March 31, 2022

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

Re: Notice of Exempt Modification New Cingular Wireless PCS LLC ("AT&T") Site CT1148
1021 Blue Hills Avenue, Bloomfield, CT 06002 (the "Property")
Latitude: 41.820103 N Longitude: 72.696526 W

Dear Ms. Bachman:

AT&T currently maintains (12) antennas at the 98-foot level on the existing 160-foot self-support tower ("Tower") at 1021 Blue Hill Avenue, Bloomfield, CT. The Tower is owned by SBA Towers and the property is owned by the Blue Hills Fire District. AT&T intends to modify its facility by replacing (9) antennas with (3) AIR6449 N77D antennas at the 96' level, (2) DMP65R-BU8EA-K, (1) DMP65R-BU6EA-K at the 98' level, and (3) AIR6419 N77D antennas at the 100' level of the tower. The AIR6419 N77G & AIR6649 N77G antennas are stacked one on top of the other. The height of AT&Ts existing antennas is 98' and the proposed antennas is 96', 98' and 100' level on the Tower.

This modification includes B2, B5, and B12 hardware that is both 4G (LTE) and 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

The Town of Bloomfield issued a Variance & Special Exemption approving the Tower on December 1, 1997. AT&T received CT Siting Council approval under TS-AT&T-011-010321 on March 28, 2001. These approvals contained no conditions that could feasibly be violated by this modification, including facility height or mounting restrictions. AT&Ts modification complies with the above-mentioned approvals.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies ("R.C.S.A") §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A §16-50j-72(b)(2). In accordance with to R.C.S.A §16-50j-73, a copy of this letter is being sent to Ms. Suzette DeBeatham-Brown, Town Manager, Town of Bloomfield, Ms. Jennifer Valentino-Rodriguez, Director of Planning & Zoning, Town of Bloomfield, the Blue Hills Fire District, the property owner and SBA Towers, the tower owner.

The planned modification of the facility falls squarely within those activities explicitly provided for in R.C.S.A §16-50j-72(b)(2). Specifically:

1. The proposed modifications will not result in an increase in the height of the existing structure.

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

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

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

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

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

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

Sincerely,

Hollis M. Redding

Hollis M. Redding
SAI Communications, LLC
12 Industrial Way
Salem, NH 03079
Mobile: 860-834-6964
hredding@saigrp.com

Enclosures

Cc:
Ms. Suzette DeBeatham-Brown, Town Manager, chief elected official, Town of Bloomfield
Ms. Jennifer Valentino-Rodriguez, Director of Planning & Zoning, Town of Bloomfield
Blue Hills Fire District, the property owner
SBA Towers, the tower owner

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
603-644-2800
support@csquaredsystems.com

Calculated Radio Frequency Exposure

CT1148

1021 Blue Hills Avenue, Bloomfield, CT

March 29, 2022

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List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of the AT&T antenna arrays on an existing tower located at 1021 Blue Hills Avenue in Bloomfield, CT. The coordinates of the existing tower are 41° 49' 12.37" N, 72° 41' 47.49" 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[1] 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^2). 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.

[1] As referenced to AT&T's Radio Frequency Design Sheet dated 3/2/2021.

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:

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

Where:

ERP = Effective Radiated Power

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

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^2)	Limit	% MPE
Verizon	110	751	4	689	0.0916	0.5007	1.83%
Verizon	110	874	4	700	0.0931	0.5827	1.60%
Verizon	110	1975	4	1500	0.1995	1.0000	1.99%
Verizon	110	2120	4	1496	0.1990	1.0000	1.99%
Verizon	110	3560	4	103	0.0137	1.0000	0.14%
Verizon	110	3730	2	21627	1.4381	1.0000	14.38%
T-Mobile	125	2500	1	19239	0.4886	1.0000	4.89%
T-Mobile	125	2500	1	19239	0.4886	1.0000	4.89%
T-Mobile	125	600	2	592	0.0301	0.4000	0.75%
T-Mobile	125	600	1	1578	0.0401	0.4000	1.00%
T-Mobile	125	700	2	649	0.0330	0.4667	0.71%
T-Mobile	125	1900	2	2204	0.1119	1.0000	1.12%
T-Mobile	125	2100	2	1295	0.0658	1.0000	0.66%
T-Mobile	125	1900	4	1028	0.1044	1.0000	1.04%
T-Mobile	125	1900	2	2057	0.1045	1.0000	1.04%
T-Mobile	125	2100	2	2308	0.1172	1.0000	1.17%
MetroPCS CDMA	75	2135	3	727	0.1647	1.0000	1.65%
MetroPCS LTE	75	2130	1	1200	0.0906	1.0000	0.91%
Clearwire	120	2496	2	153	0.0085	1.0000	0.08%
Clearwire	115	11 GHz	1	211	0.0064	1.0000	0.06%
Sprint	87	1900	4	693	0.1519	1.0000	1.52%
Sprint	87	850	1	390	0.0214	0.5667	0.38%
Sprint	87	2500	1	779	0.0427	1.0000	0.43%
Nextel	120	851	9	100	0.0249	0.5673	0.44%
XM Sat Radio	125	2340	2	321.78	0.0163	1.0000	0.16%
Page Net	110	900	1	150	0.0050	0.6000	0.08%
Blue Hills FD	140	452	1	75	0.0015	0.3013	0.05%
Blue Hills FD	110	452	1	75	0.0025	0.3013	0.08%
Blue Hills FD	60	33	1	250	0.0308	0.2000	1.54%
Blue Hills FD	40	173	1	5	0.0016	0.2000	0.08%
AT&T	98	700	1	3305	0.0140	0.4667	3.01%
AT&T	98	700	1	3084	0.0131	0.4667	2.81%
AT&T	98	885	1	3794	0.0161	0.5900	2.73%
AT&T	98	1900	4	5877	0.0999	1.0000	9.99%
AT&T	98	2100	2	8039	0.0683	1.0000	6.83%
AT&T	98	2300	1	6297	0.0268	1.0000	2.68%
AT&T	100	3500	1	24286	0.0989	1.0000	9.89%
AT&T	96	3500	1	24286	0.1079	1.0000	10.79%
						Total	**95.39%**

Table 1: Carrier Information[2]

[2] The existing record in the CSC Power Density Table for AT&T should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for Blue Hills FD, Verizon, Sprint, Nextel, Clearwire, Metro PCS, PageNet, XM Satellite Radio 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 **95.39% 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 29, 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[3]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	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[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	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)

[3] 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

[4] 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

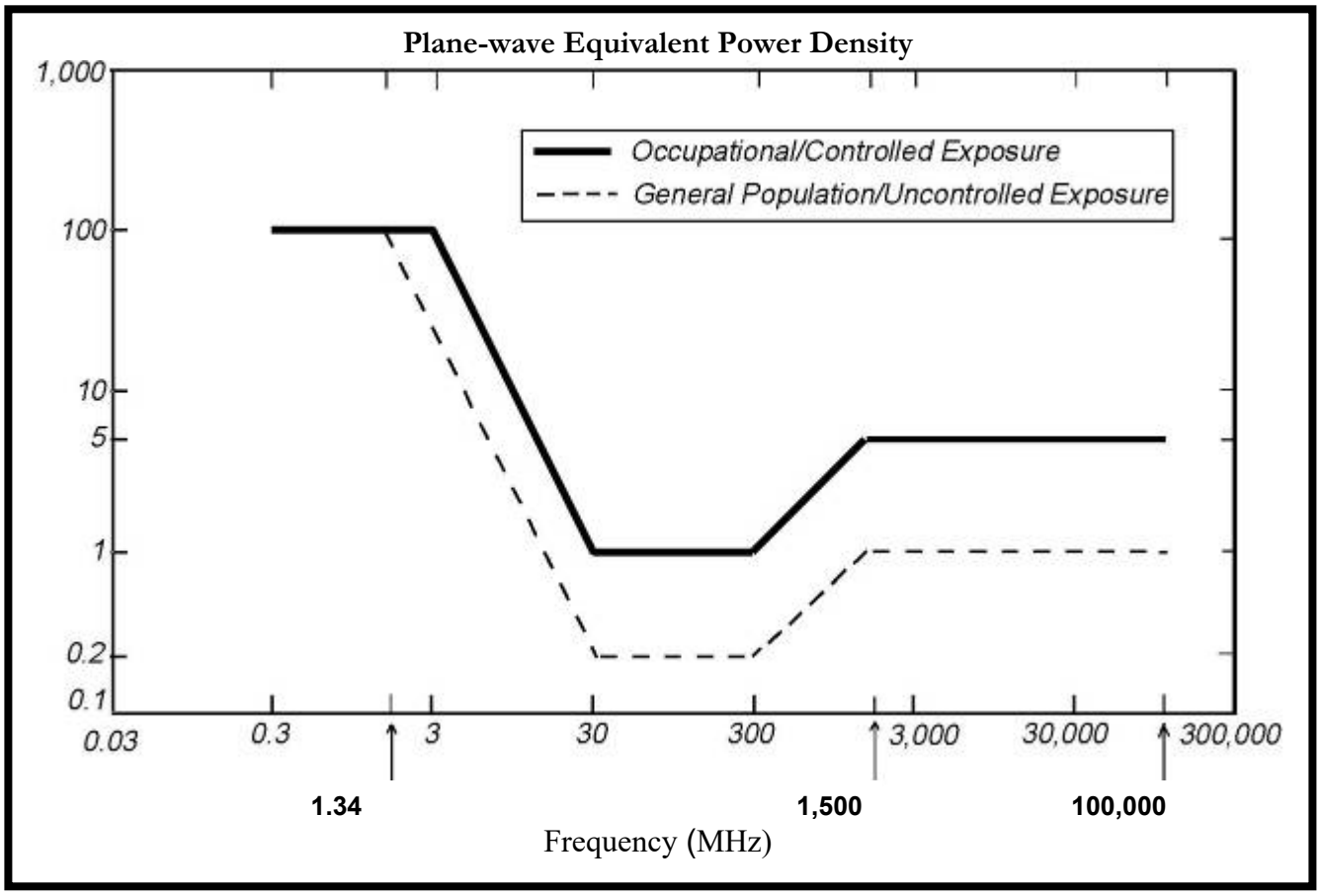
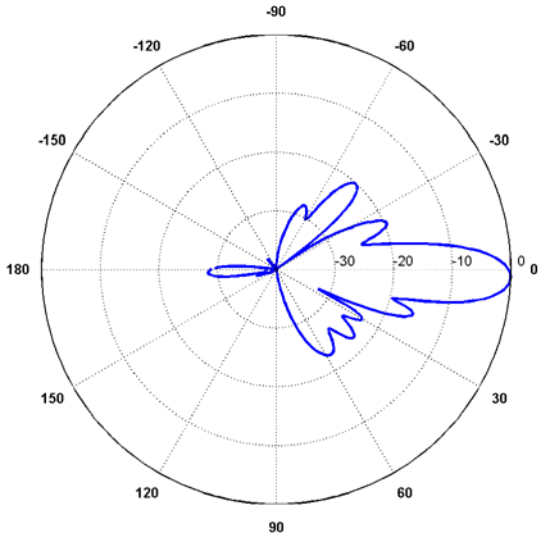
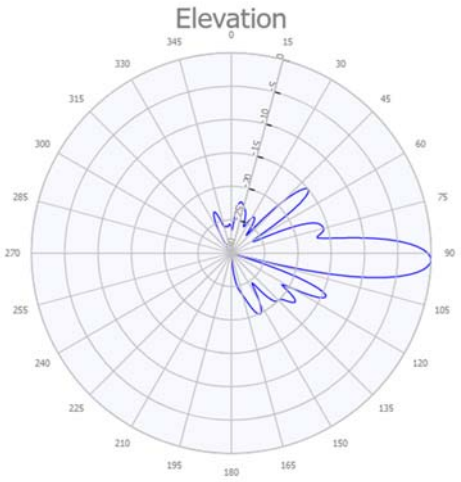
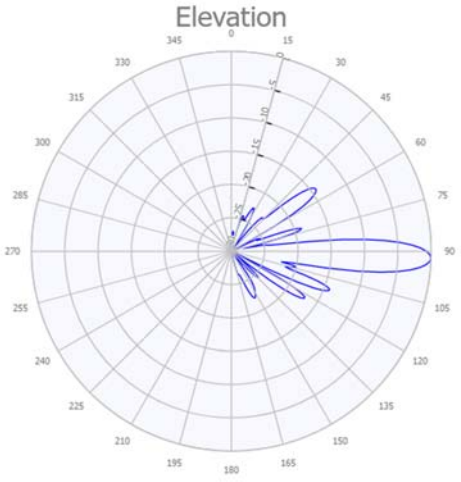
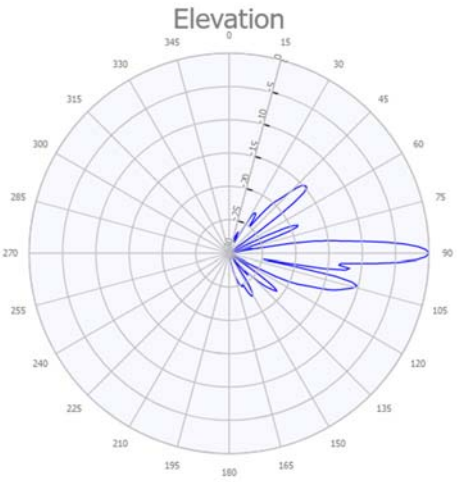
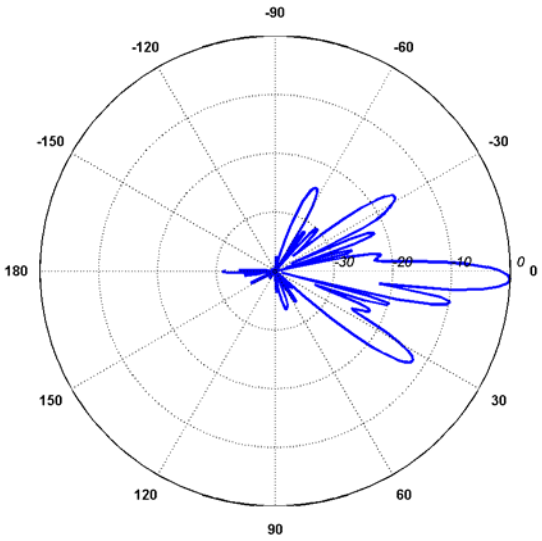
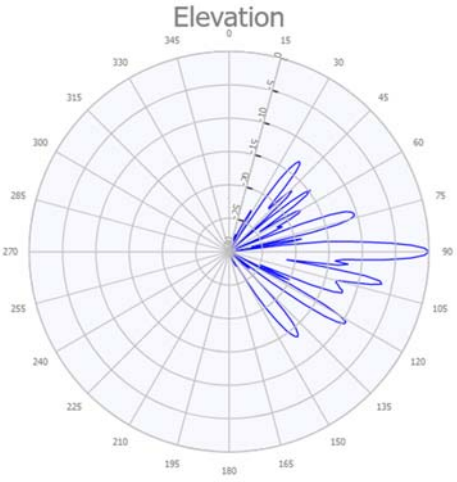


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

700 MHz Manufacturer: CCI Products Model #: HPA-65R-BUU-H8 Frequency Band: 698-798 MHz Gain: 15.3 dBi Vertical Beamwidth: 10.1° Horizontal Beamwidth: 65° Polarization: Dual Linear 45° Size L x W x D: 92.8” x 14.4” x 7.3”	
700 MHz Manufacturer: CCI Products Model #: DMP65R-BU8E Frequency Band: 698 - 806MHz Gain: 15.0 dBi Vertical Beamwidth: 9.7° Horizontal Beamwidth: 74° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 9.7”	
885 MHz Manufacturer: CCI Products Model #: DMP65R-BU8E Frequency Band: 824 - 896 MHz Gain: 15.9 dBi Vertical Beamwidth: 8.0° Horizontal Beamwidth: 62° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 9.7”	

1900 MHz Manufacturer: CCI Products Model #: DMP65R-BU8E Frequency Band: 1920-1990 MHz Gain: 17.8 Vertical Beamwidth: 5.2° Horizontal Beamwidth: 71° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 9.7”	
2100 MHz Manufacturer: CCI Products Model #: HPA-65R-BUU-H8 Frequency Band: 1920-2180 MHz Gain: 17.4 dBi Vertical Beamwidth: 5.0° Horizontal Beamwidth: 64° Polarization: Dual Linear 45° Size L x W x D: 92.8” x 14.4” x 7.3”	
2300 MHz Manufacturer: CCI Products Model #: DMP65R-BU8E Frequency Band: 1920-2180 MHz Gain: 18.1 dBi Vertical Beamwidth: 4.1° Horizontal Beamwidth: 52° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 9.7”	

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING SELF SUPPORT:
- NEW AT&T ANTENNAS: AIR6649 N77D (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T ANTENNAS: AIR6419 N77G (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T ANTENNAS: DMP65R-BU8EA-K (TYP. OF 1 PER ALPHA & BETA SECTOR, TOTAL OF 2).
- NEW AT&T ANTENNAS: DMP65R-BU6EA-K (TOTAL OF 1 PER GAMMA SECTOR).
- NEW AT&T (6) Y-CABLES.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD 6673 FHG.
- NEW AT&T RRH: RRUS-4478 B14 (TYP. OF 1 PER ALPHA & BETA SECTOR, TOTAL OF 2) (GAMMA SECTOR SHARE WITH BETA SECTOR).

ITEMS TO BE REMOVED:
- EXISTING AT&T UMTS ANTENNA: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: 800-10966 (TYP. OF 2 PER ALPHA & BETA SECTOR, TOTAL OF 4).
- EXISTING AT&T ANTENNA: 800-10965 (TYP. OF 2 PER GAMMA SECTOR, TOTAL OF 2).
- EXISTING AT&T TMA: LGP21401 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T TMA: LGP12104 (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO REMAIN:
- (3) ANTENNAS, (9) RRU'S, (3) SURGE ARRESTORS, (6) COAX CABLES, (6) DC POWER & (2) FIBER.

SITE ADDRESS:	1021 BLUE HILLS AVENUE BLOOMFIELD, CT 06002
LATITUDE:	41.820103° N, 41° 49' 12.37" N
LONGITUDE:	72.696526° W, 72° 41' 47.49" W
TYPE OF SITE:	SELF SUPPORT / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	160'-0"±
RAD CENTER:	98'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
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RF-1	RF PLUMBING DIAGRAM	1

SITE NUMBER: CT1148

SITE NAME: BLOOMFIELD EAST

FA CODE: 10035110

PACE ID: MRCTB052351, MRCTB051000, MRCTB051078

PROJECT: LTE 6C, 5G NR 1SR C-BAND UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

START AT 500 ENTERPRISE DR, ROCKY HILL GOING TOWARD CAPITOL BLVD – TURN LEFT ON CAPITOL BLVD – TURN LEFT ON WEST ST – TURN LEFT TO TAKE RAMP ONTO I-91 N TOWARD HARTFORD – TAKE EXIT #35A-35B/WINDSOR/BLOOMFIELD/MANCHESTER TOWARD #35B/CT-218/WINDSOR/BLOOMFIELD – TURN LEFT ON CT-218 – TURN RIGHT ON BLUE HILLS AVE(CT-187) – ARRIVE AT 1021 BLUE HILLS AVE, BLOOMFIELD, ON THE LEFT.

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

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1148
SITE NAME: BLOOMFIELD EAST
SBA SITE #: CT01725-A-02

1021 BLUE HILLS AVENUE
BLOOMFIELD, CT 06002
HARTFORD COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK'D	APP'D
1	12/06/21	ISSUED FOR REVIEW	AM	HC	DPH
0	11/19/21	ISSUED FOR REVIEW	AM	HC	DPH
A	10/14/21	ISSUED FOR REVIEW	AM	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

STATE OF CONNECTICUT · DANIEL P. HAMM · LICENSED PROFESSIONAL ENGINEER · NO. 24178

AT&T

TITLE SHEET
LTE 6C, 5G NR 1SR C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1148	T-1	1

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 (ANTENNAS)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1148
SITE NAME: BLOOMFIELD EAST
SBA SITE #: CT01725-A-02

1021 BLUE HILLS AVENUE
BLOOMFIELD, CT 06002
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	12/06/21	ISSUED FOR REVIEW	AM	HC	DPH
0	11/19/21	ISSUED FOR REVIEW	AM	HC	DPH
A	10/14/21	ISSUED FOR REVIEW	AM	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER
COMMON

AT&T

GENERAL NOTES

SITE 6C, 5G NR 1SR C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1148	GN-1	1

NOTE:

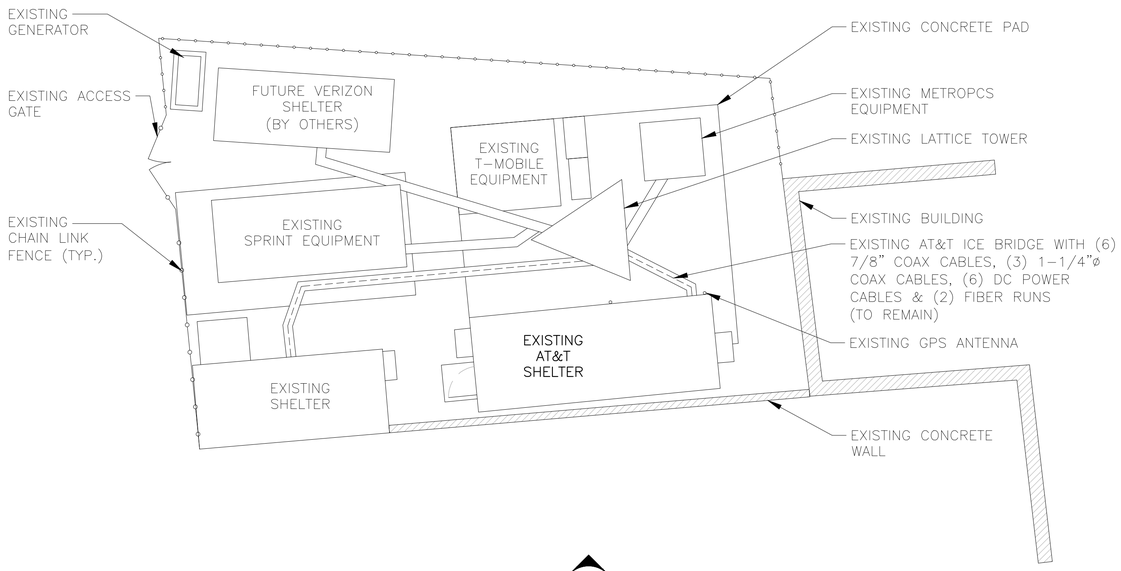
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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: **OCTUBER 13, 2021.**

NOTE:

REFER TO THE STRUCTURAL ANALYSIS BY: T.E.S., DATED: NOVEMBER 16, 21 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

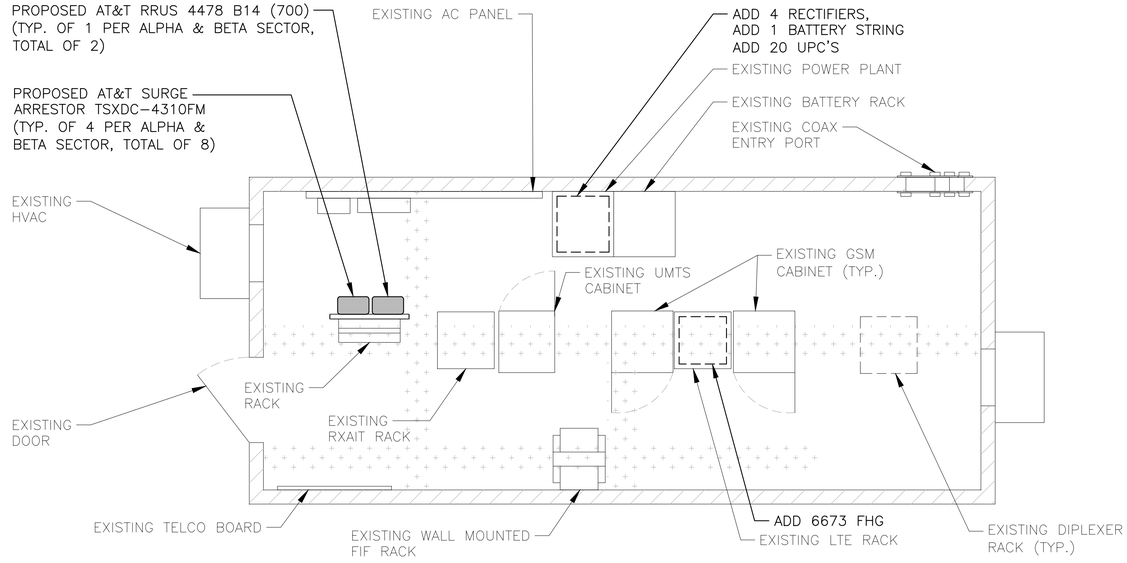


1
A-4

14°10'
TRUE NORTH
MAGNETIC NORTH

COMPOUND PLAN 1 A-1
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"



14°10'
TRUE NORTH
MAGNETIC NORTH

EQUIPMENT PLAN 2 A-1
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

0 1'-4" 2'-8" 5'-4" 8'-0"

