June 16, 2020

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 CT2579
855 University Drive (UCONN), Torrington, CT 06790 (the "Property")
Latitude: 41.840544N Longitude: 73.161908W

Dear Ms. Bachman:

AT&T currently maintains (6) antennas on the existing 300' guyed tower ("Tower") at 855 University Drive, Torrington, CT. The property is owned by the State of Connecticut. The tower is owned by Vertical Bridge. AT&T intends to modify its Facility by replacing (3) antennas with (3) OPA65R-BU6DA and adding (3) DMP65R-BU6DA antennas and replacing (3) RRUs with (3) B5/B12 4449 RRUs and install (3) 4478 B14 RRUs and install (3) 8843 B2/B66A. The height of the existing and proposed antennas and RRUs is 297'.

The city planner said since it was State of CT property, the City wasn't a party in that cell tower application. No zoning approval is available. Please see attached email. AT&T received Council approval under TS-CING-143-110407 on April 29, 2011.

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 the Honorable Elinor Carbone, Mayor, City of Torrington, Mr. Martin J. Conner, AICP, City Planner, City of Torrington, the State of Connecticut as property owner and Vertical Bridge as tower manager.

The planned modifications of the facility fall 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 modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the 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: The Honorable Elinor Carbone, Mayor, City of Torrington
Mr. Martin J. Connor, AICP, City Planner, City of Torrington
The State of Connecticut as property owner
Vertical Bridge as tower owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							0.00%
AT&T	2	500	297	0.0042	850	0.5667	0.07%
AT&T	2	500	297	0.0042	1900	1.0000	0.04%
AT&T	1	500	297	0.0021	700	0.4667	0.05%
AT&T	1	427	297	0.0018	1900	1.0000	0.02%
AT&T	1	296	297	0.0013	880	0.5667	0.02%
Site Total							0.20%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							0.00%
AT&T UMTS	1	500	297	0.0021	850	0.5667	0.04%
AT&T LTE	1	2951	297	0.0125	700	0.4667	0.27%
AT&T AWS	1	3837	297	0.0163	2170	1.0000	0.16%
AT&T LTE	1	1476	297	0.0063	700	0.4667	0.13%
AT&T LTE	1	1000	297	0.0042	850	0.5667	0.07%
AT&T LTE	2	3664	297	0.0311	1900	1.0000	0.31%
AT&T 5G	1	1000	297	0.0042	850	0.5667	0.07%
Site Total							1.06%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING GUYED TOWER: • NEW AT&T ANTENNAS (OPA65R-BU6DA) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T ANTENNAS (DMP65R-BU6DA) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). PROPOSED AT&T RRUS 8843 B2/B66A (PCS/AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T DC & FIBER SURGE ARRESTOR (DC9-48-60-24-8C-EV) (TOTAL OF 1) WITH (3) DC POWER & (1) FIBER RUN (TO FOLLOW EXISTING ROUTING). • PROPOSED ANTENNA MOUNTS SITE PRO 1 PART# VFA12-WLL-30120 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING) ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • ADD RBS 6630. • ADD XMU WITH IDLe. • ADD (1) DC12. • ADD (1) FMB. ITEMS TO BE REMOVED: • EXISTING AT&T ANTENNA (AM-X-CD-16-65-00T-RET) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T RRUS 11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). ITEMS TO REMAIN: • EXISTING AT&T ANTENNA (AM-X-CD-16-65-00T-RET) @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T TWIN TMAS: (DTMABP7819VG12A) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T SURGE ARRESTOR: (TOTAL OF 1). • EXISTING (6) COAX CABLES, (2) DC POWER & (1) FIBER.
SITE ADDRESS:	855 UNIVERSITY DRIVE TORRINGTON, MA 06790
LATITUDE:	41.840544° N, 41° 50' 25.96" N
LONGITUDE:	73.161908° W, 73° 09' 42.87" W
TYPE OF SITE:	GUYED TOWER / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	300'-0"±
RAD CENTER:	297'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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VERTICALBRIDGE SITE NAME: TORRINGTON
VERTICALBRIDGE SITE #: US-CT-5011

SITE NUMBER: CT2579

SITE NAME: TORRINGTON UNVERSITY DRIVE

FA CODE: 10128145

PACE ID: MRCTB046632, MRCTB046890, MRCTB046682, MRCTB046763, MRCTB046806

PROJECT: LTE 2C_3C_4C_4TX4RX_5G NR 2020 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

START OUT HEADING ON I84 WEST TOWARD WATERBURY/DANBURY MERGE ONTO CT8 N VIA EXIT 20 TOWARD TORRINGTONTAKE THE US202 EXIT EXIT 44 TOWARD CT4/DOWNTOWN TORRINGTON STAY STRAIGHT TO GO ONTO CHRISTOPHER RD TAKE THE 1ST LEFT ONTO E ELM ST/CT4 CONTINUE TO FOLLOW CT4 TURN RIGHT ONTO UNIVERSITY DR 855 UNIVERSITY DR IS ON THE LEFT TURN IN ENTRY PROCEED PAST UNIVERSITY TO REAR OF BUILDING THERE WILL BE AN ACCESS ROAD DIRECTLY BEHIND THE UNIVERSITY WHICH WILL LEAD TO THE SHELTER

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: CT2579
SITE NAME: TORRINGTON UNVERSITY DRIVE
VERTICALBRIDGE SITE #: US-CT-5011

855 UNIVERSITY DRIVE
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500 ENTERPRISE DRIVE, SUITE 3A
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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

TITLE SHEET

LTE 2C_3C_4C_4TX4RX_5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2579	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 (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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: CT2579
SITE NAME: TORRINGTON UNVERSITY DRIVE
VERTICALBRIDGE SITE #: US-CT-5011

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

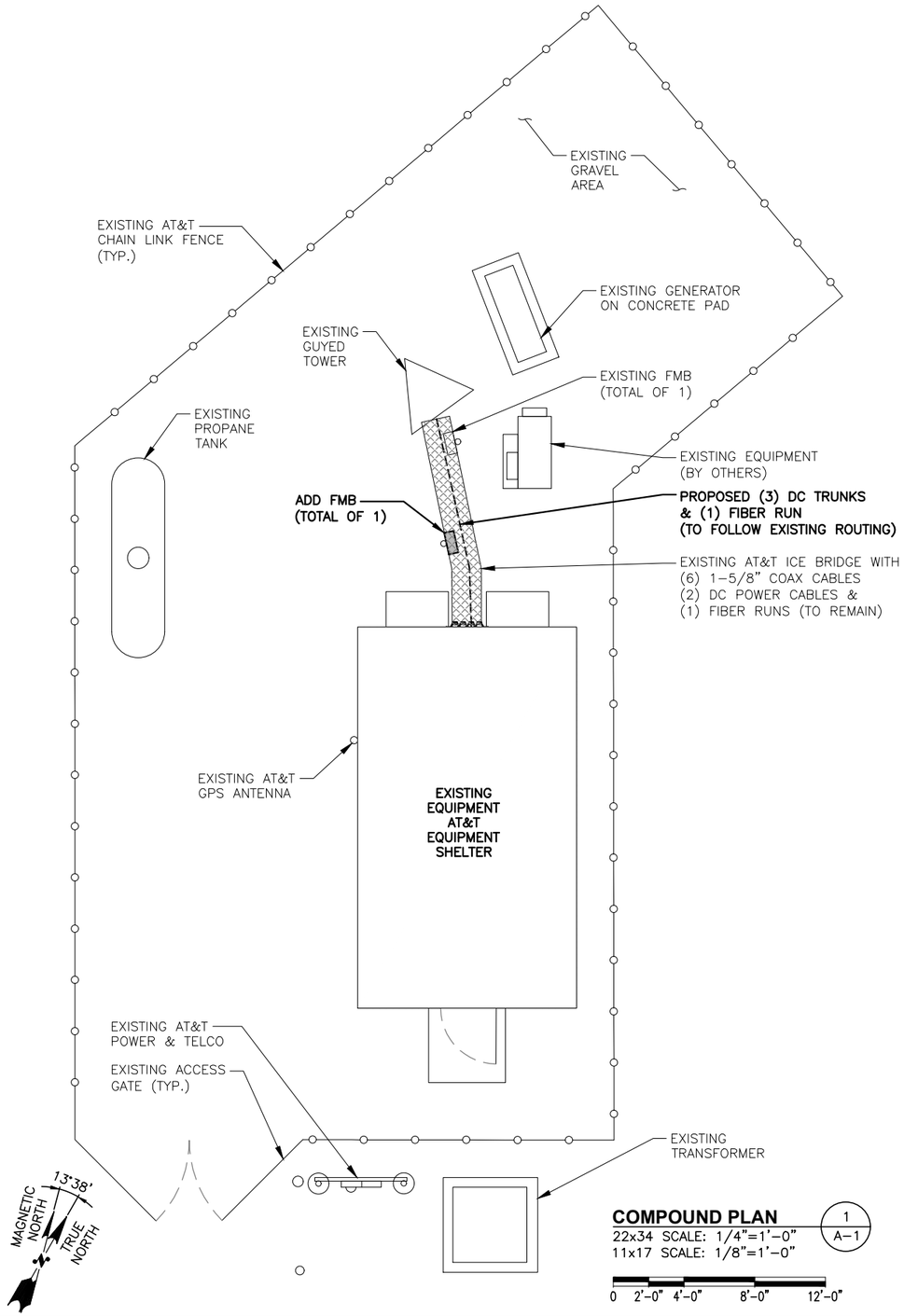
STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES

