tall.

The Sub-Petition is an eligible facilities request submitted pursuant to the Federal Middle Class Tax Relief and Job Creation Act of 2012, also known as the Spectrum Act and codified at 47 U.S.C. §1455(a). AT&T’s proposed modification does not substantially change the physical dimensions of the tower under the Spectrum Act and associated regulations promulgated by the Federal Communications Commission.

Any comments or concerns regarding this Sub-Petition should be submitted to the Siting Council within thirty (30) days of the date of this notice.

If you have any questions, please do not hesitate to contact us or the Siting Council at 860-827-2935.

Sincerely,

/s/ Thomas J. Regan  
Thomas J. Regan, Esq.

Enclosure

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