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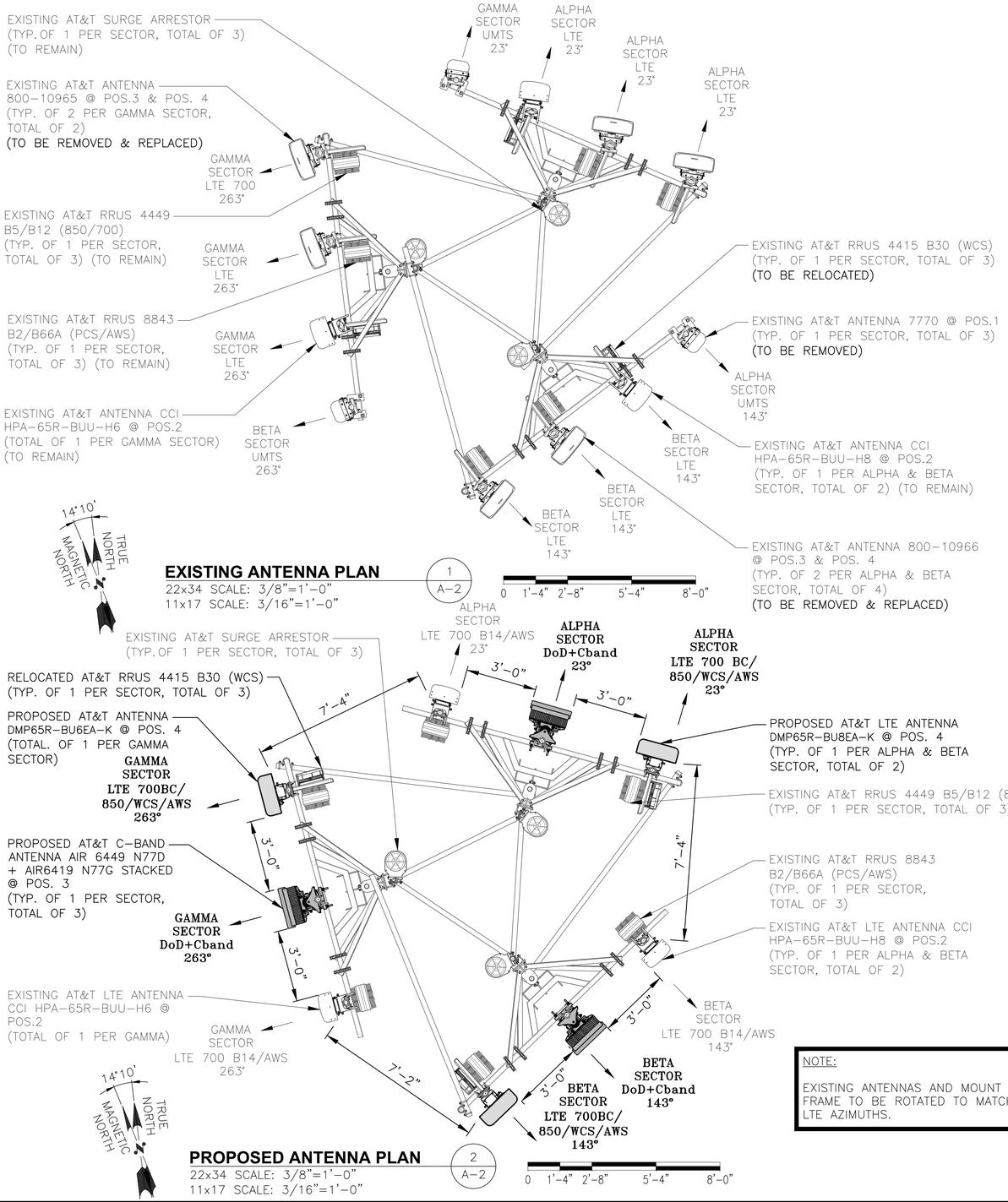
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

ROOFTOP & EQUIPMENT PLANS
LTE 6C, 5G NR 1SR C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1148	A-1	1



NOTE:

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NOTE:

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NOTE:

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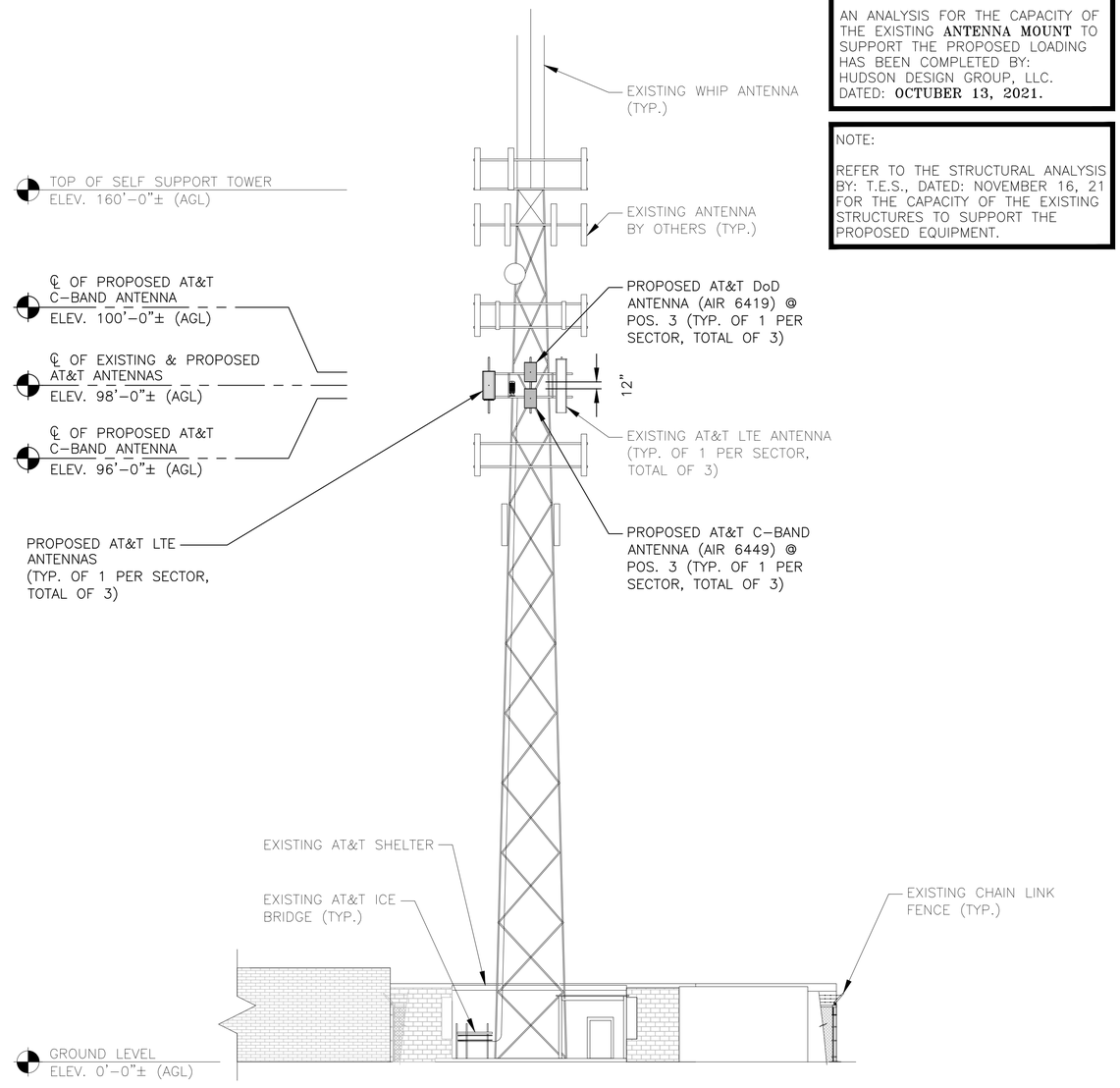
NOTE:

EXISTING ANTENNAS AND MOUNT FRAME TO BE ROTATED TO MATCH LTE AZIMUTHS.



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STATE OF CONNECTICUT
DANIEL P. HAMM
LICENSED PROFESSIONAL ENGINEER
NO. 24178

AT&T

EXISTING ANTENNA PLAN
LTE 6C, 5G NR 1SR C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
1148	A-2	1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
A2	EXISTING	LTE 700 B14/AWS	HPA-65R-BUU-H8	92.4X14.8X7.4	98'-0"±	23°	–	(P)(1)(G) 4478 B14 (700) (E)(1) 8843 B2/B66A (AWS)	18.1X13.4X8.3 –	(E)(2) 1-5/8" COAX (E)(2) DC POWER & (1) FIBER	
A3	PROPOSED	DOD+CBAND	AIR 6449 N77D AIR6419 N77G STACKED	30.4X15.9X8.1	100'-0"± 96'-0"±	23°	–	–	–		
A4	PROPOSED	LTE 700 BC/850/WCS/AWS	DMP65R-BU8EA-K	96X20.7X7.7	98'-0"±	23°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B30 (WCS)	– –		
B1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
B2	EXISTING	LTE 700 B14/AWS	HPA-65R-BUU-H8	92.4X14.8X7.4	98'-0"±	143°	–	(P)(1)(G) 4478 B14 (700) (E)(1) 8843 B2/B66A (AWS)	18.1X13.4X8.3 –	(E)(2) 1 5/8"COAX	
B3	PROPOSED	DOD+CBAND	AIR 6449 N77D AIR6419 N77G STACKED	30.4X15.9X8.1	100'-0"± 96'-0"±	143°	–	–	–		
B4	PROPOSED	LTE 700 BC/850/WCS/AWS	DMP65R-BU8EA-K	96X20.7X7.7	98'-0"±	143°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B30 (WCS)	– –	(E)(2) DC POWER & (1) FIBER	
C1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-0-8C-EV
C2	EXISTING	LTE 700 B14/AWS	HPA-65R-BUU-H6	72X14.8X9	98'-0"±	263°	–	(E)(1) 8843 B2/B66A (AWS)	–	(E)(2) COAX	
C3	PROPOSED	DOD+CBAND	AIR 6449 N77D AIR6419 N77G STACKED	30.4X15.9X8.1	100'-0"± 96'-0"±	263°	–	–	–		
C4	PROPOSED	LTE 700 BC/850/WCS/AWS	DMP65R-BU6EA-K	71.2X20.7X9.7	98'-0"±	263°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B30 (WCS)	– –	(E)(2) DC POWER	

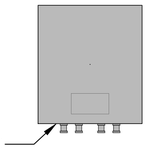
RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
E(3)	4449 (850/700)	17.9"x13.2"x10.4"
E(3)	8843 (PCS/AWS)	14.9"x13.2"x10.9"
P(2)(G)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	4415 B30 (WCS)	16.5"x13.4"x5.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

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 RRUS DETAIL 2 / A-3
SCALE: N.T.S

NOTE:

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

NOTE:

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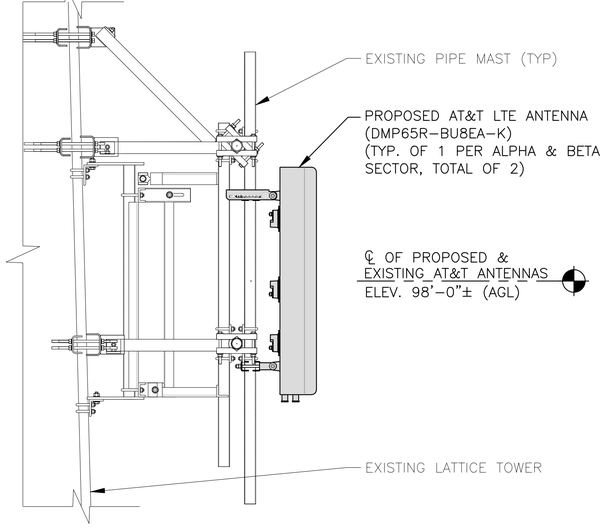
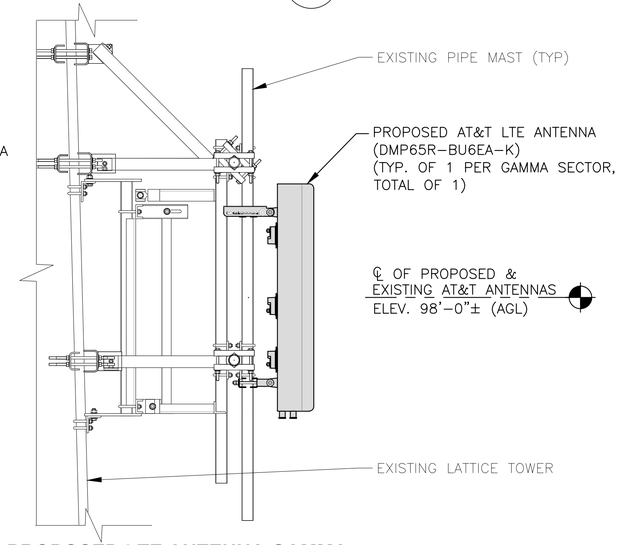
FINAL ANTENNA SCHEDULE 1 / A-3
SCALE: N.T.S



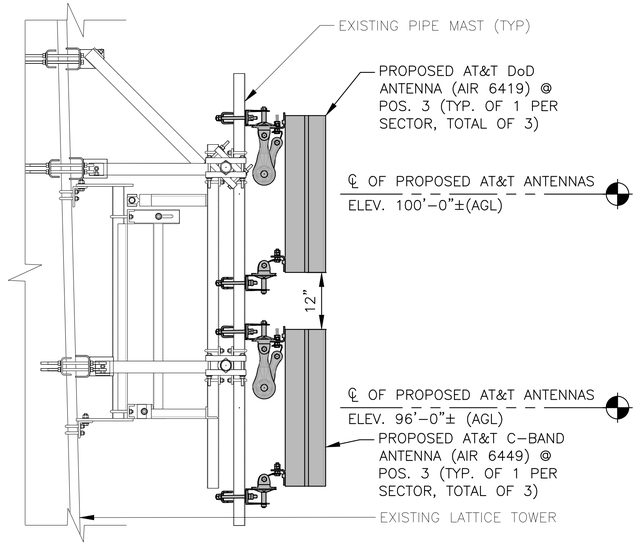
PROPOSED LTE ANTENNA ALPHA & BETA MOUNTING DETAIL 3 / A-3
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"



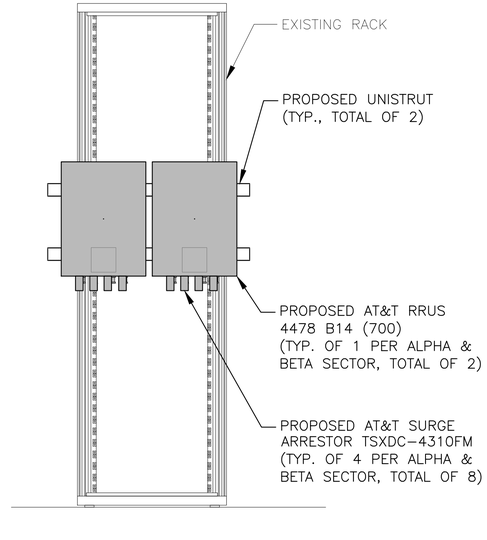
PROPOSED LTE ANTENNA GAMMA MOUNTING DETAIL 4 / A-3
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"



PROPOSED C-BAND ANTENNA MOUNTING DETAIL 5 / A-3
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"



PROPOSED RRUS MOUNTING DETAIL 6 / A-3
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 1'-0" 2'-0" 3'-0"

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SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

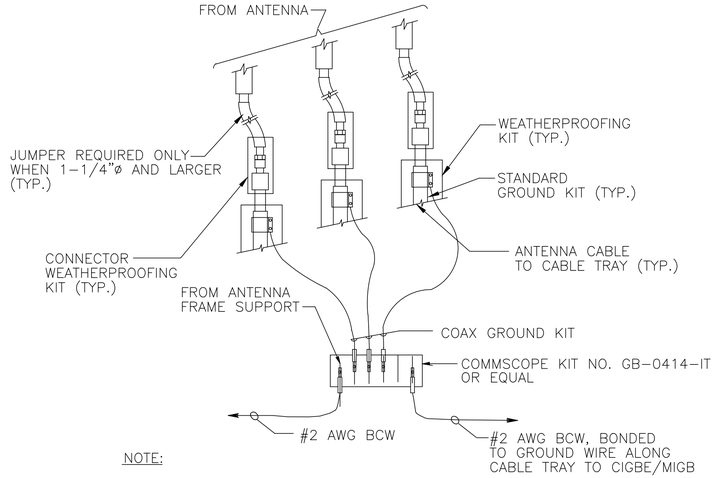
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS

LTE 6C, 5G NR 1SR C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1148	A-3	1



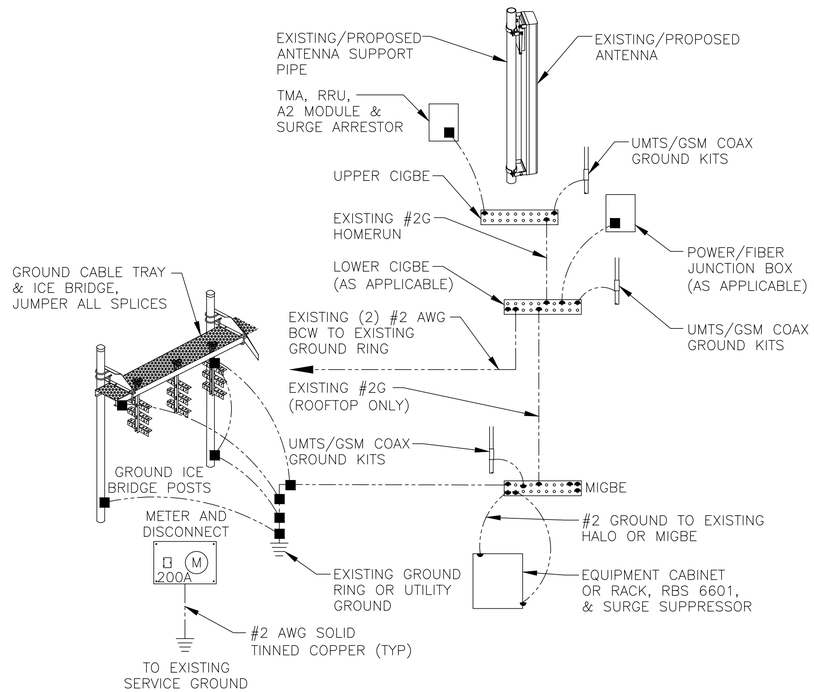
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

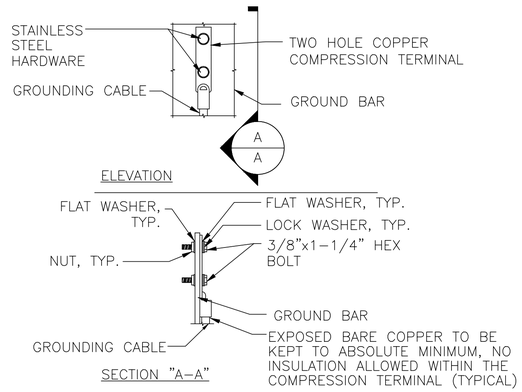
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTES:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

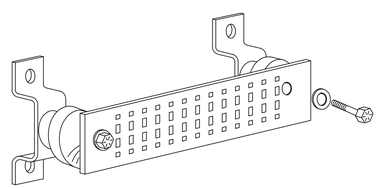
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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)



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

4 / G-1

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1148
SITE NAME: BLOOMFIELD EAST
SBA SITE #: CT01725-A-02

1021 BLUE HILLS AVENUE
BLOOMFIELD, CT 06002
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	12/06/21	ISSUED FOR REVIEW	AM	HC	DPH
0	11/19/21	ISSUED FOR REVIEW	AM	HC	DPH
A	10/14/21	ISSUED FOR REVIEW	AM	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

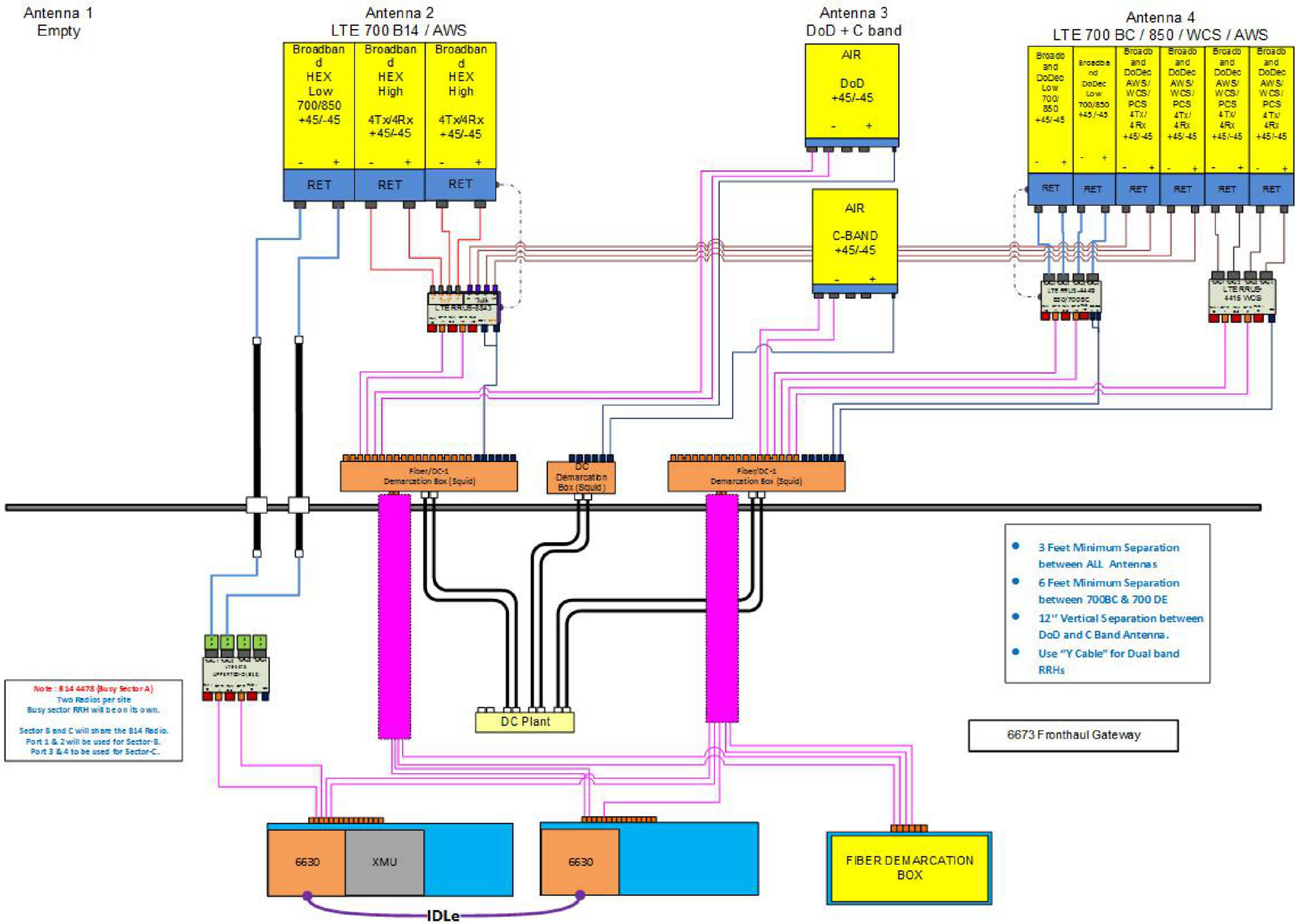
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS

LTE 6C, 5G NR 1SR C-BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV.
CT1148	G-1	1



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

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.