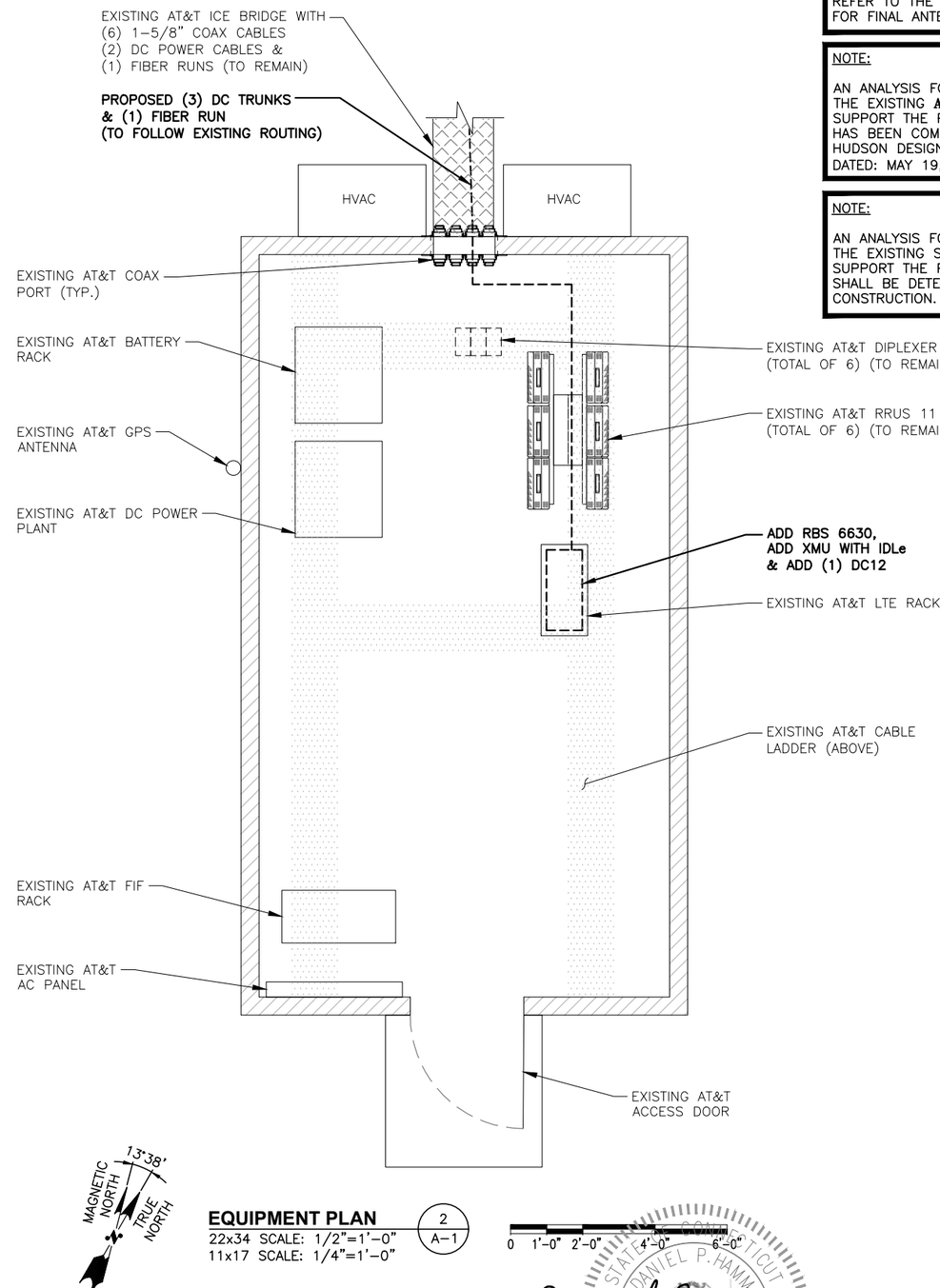
LTE 2C_3C_4C_4TX4RX_5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2579	GN-1	1



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

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: MAY 19, 2020 (REV.1)

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

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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AT&T

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LTE 2C_3C_4C_4TX4RX_5G NR 2020 UPGRADE