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

12 INDUSTRIAL WAY
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A	10/14/21	ISSUED FOR REVIEW	AM	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: AM

AT&T

RF PLUMBING DIAGRAM
LTE 6C, 5G NR 1SR C–BAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1148	RF–1	1

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

Structural Analysis Report

Existing 125 ft Nudd Corporation Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT01725-A

Customer Site Name: Bloomfield

Carrier Name: AT&T (App#: 176506-2)

Carrier Site ID / Name: CT1148 / Bloomfield East

Site Location: 1021 Blue Hills Avenue

Bloomfield, Connecticut

Hartford County

Latitude: 41.820119

Longitude: -72.696514

Analysis Result:

Max Structural Usage: 92.8% [Pass]

Max Foundation Usage: 42.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Mohammed Al Rubaye

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

Structural Analysis Report

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Customer Site Name: Bloomfield

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Carrier Site ID / Name: CT1148 / Bloomfield East

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Bloomfield, Connecticut

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Longitude: -72.696514

Analysis Result:

Max Structural Usage: 92.8% [Pass]

Max Foundation Usage: 42.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Mohammed Al Rubaye

Introduction

The purpose of this report is to summarize the analysis results on the 125 ft Nudd Corporation Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Fred A. Nudd Corporation, Project# 97-5566A-1 dated March 11, 1998
Foundation Drawing	Fred A. Nudd Corporation, Drawing #97-5566-2 dated 12/18/1997 commissioned by CDT
Geotechnical Report	FDH Engineering Project #1206690EG1 dated 08/10/2012
Modification Drawings	N/A
Mount Analysis	Hudson Design Group LLC Project No.: CT1148, dated 10/12/2021

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 **TESTowers,** 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.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.18, S_1 = 0.064

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
1	135.0	1	Cellwave PD455	Platform w/ Handrails w/ (3) PRK-FMA Reinforcement Kit	(1) 7/8" (1) 1/2"	Blue Hills Fire
2		1	Cellwave AS MONR 31			
3		3	Cellwave PD455		(4) 7/8"	Bloomfield Police Dept.
4	133.0	1	Cellwave AS MONR 31			
5	125.0	2	Cellwave PD455		(1) 1 1/4"	Blue Hills Fire
6		1	Cellwave PD165S		(1) 1/2"	
7	125.0	3	Ericsson AIR6449 B41 - Panel		(9) 1 5/8" (2) 1-1/4" Hybrid (2) 1 5/8" Hybrid	T-Mobile
8		3	RFS APXVAARR24_43-U-NA20 - Panel			
9		3	AIR32 KRD901146-1_B66A (Octa) - Panel			
10		3	Ericsson KRY 112 144/2			
11		3	Commscope SDX1926Q-43			
12		3	Ericsson Radio 4449 B71+B85 RRU			
13		3	Ericsson 4415 B25			
14	110.0	3	Commscope - NHH-65B-R2B - Panel	(3) Modified Sector Frames	(18) 1 5/8" (1) 1 5/8" Fiber (2) 1/2"	Verizon
15		3	Commscope - NHHSS-65B-R2B - Panel			
16		3	Samsung - MT6407-77A - Panel			
17		3	Antel - BXA-70063-4CF - Panel			
18		3	Samsung - RF4440d-13A - RRU			
19		3	Samsung - RF4439d-25A - RRU			
20		1	RFS - DB-C1-12C-24AB-0Z - OVP			
-	98.0	3	Powerwave 7770.00	(3) Sector Frame w/ (3) Stiff Arm Kit (3) Site Pro SFR-K-L (3) Site Pro SFS-H-L	(12) 7/8" (2) 1/2" Fiber (6) 3/4" DC (1) 3" Conduit	AT&T
-		2	CCI HPA-65R-BUU-H8			
-		1	CCI HPA-65R-BUU-H6			
-		4	Kathrein 800 10966 - Panel			
-		2	Kathrein 800 10965 - Panel			
-		6	Powerwave LGP21401 - TMA			
-		6	Powerwave LGP21901 Diplexer			
-		12	Powerwave 7020.00 RET			
-		3	Ericsson RRUS 8843 B2 B66A			
-		3	Ericsson RRUS 4449 B5/B12			
-		3	Ericsson RRUS 4415 B30			
-		1	Raycap DC6-48-60-18-8F			
-		1	Raycap DC6-48-60-0-18-8C-EV			
-		1	Raycap DC6-48-60-18-8C			
-		3	Kathrein 782 10253			
37	87.0	3	Alcatel Lucent 1900MHz RRH	(3) Sector Frame	(1) 0.7" (3) 1 1/4"	Sprint
38		3	Alcatel Lucent 800MHZ RRH			
39		3	Alcatel Lucent TD-RRH8x20-25			
40		4	RFS ACU-A20-N			
41		3	RFS APXVSPP18-C-A20 - Panel			
42		3	RFS APXVTM14-C-120 - Panel			
-	65.0	1	Nokia CS72188.01 LMU	(1) Standoff Mount	(1) ½"	AT&T

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
21	100.0	3	Ericsson Air 6449 N77D - Panel	(3) Sector Frame w/ (3) Site Pro SFR-K-L (3) Site Pro SFS-H-L	(4) 3/4" DC (12) 7/8" (1) 1/2" Fiber (1) 3"Conduit (Housing (2) 3/4" DC & (1) 1/2" Fiber)	AT&T
22	98.0	2	Cci HPA-65R-BUU-H8 - Panel			
23		1	Cci HPA-65R-BUU-H6 - Panel			
24		2	Cci DMP65R-BU8EA-K - Panel			
25		1	Cci DMP65R-BU6EA-K - Panel			
26		6	Powerwave LGP21401 TMA			
27		6	Powerwave LGP21901 Diplexer			
28		12	Powerwave 7020.00 RET			
29		3	Ericsson RRUS 8843 B2 B66A			
30		3	Ericsson RRUS 4449, B5, B12			
31		3	Ericsson RRUS 4415 B30			
32		1	Raycap DC6-48-60-18-8F - OVP			
33		1	Raycap DC6-48-60-0-18-8C-EV - OVP			
34		1	Raycap DC6-48-60-18-8C - OVP			
35		3	Kathrein 782 10253 – BIAS-T			
36	96.0	3	Ericsson Air 6419 N77G - Panel			
43	65.0	1	Nokia CS72188.01 LMU - Omni	(1) Standoff Mount	(1) 1/2"	

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:

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	**92.8%**	**88.3%**	**41.1%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	293.1	262.5	24.7

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 0.3468 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222 Standard under the design basic wind speed as specified in the Analysis Criteria.

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 ANSI/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.

Structure: CT01725-A-SBA

Site Name:	Bloomfield			**Code:**	EIA/TIA-222-G	11/16/2021
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	125.00 (ft)	**Base Width:**	12.50	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.50	**Operational WS:**	60.00	Page: 1

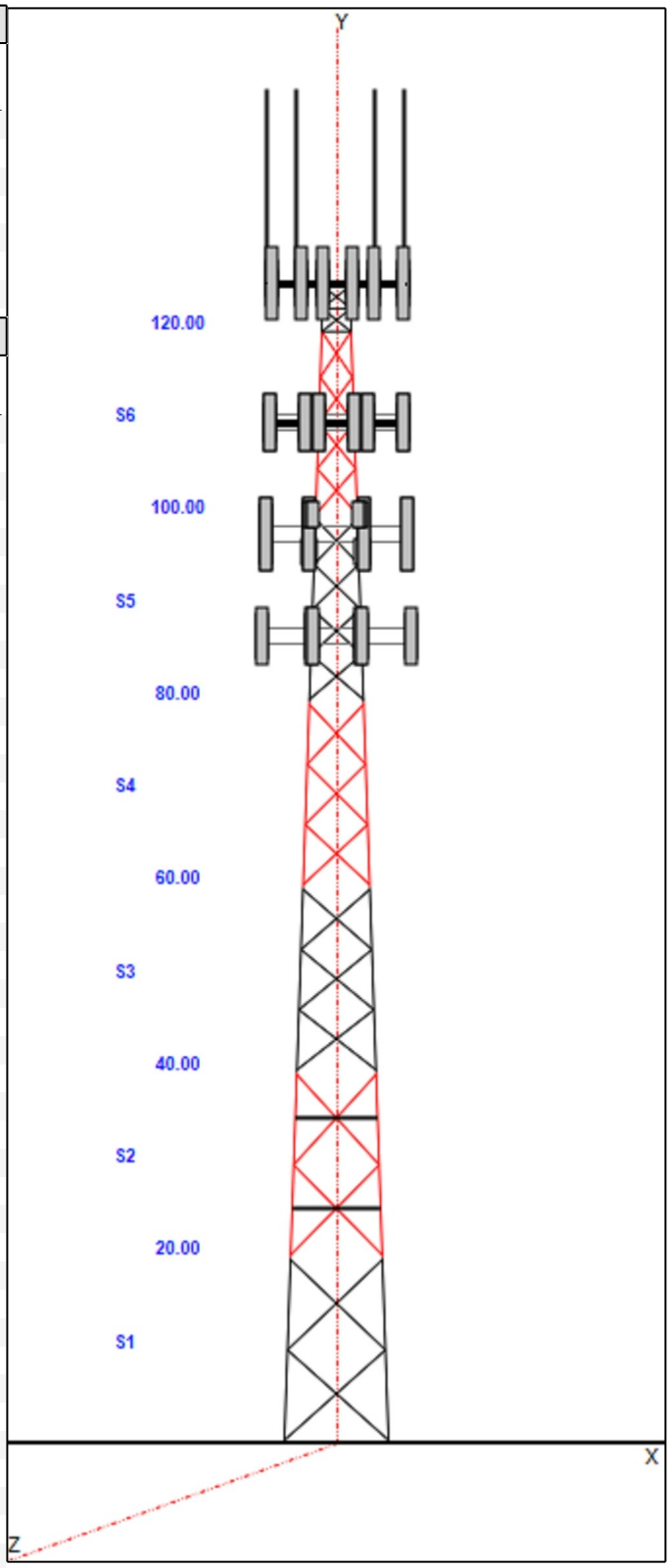
Tower Engineering Solutions

Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1	PST 8" DIA PIPE	SAE 3.5X3.5X0.25	
2	PST 6" DIA PIPE	SAE 3X3X0.25	
3	PST 6" DIA PIPE	SAE 2.5X2.5X0.1875	
4	PST 5" DIA PIPE	SAE 2.5X2.5X0.1875	
5	PST 3-1/2" DIA PIPE	SAE 2X2X0.1875	
6	PST 2-1/2" DIA PIPE	SAE 1.5X1.5X0.1875	
7	PST 2-1/2" DIA PIPE	SOL 5/8" SOLID	SAE 1.5X1.5X0.1875

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
125.00	125.00	3	APXVAARR24_43-U-NA20
125.00	125.00	3	AIR32 KRD901146-1_B66A
125.00	125.00	3	KRY 112 144/1
125.00	125.00	3	Radio 4449 B71+B85 RRU
125.00	125.00	1	Lightning Rod
125.00	125.00	1	Beacon
125.00	125.00	1	PD165S
125.00	135.00	1	Cellwave AS MONR 31
125.00	125.00	3	AIR6449 B41
125.00	125.00	3	SDX1926Q-43
125.00	125.00	3	4415 B25
125.00	135.00	3	PD455
125.00	135.00	3	PD455
125.00	125.00	1	PRK-FMA
125.00	133.00	1	Cellwave AS MONR 31
125.00	125.00	1	Platform w/ HR
125.00	125.00	1	(3) HR w/ V-Brace Kits
110.00	110.00	3	Sector Frame
110.00	110.00	3	NHH-65B-R2B
110.00	110.00	3	NHHSS-65B-R2B
110.00	110.00	3	MT6407-77A
110.00	110.00	3	BXA-70063-4CF
110.00	110.00	3	RF4440d-13A
110.00	110.00	3	RF4439d-25A
110.00	110.00	1	DB-C1-12C-24AB-0Z
110.00	110.00	1	(3) 12.5' - 2.5" Horizontal Pi
110.00	110.00	1	(3) SFS-H-L (V-Braces)
100.00	100.00	3	Air 6449 N77D
98.00	98.00	2	DMP65R-BU8EA-K
98.00	98.00	1	(3) SFR-K-L
98.00	98.00	1	(3) SFS-H-L
98.00	98.00	3	Sector Frame
98.00	98.00	1	(3) Stiff Arm Kit
98.00	98.00	1	DMP65R-BU6EA-K
98.00	98.00	2	HPA-65R-BUU-H8
98.00	98.00	1	HPA-65R-BUU-H6
98.00	98.00	6	LGP-21401
98.00	98.00	6	LGP-21903 Diplexer
98.00	98.00	12	7020.00 RET
98.00	98.00	3	8843 B2 B66A
98.00	98.00	3	4449 B5/B12
98.00	98.00	3	4415 B30



98.00	98.00	1	DC6-48-60-18-8F
98.00	98.00	1	DC6-48-60-0-18-8C-EV
98.00	98.00	1	DC6-48-60-18-8C
98.00	98.00	3	782 10253
96.00	96.00	3	Air 6419 N77G
87.00	87.00	3	Sector Frame
87.00	87.00	3	1900MHz RRH
87.00	87.00	3	800MHZ RRH
87.00	87.00	3	TD-RRH8x20-25
87.00	87.00	4	ACU-A20-N
87.00	87.00	3	APXVSPP18-C-A20
87.00	87.00	3	APXVTM14-C-120
87.00	87.00	3	800MHz Filter
65.00	65.00	1	CS72188.01 LMU
65.00	65.00	1	Standoff Mount

Linear Appurtenances

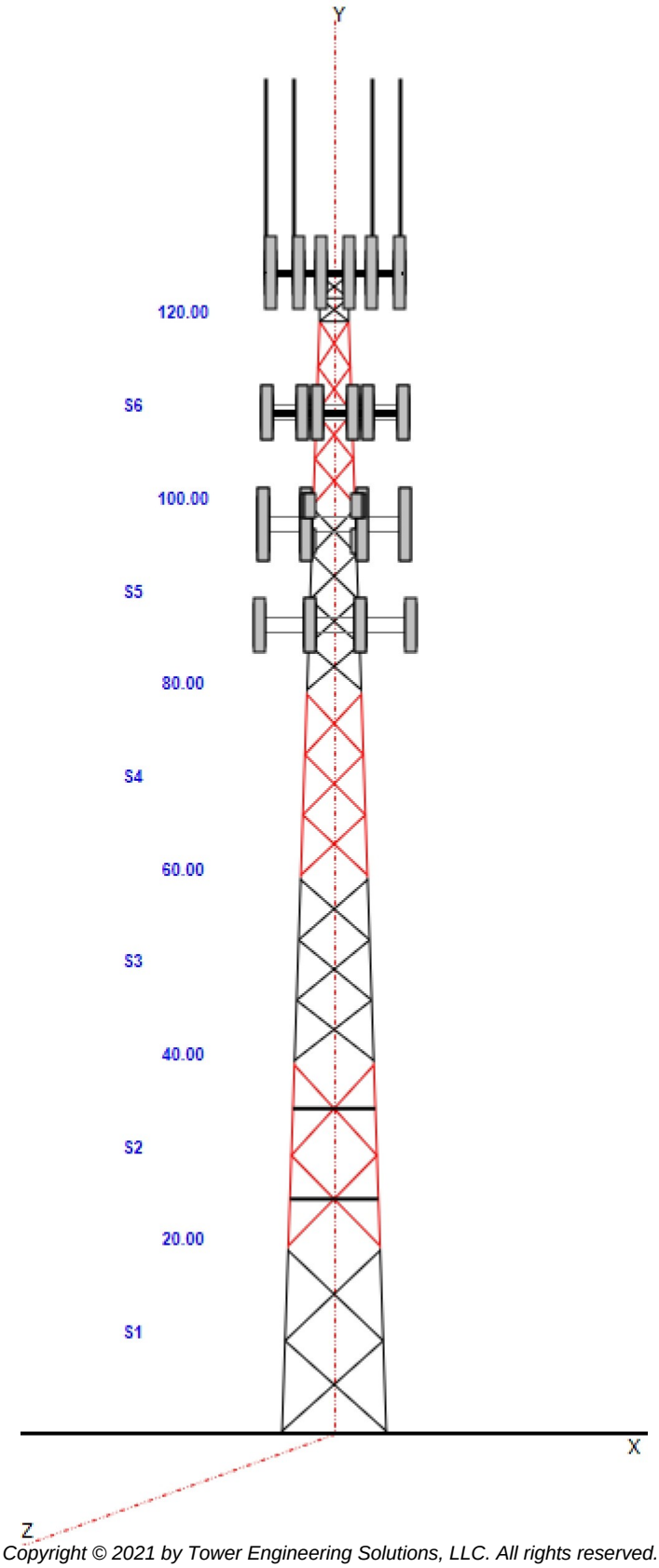
Elev From (ft)	Elev To (ft)	Qty	Description
0.00	125.00	1	1 1/4" Coax
0.00	125.00	9	1 5/8" Coax
0.00	125.00	2	1 5/8" Hybrid
0.00	125.00	2	1-1/4" Hybrid
0.00	125.00	2	1/2" Coax
0.00	125.00	1	7/8" Coax
0.00	125.00	4	7/8" Coax
0.00	125.00	1	Climbing Ladder
0.00	125.00	1	W/G Ladder
0.00	125.00	1	W/G Ladder
0.00	110.00	18	1 5/8" Coax
0.00	110.00	1	1 5/8" Fiber
0.00	110.00	2	1/2" Coax
0.00	110.00	1	W/G Ladder
0.00	98.00	1	1/2" Fiber
0.00	98.00	1	3" Conduit
0.00	98.00	4	3/4" DC
0.00	98.00	12	7/8" Coax
0.00	98.00	1	W/G Ladder
0.00	87.00	4	1 1/4" Coax
0.00	87.00	1	W/G Ladder
0.00	65.00	1	1/2" Coax

Base Reactions

Leg			Overturning		
Max Uplift:	-262.48	(kips	Moment:	3027.12	(ft-kips)
Max Down:	293.05	(kips	Total Down:	40.26	(kips)
Max Shear:	24.71	(kips	Total Shear:	38.39	(kips)

Structure: CT01725-A-SBA

Site Name:	Bloomfield			**Code:**	EIA/TIA-222-G	11/16/2021
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	125.00 (ft)	**Base Width:**	12.50	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.50	**Operational WS:**	60.00	Page: 3

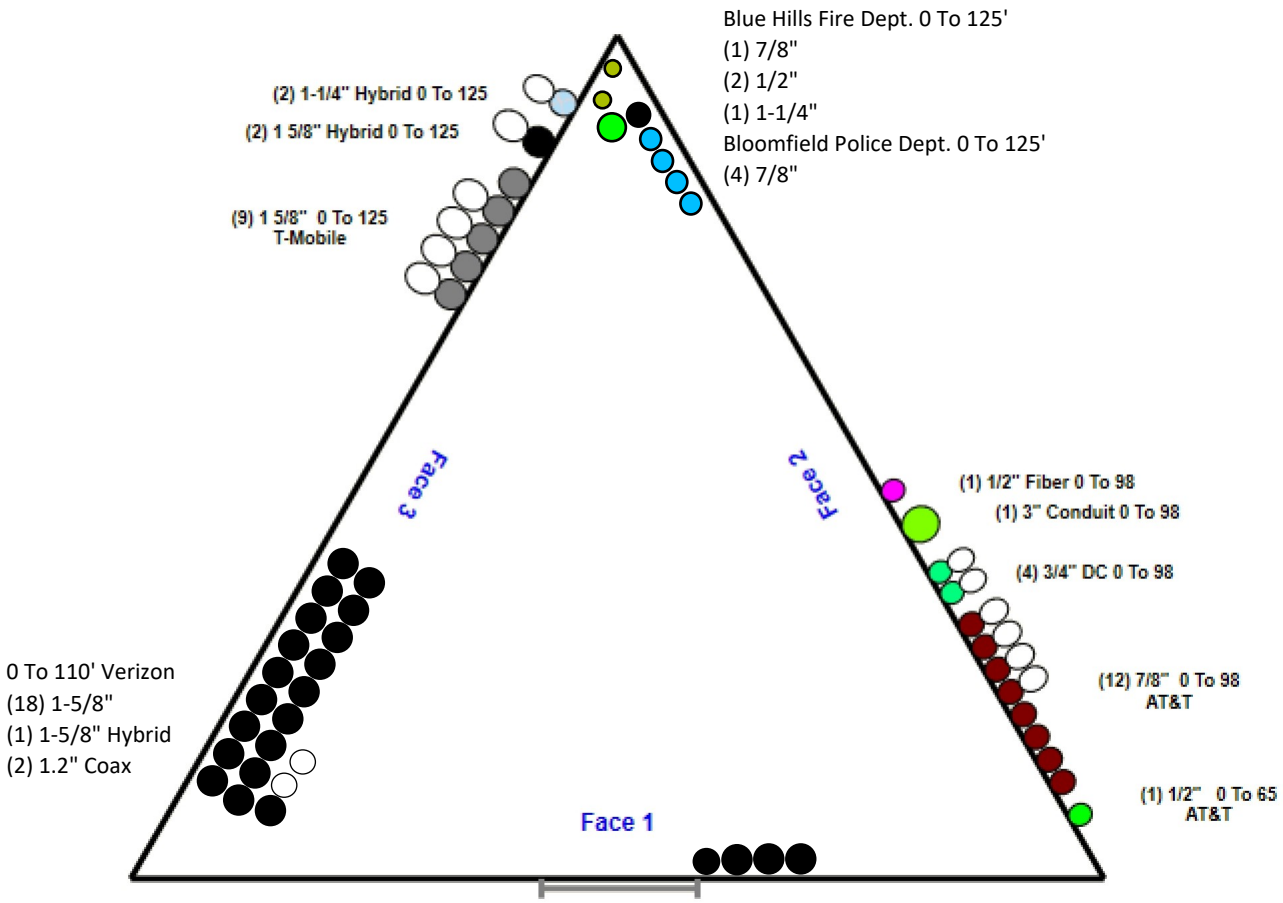


Structure: CT01725-A-SBA - Coax Line Placement

Type: Self Support
Site Name: Bloomfield
Height: 125.00 (ft)

11/16/2021

Tower Engineering Solutions



Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
125.00	APXVAARR24_43-U-NA20	3	128.00	20.240	695.54	22.751	95.900	24.000	7.800	0.75	0.70	0.000
125.00	AIR32 KRD901146-1_B66A	3	132.20	6.510	385.26	8.005	56.600	12.900	8.700	0.75	0.87	0.000
125.00	KRY 112 144/1	3	11.00	0.410	25.09	1.031	6.900	6.100	2.700	0.75	0.67	0.000
125.00	Radio 4449 B71+B85 RRU	3	70.00	1.650	166.38	2.376	15.000	13.200	9.300	0.75	0.67	0.000
125.00	Lightning Rod	1	5.00	0.500	32.36	2.780	72.000	1.000	1.000	1.00	1.00	0.000
125.00	Beacon	1	36.00	2.720	210.03	3.961	28.000	17.500	17.500	1.00	1.00	0.000
125.00	PD165S	1	5.00	1.810	120.44	22.822	0.700	39.000	50.000	1.00	1.00	0.000
125.00	Cellwave AS MONR 31	1	22.00	0.940	529.93	11.852	0.700	39.000	50.000	1.00	1.00	10.00
125.00	AIR6449 B41	3	103.00	5.650	282.16	6.892	33.100	20.500	8.300	0.75	0.71	0.000
125.00	SDX1926Q-43	3	6.10	0.300	43.70	0.692	6.900	5.500	8.200	0.75	0.67	0.000
125.00	4415 B25	3	46.00	1.640	99.71	2.313	15.000	13.200	5.400	0.75	0.67	0.000
125.00	PD455	3	24.00	6.020	223.34	15.970	258.000	2.800	2.800	1.00	1.00	10.00
125.00	PD455	3	24.00	6.020	223.34	15.970	258.000	2.800	2.800	1.00	1.00	10.00
125.00	PRK-FMA	1	337.91	5.330	954.34	12.622	0.000	0.000	0.000	1.00	1.00	0.000
125.00	Cellwave AS MONR 31	1	22.00	0.940	529.93	11.852	0.700	39.000	50.000	1.00	1.00	8.000
125.00	Platform w/ HR	1	1800.0	56.000	4262.73	94.309	0.000	0.000	0.000	1.00	1.00	0.000
125.00	(3) HR w/ V-Brace Kits	1	650.00	15.500	1717.18	36.707	0.000	0.000	0.000	0.75	1.00	0.000
110.00	Sector Frame	3	500.00	17.500	1402.36	35.502	0.000	0.000	0.000	0.75	0.75	0.000
110.00	NHH-65B-R2B	3	43.70	8.080	319.08	9.784	72.000	11.900	7.100	0.80	0.83	0.000
110.00	NHHSS-65B-R2B	3	43.70	8.080	319.08	9.784	72.000	11.900	7.100	0.80	0.83	0.000
110.00	MT6407-77A	3	79.40	4.690	243.58	5.931	35.100	16.100	5.500	0.80	0.70	0.000
110.00	BXA-70063-4CF	3	9.90	4.720	141.55	7.109	47.400	11.200	5.200	0.80	0.73	0.000
110.00	RF4440d-13A	3	84.40	1.880	150.66	2.592	15.000	15.000	10.000	0.80	0.67	0.000
110.00	RF4439d-25A	3	70.30	1.880	133.16	2.592	15.000	15.000	8.100	0.80	0.67	0.000
110.00	DB-C1-12C-24AB-0Z	1	32.00	4.060	179.26	5.122	29.500	16.500	12.500	1.00	1.00	0.000
110.00	(3) 12.5' - 2.5" Horizontal Pi	1	217.50	7.188	492.27	18.862	0.000	0.000	0.000	0.75	1.00	0.000
110.00	(3) SFS-H-L (V-Braces)	1	230.00	6.700	645.08	15.769	0.000	0.000	0.000	0.75	1.00	0.000
100.00	Air 6449 N77D	3	88.00	4.130	271.02	5.236	30.800	16.100	10.800	0.80	0.85	0.000
98.00	DMP65R-BU8EA-K	2	82.50	17.870	584.94	20.146	96.000	20.700	7.700	0.80	0.72	0.000
98.00	(3) SFR-K-L	1	394.00	16.600	1311.16	32.016	0.000	0.000	0.000	0.75	1.00	0.000
98.00	(3) SFS-H-L	1	230.00	6.700	636.84	15.588	0.000	0.000	0.000	0.75	1.00	0.000
98.00	Sector Frame	3	500.00	17.500	1384.43	35.144	0.000	0.000	0.000	0.75	0.75	0.000
98.00	(3) Stiff Arm Kit	1	180.00	6.100	466.55	14.193	0.000	0.000	0.000	0.75	1.00	0.000
98.00	DMP65R-BU6EA-K	1	79.40	12.710	452.57	14.565	71.200	20.700	7.700	0.80	0.72	0.000
98.00	HPA-65R-BUU-H8	2	68.00	12.980	453.09	15.060	92.400	14.800	7.400	0.80	0.79	0.000
98.00	HPA-65R-BUU-H6	1	51.00	9.660	379.18	11.418	72.000	14.800	9.000	0.80	0.85	0.000
98.00	LGP-21401	6	14.10	1.290	45.77	2.349	14.400	9.200	2.600	0.80	0.67	0.000
98.00	LGP-21903 Diplexer	6	5.50	0.230	15.24	0.696	4.000	6.000	3.000	0.80	0.67	0.000
98.00	7020.00 RET	12	2.20	0.400	15.16	1.013	4.900	8.300	2.400	0.80	0.67	0.000
98.00	8843 B2 B66A	3	72.00	1.640	131.35	2.269	14.900	13.200	10.900	0.80	0.67	0.000
98.00	4449 B5/B12	3	71.00	1.970	138.63	2.663	17.900	13.200	9.400	0.80	0.67	0.000
98.00	4415 B30	3	44.10	1.860	104.20	2.586	13.500	16.500	4.800	0.80	0.67	0.000
98.00	DC6-48-60-18-8F	1	31.80	2.200	110.13	3.527	24.000	11.000	18.500	0.80	0.67	0.000
98.00	DC6-48-60-0-18-8C-EV	1	20.00	1.900	101.83	2.690	23.500	9.700	9.700	0.80	0.67	0.000
98.00	DC6-48-60-18-8C	1	20.00	1.900	101.83	2.690	23.500	9.700	9.700	0.80	0.67	0.000
98.00	782 10253	3	2.90	0.120	8.12	0.463	2.900	4.200	1.800	0.80	0.67	0.000
96.00	Air 6419 N77G	3	88.00	4.130	271.02	5.236	30.800	16.100	10.800	0.80	0.85	0.000
87.00	Sector Frame	3	450.00	18.000	895.75	22.915	0.000	0.000	0.000	0.75	0.75	0.000