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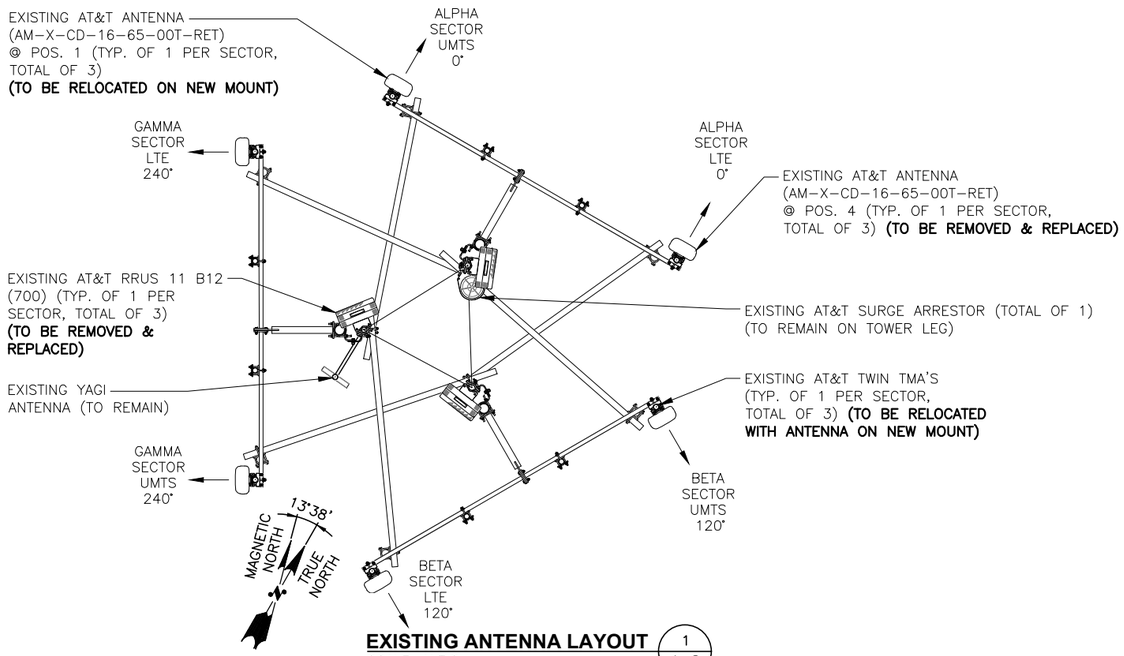
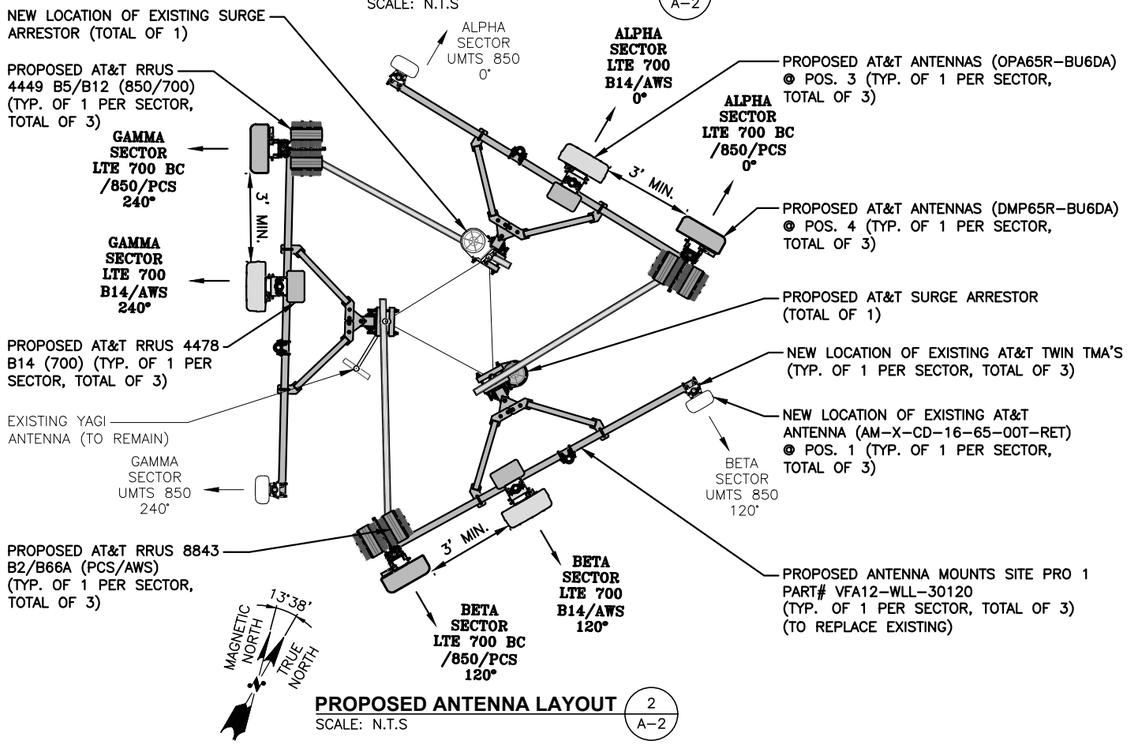
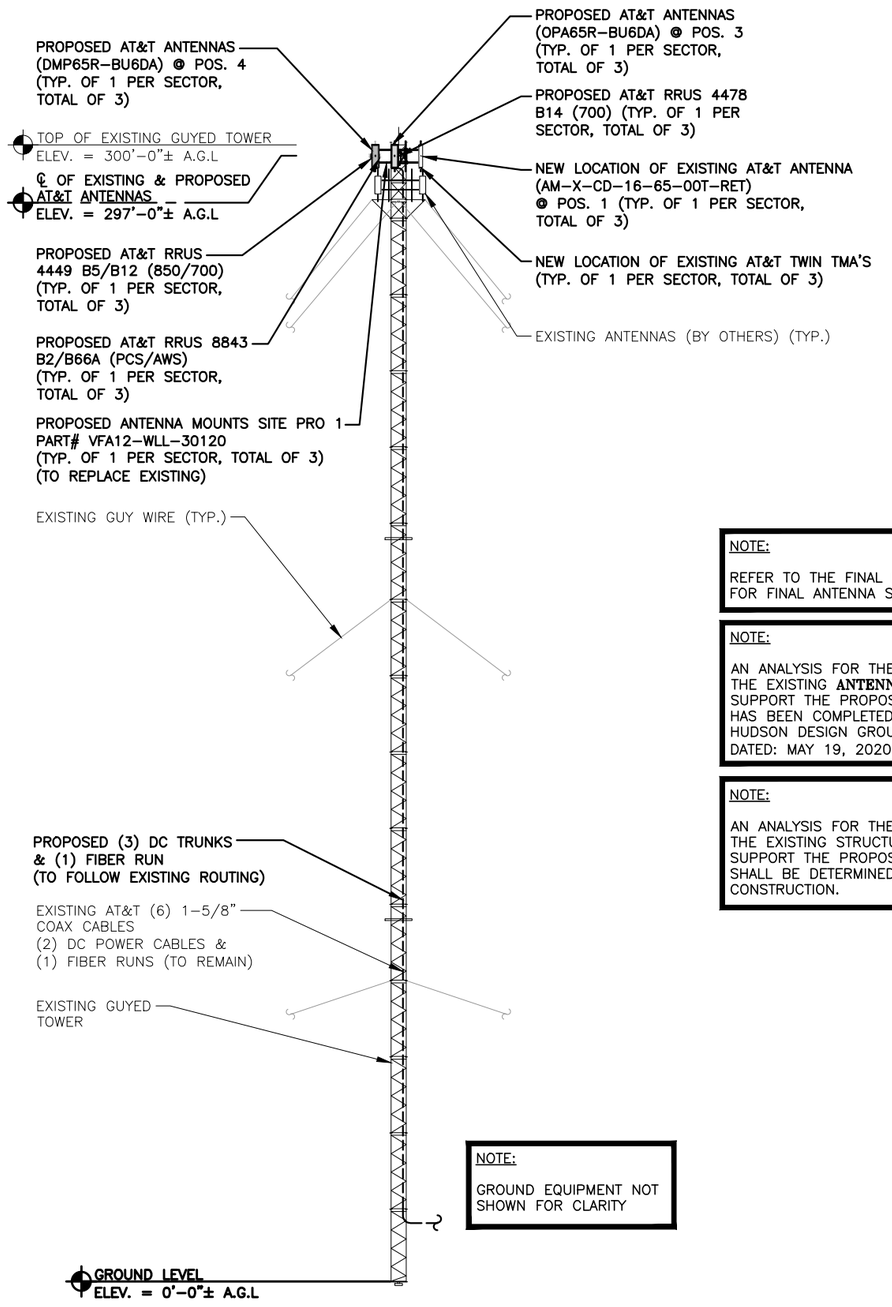


EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S



ELEVATION (3 / A-2)
22x34 SCALE: 1"=20'-0"
11x17 SCALE: 1"=40'-0"

0 10' 20' 40' 60'

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: MAY 19, 2020 (REV.1)

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
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12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2579
SITE NAME: TORRINGTON UNVERSITY DRIVE
VERTICALBRIDGE SITE #: US-CT-5011

855 UNIVERSITY DRIVE
TORRINGTON, MA 06790
LITCHFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	06/12/20	ISSUED FOR CONSTRUCTION	AM	HC	DPH
A	05/21/20	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