Loading Summary

Structure:	CT01725-A-SBA		**Code:**	EIA/TIA-222-G	11/16/2021
Site Name:	Bloomfield		**Exposure:**	B	
Height:	125.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 6

Tower Engineering Solutions

87.00	1900MHz RRH	3	60.00	2.770	165.71	4.377	25.000	11.100	11.400	0.80	0.67	0.000
87.00	800MHZ RRH	3	59.50	2.640	158.33	4.106	18.000	15.100	11.300	0.80	0.67	0.000
87.00	TD-RRH8x20-25	3	70.00	4.050	217.87	5.101	26.100	18.600	6.700	0.80	0.67	0.000
87.00	ACU-A20-N	4	1.00	0.140	6.44	0.516	4.000	2.000	3.500	0.80	0.67	0.000
87.00	APXVSPP18-C-A20	3	57.00	8.020	275.99	11.559	72.000	11.800	7.000	0.80	0.83	0.000
87.00	APXVTM14-C-120	3	56.00	6.340	270.33	7.775	56.300	12.600	6.300	0.80	0.79	0.000
87.00	800MHz Filter	3	10.00	0.490	30.33	1.201	4.600	11.000	4.500	0.80	0.67	0.000
65.00	CS72188.01 LMU	1	0.31	0.170	1.14	0.403	4.500	4.500	4.500	1.00	1.00	0.000
65.00	Standoff Mount	1	40.00	1.500	74.50	2.794	0.000	0.000	0.000	1.00	1.00	0.000
	Totals:	**143**	**13,865.52**		**43,490.33**				**Number of Appurtenances :**			**57**

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	125.00	1 1/4" Coax	1	1.55	0.66	100.00	2	Individual NR		N	1.00	1.00	
0.00	125.00	1 5/8" Coax	9	1.98	1.04	50.00	3	Block		N	0.50	1.00	
0.00	125.00	1 5/8" Hybrid	2	2.00	1.10	50.00	3	Block		N	0.50	1.00	
0.00	125.00	1-1/4" Hybrid	2	1.25	0.95	50.00	3	Block		N	0.50	1.00	
0.00	125.00	1/2" Coax	2	0.65	0.16	100.00	2	Individual NR		N	1.00	1.00	
0.00	125.00	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	125.00	7/8" Coax	4	1.11	0.52	100.00	2	Individual IR		N	1.00	1.00	
0.00	125.00	Climbing Ladder	1	3.00	6.90	100.00	1	Individual NR		N	1.00	1.00	
0.00	125.00	W/G Ladder	1	3.00	6.00	100.00	3	Individual NR		N	1.00	1.00	
0.00	125.00	W/G Ladder	1	2.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	110.00	1 5/8" Coax	18	1.98	1.04	50.00	3	Block		N	0.50	1.00	
0.00	110.00	1 5/8" Fiber	1	2.00	1.10	100.00	3	Individual NR		N	1.00	1.00	
0.00	110.00	1/2" Coax	2	0.65	0.16	100.00	3	Individual NR		N	1.00	1.00	
0.00	110.00	W/G Ladder	1	2.00	6.00	100.00	3	Individual NR		N	1.00	1.00	
0.00	98.00	1/2" Fiber	1	0.65	0.16	100.00	2	Individual IR		Y	1.00	1.00	0
0.00	98.00	3" Conduit	1	3.00	1.61	100.00	2	Individual NR		N	1.00	1.00	
0.00	98.00	3/4" DC	4	0.75	0.40	50.00	2	Block		N	0.50	1.00	
0.00	98.00	7/8" Coax	12	1.11	0.52	66.60	2	Block		N	0.50	1.00	
0.00	98.00	W/G Ladder	1	2.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	87.00	1 1/4" Coax	4	1.55	0.66	100.00	1	Individual IR		N	1.00	1.00	
0.00	87.00	W/G Ladder	1	2.00	6.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	65.00	1/2" Coax	1	0.65	0.16	100.00	2	Individual NR		N	1.00	1.00	

Section Forces

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W Normal Wind — 1.2D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	16.978	28.78	0.00	0.18	2.65	1.00	1.00	0.00	30.23	147.48	0.00	5,409.0	0.0	1562.59	2500.96	4,063.55
2	30.0	14.34	18.717	22.10	0.00	0.19	2.63	1.00	1.00	0.00	30.19	147.48	0.00	4,802.7	0.0	1551.12	2503.07	4,054.19
3	50.0	16.60	12.939	22.10	0.00	0.19	2.64	1.00	1.00	0.00	24.10	147.48	0.00	4,166.1	0.0	1433.70	2896.40	4,330.10
4	70.0	18.27	11.598	18.56	0.00	0.20	2.61	1.00	1.00	0.00	21.45	146.67	0.00	3,772.7	0.0	1392.04	3174.13	4,566.18
5	90.0	19.63	9.614	13.35	0.00	0.19	2.63	1.00	1.00	0.00	17.26	134.02	0.00	3,086.5	0.0	1213.66	3135.66	4,349.32
6	110.0	20.79	6.277	9.59	0.00	0.18	2.68	1.00	1.00	0.00	11.75	75.18	0.00	1,931.5	0.0	889.15	1955.32	2,844.47
7	122.5	21.44	1.223	3.24	0.00	0.24	2.47	1.00	1.00	0.00	3.14	13.15	0.00	452.6	0.0	226.28	355.78	582.06
														23,621.1	**0.0**			**24,789.88**

Load Case: 1.2D + 1.6W 60° Wind — 1.2D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	16.978	28.78	0.00	0.18	2.65	0.80	1.00	0.00	26.83	147.48	0.00	5,409.0	0.0	1387.06	2500.96	3,888.02
2	30.0	14.34	18.717	22.10	0.00	0.19	2.63	0.80	1.00	0.00	26.45	147.48	0.00	4,802.7	0.0	1358.82	2503.07	3,861.90
3	50.0	16.60	12.939	22.10	0.00	0.19	2.64	0.80	1.00	0.00	21.51	147.48	0.00	4,166.1	0.0	1279.76	2896.40	4,176.16
4	70.0	18.27	11.598	18.56	0.00	0.20	2.61	0.80	1.00	0.00	19.13	146.67	0.00	3,772.7	0.0	1241.53	3174.13	4,415.66
5	90.0	19.63	9.614	13.35	0.00	0.19	2.63	0.80	1.00	0.00	15.33	134.02	0.00	3,086.5	0.0	1078.43	3135.66	4,214.08
6	110.0	20.79	6.277	9.59	0.00	0.18	2.68	0.80	1.00	0.00	10.50	75.18	0.00	1,931.5	0.0	794.16	1955.32	2,749.49
7	122.5	21.44	1.223	3.24	0.00	0.24	2.47	0.80	1.00	0.00	2.90	13.15	0.00	452.6	0.0	208.65	355.78	564.44
														23,621.1	**0.0**			**23,869.74**

Section Forces

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 90° Wind — 1.2D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	16.978	28.78	0.00	0.18	2.65	0.85	1.00	0.00	27.68	147.48	0.00	5,409.0	0.0	1430.95	2500.96	3,931.90
2	30.0	14.34	18.717	22.10	0.00	0.19	2.63	0.85	1.00	0.00	27.39	147.48	0.00	4,802.7	0.0	1406.90	2503.07	3,909.97
3	50.0	16.60	12.939	22.10	0.00	0.19	2.64	0.85	1.00	0.00	22.16	147.48	0.00	4,166.1	0.0	1318.24	2896.40	4,214.64
4	70.0	18.27	11.598	18.56	0.00	0.20	2.61	0.85	1.00	0.00	19.71	146.67	0.00	3,772.7	0.0	1279.16	3174.13	4,453.29
5	90.0	19.63	9.614	13.35	0.00	0.19	2.63	0.85	1.00	0.00	15.81	134.02	0.00	3,086.5	0.0	1112.24	3135.66	4,247.89
6	110.0	20.79	6.277	9.59	0.00	0.18	2.68	0.85	1.00	0.00	10.81	75.18	0.00	1,931.5	0.0	817.91	1955.32	2,773.23
7	122.5	21.44	1.223	3.24	0.00	0.24	2.47	0.85	1.00	0.00	2.96	13.15	0.00	452.6	0.0	213.06	355.78	568.84
														23,621.1	**0.0**			**24,099.78**

Load Case: 0.9D + 1.6W Normal Wind — 0.9D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	16.978	28.78	0.00	0.18	2.65	1.00	1.00	0.00	30.23	147.48	0.00	4,056.7	0.0	1562.59	2500.96	4,063.55
2	30.0	14.34	18.717	22.10	0.00	0.19	2.63	1.00	1.00	0.00	30.19	147.48	0.00	3,602.0	0.0	1551.12	2503.07	4,054.19
3	50.0	16.60	12.939	22.10	0.00	0.19	2.64	1.00	1.00	0.00	24.10	147.48	0.00	3,124.6	0.0	1433.70	2896.40	4,330.10
4	70.0	18.27	11.598	18.56	0.00	0.20	2.61	1.00	1.00	0.00	21.45	146.67	0.00	2,829.5	0.0	1392.04	3174.13	4,566.18
5	90.0	19.63	9.614	13.35	0.00	0.19	2.63	1.00	1.00	0.00	17.26	134.02	0.00	2,314.9	0.0	1213.66	3135.66	4,349.32
6	110.0	20.79	6.277	9.59	0.00	0.18	2.68	1.00	1.00	0.00	11.75	75.18	0.00	1,448.7	0.0	889.15	1955.32	2,844.47
7	122.5	21.44	1.223	3.24	0.00	0.24	2.47	1.00	1.00	0.00	3.14	13.15	0.00	339.5	0.0	226.28	355.78	582.06
														17,715.9	**0.0**			**24,789.88**

Section Forces

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 60° Wind — 0.9D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	16.978	28.78	0.00	0.18	2.65	0.80	1.00	0.00	26.83	147.48	0.00	4,056.7	0.0	1387.06	2500.96	3,888.02
2	30.0	14.34	18.717	22.10	0.00	0.19	2.63	0.80	1.00	0.00	26.45	147.48	0.00	3,602.0	0.0	1358.82	2503.07	3,861.90
3	50.0	16.60	12.939	22.10	0.00	0.19	2.64	0.80	1.00	0.00	21.51	147.48	0.00	3,124.6	0.0	1279.76	2896.40	4,176.16
4	70.0	18.27	11.598	18.56	0.00	0.20	2.61	0.80	1.00	0.00	19.13	146.67	0.00	2,829.5	0.0	1241.53	3174.13	4,415.66
5	90.0	19.63	9.614	13.35	0.00	0.19	2.63	0.80	1.00	0.00	15.33	134.02	0.00	2,314.9	0.0	1078.43	3135.66	4,214.08
6	110.0	20.79	6.277	9.59	0.00	0.18	2.68	0.80	1.00	0.00	10.50	75.18	0.00	1,448.7	0.0	794.16	1955.32	2,749.49
7	122.5	21.44	1.223	3.24	0.00	0.24	2.47	0.80	1.00	0.00	2.90	13.15	0.00	339.5	0.0	208.65	355.78	564.44
														17,715.9	**0.0**			**23,869.74**

Load Case: 0.9D + 1.6W 90° Wind — 0.9D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	16.978	28.78	0.00	0.18	2.65	0.85	1.00	0.00	27.68	147.48	0.00	4,056.7	0.0	1430.95	2500.96	3,931.90
2	30.0	14.34	18.717	22.10	0.00	0.19	2.63	0.85	1.00	0.00	27.39	147.48	0.00	3,602.0	0.0	1406.90	2503.07	3,909.97
3	50.0	16.60	12.939	22.10	0.00	0.19	2.64	0.85	1.00	0.00	22.16	147.48	0.00	3,124.6	0.0	1318.24	2896.40	4,214.64
4	70.0	18.27	11.598	18.56	0.00	0.20	2.61	0.85	1.00	0.00	19.71	146.67	0.00	2,829.5	0.0	1279.16	3174.13	4,453.29
5	90.0	19.63	9.614	13.35	0.00	0.19	2.63	0.85	1.00	0.00	15.81	134.02	0.00	2,314.9	0.0	1112.24	3135.66	4,247.89
6	110.0	20.79	6.277	9.59	0.00	0.18	2.68	0.85	1.00	0.00	10.81	75.18	0.00	1,448.7	0.0	817.91	1955.32	2,773.23
7	122.5	21.44	1.223	3.24	0.00	0.24	2.47	0.85	1.00	0.00	2.96	13.15	0.00	339.5	0.0	213.06	355.78	568.84
														17,715.9	**0.0**			**24,099.78**

Section Forces

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 1.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	16.978	58.69	29.91	0.30	2.31	1.00	1.00	1.77	52.06	238.75	59.16	14,842.	9434.0	388.55	891.98	1,280.53
2	30.0	3.81	18.717	54.01	31.91	0.33	2.23	1.00	1.00	1.98	51.54	248.36	66.03	15,661.	10858.8	371.90	932.60	1,304.50
3	50.0	4.41	12.939	58.75	36.64	0.37	2.12	1.00	1.00	2.08	49.62	253.21	69.50	14,994.	10828.3	394.94	1091.01	1,485.94
4	70.0	4.86	11.598	53.95	35.39	0.41	2.05	1.00	1.00	2.16	46.07	255.73	66.48	14,564.	10791.5	390.15	1179.85	1,399.27
5	90.0	5.22	9.614	50.34	36.99	0.46	1.95	1.00	1.00	2.21	43.17	230.75	64.86	13,029.	9943.1	373.29	1043.30	1,416.59
6	110.0	5.52	6.277	44.25	34.66	0.52	1.88	1.00	1.00	2.26	37.05	140.34	41.36	8,582.6	6651.1	326.47	627.61	954.08
7	122.5	5.70	1.223	17.57	14.33	0.91	1.94	1.00	1.00	2.28	18.42	27.70	7.60	2,222.0	1769.4	173.23	23.19	196.43
														83,897.3	**60276.1**			**8,037.33**

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 1.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	16.978	58.69	29.91	0.30	2.31	0.80	1.00	1.77	48.67	238.75	59.16	14,842.	9434.0	363.21	891.98	1,255.19
2	30.0	3.81	18.717	54.01	31.91	0.33	2.23	0.80	1.00	1.98	47.79	248.36	66.03	15,661.	10858.8	344.89	932.60	1,277.49
3	50.0	4.41	12.939	58.75	36.64	0.37	2.12	0.80	1.00	2.08	47.03	253.21	69.50	14,994.	10828.3	374.34	1091.01	1,465.35
4	70.0	4.86	11.598	53.95	35.39	0.41	2.05	0.80	1.00	2.16	43.75	255.73	66.48	14,564.	10791.5	370.51	1179.85	1,550.36
5	90.0	5.22	9.614	50.34	36.99	0.46	1.95	0.80	1.00	2.21	41.24	230.75	64.86	13,029.	9943.1	356.66	1043.30	1,399.96
6	110.0	5.52	6.277	44.25	34.66	0.52	1.88	0.80	1.00	2.26	35.80	140.34	41.36	8,582.6	6651.1	315.41	627.61	943.02
7	122.5	5.70	1.223	17.57	14.33	0.91	1.94	0.80	1.00	2.28	18.18	27.70	7.60	2,222.0	1769.4	170.93	23.19	194.13
														83,897.3	**60276.1**			**8,085.48**

Section Forces

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	16.978	58.69	29.91	0.30	2.31	0.85	1.00	1.77	49.52	238.75	59.16	14,842.	9434.0	369.54	891.98	1,261.52
2	30.0	3.81	18.717	54.01	31.91	0.33	2.23	0.85	1.00	1.98	48.73	248.36	66.03	15,661.	10858.8	351.64	932.60	1,284.24
3	50.0	4.41	12.939	58.75	36.64	0.37	2.12	0.85	1.00	2.08	47.68	253.21	69.50	14,994.	10828.3	379.49	1091.01	1,470.49
4	70.0	4.86	11.598	53.95	35.39	0.41	2.05	0.85	1.00	2.16	44.33	255.73	66.48	14,564.	10791.5	375.42	1179.85	1,555.27
5	90.0	5.22	9.614	50.34	36.99	0.46	1.95	0.85	1.00	2.21	41.73	230.75	64.86	13,029.	9943.1	360.82	1043.30	1,404.12
6	110.0	5.52	6.277	44.25	34.66	0.52	1.88	0.85	1.00	2.26	36.11	140.34	41.36	8,582.6	6651.1	318.17	627.61	945.78
7	122.5	5.70	1.223	17.57	14.33	0.91	1.94	0.85	1.00	2.28	18.24	27.70	7.60	2,222.0	1769.4	171.51	23.19	194.70
														83,897.3	**60276.1**			**8,116.13**

Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

Wind Load Factor: 1.00
Dead Load Factor: 1.00
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	16.978	28.78	0.00	0.18	2.65	1.00	1.00	0.00	32.94	147.48	0.00	4,507.5	0.0	407.14	598.06	1,005.20
2	30.0	5.49	18.717	22.10	0.00	0.19	2.63	1.00	1.00	0.00	31.37	147.48	0.00	4,002.2	0.0	385.41	598.57	983.98
3	50.0	6.35	12.939	22.10	0.00	0.19	2.64	1.00	1.00	0.00	25.59	147.48	0.00	3,471.8	0.0	364.10	692.62	1,056.72
4	70.0	6.99	11.598	18.56	0.00	0.20	2.61	1.00	1.00	0.00	22.25	146.67	0.00	3,143.9	0.0	345.20	759.04	1,104.23
5	90.0	7.51	9.614	13.35	0.00	0.19	2.63	1.00	1.00	0.00	17.26	134.02	0.00	2,572.1	0.0	290.23	749.84	1,040.07
6	110.0	7.96	6.277	9.59	0.00	0.18	2.68	1.00	1.00	0.00	11.75	75.18	0.00	1,609.6	0.0	212.62	467.58	680.21
7	122.5	8.20	1.223	3.24	0.00	0.24	2.47	1.00	1.00	0.00	3.14	13.15	0.00	377.2	0.0	54.11	85.08	139.19
														19,684.3	**0.0**			**6,009.59**

Section Forces

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60° Wind — 1.0D + 1.0W 60 mph Wind at 60° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.00

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	16.978	28.78	0.00	0.18	2.65	0.80	1.00	0.00	29.54	147.48	0.00	4,507.5	0.0	365.16	598.06	963.22
2	30.0	5.49	18.717	22.10	0.00	0.19	2.63	0.80	1.00	0.00	27.63	147.48	0.00	4,002.2	0.0	339.43	598.57	937.99
3	50.0	6.35	12.939	22.10	0.00	0.19	2.64	0.80	1.00	0.00	23.01	147.48	0.00	3,471.8	0.0	327.28	692.62	1,019.91
4	70.0	6.99	11.598	18.56	0.00	0.20	2.61	0.80	1.00	0.00	19.93	146.67	0.00	3,143.9	0.0	309.20	759.04	1,068.24
5	90.0	7.51	9.614	13.35	0.00	0.19	2.63	0.80	1.00	0.00	15.33	134.02	0.00	2,572.1	0.0	257.89	749.84	1,007.73
6	110.0	7.96	6.277	9.59	0.00	0.18	2.68	0.80	1.00	0.00	10.50	75.18	0.00	1,609.6	0.0	189.91	467.58	657.49
7	122.5	8.20	1.223	3.24	0.00	0.24	2.47	0.80	1.00	0.00	2.90	13.15	0.00	377.2	0.0	49.90	85.08	134.98
														19,684.3	**0.0**			**5,789.55**

Load Case: 1.0D + 1.0W 90° Wind — 1.0D + 1.0W 60 mph Wind at 90° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.00

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	16.978	28.78	0.00	0.18	2.65	0.85	1.00	0.00	30.39	147.48	0.00	4,507.5	0.0	375.65	598.06	973.72
2	30.0	5.49	18.717	22.10	0.00	0.19	2.63	0.85	1.00	0.00	28.57	147.48	0.00	4,002.2	0.0	350.92	598.57	949.49
3	50.0	6.35	12.939	22.10	0.00	0.19	2.64	0.85	1.00	0.00	23.65	147.48	0.00	3,471.8	0.0	336.49	692.62	1,029.11
4	70.0	6.99	11.598	18.56	0.00	0.20	2.61	0.85	1.00	0.00	20.51	146.67	0.00	3,143.9	0.0	318.20	759.04	1,077.24
5	90.0	7.51	9.614	13.35	0.00	0.19	2.63	0.85	1.00	0.00	15.81	134.02	0.00	2,572.1	0.0	265.97	749.84	1,015.81
6	110.0	7.96	6.277	9.59	0.00	0.18	2.68	0.85	1.00	0.00	10.81	75.18	0.00	1,609.6	0.0	195.59	467.58	663.17
7	122.5	8.20	1.223	3.24	0.00	0.24	2.47	0.85	1.00	0.00	2.96	13.15	0.00	377.2	0.0	50.95	85.08	136.03
														19,684.3	**0.0**			**5,844.56**

Force/Stress Compression Summary

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PST - 8" DIA PIPE	-281.76	1.2D + 1.6W Normal Wind	9.76	100	100	100	39.83	55.00	365.98	77.0	Member X
2	40	PST - 6" DIA PIPE	-242.72	1.2D + 1.6W Normal Wind	9.76	50	50	50	26.02	55.00	261.57	92.8	Member X
3	60	PST - 6" DIA PIPE	-202.73	1.2D + 1.6W Normal Wind	6.51	100	100	100	34.70	55.00	250.72	80.9	Member X
4	80	PST - 5" DIA PIPE	-154.57	1.2D + 1.6W Normal Wind	6.51	100	100	100	41.53	55.00	185.28	83.4	Member X
5	100	PST - 3-1/2" DIA PIPE	-103.77	1.2D + 1.6W Normal Wind	4.88	100	100	100	43.70	55.00	113.77	91.2	Member X
6	120	PST - 2-1/2" DIA PIPE	-48.24	1.2D + 1.6W Normal Wind	4.94	100	100	100	62.62	55.00	61.53	78.4	Member X
7	125	PST - 2-1/2" DIA PIPE	-12.22	1.2D + 1.6W Normal Wind	2.50	100	100	100	31.68	55.00	77.81	15.7	Member X

Splices

		Top Splice					Bottom Splice				
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	1.2D + 1.6W Normal Wind	254.57	0.00	0.0			1.2D + 1.6W Normal Wind	293.47	0.00			
2	40	1.2D + 1.6W Normal Wind	211.24	0.00	0.0			1.2D + 1.6W Normal Wind	254.57	0.00		1/4 A325	8
3	60	1.2D + 1.6W Normal Wind	163.88	0.00	0.0			1.2D + 1.6W Normal Wind	211.24	0.00		1 A325	8
4	80	1.2D + 1.6W Normal Wind	111.44	0.00	0.0			1.2D + 1.6W Normal Wind	163.88	0.00		1 A325	8
5	100	1.2D + 1.6W Normal Wind	54.00	0.00	0.0			1.2D + 1.6W Normal Wind	111.44	0.00		1 A325	6
6	120	1.2D + 1.6W Normal Wind	15.08	0.00	0.0			1.2D + 1.6W Normal Wind	54.00	0.00		3/4 A325	6
7	125	1.2D + 1.0Di + 1.0Wi 90° Wind	5.16	0.00	0.0			1.2D + 1.6W Normal Wind	15.08	0.00		3/4 A325	4

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20										0.00	0	0				
2	40										0.00	0	0				
3	60										0.00	0	0				
4	80										0.00	0	0				
5	100										0.00	0	0				
6	120										0.00	0	0				
7	125	SAE - 1.5X1.5X0.1875	-4.15	1.2D + 1.6W Normal Wind	3.50	100	100	100	100.34	36.00	10.11	2	1	35.78	27.73	41	Member Z