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ANTENNA LAYOUTS & ELEVATION

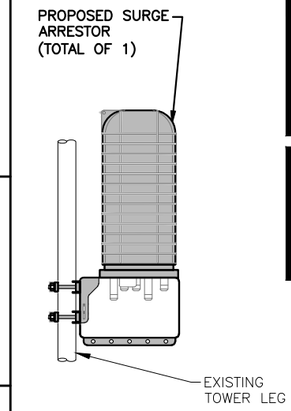
LTE 2C_3C_4C_4TX4RX_5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2579	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	EXISTING	UMTS 850	AM-X-CD-16-65-00T-RET	72X11.8X5.9	297'-0"±	0°	(1)(E) DTMABP7819VG12A	–	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	–	–	–	–	–	–	–	–	–	–	
A3	**PROPOSED**	**LTE 700 B14/AWS**	**OPA65R-BU6DA**	**71.2X21X7.8**	**297'-0"±**	**0°**	–	**(1)(P) RRUS 4478 B14 (700)**	**18.1"x13.4"x8.3"**	–	
A4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**297'-0"±**	**0°**	–	**(1)(P) RRUS 4449 B5/B12 (850/700)** **(1)(P) RRUS 8843 B2/B66A (AWS/PCS)**	**14.9"x13.2"x10.4"** **14.9"x13.2"x10.9"**	(E)(2) DC & (E)(1) FIBER	
B1	EXISTING	UMTS 850	AM-X-CD-16-65-00T-RET	72X11.8X5.9	297'-0"±	120°	(1)(E) DTMABP7819VG12A	–	–	(2)1-5/8 COAX	(P) (1) RAYCAP DC9-48-60-24-8C-EV
B2	–	–	–	–	–	–	–	–	–	–	
B3	**PROPOSED**	**LTE 700 B14/AWS**	**OPA65R-BU6DA**	**71.2X21X7.8**	**297'-0"±**	**120°**	–	**(1)(P) RRUS 4478 B14 (700)**	**18.1"x13.4"x8.3"**	**(P)(3) DC & (1) FIBER**	
B4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**297'-0"±**	**120°**	–	**(1)(P) RRUS 4449 B5/B12 (850/700)** **(1)(P) RRUS 8843 B2/B66A (AWS/PCS)**	**14.9"x13.2"x10.4"** **14.9"x13.2"x10.9"**	–	
C1	EXISTING	UMTS 850	AM-X-CD-16-65-00T-RET	72X11.8X5.9	297'-0"±	240°	(1)(E) DTMABP7819VG12A	–	–	(2)1-5/8 COAX	SHARED
C2	–	–	–	–	–	–	–	–	–	–	
C3	**PROPOSED**	**LTE 700 B14/AWS**	**OPA65R-BU6DA**	**71.2X21X7.8**	**297'-0"±**	**240°**	–	**(1)(P) RRUS 4478 B14 (700)**	**18.1"x13.4"x8.3"**	–	
C4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**297'-0"±**	**240°**	–	**(1)(P) RRUS 4449 B5/B12 (850/700)** **(1)(P) RRUS 8843 B2/B66A (AWS/PCS)**	**14.9"x13.2"x10.4"** **14.9"x13.2"x10.9"**	–	

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



SURGE SUPPRESSOR MOUNTING DETAIL (2 / A-3)
SCALE: N.T.S

NOTE:
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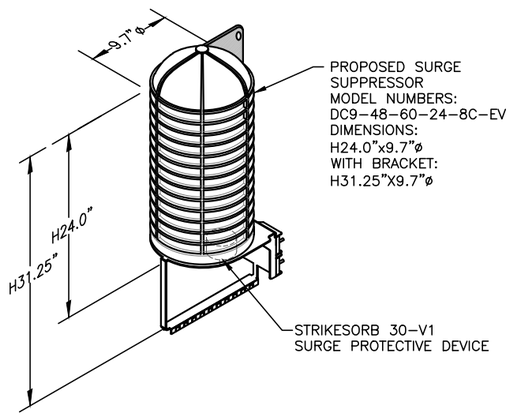
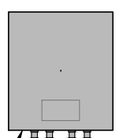
RRU CHART		
QUANTITY	**MODEL**	**SIZE (L x W x D)**
3(P)	**4449 B5/B12 (850/700)**	**14.9"x13.2"x10.4"**
3(P)	**8843 B2/B66A (AWS/PCS)**	**14.9"x13.2"x10.9"**
3(P)	**4478 B14 (700)**	**18.1"x13.4"x8.3"**
6(E)(G)	RRUS-11 B5 (850)	19.7"x17.0"x7.2"
NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS		



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

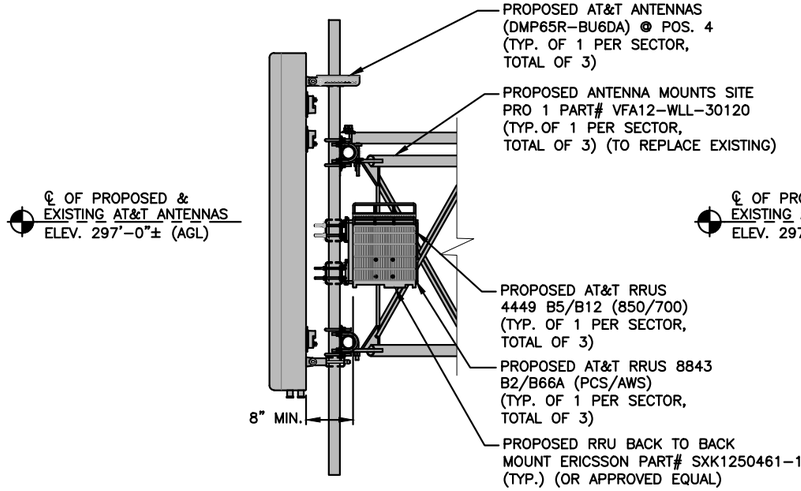
DC SURGE SUPPRESSOR DETAIL (3 / A-3)
SCALE: N.T.S

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



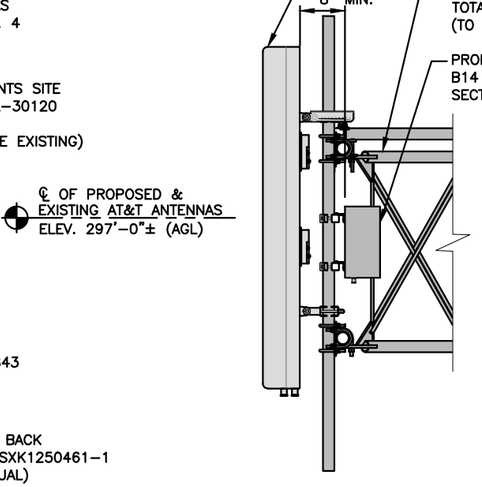
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (4 / A-3)
SCALE: N.T.S



PROPOSED LTE ANTENNA & RRU 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 LTE ANTENNA & RRU MOUNTING DETAIL (6 / A-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

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SITE NUMBER	DRAWING NUMBER	REV
CT2579	A-3	1

STRUCTURAL NOTES:

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

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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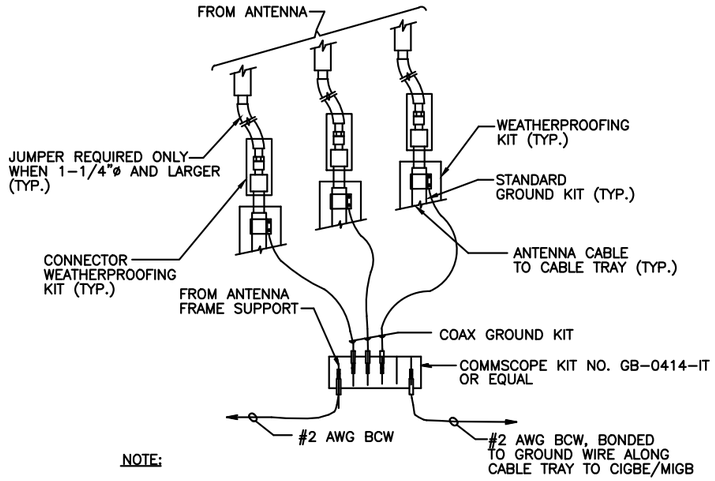
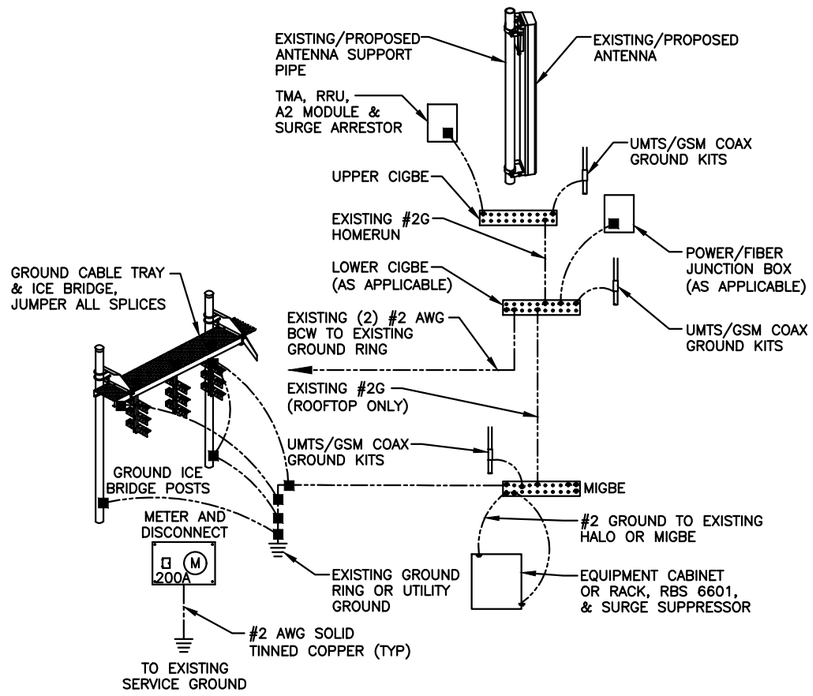


NOTE:

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

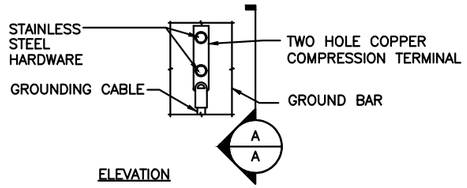
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



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 (3 / G-1)

SCALE: N.T.S

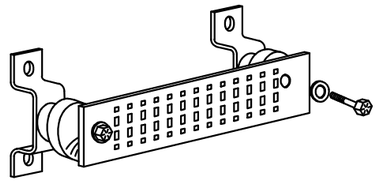
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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) (4 / G-1)

SCALE: N.T.S

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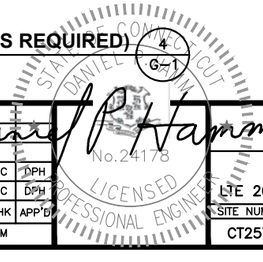

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GROUNDING DETAILS

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PLUMBING DIAGRAM TO BE INSERTED ONCE
FINAL PLUMBING DIAGRAM IS AVAILABLE

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:

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

AT&T

RF PLUMBING DIAGRAM
LTE 2C_3C_4C_4TX4RX_5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2579	RF–1	1

Structural Analysis Report

Structure	**:** 300 Foot Guyed Tower
VB Site Name	**:** Torrington Tower
VB Site Number	**:** US-CT-5011
Proposed Carrier	**:** New Cingular Wireless PCS, LLC
Carrier Site Name	**:** TORRINGTON
Carrier Site Number	**:** CT2579
Site Location	**:** 855 University Drive Torrington, CT 06790 (Litchfield County)
Date	**:** June 3, 2020
Max Member Stress Level	**:** 99%
Result	**: PASS**

06/04/2020

Prepared by:

VERTICAL BRIDGE ENGINEERING, LLC

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Introduction

We have completed our structural analysis of the proposed equipment installation on the foregoing tower to determine its ability to support the new loads proposed by **AT&T**. The objective of the analysis was to determine if the tower meets the current structural codes and standards with the proposed equipment installation.

Existing Structural Information

The following documents for the existing structure were made available for our structural analysis.

Tower Information	Structural Components Tower Mapping dated September 27, 2016.
Foundation Information	Foundation information was not available at the time of analysis
Geotechnical Information	Geotechnical information was not available at the time of analysis.
Existing Equipment Information	Vertical Bridge Collocation Application Version 1.
Tower Reinforcement Information	Tower has not been previously reinforced.

Final Proposed Equipment Loading for AT&T

The following proposed loading was obtained from the Vertical Bridge Collocation Application:

Antenna/Equipment					Coax	
Mount (ft.)	RAD (ft.)	Qty.	Antenna	Type	Qty.	Size/Type
297.0	-	**3**	**SitePro1 VFA12-WLL-30120**	Mount	6 1 2 **3** **1**	2 1/4” Coax 7/16” Fiber 3/4” DC Power **1” DC Power** **7/16” Fiber**
	297.0	3	KMW AM-X-CD-16-65-00T-RET	Panel		
		1	Raycap DC6-48-60-18-8F	Squid		
		3	CCI DTMABP7819VG12A	TMA		
		3	**Ericsson 4478 B14**	RRU		
		3	**Ericsosn 4449 B5/B12**	RRU		
		3	**Ericsson 8843 B2/B66A**	RRU		
		1	**Raycap DC9-48-60-24-8C-EV**	Squid		
		3	**CCI OPA65R-BU6DA**	Panel		
		3	**CCI DMP65R-BU6DA**	Panel		

Note: Proposed equipment shown in bold.
Note: Other existing loading can be found on the tower profile attached.
Note: (6) Ericsson RRUS 11 B12 RRUs and (3) KMW AM-X-CD-16-65-00T-RET Panels are to be removed.

Design Criteria

The tower was analyzed using tnxTower (Version 8.0.7.4) tower analysis software using the following design criteria.

State	Connecticut
City / County Building Code	Litchfield County (IBC 2015)
TIA/EIA Standard Code	TIA-222-G
Basic Wind Speed	90 MPH (V_{asd}) / 107 MPH (V_{ult})
Basic Wind Speed w/ Ice	40 MPH w/ 0.75" Ice
Steel Grade	36 ksi All Members / A325 Bolts
Exposure Category	C
Topographic Category (height)	1 (0.0 Ft.)
Risk Category	II

Analysis Results

Based on the foregoing information, our structural analysis determined that **the existing tower is structurally capable of supporting the proposed equipment loads without modification.** The existing foundation has not been evaluated. Foundations are typically designed to match the tower capacity. Based on the remaining capacity, the foundation should be within acceptable tolerances.

Assumptions

The below assumptions are true, complete and accurate.

1. The existing tower has been maintained to manufacturer's specifications and is in good condition.
2. Foundations are considered to have been properly designed for the original design loads.
3. All member connections are considered to have been designed to meet the load carrying capacity of the connected member.
4. Antenna mount loads have been estimated based on generally accepted industry standards.
5. The mounts for the proposed antennas have been analyzed and designed by others.
6. See additional assumptions contained in the report attached.
7. Tower is within acceptable engineering tolerance at 105%.
8. Foundations are within acceptable engineering tolerance at 110%.

Conclusions

The existing tower described above **does have sufficient capacity** to support the proposed loading based on the governing Building Code. The tower base and anchor foundations have not been evaluated but should be acceptable.

We appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance, please call us anytime at 561-948-6367.

Sincerely,

Analysis by:

Jesse Wagner
Modifications and Safety Manager

Reviewed by:

Michael T. DeBoer, PE
Vice President of Structural Engineering 06/04/2020

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but not necessarily limited, to:

- Information supplied by the client regarding the structure itself, the antenna and transmission line loading on the structure and its components, or relevant information.

- Information from drawings in possession of Vertical Bridge Engineering, LLC, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Vertical Bridge Engineering, LLC and used in the performance of our engineering services is correct and complete. In the absence of information contrary, we consider that all structures were constructed in accordance with the drawings and specifications and are in a un- corroded condition and have not deteriorated; and we, therefore consider that their capacity has not significantly changed from the original design condition.

All services will be performed to the codes and standards specified by the client, and we do not imply to meet any other code and standard requirements unless explicitly agreed to in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes and standards, the client shall specify the exact requirements. In the absence of information to the contrary, all work will be performed in accordance with the revision of ANSI/TIA/EIA-222-G requested.