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20	SAE - 3.5X3.5X0.25	-8.84	0.9D + 1.6W 90° Wind	14.99	50	50	50	129.60	36.00	22.62	1	1	12.43	13.0	71	Bolt Shear
2	40	SAE - 3X3X0.25	-9.20	1.2D + 1.6W 90° Wind	13.89	50	50	50	140.73	36.00	16.43	1	1	12.43	13.0	74	Bolt Shear
3	60	SAE - 2.5X2.5X0.1875	-7.83	1.2D + 1.6W 90° Wind	10.51	50	50	50	127.44	36.00	12.43	1	1	12.43	9.79	80	Bolt Bear
4	80	SAE - 2.5X2.5X0.1875	-8.07	1.2D + 1.6W 90° Wind	9.38	50	50	50	115.28	36.00	14.52	2	1	15.90	18.6	56	Member Z
5	100	SAE - 2X2X0.1875	-6.53	1.2D + 1.6W 90° Wind	7.97	50	50	50	121.30	36.00	10.60	1	1	7.95	7.50	87	Bolt Bear
6	120	SAE - 1.5X1.5X0.1875	-4.23	1.2D + 1.6W 90° Wind	6.88	50	50	50	140.97	36.00	6.02	1	1	7.95	7.50	70	Member Z
7	125	SOL - 5/8" SOLID	-2.43	1.2D + 1.6W Normal Wind	4.30	50	50	50	148.89	36.00	3.13	0	0				T-Only

Force/Stress Tension Summary

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	

IES Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PST - 8" DIA PIPE	263.50	0.9D + 1.6W 60° Wind	55	415.80	63.4	Member
2	40	PST - 6" DIA PIPE	227.77	0.9D + 1.6W 60° Wind	55	276.21	82.5	Member
3	60	PST - 6" DIA PIPE	188.03	0.9D + 1.6W 60° Wind	55	276.21	68.1	Member
4	80	PST - 5" DIA PIPE	143.85	0.9D + 1.6W 60° Wind	55	212.85	67.6	Member
5	100	PST - 3-1/2" DIA PIPE	94.08	0.9D + 1.6W 60° Wind	55	132.66	70.9	Member
6	120	PST - 2-1/2" DIA PIPE	42.70	0.9D + 1.6W 60° Wind	55	84.35	50.6	Member
7	125	PST - 2-1/2" DIA PIPE	4.36	0.9D + 1.6W Normal Wind	55	84.35	5.2	Member

Splices

		Top Splice					Bottom Splice					
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	0.9D + 1.6W 60° Wind	227.51	0.00	0.0			0.9D + 1.6W 60° Wind	263.5	0.00			
2	40	0.9D + 1.6W 60° Wind	187.75	0.00	0.0			0.9D + 1.6W 60° Wind	227.5	610.56	37.3	1 1/4 A325	8
3	60	0.9D + 1.6W 60° Wind	143.66	0.00	0.0			0.9D + 1.6W 60° Wind	187.7	424.08	44.3	1 A325	8
4	80	0.9D + 1.6W 60° Wind	93.91	0.00	0.0			0.9D + 1.6W 60° Wind	143.6	424.08	33.9	1 A325	8
5	100	0.9D + 1.6W 60° Wind	42.51	0.00	0.0			0.9D + 1.6W 60° Wind	93.91	318.06	29.5	1 A325	6
6	120	0.9D + 1.6W 60° Wind	5.98	0.00	0.0			0.9D + 1.6W 60° Wind	42.51	180.60	23.5	3/4 A325	6
7	125		0.00	0.00	0.0			0.9D + 1.6W 60° Wind	5.98	120.40	5.0	3/4 A325	4

HORIZONTAL MEMBERS

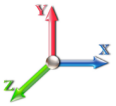
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			36	0.00	0	0					
2	40	-			36	0.00	0	0					
3	60	-			36	0.00	0	0					
4	80	-			36	0.00	0	0					
5	100	-			36	0.00	0	0					
6	120	-			36	0.00	0	0					
7	125	SAE - 1.5X1.5X0.1875	2.01	1.2D + 1.6W Normal Wi	36	15.92	2	1	35.78	27.73	13.18	15.2	Blck Shear

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 3.5X3.5X0.25	8.44	0.9D + 1.6W 90° Wind	36	54.76	1	1	12.43	13.05	16.79	67.9	Bolt Shear
2	40	SAE - 3X3X0.25	8.48	0.9D + 1.6W 90° Wind	36	46.66	1	1	12.43	13.05	14.07	68.2	Bolt Shear
3	60	SAE - 2.5X2.5X0.1875	7.57	1.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	9.79	9.53	79.4	Blck Shear
4	80	SAE - 2.5X2.5X0.1875	7.81	1.2D + 1.6W 90° Wind	36	29.22	2	1	15.90	18.60	13.66	57.1	Blck Shear
5	100	SAE - 2X2X0.1875	6.40	1.2D + 1.6W 90° Wind	36	23.00	1	1	7.95	7.50	7.25	88.3	Blck Shear
6	120	SAE - 1.5X1.5X0.1875	4.23	1.2D + 1.6W 90° Wind	36	17.17	1	1	7.95	7.50	5.21	81.3	Blck Shear
7	125	SOL - 5/8" SOLID	7.67	1.2D + 1.6W Normal Wi	36	9.94	0	0				77.2	Member

Seismic Section Forces

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 16	



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Load Case: 1.2D + 1.0E

Dead Load Factor	1.20	**Sds**	0.192	**Ss**	0.1800	**Fa**	1.6000	**Ke**	0.0000
Seismic Load Factor	1.00	**Sd1**	0.102	**S1**	0.0640	**Fv**	2.4000	**Kg**	0.0000
Seismic Importance Factor	1.00	**SA**	0.192	**R**	3.0000	**Vs**	2.5779	**f1**	2.0152

Sect #	Elev (ft)	Wz (lb)	a	b	c	Lateral Fsz (lb)
1	10.00	4507.4	0.01	0.06	0.03	19.78
2	30.00	4002.2	0.11	0.07	0.04	45.18
3	50.00	3471.7	0.30	0.04	0.01	76.71
4	70.00	3184.2	0.59	-0.05	0.01	109.84
5	90.00	8912.8	0.98	-0.11	0.12	466.36
6	110.00	4583.3	1.46	0.42	0.50	450.18
7	122.50	4887.9	1.82	1.61	1.00	756.98

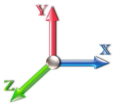
Load Case: 0.9D + 1.0E

Dead Load Factor	0.90	**Sds**	0.192	**Ss**	0.1800	**Fa**	1.6000	**Ke**	0.0000
Seismic Load Factor	1.00	**Sd1**	0.102	**S1**	0.0640	**Fv**	2.4000	**Kg**	0.0000
Seismic Importance Factor	1.00	**SA**	0.192	**R**	3.0000	**Vs**	2.5779	**f1**	2.0152

Sect #	Elev (ft)	Wz (lb)	a	b	c	Lateral Fsz (lb)
1	10.00	4507.4	0.01	0.06	0.03	19.78
2	30.00	4002.2	0.11	0.07	0.04	45.18
3	50.00	3471.7	0.30	0.04	0.01	76.71
4	70.00	3184.2	0.59	-0.05	0.01	109.84
5	90.00	8912.8	0.98	-0.11	0.12	466.36
6	110.00	4583.3	1.46	0.42	0.50	450.18
7	122.50	4887.9	1.82	1.61	1.00	756.98

Support Forces Summary

Structure:	CT01725-A-SBA	**Code:**	EIA/TIA-222-G	11/16/2021	
Site Name:	Bloomfield	**Exposure:**	B		
Height:	125.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 17	



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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.00	293.05	-24.71	
	1a	9.24	-126.40	-6.84	
	1b	-9.24	-126.40	-6.84	
1.2D + 1.6W 60° Wind	1	-1.30	150.86	-12.39	
	1a	-11.34	149.24	5.07	
	1b	-19.81	-259.84	-11.42	
1.2D + 1.6W 90° Wind	1	-1.50	13.44	-0.61	
	1a	-18.65	250.61	9.89	
	1b	-17.54	-223.79	-9.28	
0.9D + 1.6W Normal Wind	1	0.00	288.97	-24.51	
	1a	9.40	-129.39	-6.94	
	1b	-9.40	-129.39	-6.94	
0.9D + 1.6W 60° Wind	1	-1.31	147.14	-12.19	
	1a	-11.17	145.54	4.96	
	1b	-19.97	-262.48	-11.51	
0.9D + 1.6W 90° Wind	1	-1.51	10.08	-0.42	
	1a	-18.48	246.65	9.78	
	1b	-17.70	-226.54	-9.36	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	130.82	-8.61	
	1a	2.15	-2.51	-1.68	
	1b	-2.15	-2.51	-1.68	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.40	86.73	-4.86	
	1a	-4.39	85.85	2.08	
	1b	-5.63	-46.78	-3.24	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.46	41.94	-1.07	
	1a	-6.73	118.64	3.62	
	1b	-4.88	-34.78	-2.55	
1.2D + 1.0E	1	0.00	31.84	0.82	
	1a	2.41	4.21	-1.36	
	1b	-2.41	4.21	-1.36	
0.9D + 1.0E	1	0.00	28.43	1.01	
	1a	2.58	0.88	-1.46	
	1b	-2.58	0.88	-1.46	
1.0D + 1.0W Normal Wind	1	0.00	77.95	-6.42	
	1a	1.79	-22.20	-1.41	
	1b	-1.79	-22.20	-1.41	
1.0D + 1.0W 60° Wind	1	-0.32	44.12	-3.47	
	1a	-3.16	43.74	1.46	
	1b	-4.36	-54.31	-2.51	
1.0D + 1.0W 90° Wind	1	-0.37	11.18	-0.63	
	1a	-4.91	68.03	2.62	
	1b	-3.81	-45.66	-1.99	

Max Reactions

Leg			Overturning		
Max Uplift:	-262.48	(kips)	Moment:	3027.12	(ft-kips)
Max Down:	293.05	(kips)	Total Down:	40.26	(kips)
Max Shear:	24.71	(kips)	Total Shear:	38.39	(kips)

Max Reactions

Leg			Overturning		
Max Uplift:	-262.48	(kips)	Moment:	3027.12	(ft-kips)
Max Down:	293.05	(kips)	Total Down:	40.26	(kips)
Max Shear:	24.71	(kips)	Total Shear:	38.39	(kips)

Anchor Bolts

Bolt Size (in.):	1.50	Number Bolts:	8
Yield Strength (Ksi):	36.00	Tensile Strength (Ksi):	58.00
Detail Type:	D	Length:	1.00

Interaction Ratio: 0.66

Max Usages

Max Leg: 92.8% (1.2D + 1.6W Normal Wind - Sect 2)
Max Diag: 88.3% (1.2D + 1.6W 90° Wind - Sect 5)
Max Horiz: 41.1% (1.2D + 1.6W Normal Wind - Sect 7)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0E - Normal To Face	66.75	0.0324	0.0022	0.0607
	85.13	0.0554	0.0030	0.0849
	94.88	0.0713	0.0035	0.0998
	99.75	0.0802	0.0039	0.1204
	100.00	0.0807	0.0039	0.1223
	110.13	0.1016	0.0041	0.1275
	125.00	0.1364	0.0042	0.1369
0.9D + 1.6W 97 mph Wind at 60° From Face	66.75	0.4437	0.0983	0.7876
	85.13	0.7394	0.1708	1.0558
	94.88	0.9334	0.2419	1.2109
	99.75	1.0390	0.2804	1.4017
	100.00	1.0452	0.2824	1.4197
	110.13	1.2850	0.4993	1.4453
	125.00	1.6677	0.8049	1.3697
0.9D + 1.6W 97 mph Wind at 90° From Face	66.75	0.4427	-0.0389	0.7846
	85.13	0.7382	-0.0552	1.0548
	94.88	0.9313	-0.0667	1.2085
	99.75	1.0370	-0.0742	1.3815
	100.00	1.0431	-0.0745	1.3969
	110.13	1.2813	-0.0939	1.4172
	125.00	1.6581	-0.1109	0.9260

0.9D + 1.6W 97 mph Wind at Normal To Face	66.75	0.4524	0.0299	0.8025
	85.13	0.7546	0.0401	1.0786
	94.88	0.9538	0.0459	1.2403
	99.75	1.0633	0.0490	1.4413
	100.00	1.0694	0.0489	1.4603
	110.13	1.3183	0.0517	1.4906
	125.00	1.7274	0.0555	2.2847
1.0D + 1.0W 60 mph Wind at 60° From Face	66.75	0.1062	0.0111	0.1883
	85.13	0.1770	0.0173	0.2518
	94.88	0.2235	0.0226	0.2887
	99.75	0.2490	0.0258	0.3378
	100.00	0.2504	0.0259	0.3421
	110.13	0.3079	0.0397	0.3430
	125.00	0.3996	0.0585	0.3234
1.0D + 1.0W 60 mph Wind at 90° From Face	66.75	0.1064	-0.0092	0.1882
	85.13	0.1772	-0.0130	0.2530
	94.88	0.2235	-0.0157	0.2898
	99.75	0.2488	-0.0175	0.3326
	100.00	0.2502	-0.0175	0.3360
	110.13	0.3073	-0.0220	0.3398
	125.00	0.3976	-0.0260	0.2227
1.0D + 1.0W 60 mph Wind at Normal To Face	66.75	0.1085	0.0069	0.1919
	85.13	0.1808	0.0090	0.2582
	94.88	0.2285	0.0101	0.2967
	99.75	0.2543	0.0109	0.3422
	100.00	0.2558	0.0109	0.3468
	110.13	0.3152	0.0107	0.3568
	125.00	0.4120	0.0107	0.5219
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	66.75	0.1446	0.0216	0.2568
	85.13	0.2412	0.0359	0.3435
	94.88	0.3045	0.0493	0.3955
	99.75	0.3396	0.0567	0.4692
	100.00	0.3417	0.0571	0.4748
	110.13	0.4209	0.0958	0.4742
	125.00	0.5476	0.1497	0.4576
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	66.75	0.1439	-0.0132	0.2551
	85.13	0.2399	-0.0191	0.3435
	94.88	0.3029	-0.0234	0.3941
	99.75	0.3376	-0.0262	0.4587
	100.00	0.3396	-0.0264	0.4633
	110.13	0.4177	-0.0347	0.4654
	125.00	0.5411	-0.0419	0.1997
1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	66.75	0.1450	0.0089	0.2589
	85.13	0.2428	0.0115	0.3522
	94.88	0.3081	0.0127	0.4067
	99.75	0.3438	0.0137	0.4671
	100.00	0.3458	0.0137	0.4739
	110.13	0.4282	-0.0123	0.4982
	125.00	0.5644	0.0116	0.8382
1.2D + 1.0E - Normal To Face	66.75	0.0325	0.0022	0.0609
	85.13	0.0556	0.0030	0.0853
	94.88	0.0715	0.0035	0.1002
	99.75	0.0805	0.0039	0.1206
	100.00	0.0810	0.0039	0.1225
	110.13	0.1019	0.0041	0.1280
	125.00	0.1370	0.0043	0.1375
1.2D + 1.6W 97 mph Wind at 60° From Face	66.75	0.4450	0.0988	0.7906
	85.13	0.7420	0.1717	1.0602
	94.88	0.9369	0.2431	1.2164
	99.75	1.0429	0.2818	1.4088
	100.00	1.0491	0.2838	1.4269
	110.13	1.2901	0.5018	1.4521
	125.00	1.6747	0.8089	1.3769

1.2D + 1.6W 97 mph Wind at 90° From Face	66.75	0.4441	-0.0391	0.7876
	85.13	0.7407	-0.0554	1.0594
	94.88	0.9347	-0.0670	1.2140
	99.75	1.0410	-0.0746	1.3875
	100.00	1.0471	-0.0749	1.4030
	110.13	1.2864	-0.0944	1.4241
	125.00	1.6651	-0.1115	0.9336
1.2D + 1.6W 97 mph Wind at Normal To Face	66.75	0.4539	0.0300	0.8055
	85.13	0.7573	0.0403	1.0834
	94.88	0.9574	0.0462	1.2460
	99.75	1.0674	0.0492	1.4475
	100.00	1.0735	-0.0492	1.4667
	110.13	1.3235	0.0520	1.4980
	125.00	1.7346	0.0559	2.2935

Mat Foundation Design for Self Supporting Tower

Tower Engineering Solutions

Customer Name:	**SBA Communications Corp**	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	125
Site Nmber:	CT01725-A-SBA	**Engineer Name:**	J. Tibbetts
Engr. Number:	119391	**Engineer Login ID:**	

Date 11/16/2021

Foundation Info Obtained from: Drawings/Calculations

Analysis or Design? Analysis

Number of Tower Legs: 3 Legs

Base Reactions (Factored):

(1). Individual Leg:

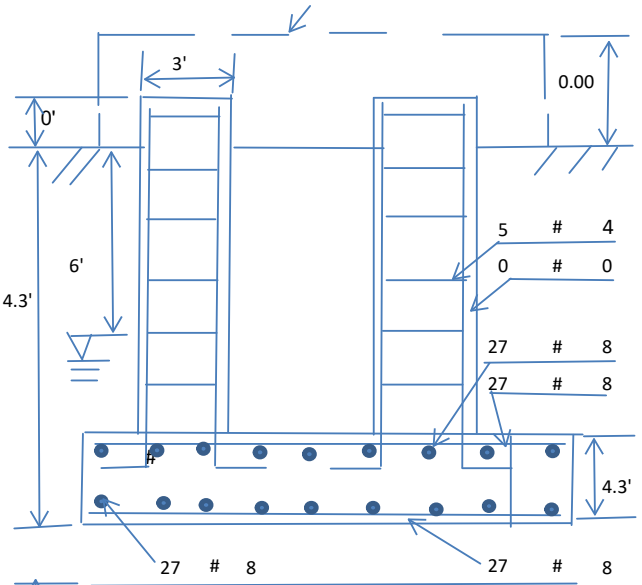
Axial Load (Kips):	293.1	Uplift Force (Kips):	262.5
Shear Force (Kips):	24.7		

(2). Tower Base:

Total Vertical Load (Kips):	40.3	Total Shear Force (Kips):	38.4
Moment (Kips-ft):	3027.1		

Foundation Geometries:

Leg distance (Center-to-Center ft.):		12.5	Mods required -Yes/No ?:	No	
Diameter of Pier (ft.):	Square	3.0	Pier Height A. G. (ft.):	0.00	
Tower center to mat center (ft):		1.01	Depth of Base BG (ft.):	4.3	
Length of Pad (ft.):		29	Width of Pad (ft.):	29	
Thickness of Pad (ft):		4.30			



Material Properties and Reabr Info:

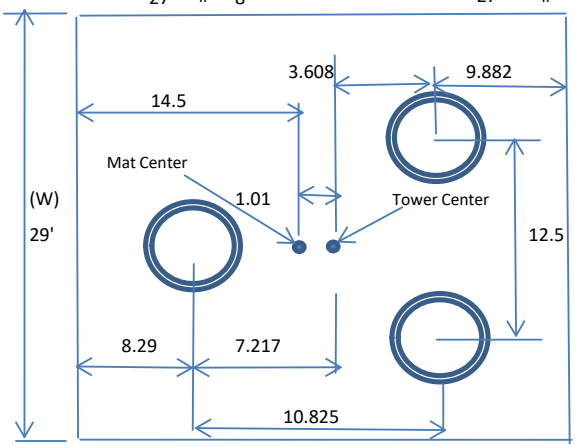
Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi	
Vertical bar yield (ksi)		Tie steel yield (ksi):	60		
Vertical Rebar Size #:		Tie / Stirrup Size #:	4		
Qty. of Vertical Rebars:		Tie Spacing (in):	12.0		
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8		
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf	

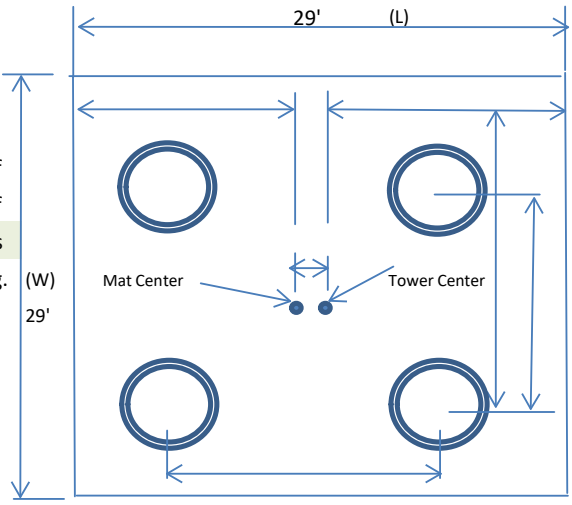
Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	27	Qty. of Rebar in Pad (W):	27

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	27	Qty. of Rebar in Pad (W):	27





Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	50.0	Pcf	
Water Table B.G.S. (ft):	6.0	Unit Weight of Water:	62.4	pcf	
Ultimate Bearing Pressure (psf):	6000	Consider ties in concrete shear strength:		Yes	
Consider Soil Lateral Resistance ?	Yes	Enter soil C (psf) or Phi (deg.):	30.0	Deg.	
		Depth to ignor lateral resistance	1.0	Ft.	

Apply 1.35 for e/w per G/H: 1.35

Foundation Analysis and Design:	Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75			
Total Dry Soil Volume (cu. Ft.):		0.08	Total Dry Soil Weight (Kips):	0.01			
Total Buoyant Soil Volume (cu. Ft.):		0.00	Total Buoyant Soil Weight (Kips):	0.00			
Total Effective Soil Weight (Kips):		0.01	Weight from the Concrete Block at Top (K):	0.00			
Total Dry Concrete Volume (cu. Ft.):		3616.35	Total Dry Concrete Weight (Kips):	542.45			
Total Buoyant Concrete Volume (cu. Ft.):		0.00	Total Buoyant Concrete Weight (Kips):	0.00			
Total Effective Concrete Weight (Kips):		542.45	Total Vertical Load on Base (Kips):	582.72			
Check Soil Capacities:						Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):		1637.24	<	Allowable Factored Soil Bearing (psf):	4500	0.36	OK!
Allowable Foundation Overturning Resistance (kips-ft.):		7662.9	>	Design Factored Momont (kips-ft):	3233	0.42	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):		2.37	OK!				
Check the capacities of Reinforceing Concrete:							
Strength reduction factor (Flexure and axial tension):		0.90	Strength reduction factor (Shear):		0.75		
Strength reduction factor (Axial compresion):		0.65	Wind Load Factor on Concrete Design:		1.00		
(1) Concrete Pier:						Load/ Capacity Ratio	
Vertical Steel Rebar Area (sq. in./each):		#N/A		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):		#N/A	#N/A	Design Factored Moment (Mu, Kips-Ft)	0.1	#N/A	###
Calculated Shear Capacity (Kips):		107.6	>	Design Factored Shear (Kips):	24.7	0.23	OK!
Calculated Tension Capacity (Tn, Kips):		#N/A	#N/A	Design Factored Tension (Tu Kips):	262.5	#N/A	###
Calculated Compression Capacity (Pn, Kips):		#N/A	#N/A	Design Factored Axial Load (Pu Kips):	293.1	#N/A	###
Moment & Tension Strength Combination:		#N/A	#N/A	Check Tie Spacing (Design/Req'd):	#DIV/0!		
Pier Reinforcement Ratio:		#N/A		#N/A			
(2).Concrete Pad:							
One-Way Design Shear Capacity (L or W Direction, Kips):		1375.2	>	One-Way Factored Shear (L/W-Dir Kips	255.3	0.19	OK!
One-Way Design Shear Capacity (Diagonal Dir., Kips):		1205.0	>	One-Way Factored Shear (Dia. Dir, Kips	276.8	0.23	OK!
Lower Steel Pad Reinforcement Ratio (L or W-Direct.):		0.0013		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0011		
Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft):		4547.5	>	Moment at Bottom (L-Direct. K-Ft):	1642.0	0.36	OK!
Lower Steel Pad Moment Capacity (Dia. Direction,K-ft):		4556.8	>	Moment at Bottom (Dia. Dir. K-Ft):	1602.4	0.35	OK!
Upper Steel Pad Reinforcement Ratio (L or W -Direction):		0.0013		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0011		
Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft):		4547.5	>	Moment at the top (L-Dir Kips-Ft):	683.3	0.15	OK!
Upper Steel Pad Moment Capacity (Dia. Direction, K-ft):		4556.8	>	Moment at the top (Dia. Dir., K-Ft):	518.6	0.11	OK!
Punching Failure Capacity (Kips):		2202.9	>	Punch. Failure Factored Shear (K):	293.1	0.13	OK!