All services are performed, results obtained, and recommendations made in accordance with the generally accepted engineering principles and practices. Vertical Bridge Engineering LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Disclaimer of Warranties

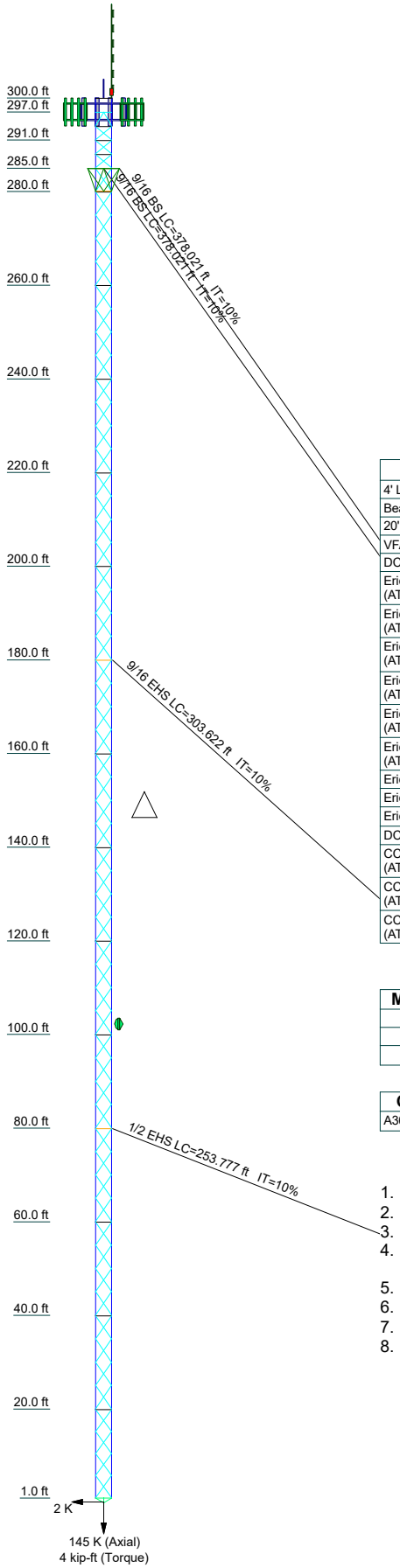
The engineering services by Vertical Bridge Engineering, LLC in connection with this Structural Analysis are limited to a computer analysis of the tower structure, size and capacity of its members. Vertical Bridge Engineering, LLC does not analyze the fabrication, including welding, except as may be expressly included in this report.

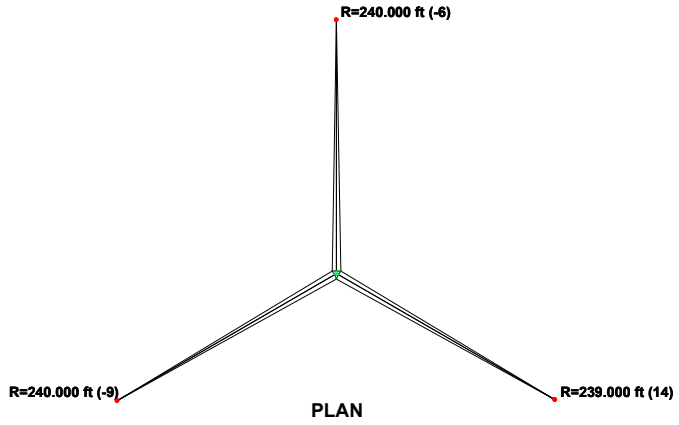
The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines. Any mention of structural modifications are reasonable estimates and should not be used a precise construction document. Precise modification drawings are obtainable from Vertical Bridge Engineering, LLC but are beyond the scope of this report.

Vertical Bridge Engineering, LLC makes no warranties, express or implied, in connection with this report and disclaims any liability arising from material, fabrication and erection of this tower, or installation and compliance with legal and permitting requirements of the proposed equipment. Vertical Bridge Engineering, LLC will not be responsible whatsoever for or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of Vertical Bridge Engineering, LLC pursuant to this report will be limited to the total fee received for preparation of this report.

Attachment 1:
Calculations

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20
Legs							V4x4x5/16	V3x3x1/4		V3x3x1/4 w/ 3/4" SR	V3x3x1/4					V4x4x5/16					
Leg Grade														A36							
Diagonals		A					B							L1 1/2x1 1/2x1/8							
Diagonal Grade		A												A36							
Top Girts		A	B				A					L2x2x3/16	N.A.		L2x2x3/16			N.A.		L2x2x3/16	
Horizontals		B	A											N.A.							
Top Guy Pull-Offs							D	N.A.				N.A.	L2x2x3/16		N.A.			L2x2x3/16		N.A.	
Bot Guy Pull-Offs							D	N.A.						N.A.							
Face Width (ft)														4							
# Panels @ (ft)							E	5 @ 2.83333						52 @ 4.95833							4 @ 4.70833
Weight (K)	10.8	0.1	0.2	0.2	0.2	0.2	0.6	0.5	0.6	0.6	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
4' Lightning Rod	300	KMW AM-X-CD-16-65-00T-RET (72x11.8x5.9) (ATI)	297
Beacon (.035k 2.250CAAA)	300	KMW AM-X-CD-16-65-00T-RET (72x11.8x5.9) (ATI)	297
20' Dipole (City of Torrington)	300	KMW AM-X-CD-16-65-00T-RET (72x11.8x5.9) (ATI)	297
VFA12-WLL-30120 (ATI)	297	CCI DTMABP7819VG12A (14.25x11.46x4.17) (ATI)	297
DC6-48-60-18-8F (ATI)	297	CCI DTMABP7819VG12A (14.25x11.46x4.17) (ATI)	297
Ericsson 4478 B14 (16.5x13.4x7.7) (ATI)	297	CCI DTMABP7819VG12A (14.25x11.46x4.17) (ATI)	297
Ericsson 4478 B14 (16.5x13.4x7.7) (ATI)	297	CCI DMP65R-BU6DA (71.2x20.7x7.7) (ATI)	297
Ericsson 4478 B14 (16.5x13.4x7.7) (ATI)	297	CCI DMP65R-BU6DA (71.2x20.7x7.7) (ATI)	297
Ericsson 4449 B5/B12 (17.9x13.2x9.4) (ATI)	297	CCI DMP65R-BU6DA (71.2x20.7x7.7) (ATI)	297
Ericsson 4449 B5/B12 (17.9x13.2x9.4) (ATI)	297	4' x 2' x2-1/2" rest Platform	196
Ericsson 4449 B5/B12 (17.9x13.2x9.4) (ATI)	297	4' x 2' x2-1/2" rest Platform	196
Ericsson 8843 (14.9x13.2x10.9) (ATI)	297	ODU (15 lbs, 1.5 CaAa)	102.25
Ericsson 8843 (14.9x13.2x10.9) (ATI)	297	1' Side Arm	102.25
Ericsson 8843 (14.9x13.2x10.9) (ATI)	297	PCTEL MPRD 2449	102.25
DC9-48-60-24-8C-EV (ATI)	297	4' x 2' x2-1/2" rest Platform	96
CCI TPA65R-BU6D (71.2x21x7.8) (ATI)	297	4' x 2' x2-1/2" rest Platform	96
CCI TPA65R-BU6D (71.2x21x7.8) (ATI)	297		
CCI TPA65R-BU6D (71.2x21x7.8) (ATI)	297		

SYMBOL LIST

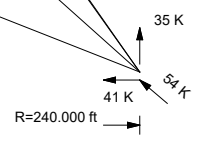
MARK	SIZE	MARK	SIZE
A	N.A.	D	L3 1/2x3 1/2x1/4
B	L2x2x3/16	E	1 @ 4.83333
C	L5x3x1/4		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 90 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 99.3%



ALL REACTIONS ARE FACTORED

Vertical Bridge
750 Park of Commerce Drive
Boca Raton, FL 33487
Phone: 561-948-6367
FAX:

Job: ***US-CT-5011***			
Project: ***Guyed Tower Structural Analysis***			
Client:	Drawn by: JWagner	App'd:	
Code: TIA-222-G	Date: 06/04/20	Scale: NTS	
Path: C:\Users\jwagner\Desktop\VB\Operationals\US-CT-5011\US-CT-5011_SA_060320_ATT.eri		Dwg No. E-1	

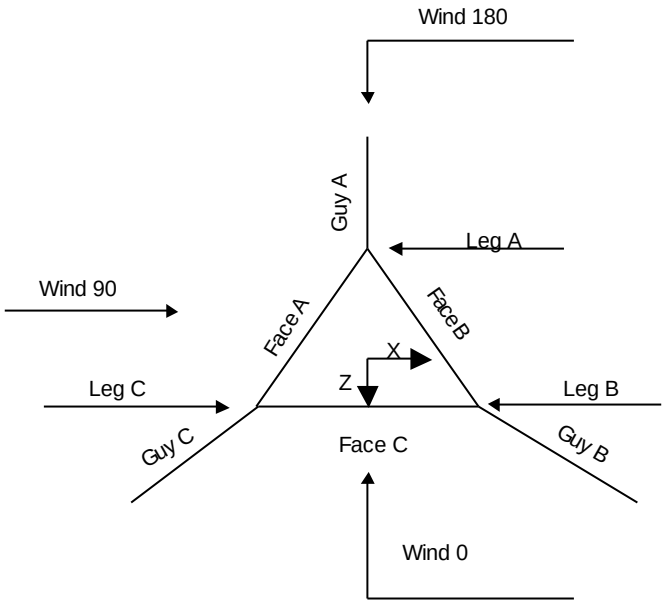
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 300.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 4.000 ft at the top and 4.000 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

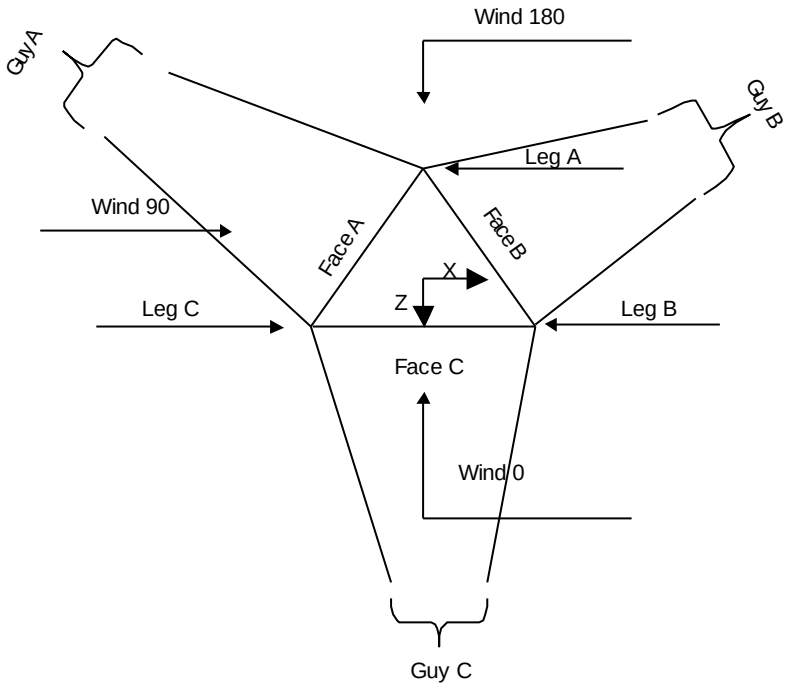
Tower is located in Litchfield County, Connecticut.
Basic wind speed of 90 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 40 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
I-Beam base is 1.000 ft above the pivot.
Pressures are calculated at each section.
Safety factor used in guy design is 1.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals		Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)	√	Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
√	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	300.000-297.000			4.000	1	3.000
T2	297.000-294.000			4.000	1	3.000
T3	294.000-291.000			4.000	1	3.000
T4	291.000-288.000			4.000	1	3.000
T5	288.000-285.000			4.000	1	3.000
T6	285.000-280.000			4.000	1	5.000
T7	280.000-260.000			4.000	1	20.000
T8	260.000-240.000			4.000	1	20.000
T9	240.000-220.000			4.000	1	20.000
T10	220.000-200.000			4.000	1	20.000
T11	200.000-180.000			4.000	1	20.000
T12	180.000-160.000			4.000	1	20.000
T13	160.000-140.000			4.000	1	20.000
T14	140.000-120.000			4.000	1	20.000
T15	120.000-100.000			4.000	1	20.000
T16	100.000-80.000			4.000	1	20.000

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T17	80.000-60.000			4.000	1	20.000
T18	60.000-40.000			4.000	1	20.000
T19	40.000-20.000			4.000	1	20.000
T20	20.000-1.000			4.000	1	19.000

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	300.000-297.000	2.833	X Brace	No	Yes	1.0000	1.0000
T2	297.000-294.000	2.833	K Brace Down	No	Yes	1.0000	1.0000
T3	294.000-291.000	2.833	X Brace	No	Yes	1.0000	1.0000
T4	291.000-288.000	2.833	X Brace	No	Yes	1.0000	1.0000
T5	288.000-285.000	2.833	X Brace	No	Yes	1.0000	1.0000
T6	285.000-280.000	4.833	X Brace	No	No	1.0000	1.0000
T7	280.000-260.000	4.958	X Brace	No	No	1.0000	1.0000
T8	260.000-240.000	4.958	X Brace	No	No	1.0000	1.0000
T9	240.000-220.000	4.958	X Brace	No	No	1.0000	1.0000
T10	220.000-200.000	4.958	X Brace	No	No	1.0000	1.0000
T11	200.000-180.000	4.958	X Brace	No	No	1.0000	1.0000
T12	180.000-160.000	4.958	X Brace	No	No	1.0000	1.0000
T13	160.000-140.000	4.958	X Brace	No	No	1.0000	1.0000
T14	140.000-120.000	4.958	X Brace	No	No	1.0000	1.0000
T15	120.000-100.000	4.958	X Brace	No	No	1.0000	1.0000
T16	100.000-80.000	4.958	X Brace	No	No	1.0000	1.0000
T17	80.000-60.000	4.958	X Brace	No	No	1.0000	1.0000
T18	60.000-40.000	4.958	X Brace	No	No	1.0000	1.0000
T19	40.000-20.000	4.958	X Brace	No	No	1.0000	1.0000
T20	20.000-1.000	4.708	X Brace	No	No	1.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 300.000-297.000	60 Angle	V4x4x5/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T2 297.000-294.000	60 Angle	V4x4x5/16	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 294.000-291.000	60 Angle	V4x4x5/16	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 291.000-288.000	60 Angle	V4x4x5/16	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T5 288.000-285.000	60 Angle	V4x4x5/16	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T6 285.000-280.000	60 Angle	V4x4x5/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T7 280.000-260.000	60 Angle	V3x3x1/4	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T8	60 Angle	V3x3x1/4 w/ 3/4" SR	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
260.000-240.000			(36 ksi)			(36 ksi)
T9	60 Angle	V3x3x1/4 w/ 3/4" SR	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
240.000-220.000			(36 ksi)			(36 ksi)
T10	60 Angle	V3x3x1/4	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
220.000-200.000			(36 ksi)			(36 ksi)
T11	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
200.000-180.000			(36 ksi)			(36 ksi)
T12	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
180.000-160.000			(36 ksi)			(36 ksi)
T13	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
160.000-140.000			(36 ksi)			(36 ksi)
T14	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
140.000-120.000			(36 ksi)			(36 ksi)
T15	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
120.000-100.000			(36 ksi)			(36 ksi)
T16	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
100.000-80.000			(36 ksi)			(36 ksi)
T17	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
80.000-60.000			(36 ksi)			(36 ksi)
T18	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
60.000-40.000			(36 ksi)			(36 ksi)
T19	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
40.000-20.000			(36 ksi)			(36 ksi)
T20 20.000-1.000	60 Angle	V4x4x5/16	A36	Equal Angle	L1 1/2x1 1/2x1/8	A36
			(36 ksi)			(36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1	Equal Angle	L2x2x3/16	A36	Solid Round		A36
300.000-297.000			(36 ksi)			(36 ksi)
T3	Single Angle	L5x3x1/4	A36	Solid Round		A36
294.000-291.000			(36 ksi)			(36 ksi)
T4	Single Angle	L5x3x1/4	A36	Solid Round		A36
291.000-288.000			(36 ksi)			(36 ksi)
T5	Single Angle	L5x3x1/4	A36	Solid Round		A36
288.000-285.000			(36 ksi)			(36 ksi)
T6	Equal Angle	L2x2x3/16	A36	Solid Round		A36
285.000-280.000			(36 ksi)			(36 ksi)
T7	Equal Angle	L2x2x3/16	A36	Solid Round		A36
280.000-260.000			(36 ksi)			(36 ksi)
T8	Equal Angle	L2x2x3/16	A36	Solid Round		A36
260.000-240.000			(36 ksi)			(36 ksi)
T9	Equal Angle	L2x2x3/16	A36	Solid Round		A36
240.000-220.000			(36 ksi)			(36 ksi)
T10	Equal Angle	L2x2x3/16	A36	Solid Round		A36
220.000-200.000			(36 ksi)			(36 ksi)
T11	Equal Angle	L2x2x3/16	A36	Solid Round		A36
200.000-180.000			(36 ksi)			(36 ksi)
T12	Equal Angle	L2x2x3/16	A36	Solid Round		A36
180.000-160.000			(36 ksi)			(36 ksi)
T13	Equal Angle	L2x2x3/16	A36	Solid Round		A36
160.000-140.000			(36 ksi)			(36 ksi)
T14	Equal Angle	L2x2x3/16	A36	Solid Round		A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
140.000-120.000			(36 ksi)			(36 ksi)
T15	Equal Angle	L2x2x3/16	A36	Solid Round		A36
120.000-100.000			(36 ksi)			(36 ksi)
T16	Equal Angle	L2x2x3/16	A36	Solid Round		A36
100.000-80.000			(36 ksi)			(36 ksi)
T17	Equal Angle	L2x2x3/16	A36	Solid Round		A36
80.000-60.000			(36 ksi)			(36 ksi)
T18	Equal Angle	L2x2x3/16	A36	Solid Round		A36
60.000-40.000			(36 ksi)			(36 ksi)
T19	Equal Angle	L2x2x3/16	A36	Solid Round		A36
40.000-20.000			(36 ksi)			(36 ksi)
T20 20.000-1.000	Equal Angle	L2x2x3/16	A36	Solid Round		A36
			(36 ksi)			(36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T2	None	Flat Bar		A36	Equal Angle	L2x2x3/16	A36
297.000-294.000				(36 ksi)			(36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1	0.000	0.3125	A36	1	1	1	36.0000	36.0000	36.0000
300.000-297.000			(36 ksi)						
T2	0.000	0.3125	A36	1	1	1	36.0000	36.0000	36.0000
297.000-294.000			(36 ksi)						
T3	0.000	0.3125	A36	1	1	1	36.0000	36.0000	36.0000
294.000-291.000			(36 ksi)						
T4	0.000	0.3125	A36	1	1	1	36.0000	36.0000	36.0000
291.000-288.000			(36 ksi)						
T5	0.000	0.3125	A36	1	1	1	36.0000	36.0000	36.0000
288.000-285.000			(36 ksi)						
T6	0.000	0.3125	A36	1	1	1	36.0000	36.0000	36.0000
285.000-280.000			(36 ksi)						
T7	0.000	0.2500	A36	1	1	1	36.0000	36.0000	36.0000
280.000-260.000			(36 ksi)						