October 13, 2021

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT1148 (C-BAND)
	FA Number:	10035110
	PACE Number:	MRCTB051078
	PT Number:	2051A0Z7GL
	Site Name:	BLOOMFIELD EAST
	Site Address:	1021 Blue Hills Avenue Bloomfield, CT 06002

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the existing AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (2) HPA-65R-BUU-H8 Antennas (92.4"x14.8"x7.4" – Wt. = 68 lbs. /each)
- (1) HPA-65R-BUU-H6 Antennas (72.0"x14.8"x7.4" – Wt. = 51 lbs. /each)
- (3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)
- (3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)
- (3) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.) (Tower Mounted)
- **(2) DMP65R-BU8EA-K Antennas (96.0"x20.7"x7.7" – Wt. = 127 lbs. /each)**
- **(1) DMP65R-BU6EA-K Antennas (71.2"x20.7"x9.7" – Wt. = 104 lbs. /each)**
- **(3) AIR6449 N77D Antennas (30.6"x15.9"x10.6" – Wt. = 83 lbs. /each)**
- **(3) AIR6419 N77G Antennas (31.1"x16.1"x7.3" – Wt. =55 lbs. each)**

**Proposed equipment shown in bold.*

No original structural design documents or fabrication drawings were available for the existing mounts. A previous Mount Analysis prepared by B+T Group, dated January 24, 2019, was used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.67 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.180 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.064.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing tower with bent plates and U-bolts. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (C-BAND) Mount Rating	78	LC30	80%	**PASS**

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mounts have been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:











HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
Project No.: CT1148
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\,(z/z_g)^{2/\alpha}$

z=	98	(ft)
z_g=	900	(ft)
α=	9.5	

K_z= 1.260

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= 1

K_h=	1	
K_c=	1	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	98	
z_s=	113	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	1.00	(from 2.6.8)

(If Category 1 then K_{zt}=1.0)

Category= **1**

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i = 1.50 in
Importance Factor = I= 1.0 (from Table 2-3)
K_{iz} = 1.11 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.67 in

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
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HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	125	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

q_z= $0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.260	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**42.67**	K_e=	1.00	(from 2.6.8)
$q_{z\ (ice)}$=	**6.83**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**2.46**	V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
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HUDSON Design Group LLC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.67 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	6.24	1.37	554	113	32
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	4.86	1.31	412	85	24
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	1.92	1.20	173	37	10
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.93	1.20	178	38	10
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	4.64	1.30	763	147	44
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	4.64	1.30	763	147	44
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	70	17	4
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	58	15	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	2.73	1.21	29	9	2
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.36	1.20	84	20	5
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	60	15	3
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	31	10	2
4415 B30 RRH	16.5	13.4	5.9	1.54	1.23	1.20	79	19	5
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	2.80	1.21	35	11	2
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	5.59	1.34	19	8	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	48	12	3
PL 6x3/8	0.4	12.0	-	0.03	0.03	1.25	2		
C 3X5	1.5	12.0	-	0.13	0.13	1.25	7		
3x2 Angle	3.0	12.0	-	0.25	0.25	1.25	13		
2-1/2x2-1/2 Angle	2.5	12.0	-	0.21	0.21	1.25	11		
2x2 Angle	2.0	12.0	-	0.17	0.17	1.25	9		
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	12		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	10		
1-1/4" Pipe	1.7	12.0	-	0.14	0.14	1.20	7		

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
Project No.: CT1148
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 30 (deg) | Ice Thickness = 1.67 in. | Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	554	321	495
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	412	235	368
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	173	117	159
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	178	86	155
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	763	347	659
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	763	413	675
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	70	58	67
B2/B66A 8843 RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	35	70	44
B2/B66A 8843 RRH (Shielded)	14.9	3.3	13.2	0.34	1.37	4.52	1.13	1.29	1.20	19	70	32
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	84	60	78
B5/B12 4449 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	42	84	53
B5/B12 4449 RRH (Shielded)	17.9	3.3	13.2	0.41	1.64	5.42	1.36	1.33	1.20	23	84	38
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	68
4415 B30 RRH (Side)	16.5	6.7	13.4	0.77	1.54	2.46	1.23	1.20	1.20	39	79	49
4415 B30 RRH (Shielded)	16.5	3.4	13.4	0.38	1.54	4.93	1.23	1.31	1.20	21	79	36

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.7	18.1	10.7	12.06	7.14	5.28	8.91	1.32	1.46	109	71	100
HPA-65R-BUU-H6 Antenna	75.3	18.1	10.7	9.49	5.62	4.15	7.01	1.27	1.40	83	54	75
AIR6449 N77D Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	37	27	35
AIR6419 N77G Antenna	34.4	19.4	10.6	4.65	2.55	1.77	3.24	1.20	1.23	38	21	34
DMP65R-BU8EA-K Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	144	76	127
DMP65R-BU6EA-K Antenna	99.3	24.0	13.0	16.59	9.00	4.13	7.62	1.27	1.42	144	87	130
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	17	15	17
B2/B66A 8843 RRH (Side)	18.2	8.3	16.5	1.05	2.10	2.21	1.10	1.20	1.20	9	17	11
B2/B66A 8843 RRH (Shielded)	18.2	4.1	16.5	0.52	2.10	4.41	1.10	1.28	1.20	5	17	8
B5/B12 4449 RRH	21.2	16.5	12.7	2.44	1.88	1.28	1.67	1.20	1.20	20	15	19
B5/B12 4449 RRH (Side)	21.2	8.3	16.5	1.22	2.44	2.57	1.28	1.20	1.20	10	20	13
B5/B12 4449 RRH (Shielded)	21.2	4.1	16.5	0.61	2.44	5.14	1.28	1.32	1.20	5	20	9
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	19	10	17
4415 B30 RRH (Side)	19.8	8.4	16.7	1.15	2.31	2.37	1.19	1.20	1.20	9	19	12
4415 B30 RRH (Shielded)	19.8	4.2	16.7	0.58	2.31	4.74	1.19	1.30	1.20	5	19	9

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	29
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	24	14	21
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	9
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	9
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	38
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	44	24	39
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	4
B2/B66A 8843 RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	2	4	3
B2/B66A 8843 RRH (Shielded)	14.9	3.3	13.2	0.34	1.37	4.52	1.13	1.29	1.20	1	4	2
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	3	4
B5/B12 4449 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	2	5	3
B5/B12 4449 RRH (Shielded)	17.9	3.3	13.2	0.41	1.64	5.42	1.36	1.33	1.20	1	5	2
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	4
4415 B30 RRH (Side)	16.5	6.7	13.4	0.77	1.54	2.46	1.23	1.20	1.20	2	5	3
4415 B30 RRH (Shielded)	16.5	3.4	13.4	0.38	1.54	4.93	1.23	1.31	1.20	1	5	2

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
Project No.: CT1148
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg) | Ice Thickness = 1.67 in. | Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	554	321	379
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	412	235	280
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	173	117	131
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	178	86	109
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	763	347	451
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	763	413	500
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	70	58	61
B2/B66A 8843 RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	52	70	66
B2/B66A 8843 RRH (Shielded)	14.9	7.4	13.2	0.77	1.37	2.01	1.13	1.20	1.20	39	70	62
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	84	60	66
B5/B12 4449 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	63	84	79
B5/B12 4449 RRH (Shielded)	17.9	7.4	13.2	0.92	1.64	2.41	1.36	1.20	1.20	47	84	75
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	46
4415 B30 RRH (Side)	16.5	10.1	13.4	1.15	1.54	1.64	1.23	1.20	1.20	59	79	74
4415 B30 RRH (Shielded)	16.5	7.5	13.4	0.86	1.54	2.19	1.23	1.20	1.20	44	79	70

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.7	18.1	10.7	12.06	7.14	5.28	8.91	1.32	1.46	109	71	81
HPA-65R-BUU-H6 Antenna	75.3	18.1	10.7	9.49	5.62	4.15	7.01	1.27	1.40	83	54	61
AIR6449 N77D Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	37	27	29
AIR6419 N77G Antenna	34.4	19.4	10.6	4.65	2.55	1.77	3.24	1.20	1.23	38	21	26
DMP65R-BU8EA-K Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	144	76	93
DMP65R-BU6EA-K Antenna	99.3	24.0	13.0	16.59	9.00	4.13	7.62	1.27	1.42	144	87	101
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	17	15	15
B2/B66A 8843 RRH (Side)	18.2	12.4	16.5	1.57	2.10	1.47	1.10	1.20	1.20	13	17	16
B2/B66A 8843 RRH (Shielded)	18.2	8.8	16.5	1.11	2.10	2.07	1.10	1.20	1.20	9	17	15
B5/B12 4449 RRH	21.2	16.5	12.7	2.44	1.88	1.28	1.67	1.20	1.20	20	15	17
B5/B12 4449 RRH (Side)	21.2	12.4	16.5	1.83	2.44	1.71	1.28	1.20	1.20	15	20	19
B5/B12 4449 RRH (Shielded)	21.2	8.0	16.5	1.19	2.44	2.64	1.28	1.21	1.20	10	20	17
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	19	10	13
4415 B30 RRH (Side)	19.8	12.6	16.7	1.73	2.31	1.58	1.19	1.20	1.20	14	19	18
4415 B30 RRH (Shielded)	19.8	6.3	16.7	0.87	2.31	3.15	1.19	1.23	1.20	7	19	16

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	22
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	24	14	16
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	8
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	6
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	26
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	44	24	29
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	4
B2/B66A 8843 RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	3	4	4
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	3
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	3	4
B5/B12 4449 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	4	5	5
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	4
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	3
4415 B30 RRH (Side)	16.5	10.1	13.4	1.15	1.54	1.64	1.23	1.20	1.20	3	5	4
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	4

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
Project No.: CT1148
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.67	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	554	321	321
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	412	235	235
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	173	117	117
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	178	86	86
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	763	347	347
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	763	413	413
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	70	58	58
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	58	70	70
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	29	70	70
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	84	60	60
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	60	84	84
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	31	84	84
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	35
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	35	79	79
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	19	79	79

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.7	18.1	10.7	12.06	7.14	5.28	8.91	1.32	1.46	109	71	71
HPA-65R-BUU-H6 Antenna	75.3	18.1	10.7	9.49	5.62	4.15	7.01	1.27	1.40	83	54	54
AIR6449 N77D Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	37	27	27
AIR6419 N77G Antenna	34.4	19.4	10.6	4.65	2.55	1.77	3.24	1.20	1.23	38	21	21
DMP65R-BU8EA-K Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	144	76	76
DMP65R-BU6EA-K Antenna	99.3	24.0	13.0	16.59	9.00	4.13	7.62	1.27	1.42	144	87	87
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	17	15	15
B2/B66A 8843 RRH (Side)	18.2	14.2	16.5	1.80	2.10	1.28	1.10	1.20	1.20	15	17	17
B2/B66A 8843 RRH (Shielded)	18.2	8.8	16.5	1.11	2.10	2.07	1.10	1.20	1.20	9	17	17
B5/B12 4449 RRH	21.2	16.5	12.7	2.44	1.88	1.28	1.67	1.20	1.20	20	15	15
B5/B12 4449 RRH (Side)	21.2	12.7	16.5	1.88	2.44	1.67	1.28	1.20	1.20	15	20	20
B5/B12 4449 RRH (Shielded)	21.2	8.0	16.5	1.19	2.44	2.64	1.28	1.21	1.20	10	20	20
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	19	10	10
4415 B30 RRH (Side)	19.8	9.2	16.7	1.27	2.31	2.15	1.19	1.20	1.20	10	19	19
4415 B30 RRH (Shielded)	19.8	6.3	16.7	0.87	2.31	3.15	1.19	1.23	1.20	7	19	19

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	18
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	24	14	14
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	7
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	5
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	20
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	44	24	24
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	4
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	3	3
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	5
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	5
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	5
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	5

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
Project No.: CT1148
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.67	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	554	321	379
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	412	235	280
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	173	117	131
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	178	86	109
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	763	347	451
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	763	413	500
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	70	58	61
B2/B66A 8843 RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	52	70	66
B2/B66A 8843 RRH (Shielded)	14.9	7.4	13.2	0.77	1.37	2.01	1.13	1.20	1.20	39	70	62
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	84	60	66
B5/B12 4449 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	63	84	79
B5/B12 4449 RRH (Shielded)	17.9	7.4	13.2	0.92	1.64	2.41	1.36	1.20	1.20	47	84	75
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	46
4415 B30 RRH (Side)	16.5	10.1	13.4	1.15	1.54	1.64	1.23	1.20	1.20	59	79	74
4415 B30 RRH (Shielded)	16.5	7.5	13.4	0.86	1.54	2.19	1.23	1.20	1.20	44	79	70

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.7	18.1	10.7	12.06	7.14	5.28	8.91	1.32	1.46	109	71	81
HPA-65R-BUU-H6 Antenna	75.3	18.1	10.7	9.49	5.62	4.15	7.01	1.27	1.40	83	54	61
AIR6449 N77D Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	37	27	29
AIR6419 N77G Antenna	34.4	19.4	10.6	4.65	2.55	1.77	3.24	1.20	1.23	38	21	26
DMP65R-BU8EA-K Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	144	76	93
DMP65R-BU6EA-K Antenna	99.3	24.0	13.0	16.59	9.00	4.13	7.62	1.27	1.42	144	87	101
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	17	15	15
B2/B66A 8843 RRH (Side)	18.2	12.4	16.5	1.57	2.10	1.47	1.10	1.20	1.20	13	17	16
B2/B66A 8843 RRH (Shielded)	18.2	8.8	16.5	1.11	2.10	2.07	1.10	1.20	1.20	9	17	15
B5/B12 4449 RRH	21.2	16.5	12.7	2.44	1.88	1.28	1.67	1.20	1.20	20	15	17
B5/B12 4449 RRH (Side)	21.2	12.4	16.5	1.83	2.44	1.71	1.28	1.20	1.20	15	20	19
B5/B12 4449 RRH (Shielded)	21.2	8.0	16.5	1.19	2.44	2.64	1.28	1.21	1.20	10	20	17
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	19	10	13
4415 B30 RRH (Side)	19.8	12.6	16.7	1.73	2.31	1.58	1.19	1.20	1.20	14	19	18
4415 B30 RRH (Shielded)	19.8	6.3	16.7	0.87	2.31	3.15	1.19	1.23	1.20	7	19	16

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	22
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	24	14	16
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	8
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	6
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	26
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	44	24	29
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	4
B2/B66A 8843 RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	3	4	4
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	3
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	3	4
B5/B12 4449 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	4	5	5
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	4
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	3
4415 B30 RRH (Side)	16.5	10.1	13.4	1.15	1.54	1.64	1.23	1.20	1.20	3	5	4
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	4

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
Project No.: CT1148
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 150 (deg) | Ice Thickness = 1.67 in. | Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	554	321	495
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	412	235	368
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	173	117	159
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	178	86	155
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	763	347	659
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	763	413	675
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	70	58	67
B2/B66A 8843 RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	35	70	44
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	29	70	39
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	84	60	78
B5/B12 4449 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	42	84	53
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	31	84	45
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	68
4415 B30 RRH (Side)	16.5	6.7	13.4	0.77	1.54	2.46	1.23	1.20	1.20	39	79	49
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	19	79	34

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.7	18.1	10.7	12.06	7.14	5.28	8.91	1.32	1.46	109	71	100
HPA-65R-BUU-H6 Antenna	75.3	18.1	10.7	9.49	5.62	4.15	7.01	1.27	1.40	83	54	75
AIR6449 N77D Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	37	27	35
AIR6419 N77G Antenna	34.4	19.4	10.6	4.65	2.55	1.77	3.24	1.20	1.23	38	21	34
DMP65R-BU8EA-K Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	144	76	127
DMP65R-BU6EA-K Antenna	99.3	24.0	13.0	16.59	9.00	4.13	7.62	1.27	1.42	144	87	130
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	17	15	17
B2/B66A 8843 RRH (Side)	18.2	8.3	16.5	1.05	2.10	2.21	1.10	1.20	1.20	9	17	11
B2/B66A 8843 RRH (Shielded)	18.2	8.8	16.5	1.11	2.10	2.07	1.10	1.20	1.20	9	17	11
B5/B12 4449 RRH	21.2	16.5	12.7	2.44	1.88	1.28	1.67	1.20	1.20	20	15	19
B5/B12 4449 RRH (Side)	21.2	8.3	16.5	1.22	2.44	2.57	1.28	1.20	1.20	10	20	13
B5/B12 4449 RRH (Shielded)	21.2	8.0	16.5	1.19	2.44	2.64	1.28	1.21	1.20	10	20	12
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	19	10	17
4415 B30 RRH (Side)	19.8	8.4	16.7	1.15	2.31	2.37	1.19	1.20	1.20	9	19	12
4415 B30 RRH (Shielded)	19.8	6.3	16.7	0.87	2.31	3.15	1.19	1.23	1.20	7	19	10

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	29
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	24	14	21
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	9
AIR6419 N77G Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	9
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	38
DMP65R-BU6EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	44	24	39
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	4
B2/B66A 8843 RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	2	4	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	3	4
B5/B12 4449 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	2	5	3
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	3
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	4
4415 B30 RRH (Side)	16.5	6.7	13.4	0.77	1.54	2.46	1.23	1.20	1.20	2	5	3
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	2

Date: 10/12/2021
Project Name: BLOOMFIELD EAST
Project No.: CT1148
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.67 in.
Density of ice: 56 pcf

HPA-65R-BUU-H8 Antenna

Weight of ice based on total radial SF area:

Height (in):	92.4	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:	286	lbs
Weight of object:	68.0	lbs
Combined weight of ice and object:	354	lbs

HPA-65R-BUU-H6 Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:	223	lbs
Weight of object:	51.0	lbs
Combined weight of ice and object:	274	lbs

AIR6449 N77D Antenna

Weight of ice based on total radial SF area:

Height (in):	30.6	
Width (in):	15.9	
Depth (in):	10.6	
Total weight of ice on object:	108	lbs
Weight of object:	82.0	lbs
Combined weight of ice and object:	190	lbs

AIR6419 N77G Antenna

Weight of ice based on total radial SF area:

Height (in):	31.0	
Width (in):	16.1	
Depth (in):	7.3	
Total weight of ice on object:	102	lbs
Weight of object:	66.0	lbs
Combined weight of ice and object:	168	lbs

DMP65R-BU8EA-K Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:	388	lbs
Weight of object:	127.0	lbs
Combined weight of ice and object:	515	lbs

DMP65R-BU6EA-K Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	9.7	
Total weight of ice on object:	297	lbs
Weight of object:	104.0	lbs
Combined weight of ice and object:	401	lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:	48	lbs
Weight of object:	72.0	lbs
Combined weight of ice and object:	120	lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	13.2	
Depth (in):	9.4	
Total weight of ice on object:	54	lbs
Weight of object:	73.0	lbs
Combined weight of ice and object:	127	lbs

4415 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.4	
Depth (in):	5.9	
Total weight of ice on object:	46	lbs
Weight of object:	46.0	lbs
Combined weight of ice and object:	92	lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:	46	lbs
Weight of object:	33	lbs
Combined weight of ice and object:	79	lbs

PL 6x3/8

Weight of ice based on total radial SF area:

Height (in):	6	
Width (in):	0.375	
Per foot weight of ice on object:	16	plf

C 3X5

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	1.5	
Per foot weight of ice on object:	10	plf

L 3x2 Angles

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	2	
Per foot weight of ice on object:	11	plf

L 2-1/2x2-1/2 Angles

Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:	11	plf

L 2x2 Angles

Weight of ice based on total radial SF area:

Height (in):	2	
Width (in):	2	
Per foot weight of ice on object:	9	plf

2-1/2" pipe

Per foot weight of ice:		
diameter (in):	2.88	
Per foot weight of ice on object:	9	plf

2" pipe

Per foot weight of ice:		
diameter (in):	2.38	
Per foot weight of ice on object:	8	plf

1-1/4" Pipe

Per foot weight of ice:		
diameter (in):	1.66	
Per foot weight of ice on object:	7	plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

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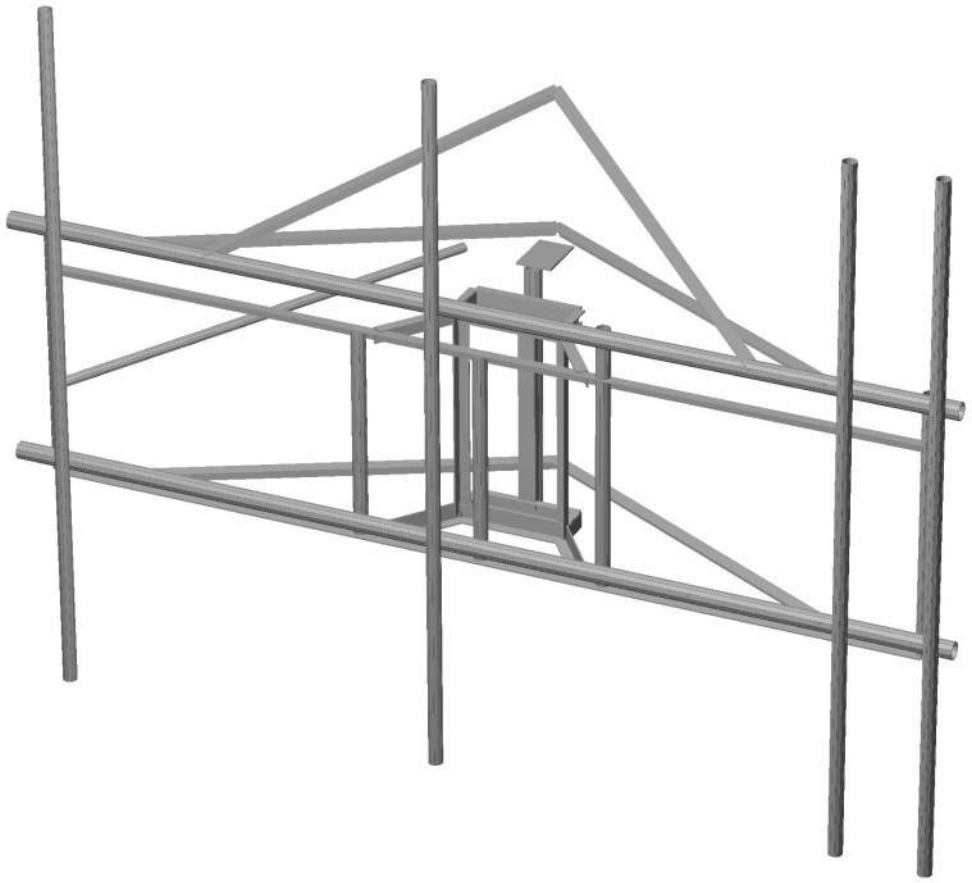

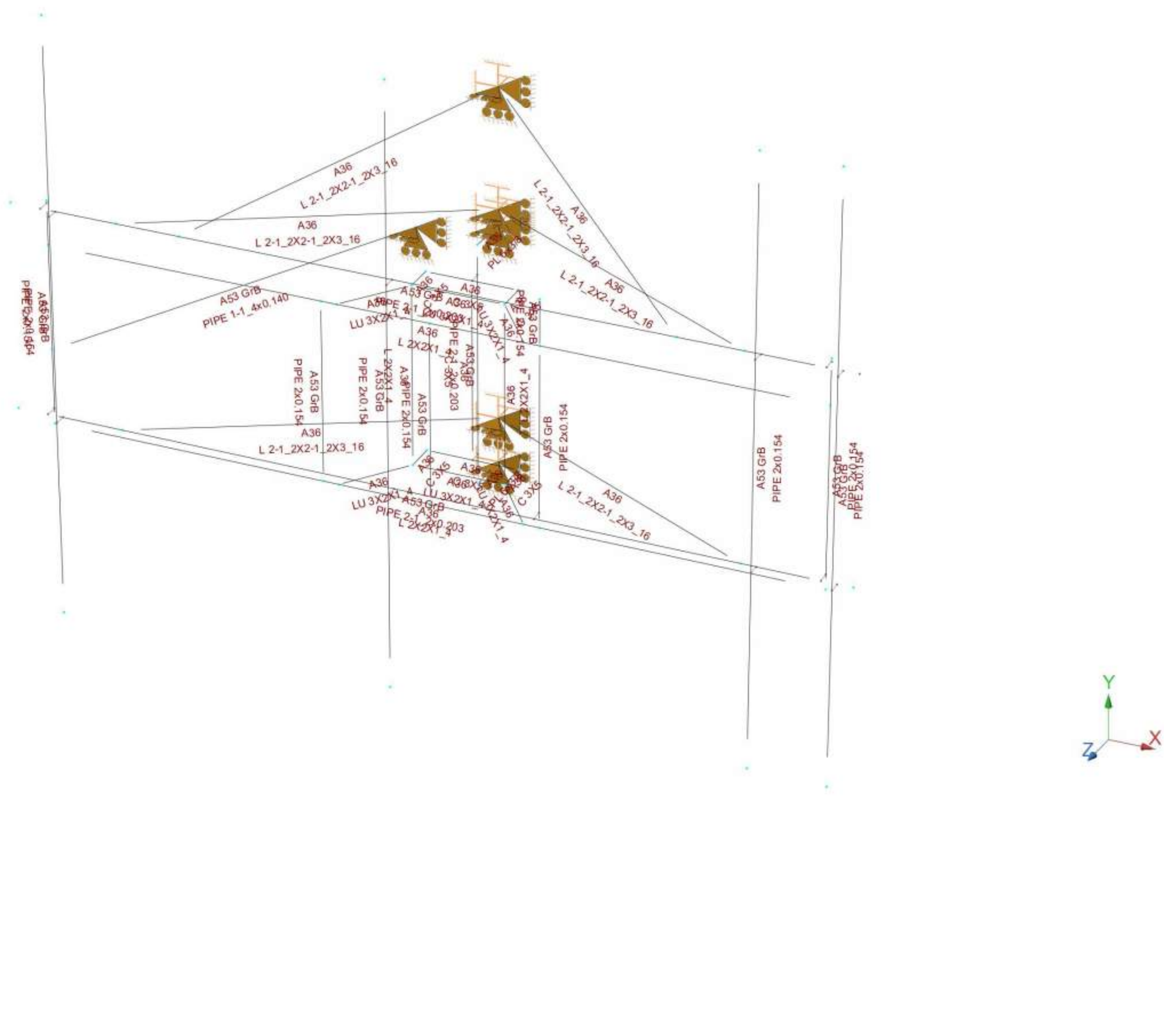
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C 3X5
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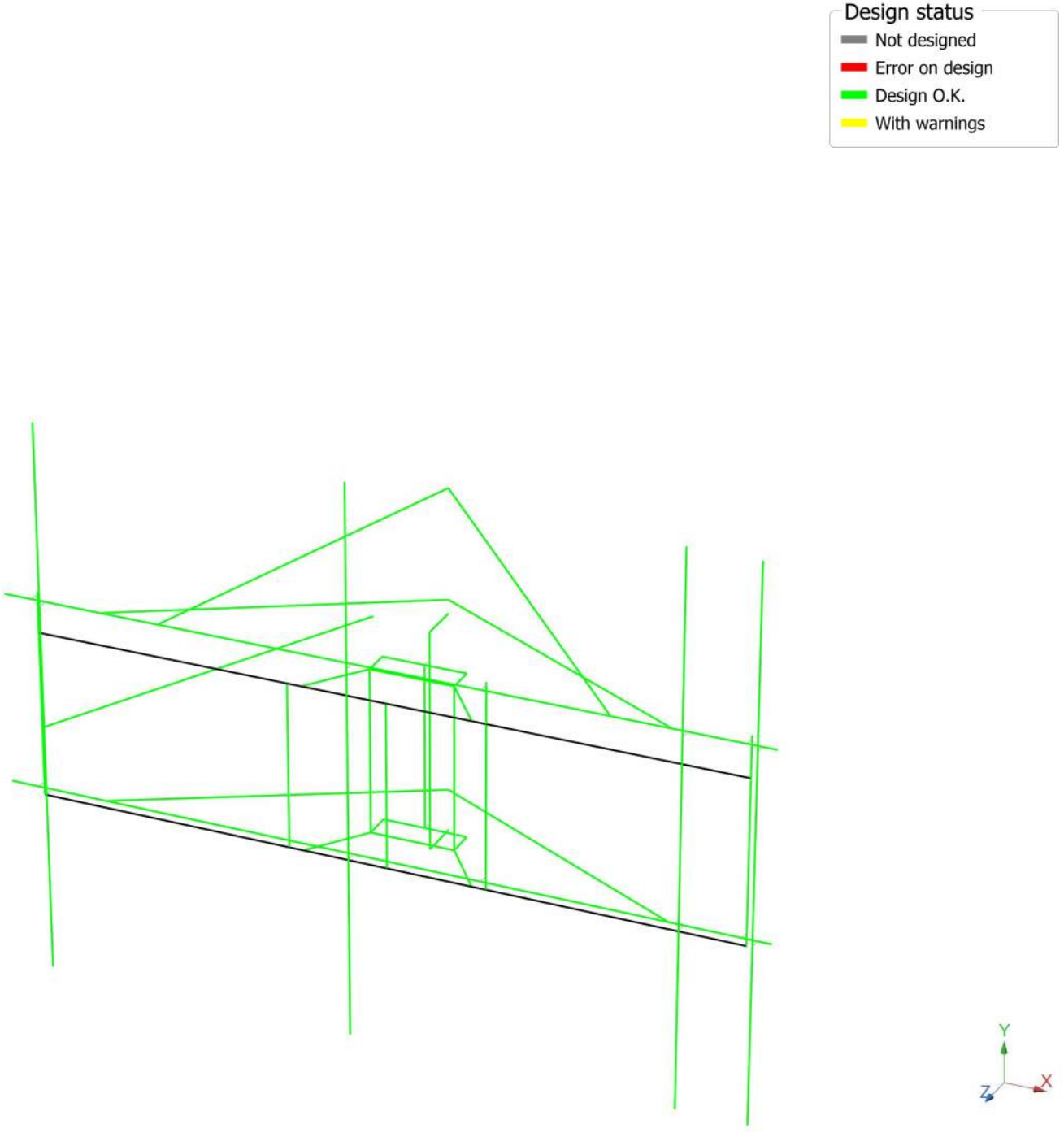
Design status
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Error on design
Design O.K.
With warnings
Y
X
Z

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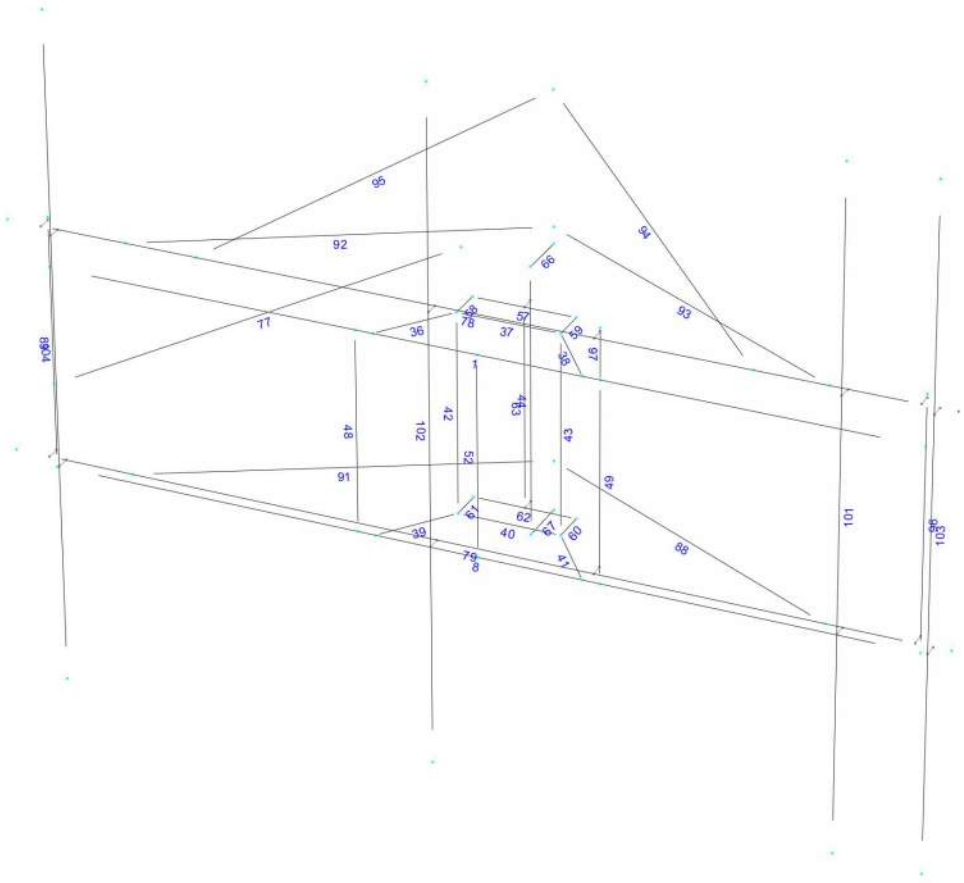

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Load data

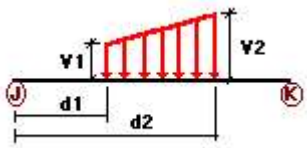
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.009	-0.009	0.00	No	100.00	Yes
	8	z	-0.009	-0.009	0.00	No	100.00	Yes
	36	z	-0.013	-0.013	0.00	No	100.00	Yes
	37	z	-0.013	-0.013	0.00	No	100.00	Yes
	38	z	-0.013	-0.013	0.00	No	100.00	Yes
	39	z	-0.013	-0.013	0.00	No	100.00	Yes
	40	z	-0.013	-0.013	0.00	No	100.00	Yes
	41	z	-0.013	-0.013	0.00	No	100.00	Yes
	42	z	-0.009	-0.009	0.00	No	100.00	Yes
	43	z	-0.009	-0.009	0.00	No	100.00	Yes
	44	z	-0.012	-0.012	0.00	No	100.00	Yes
	48	z	-0.01	-0.01	0.00	No	100.00	Yes
	49	z	-0.01	-0.01	0.00	No	100.00	Yes
	52	z	-0.01	-0.01	0.00	No	100.00	Yes
	57	z	-0.007	-0.007	0.00	No	100.00	Yes
	58	z	-0.007	-0.007	0.00	No	100.00	Yes
	59	z	-0.007	-0.007	0.00	No	100.00	Yes
	60	z	-0.007	-0.007	0.00	No	100.00	Yes
	61	z	-0.007	-0.007	0.00	No	100.00	Yes
	62	z	-0.007	-0.007	0.00	No	100.00	Yes
	77	z	-0.007	-0.007	0.00	No	100.00	Yes
	78	z	-0.012	-0.012	0.00	No	100.00	Yes
	79	z	-0.012	-0.012	0.00	No	100.00	Yes
	88	z	-0.011	-0.011	0.00	No	100.00	Yes
	91	z	-0.011	-0.011	0.00	No	100.00	Yes
	92	z	-0.011	-0.011	0.00	No	100.00	Yes
	93	z	-0.011	-0.011	0.00	No	100.00	Yes
	94	z	-0.011	-0.011	0.00	No	100.00	Yes
	95	z	-0.011	-0.011	0.00	No	100.00	Yes
	103	z	-0.01	-0.01	0.00	No	100.00	Yes
W30	1	z	-0.009	-0.009	0.00	No	100.00	Yes
	8	z	-0.009	-0.009	0.00	No	100.00	Yes
	36	z	-0.013	-0.013	0.00	No	100.00	Yes
	37	z	-0.013	-0.013	0.00	No	100.00	Yes
	38	z	-0.013	-0.013	0.00	No	100.00	Yes
	39	z	-0.013	-0.013	0.00	No	100.00	Yes
	40	z	-0.013	-0.013	0.00	No	100.00	Yes
	41	z	-0.013	-0.013	0.00	No	100.00	Yes
	42	z	-0.009	-0.009	0.00	No	100.00	Yes
	43	z	-0.009	-0.009	0.00	No	100.00	Yes
	44	z	-0.012	-0.012	0.00	No	100.00	Yes
	48	z	-0.01	-0.01	0.00	No	100.00	Yes
	49	z	-0.01	-0.01	0.00	No	100.00	Yes
	52	z	-0.01	-0.01	0.00	No	100.00	Yes
	57	z	-0.007	-0.007	0.00	No	100.00	Yes
	58	z	-0.007	-0.007	0.00	No	100.00	Yes
	59	z	-0.007	-0.007	0.00	No	100.00	Yes
	60	z	-0.007	-0.007	0.00	No	100.00	Yes
	61	z	-0.007	-0.007	0.00	No	100.00	Yes
	62	z	-0.007	-0.007	0.00	No	100.00	Yes
	66	z	-0.002	-0.002	0.00	No	100.00	Yes
	67	z	-0.002	-0.002	0.00	No	100.00	Yes
	77	z	-0.007	-0.007	0.00	No	100.00	Yes
	78	z	-0.012	-0.012	0.00	No	100.00	Yes
	79	z	-0.012	-0.012	0.00	No	100.00	Yes
	88	z	-0.011	-0.011	0.00	No	100.00	Yes
	89	z	-0.01	-0.01	0.00	No	100.00	Yes
	91	z	-0.011	-0.011	0.00	No	100.00	Yes
	92	z	-0.011	-0.011	0.00	No	100.00	Yes
	93	z	-0.011	-0.011	0.00	No	100.00	Yes

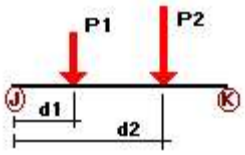
	94	z	-0.011	-0.011	0.00	No	100.00	Yes
	95	z	-0.011	-0.011	0.00	No	100.00	Yes
	96	z	-0.01	-0.01	0.00	No	100.00	Yes
	101	z	-0.01	-0.01	0.00	No	100.00	Yes
	102	z	-0.01	-0.01	0.00	No	100.00	Yes
	103	z	-0.01	-0.01	0.00	No	100.00	Yes
	104	z	-0.01	-0.01	0.00	No	100.00	Yes
W60	1	x	-0.009	-0.009	0.00	No	100.00	Yes
	8	x	-0.009	-0.009	0.00	No	100.00	Yes
	36	x	-0.013	-0.013	0.00	No	100.00	Yes
	37	x	-0.013	-0.013	0.00	No	100.00	Yes
	38	x	-0.013	-0.013	0.00	No	100.00	Yes
	39	x	-0.013	-0.013	0.00	No	100.00	Yes
	40	x	-0.013	-0.013	0.00	No	100.00	Yes
	41	x	-0.013	-0.013	0.00	No	100.00	Yes
	42	x	-0.009	-0.009	0.00	No	100.00	Yes
	43	x	-0.009	-0.009	0.00	No	100.00	Yes
	44	x	-0.012	-0.012	0.00	No	100.00	Yes
	48	x	-0.01	-0.01	0.00	No	100.00	Yes
	49	x	-0.01	-0.01	0.00	No	100.00	Yes
	52	x	-0.01	-0.01	0.00	No	100.00	Yes
	57	x	-0.007	-0.007	0.00	No	100.00	Yes
	58	x	-0.007	-0.007	0.00	No	100.00	Yes
	59	x	-0.007	-0.007	0.00	No	100.00	Yes
	60	x	-0.007	-0.007	0.00	No	100.00	Yes
	61	x	-0.007	-0.007	0.00	No	100.00	Yes
	62	x	-0.007	-0.007	0.00	No	100.00	Yes
	66	x	-0.002	-0.002	0.00	No	100.00	Yes
	67	x	-0.002	-0.002	0.00	No	100.00	Yes
	77	x	-0.007	-0.007	0.00	No	100.00	Yes
	78	x	-0.012	-0.012	0.00	No	100.00	Yes
	79	x	-0.012	-0.012	0.00	No	100.00	Yes
	88	x	-0.011	-0.011	0.00	No	100.00	Yes
	89	x	-0.01	-0.01	0.00	No	100.00	Yes
	91	x	-0.011	-0.011	0.00	No	100.00	Yes
	92	x	-0.011	-0.011	0.00	No	100.00	Yes
	93	x	-0.011	-0.011	0.00	No	100.00	Yes
	94	x	-0.011	-0.011	0.00	No	100.00	Yes
	95	x	-0.011	-0.011	0.00	No	100.00	Yes
	96	x	-0.01	-0.01	0.00	No	100.00	Yes
	101	x	-0.01	-0.01	0.00	No	100.00	Yes
	102	x	-0.01	-0.01	0.00	No	100.00	Yes
	103	x	-0.01	-0.01	0.00	No	100.00	Yes
	104	x	-0.01	-0.01	0.00	No	100.00	Yes
W90	36	x	-0.013	-0.013	0.00	No	100.00	Yes
	37	x	-0.013	-0.013	0.00	No	100.00	Yes
	38	x	-0.013	-0.013	0.00	No	100.00	Yes
	39	x	-0.013	-0.013	0.00	No	100.00	Yes
	40	x	-0.013	-0.013	0.00	No	100.00	Yes
	41	x	-0.013	-0.013	0.00	No	100.00	Yes
	42	x	-0.009	-0.009	0.00	No	100.00	Yes
	43	x	-0.009	-0.009	0.00	No	100.00	Yes
	44	x	-0.012	-0.012	0.00	No	100.00	Yes
	48	x	-0.01	-0.01	0.00	No	100.00	Yes
	49	x	-0.01	-0.01	0.00	No	100.00	Yes
	52	x	-0.01	-0.01	0.00	No	100.00	Yes
	57	x	-0.007	-0.007	0.00	No	100.00	Yes
	58	x	-0.007	-0.007	0.00	No	100.00	Yes
	59	x	-0.007	-0.007	0.00	No	100.00	Yes
	60	x	-0.007	-0.007	0.00	No	100.00	Yes

	61	x	-0.007	-0.007	0.00	No	100.00	Yes
	62	x	-0.007	-0.007	0.00	No	100.00	Yes
	66	x	-0.002	-0.002	0.00	No	100.00	Yes
	67	x	-0.002	-0.002	0.00	No	100.00	Yes
	77	x	-0.007	-0.007	0.00	No	100.00	Yes
	88	x	-0.011	-0.011	0.00	No	100.00	Yes
	89	x	-0.01	-0.01	0.00	No	100.00	Yes
	91	x	-0.011	-0.011	0.00	No	100.00	Yes
	92	x	-0.011	-0.011	0.00	No	100.00	Yes
	93	x	-0.011	-0.011	0.00	No	100.00	Yes
	94	x	-0.011	-0.011	0.00	No	100.00	Yes
	95	x	-0.011	-0.011	0.00	No	100.00	Yes
	96	x	-0.01	-0.01	0.00	No	100.00	Yes
	101	x	-0.01	-0.01	0.00	No	100.00	Yes
	102	x	-0.01	-0.01	0.00	No	100.00	Yes
	103	x	-0.01	-0.01	0.00	No	100.00	Yes
	104	x	-0.01	-0.01	0.00	No	100.00	Yes
W120	1	x	-0.009	-0.009	0.00	No	100.00	Yes
	8	x	-0.009	-0.009	0.00	No	100.00	Yes
	36	x	-0.013	-0.013	0.00	No	100.00	Yes
	37	x	-0.013	-0.013	0.00	No	100.00	Yes
	38	x	-0.013	-0.013	0.00	No	100.00	Yes
	39	x	-0.013	-0.013	0.00	No	100.00	Yes
	40	x	-0.013	-0.013	0.00	No	100.00	Yes
	41	x	-0.013	-0.013	0.00	No	100.00	Yes
	42	x	-0.009	-0.009	0.00	No	100.00	Yes
	43	x	-0.009	-0.009	0.00	No	100.00	Yes
	44	x	-0.012	-0.012	0.00	No	100.00	Yes
	48	x	-0.01	-0.01	0.00	No	100.00	Yes
	49	x	-0.01	-0.01	0.00	No	100.00	Yes
	52	x	-0.01	-0.01	0.00	No	100.00	Yes
	57	x	-0.007	-0.007	0.00	No	100.00	Yes
	58	x	-0.007	-0.007	0.00	No	100.00	Yes
	59	x	-0.007	-0.007	0.00	No	100.00	Yes
	60	x	-0.007	-0.007	0.00	No	100.00	Yes
	61	x	-0.007	-0.007	0.00	No	100.00	Yes
	62	x	-0.007	-0.007	0.00	No	100.00	Yes
	66	x	-0.002	-0.002	0.00	No	100.00	Yes
	67	x	-0.002	-0.002	0.00	No	100.00	Yes
	77	x	-0.007	-0.007	0.00	No	100.00	Yes
	78	x	-0.012	-0.012	0.00	No	100.00	Yes
	79	x	-0.012	-0.012	0.00	No	100.00	Yes
	88	x	-0.011	-0.011	0.00	No	100.00	Yes
	89	x	-0.01	-0.01	0.00	No	100.00	Yes
	91	x	-0.011	-0.011	0.00	No	100.00	Yes
	92	x	-0.011	-0.011	0.00	No	100.00	Yes
	93	x	-0.011	-0.011	0.00	No	100.00	Yes
	94	x	-0.011	-0.011	0.00	No	100.00	Yes
	95	x	-0.011	-0.011	0.00	No	100.00	Yes
	96	x	-0.01	-0.01	0.00	No	100.00	Yes
	101	x	-0.01	-0.01	0.00	No	100.00	Yes
	102	x	-0.01	-0.01	0.00	No	100.00	Yes
	103	x	-0.01	-0.01	0.00	No	100.00	Yes
	104	x	-0.01	-0.01	0.00	No	100.00	Yes
W150	1	z	0.009	0.009	0.00	No	100.00	Yes
	8	z	0.009	0.009	0.00	No	100.00	Yes
	36	z	0.013	0.013	0.00	No	100.00	Yes
	37	z	0.013	0.013	0.00	No	100.00	Yes
	38	z	0.013	0.013	0.00	No	100.00	Yes
	39	z	0.013	0.013	0.00	No	100.00	Yes

	40	z	0.013	0.013	0.00	No	100.00	Yes
	41	z	0.013	0.013	0.00	No	100.00	Yes
	42	z	0.009	0.009	0.00	No	100.00	Yes
	43	z	0.009	0.009	0.00	No	100.00	Yes
	44	z	0.012	0.012	0.00	No	100.00	Yes
	48	z	0.01	0.01	0.00	No	100.00	Yes
	49	z	0.01	0.01	0.00	No	100.00	Yes
	52	z	0.01	0.01	0.00	No	100.00	Yes
	57	z	0.007	0.007	0.00	No	100.00	Yes
	58	z	0.007	0.007	0.00	No	100.00	Yes
	59	z	0.007	0.007	0.00	No	100.00	Yes
	60	z	0.007	0.007	0.00	No	100.00	Yes
	61	z	0.007	0.007	0.00	No	100.00	Yes
	62	z	0.007	0.007	0.00	No	100.00	Yes
	66	z	0.002	0.002	0.00	No	100.00	Yes
	67	z	0.002	0.002	0.00	No	100.00	Yes
	77	z	0.007	0.007	0.00	No	100.00	Yes
	78	z	0.012	0.012	0.00	No	100.00	Yes
	79	z	0.012	0.012	0.00	No	100.00	Yes
	88	z	0.011	0.011	0.00	No	100.00	Yes
	89	z	0.01	0.01	0.00	No	100.00	Yes
	91	z	0.011	0.011	0.00	No	100.00	Yes
	92	z	0.011	0.011	0.00	No	100.00	Yes
	93	z	0.011	0.011	0.00	No	100.00	Yes
	94	z	0.011	0.011	0.00	No	100.00	Yes
	95	z	0.011	0.011	0.00	No	100.00	Yes
	96	z	0.01	0.01	0.00	No	100.00	Yes
	101	z	0.01	0.01	0.00	No	100.00	Yes
	102	z	0.01	0.01	0.00	No	100.00	Yes
	103	z	0.01	0.01	0.00	No	100.00	Yes
	104	z	0.01	0.01	0.00	No	100.00	Yes
Di	1	y	-0.009	-0.009	0.00	No	100.00	Yes
	8	y	-0.009	-0.009	0.00	No	100.00	Yes
	36	y	-0.011	-0.011	0.00	No	100.00	Yes
	37	y	-0.011	-0.011	0.00	No	100.00	Yes
	38	y	-0.011	-0.011	0.00	No	100.00	Yes
	39	y	-0.011	-0.011	0.00	No	100.00	Yes
	40	y	-0.011	-0.011	0.00	No	100.00	Yes
	41	y	-0.011	-0.011	0.00	No	100.00	Yes
	42	y	-0.009	-0.009	0.00	No	100.00	Yes
	43	y	-0.009	-0.009	0.00	No	100.00	Yes
	44	y	-0.009	-0.009	0.00	No	100.00	Yes
	48	y	-0.008	-0.008	0.00	No	100.00	Yes
	49	y	-0.008	-0.008	0.00	No	100.00	Yes
	52	y	-0.008	-0.008	0.00	No	100.00	Yes
	57	y	-0.01	-0.01	0.00	No	100.00	Yes
	58	y	-0.01	-0.01	0.00	No	100.00	Yes
	59	y	-0.01	-0.01	0.00	No	100.00	Yes
	60	y	-0.01	-0.01	0.00	No	100.00	Yes
	61	y	-0.01	-0.01	0.00	No	100.00	Yes
	62	y	-0.01	-0.01	0.00	No	100.00	Yes
	63	y	-0.01	-0.01	0.00	No	100.00	Yes
	66	y	-0.016	-0.016	0.00	No	100.00	Yes
	67	y	-0.016	-0.016	0.00	No	100.00	Yes
	77	y	-0.007	-0.007	0.00	No	100.00	Yes
	78	y	-0.009	-0.009	0.00	No	100.00	Yes
	79	y	-0.009	-0.009	0.00	No	100.00	Yes
	88	y	-0.011	-0.011	0.00	No	100.00	Yes
	89	y	-0.008	-0.008	0.00	No	100.00	Yes
	91	y	-0.011	-0.011	0.00	No	100.00	Yes

92	y	-0.011	-0.011	0.00	No	100.00	Yes
93	y	-0.011	-0.011	0.00	No	100.00	Yes
94	y	-0.011	-0.011	0.00	No	100.00	Yes
95	y	-0.011	-0.011	0.00	No	100.00	Yes
96	y	-0.008	-0.008	0.00	No	100.00	Yes
101	y	-0.008	-0.008	0.00	No	100.00	Yes
102	y	-0.008	-0.008	0.00	No	100.00	Yes
103	y	-0.008	-0.008	0.00	No	100.00	Yes
104	y	-0.008	-0.008	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	101	y	-0.034	1.50	No
		y	-0.034	8.50	No
		y	-0.072	5.00	No
	102	y	-0.042	2.00	No
		y	-0.042	4.00	No
		y	-0.028	6.00	No
		y	-0.028	8.00	No
	104	y	-0.064	1.50	No
		y	-0.064	8.50	No
		y	-0.073	5.00	No
		y	-0.046	5.00	No
Wo	101	z	-0.277	1.50	No
		z	-0.277	8.50	No
		z	-0.029	5.00	No
	102	z	-0.087	2.00	No
		z	-0.087	4.00	No
		z	-0.089	6.00	No
		z	-0.089	8.00	No
	104	z	-0.382	1.50	No
		z	-0.382	8.50	No
		z	-0.031	5.00	No
		z	-0.019	5.00	No
W30	101	3	-0.248	1.50	No
		3	-0.248	8.50	No
		3	-0.032	5.00	No
	102	3	-0.08	2.00	No
		3	-0.08	4.00	No
		3	-0.078	6.00	No
		3	-0.078	8.00	No
	104	3	-0.33	1.50	No
		3	-0.33	8.50	No
		3	-0.038	5.00	No
W60	101	3	-0.19	1.50	No
		3	-0.19	8.50	No
		3	-0.062	5.00	No
	102	3	-0.066	2.00	No

		3	-0.066	4.00	No
		3	-0.055	6.00	No
		3	-0.055	8.00	No
	104	3	-0.226	1.50	No
		3	-0.226	8.50	No
		3	-0.075	5.00	No
W90	101	x	-0.161	1.50	No
		x	-0.161	8.50	No
		x	-0.07	5.00	No
	102	x	-0.059	2.00	No
		x	-0.059	4.00	No
		x	-0.043	6.00	No
		x	-0.043	8.00	No
	104	x	-0.174	1.50	No
		x	-0.174	8.50	No
		x	-0.084	5.00	No
W120	101	2	-0.19	1.50	No
		2	-0.19	8.50	No
		2	-0.062	5.00	No
	102	2	-0.066	2.00	No
		2	-0.066	4.00	No
		2	-0.055	6.00	No
		2	-0.055	8.00	No
	104	2	-0.226	1.50	No
		2	-0.226	8.50	No
		2	-0.075	5.00	No
W150	101	2	-0.248	1.50	No
		2	-0.248	8.50	No
		2	-0.032	5.00	No
	102	2	-0.08	2.00	No
		2	-0.08	4.00	No
		2	-0.078	6.00	No
		2	-0.078	8.00	No
	104	2	-0.33	1.50	No
		2	-0.33	8.50	No
		2	-0.038	5.00	No
Di	101	y	-0.143	1.50	No
		y	-0.143	8.50	No
		y	-0.048	5.00	No
	102	y	-0.054	2.00	No
		y	-0.054	4.00	No
		y	-0.051	6.00	No
		y	-0.051	8.00	No
	104	y	-0.194	1.50	No
		y	-0.194	8.50	No
		y	-0.054	5.00	No
		y	-0.046	5.00	No
WI0	101	z	-0.057	1.50	No
		z	-0.057	8.50	No
		z	-0.009	5.00	No
	102	z	-0.019	2.00	No
		z	-0.019	4.00	No
		z	-0.019	6.00	No
		z	-0.019	8.00	No
	104	z	-0.074	1.50	No
		z	-0.074	8.50	No
		z	-0.01	5.00	No
		z	-0.008	5.00	No
WI30	101	3	-0.05	1.50	No
		3	-0.05	8.50	No

		3	-0.008	5.00	No
	102	3	-0.018	2.00	No
		3	-0.018	4.00	No
		3	-0.017	6.00	No
		3	-0.017	8.00	No
	104	3	-0.064	1.50	No
		3	-0.064	8.50	No
		3	-0.009	5.00	No
WI60	101	3	-0.041	1.50	No
		3	-0.041	8.50	No
		3	-0.015	5.00	No
	102	3	-0.015	2.00	No
		3	-0.015	4.00	No
		3	-0.013	6.00	No
		3	-0.013	8.00	No
	104	3	-0.047	1.50	No
		3	-0.047	8.50	No
		3	-0.017	5.00	No
WI90	101	3	-0.036	1.50	No
		3	-0.036	8.50	No
		3	-0.017	5.00	No
	102	3	-0.014	2.00	No
		3	-0.014	4.00	No
		3	-0.011	6.00	No
		3	-0.011	8.00	No
	104	3	-0.038	1.50	No
		3	-0.038	8.50	No
		3	-0.02	5.00	No
WI120	101	2	-0.041	1.50	No
		2	-0.041	8.50	No
		2	-0.015	5.00	No
	102	2	-0.015	2.00	No
		2	-0.015	4.00	No
		2	-0.013	6.00	No
		2	-0.013	8.00	No
	104	2	-0.047	1.50	No
		2	-0.047	8.50	No
		2	-0.017	5.00	No
WI150	101	2	-0.05	1.50	No
		2	-0.05	8.50	No
		2	-0.008	5.00	No
	102	2	-0.018	2.00	No
		2	-0.018	4.00	No
		2	-0.017	6.00	No
		2	-0.017	8.00	No
	104	2	-0.064	1.50	No
		2	-0.064	8.50	No
		2	-0.009	5.00	No
WL0	101	z	-0.016	1.50	No
		z	-0.016	8.50	No
		z	-0.002	5.00	No
	102	z	-0.005	2.00	No
		z	-0.005	4.00	No
		z	-0.005	6.00	No
		z	-0.005	8.00	No
	104	z	-0.022	1.50	No
		z	-0.022	8.50	No
		z	-0.002	5.00	No
		z	-0.001	5.00	No
WL30	101	3	-0.015	1.50	No

		3	-0.015	8.50	No
		3	-0.002	5.00	No
	102	3	-0.005	2.00	No
		3	-0.005	4.00	No
		3	-0.005	6.00	No
		3	-0.005	8.00	No
	104	3	-0.019	1.50	No
		3	-0.019	8.50	No
		3	-0.002	5.00	No
WL60	101	3	-0.011	1.50	No
		3	-0.011	8.50	No
		3	-0.003	5.00	No
	102	3	-0.004	2.00	No
		3	-0.004	4.00	No
		3	-0.003	6.00	No
		3	-0.003	8.00	No
	104	3	-0.013	1.50	No
		3	-0.013	8.50	No
		3	-0.004	5.00	No
WL90	101	x	-0.009	1.50	No
		x	-0.009	8.50	No
		x	-0.004	5.00	No
	102	x	-0.004	2.00	No
		x	-0.004	4.00	No
		x	-0.003	6.00	No
		x	-0.003	8.00	No
	104	x	-0.01	1.50	No
		x	-0.01	8.50	No
		x	-0.005	5.00	No
WL120	101	2	-0.011	1.50	No
		2	-0.011	8.50	No
		2	-0.003	5.00	No
	102	2	-0.004	2.00	No
		2	-0.004	4.00	No
		2	-0.003	6.00	No
		2	-0.003	8.00	No
	104	2	-0.013	1.50	No
		2	-0.013	8.50	No
		2	-0.004	5.00	No
WL150	101	2	-0.015	1.50	No
		2	-0.015	8.50	No
		2	-0.002	5.00	No
	102	2	-0.005	2.00	No
		2	-0.005	4.00	No
		2	-0.005	6.00	No
		2	-0.005	8.00	No
	104	2	-0.019	1.50	No
		2	-0.019	8.50	No
		2	-0.002	5.00	No
LL1	1	y	-0.25	50.00	Yes
LL2	1	y	-0.25	100.00	Yes
LL3	1	y	-0.25	0.00	Yes
LLa1	103	y	-0.50	50.00	Yes
LLa2	101	y	-0.50	50.00	Yes
LLa3	102	y	-0.50	50.00	Yes
LLa4	104	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00

LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Current Date: 10/12/2021 2:35 PM
Units system: English
File name: Z:\Shared\Work2.0\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1148\CT1148 (C-BAND).retx

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2

LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 3X5	**57**	LC51 at 46.88%	**0.25**	**OK**	Eq. H1-1b
		58	LC6 at 0.00%	0.08	OK	Eq. H1-1b
		59	LC2 at 100.00%	0.21	OK	Eq. H1-1b
		60	LC2 at 0.00%	0.15	OK	Eq. H1-1b
		61	LC12 at 100.00%	0.09	OK	Eq. H1-1b
		62	LC12 at 50.00%	0.24	OK	Eq. H1-1b
		63	LC26 at 0.00%	0.08	OK	Eq. H1-1b
	L 2-1_2X2-1_2X3_16	**88**	LC32 at 0.00%	0.28	OK	Sec. F1
		91	LC30 at 100.00%	0.52	OK	Sec. F1
		92	LC25 at 100.00%	**0.71**	**OK**	Eq. H2-1
		93	LC51 at 0.00%	0.52	OK	Eq. H2-1
		94	LC51 at 100.00%	0.46	OK	Eq. H2-1
		95	LC26 at 0.00%	0.59	OK	Eq. H2-1
	L 2X2X1_4	**1**	LC83 at 35.42%	**0.74**	**With warnings**	Eq. H2-1
		8	LC87 at 35.42%	0.68	With warnings	Eq. H2-1
		42	LC30 at 0.00%	0.45	OK	Sec. F1
		43	LC70 at 100.00%	0.44	OK	Sec. F1
	LU 3X2X1_4	**36**	LC32 at 0.00%	0.18	OK	Eq. H2-1
		37	LC4 at 0.00%	0.18	OK	Eq. H2-1
		38	LC26 at 100.00%	**0.24**	**OK**	Eq. H2-1
		39	LC26 at 100.00%	0.19	OK	Eq. H2-1
		40	LC10 at 0.00%	0.09	OK	Eq. H2-1
		41	LC71 at 0.00%	0.20	OK	Eq. H2-1

PIPE 1-1_4x0.140	**77**	LC3 at 50.00%	**0.28**	**OK**	Eq. H1-1a
PIPE 2-1_2x0.203	**44**	LC26 at 10.42%	0.17	OK	Eq. H1-1b
	78	LC30 at 20.31%	**0.80**	**OK**	Eq. H1-1b
	79	LC6 at 87.50%	0.30	OK	Eq. H1-1b
PIPE 2x0.154	**48**	LC82 at 100.00%	0.16	OK	Eq. H1-1b
	49	LC25 at 0.00%	0.16	OK	Eq. H1-1b
	52	LC65 at 100.00%	0.05	OK	Eq. H1-1b
	89	LC9 at 33.75%	0.49	OK	Eq. H1-1b
	96	LC46 at 98.44%	0.23	OK	Eq. H1-1b
	97	LC26 at 0.00%	0.29	OK	Eq. H1-1b
	101	LC1 at 31.25%	0.52	OK	Eq. H1-1b
	102	LC31 at 33.33%	0.20	OK	Eq. H1-1b
	103	LC46 at 66.67%	0.30	OK	Eq. H1-1b
	104	LC1 at 31.25%	**0.71**	**OK**	Eq. H1-1b
PL 6x3/8	**66**	LC30 at 0.00%	**0.47**	**OK**	Eq. H1-1b
	67	LC32 at 0.00%	0.46	OK	Eq. H1-1b

Current Date: 10/12/2021 2:35 PM
Units system: English
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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	-6.25	0.25	0.00	0
2	6.25	0.25	0.00	0
12	-6.25	-2.75	0.00	0
69	0.00	0.75	-1.70	0
70	-0.75	0.25	-1.00	0
71	0.75	0.25	-1.00	0
72	-1.50	0.25	0.00	0
73	1.50	0.25	0.00	0
74	0.00	-3.25	-1.70	0
75	-0.75	-2.75	-1.00	0
76	0.75	-2.75	-1.00	0
77	-1.50	-2.75	0.00	0
78	1.50	-2.75	0.00	0
81	-1.75	0.25	0.00	0
82	-1.75	-2.75	0.00	0
83	1.75	0.25	0.00	0
84	1.75	-2.75	0.00	0
87	0.00	0.25	0.00	0
88	0.00	-2.75	0.00	0
89	-0.75	-2.75	-1.50	0
90	0.75	-2.75	-1.50	0

91	0.75	0.25	-1.50	0
92	-0.75	0.25	-1.50	0
97	0.00	0.75	-2.45	0
98	0.00	-3.25	-2.45	0
110	-6.25	-1.50	0.00	0
111	-3.00	-1.50	-6.00	0
115	6.75	-2.50	0.20	0
116	-6.75	0.95	0.20	0
117	-6.75	-2.50	0.20	0
136	3.9583	0.95	0.20	0
137	-3.9583	0.95	0.20	0
138	-5.00	-2.50	0.20	0
139	5.00	-2.50	0.20	0
140	0.00	-2.50	-2.45	0
143	-5.00	0.95	0.20	0
144	5.00	0.95	0.20	0
145	0.00	1.00	-2.45	0
146	0.00	3.00	-2.45	0
147	1.75	1.00	0.00	0
154	5.25	4.225	0.40	0
155	5.25	-5.775	0.40	0
156	-0.50	4.225	0.40	0
157	-0.50	-5.775	0.40	0
158	6.50	4.225	0.40	0
159	6.50	-5.775	0.40	0
160	-6.00	4.225	0.40	0
161	-6.00	-5.775	0.40	0
141	-6.25	1.00	0.00	0
13	6.25	-2.75	0.00	0
142	6.25	1.00	0.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
97	1	1	1	1	1	1
98	1	1	1	1	1	1
111	1	1	1	0	0	0
140	1	1	1	1	1	1
145	1	1	1	1	1	1
146	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		L 2X2X1_4	A36	0.00	0.00	0.00
8	12	13		L 2X2X1_4	A36	0.00	0.00	0.00
36	70	72		LU 3X2X1_4	A36	0.00	0.00	0.00
37	71	70		LU 3X2X1_4	A36	0.00	0.00	0.00
38	73	71		LU 3X2X1_4	A36	0.00	0.00	0.00
39	77	75		LU 3X2X1_4	A36	0.00	0.00	0.00

40	75	76	LU 3X2X1_4	A36	0.00	0.00	0.00
41	76	78	LU 3X2X1_4	A36	0.00	0.00	0.00
42	70	75	L 2X2X1_4	A36	0.00	0.00	0.00
43	71	76	L 2X2X1_4	A36	0.00	0.00	0.00
44	69	74	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
48	81	82	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
49	83	84	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
52	87	88	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	91	92	C 3X5	A36	0.00	0.00	0.00
58	92	70	C 3X5	A36	0.00	0.00	0.00
59	71	91	C 3X5	A36	0.00	0.00	0.00
60	90	76	C 3X5	A36	0.00	0.00	0.00
61	75	89	C 3X5	A36	0.00	0.00	0.00
62	89	90	C 3X5	A36	0.00	0.00	0.00
63	93	94	C 3X5	A36	0.00	0.00	0.00
66	97	69	PL 6x3/8	A36	0.00	0.00	0.00
67	98	74	PL 6x3/8	A36	0.00	0.00	0.00
77	110	111	PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
78	116	114	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
79	115	117	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
88	140	139	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
89	12	141	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	138	140	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
92	145	143	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
93	144	145	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
94	146	136	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
95	137	146	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
96	13	142	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
97	83	147	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
101	154	155	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
102	156	157	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
103	158	159	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
104	160	161	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	90.00	0	0.00	0.00	0.00
36	180.00	0	0.00	0.00	0.00
37	180.00	0	0.00	0.00	0.00
38	180.00	0	0.00	0.00	0.00
43	90.00	0	0.00	0.00	0.00
63	180.00	0	0.00	0.00	0.00
66	90.00	0	0.00	0.00	0.00
67	90.00	0	0.00	0.00	0.00
88	90.00	0	0.00	0.00	0.00
91	90.00	0	0.00	0.00	0.00
92	180.00	0	0.00	0.00	0.00
93	180.00	0	0.00	0.00	0.00
94	90.00	0	0.00	0.00	0.00
95	90.00	0	0.00	0.00	0.00
101	315.00	0	0.00	0.00	0.00
102	315.00	0	0.00	0.00	0.00
103	315.00	0	0.00	0.00	0.00
104	315.00	0	0.00	0.00	0.00

Town of Bloomfield, CT

Property Listing Report

Map Block Lot	39-29	Building #	1	PID	7809	Account	

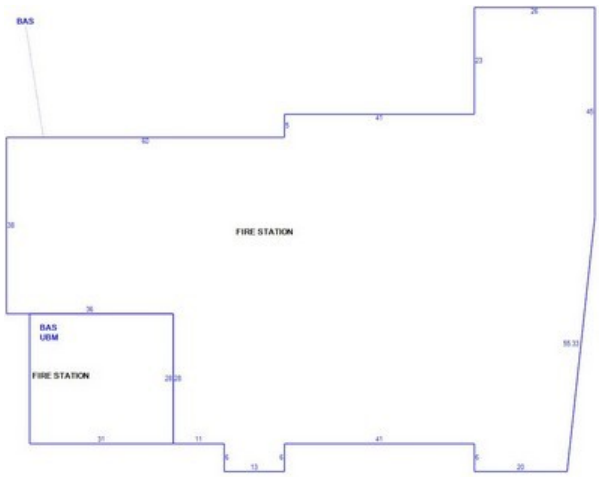
Property Information

Property Location	1021 BLUE HILLS AVE
Owner	BLUE HILLS FIRE DIST
Co-Owner	BLUE HILLS AVE COR
Mailing Address	ROCKWELL AVENUE BLOOMFIELD CT 06002
Land Use	922 Mun Bldg Com
Land Class	E
Zoning Code	GWB
Census Tract	4712

Site Index	C
Acreage	1.23
Utilities	
Lot Setting/Desc	
Fire District	B
Book / Page	0091/0376

Photo

Sketch



Primary Construction Details

Year Built	1962
Building Desc.	Commercial
Building Style	Fire Station
Building Grade	C
Stories	1
Occupancy	1.00
Exterior Walls	Brick Veneer
Exterior Walls 2	NA
Roof Style	Gable
Roof Cover	Arch Shingles
Interior Walls	Drywall
Interior Walls 2	Minimum
Interior Floors 1	Vinyl/Asphalt
Interior Floors 2	Concrete

Heating Fuel	Gas
Heating Type	Hot Water
AC Type	42
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Bsmt Fin Area	0
Rec Rm Area	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Commercial
Building Condition	G
Sprinkler %	100
Heat / AC	HEAT/AC SPLIT
Frame Type	Masonry
Baths / Plumbing	Average
Ceiling / Wall	Sus Ceil & Wal
Rooms / Prtns	Average
Wall Height	12.00
First Floor Use	
Foundation	NA

Report Created On 12/9/2021

Town of Bloomfield, CT

Property Listing Report | Map Block Lot **39-29** | Building # **1** | PID **7809** | Account

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	617000	431900
Extras	0	0
Improvements		
Outbuildings	85700	59990
Land	377100	263970
Total	1079800	755860

Outbuilding and Extra Features

Type	Description
Cell Shed	260 S.F.
Cell Shed	200 S.F.
Cell Shed	200 S.F.
Paving	23120 S.F.
Shed	288 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Office Area	3898	3898
First Floor	5346	5346
Canopy	75	0
Basement	868	0
Total Area	10187	9244

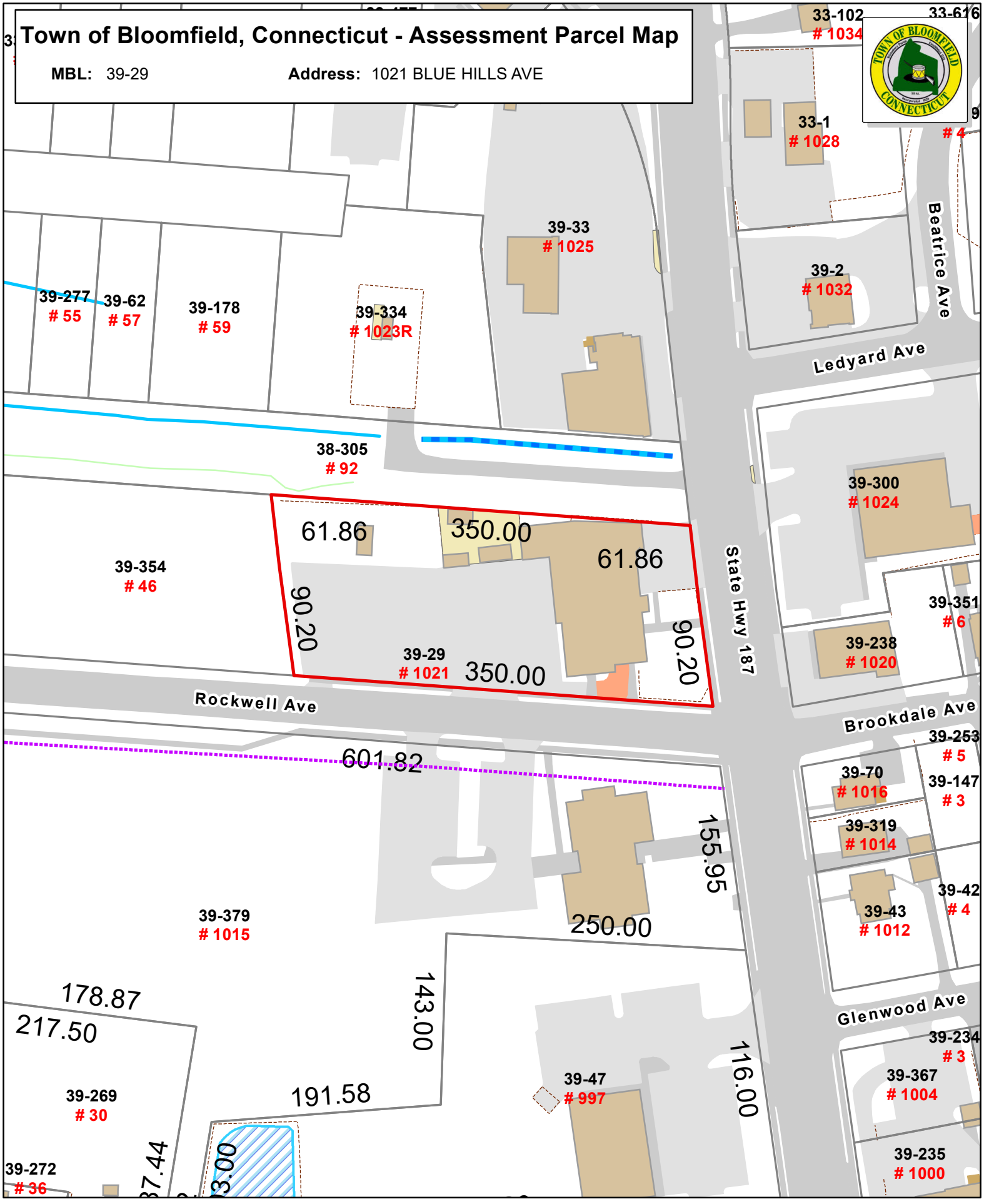
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BLUE HILLS FIRE DIST	0091/0376	1900-01-01	0

Report Created On 12/9/2021

Town of Bloomfield, Connecticut - Assessment Parcel Map

MBL: 39-29 **Address:** 1021 BLUE HILLS AVE



Approximate Scale:

1 inch = 100 feet

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Bloomfield and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced December 2021

ZONING BOARD OF APPEALS

TOWN OF BLOOMFIELD

LOCATION: 1021 Blue Hills Avenue
Please type or print

OWNER OF RECORD: Blue Hills Fire District

The foregoing application for / Variance; / Special Exception pursuant to Section IV.S.4b/III.T of the Bloomfield Zoning Regulations, pertains to premises bounded and described as follows:
(Type or attach written legal boundary description)

(See Attached Description)

Notary: [signature]
MARK LECAULT
MY COMMISSION EXPIRES: 11/30/2001

December 1, 1997
Date

[signature] CHIEF
Signature of Owner of Record

PLEASE NOTE REQUIREMENTS BELOW FOR RECORDING APPROVAL ON LAND RECORDS

To be completed by Zoning Board of Appeals following approval:

I hereby certify that the Zoning Board of Appeals, at a meeting held on December 1, 1997, approved /XX/ Variance and XXX/ Special Exception of Cordless Data Transfer, Inc. for a radio tower in the gateway zone, to be located 12 feet from the property line, 1021 Blue Hills Ave., (Fire Dept.) at the above premises, pursuant to Section IV.S.4.b III-P of the Bloomfield Zoning Regulations, subject to the following conditions (if any):

An 8-foot chain link fence shall be placed around the tower

Woodrow Dixon/KMMF
Woodrow Dixon
Secretary - ZBA

* NOTE: PURSUANT TO SECTION 8-3d OF THE CONN. GENERAL STATUTES, THIS VARIANCE/SPECIAL EXCEPTION WILL NOT BECOME EFFECTIVE UNTIL IT HAS BEEN RECORDED ON THE LAND RECORDS OF THE TOWN OF BLOOMFIELD. IT IS THE RESPONSIBILITY OF THE OWNER TO RECORD THIS FORM AND PAY THE RECORDING FEE. ($10.00 FOR THE FIRST PAGE, $5.00 EACH ADDITIONAL PAGE

* NO BUILDING PERMITS REQUIRED IN CONNECTION WITH THE ABOVE VARIANCE OR SPECIAL EXCEPTION MAY BE ISSUED UNTIL THIS APPROVAL HAS BEEN RECORDED.

Rev. 1/91

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@po.state.ct.us
Web Site: www.state.ct.us/csc/index.htm

March 30, 2001

Christopher B. Fisher, Esq.
Cuddy & Feder & Worby LLP
90 Maple Avenue
White Plains, NY 10601-5196

RE: **TS-AT&T-011-010321** - AT&T Wireless PCS, LLC request for an order to approve tower sharing at an existing telecommunications facility located at 1021 Blue Hills Avenue, Bloomfield, Connecticut.

Dear Attorney Fisher:

At a public meeting held March 28, 2001, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated March 19, 2001.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/laf

c: Honorable Faith McMahon, Mayor, Town of Bloomfield
Mr. Thomas B. Hooper, Director of Planning, Town of Bloomfield
Louie Chapman, Jr., Town Manager, Town of Bloomfield
Esther McNany, SBA, Inc.
Stephen J. Humes, Esq., LeBoeuf, Lamb, Greene & MacRae
Peter W. van Wilgen, SNET Cellular LLC
Christine Belvin, LCC International, Inc.
Sam J. D'Agostino, PageNet Inc.

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CT SITING COUNCIL
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