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T8 260.000-240.000	0.000	0.2500	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 240.000-220.000	0.000	0.2500	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 220.000-200.000	0.000	0.2500	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T11 200.000-180.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T12 180.000-160.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T13 160.000-140.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T14 140.000-120.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T15 120.000-100.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T16 100.000-80.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T17 80.000-60.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T18 60.000-40.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T19 40.000-20.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T20 20.000-1.000	0.000	0.3125	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 300.000-297.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 297.000-294.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 294.000-291.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 291.000-288.0	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
00										
T5	Yes	No	1	1	1	1	1	1	1	1
288.000-285.000				1	1	1	1	1	1	1
T6	Yes	No	1	1	1	1	1	1	1	1
285.000-280.000				1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1
280.000-260.000				1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1
260.000-240.000				1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1
240.000-220.000				1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1
220.000-200.000				1	1	1	1	1	1	1
T11	Yes	No	1	1	1	1	1	1	1	1
200.000-180.000				1	1	1	1	1	1	1
T12	Yes	No	1	1	1	1	1	1	1	1
180.000-160.000				1	1	1	1	1	1	1
T13	Yes	No	1	1	1	1	1	1	1	1
160.000-140.000				1	1	1	1	1	1	1
T14	Yes	No	1	1	1	1	1	1	1	1
140.000-120.000				1	1	1	1	1	1	1
T15	Yes	No	1	1	1	1	1	1	1	1
120.000-100.000				1	1	1	1	1	1	1
T16	Yes	No	1	1	1	1	1	1	1	1
100.000-80.000				1	1	1	1	1	1	1
T17	Yes	No	1	1	1	1	1	1	1	1
80.000-60.000				1	1	1	1	1	1	1
T18	Yes	No	1	1	1	1	1	1	1	1
60.000-40.000				1	1	1	1	1	1	1
T19	Yes	No	1	1	1	1	1	1	1	1
40.000-20.000				1	1	1	1	1	1	1
T20	Yes	No	1	1	1	1	1	1	1	1
20.000-1.000				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 300.000-297.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 297.000-294.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 294.000-291.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 291.000-288.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 288.000-285.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 285.000-280.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 280.000-260.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 260.000-240.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 240.000-220.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 220.000-200.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 200.000-180.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 180.000-160.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 160.000-140.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 140.000-120.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 120.000-100.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 100.000-80.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 80.000-60.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 60.000-40.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T19 40.000-20.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T20 20.000-1.000	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 300.000-297.000	Sleeve SS	0.5000 A325N	0	0.5000 A325N	0	0.5000 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 297.000-294.000	Sleeve SS	0.5000 A325N	0	0.5000 A325N	2	0.5000 A325N	2	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 294.000-291.000	Sleeve SS	0.5000 A325N	0	0.5000 A325N	2	0.5000 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 291.000-288.000	Sleeve SS	0.5000 A325N	0	0.5000 A325N	2	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 288.000-285.000	Sleeve SS	0.5000 A325N	0	0.5000 A325N	2	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 285.000-280.000	Sleeve SS	0.5000 A325N	16	0.5000 A325N	1	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 280.000-260.000	Sleeve SS	0.5000 A325N	16	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 260.000-240.000	Sleeve SS	0.5000 A325N	16	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 240.000-220.000	Sleeve SS	0.5000 A325N	16	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 220.000-200.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 200.000-180.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 180.000-160.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 160.000-140.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T14 140.000-120.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 120.000-100.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T16 100.000-80.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T17 80.000-60.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T18 60.000-40.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T19 40.000-20.000	Sleeve SS	0.5000 A325N	28	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T20 20.000-1.000	Sleeve SS	0.5000 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
284.917	BS	A	9/16	3.800	10%	24000.000	0.660	375.398	240.000	0.0000	-6.000	100%
		B	9/16	3.800	10%	24000.000	0.660	359.487	239.000	0.0000	14.000	100%
		C	9/16	3.800	10%	24000.000	0.660	377.724	240.000	0.0000	-9.000	100%
179.917	EHS	A	9/16	3.500	10%	21000.000	0.671	301.526	240.000	0.0000	-6.000	100%
		B	9/16	3.500	10%	21000.000	0.671	288.824	239.000	0.0000	14.000	100%
		C	9/16	3.500	10%	21000.000	0.671	303.382	240.000	0.0000	-9.000	100%
79.9167	EHS	A	1/2	2.690	10%	21000.000	0.517	252.546	240.000	0.0000	-6.000	100%
		B	1/2	2.690	10%	21000.000	0.517	245.507	239.000	0.0000	14.000	100%
		C	1/2	2.690	10%	21000.000	0.517	253.580	240.000	0.0000	-9.000	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
284.917	Torque Arm	8.000	30.0000	Bat Ear	A36 (36 ksi)	Single Angle	L3x4x1/4 L3x3x1/4
179.917	Corner						
79.9167	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
284.917	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4
179.917	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L2x2x3/16
79.917	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L2x2x3/16

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
284.917	0.248	0.237	0.249		11.949	10.976	12.094	
					6.0 sec/pulse	5.7 sec/pulse	6.0 sec/pulse	
179.917	0.202	0.194	0.204		8.572	7.879	8.675	
					5.1 sec/pulse	4.8 sec/pulse	5.1 sec/pulse	
79.9167	0.131	0.127	0.131		6.085	5.762	6.133	
					4.3 sec/pulse	4.1 sec/pulse	4.3 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
284.917	No	No	1	1	1	1	1	1
179.917	No	No			1	1	1	1
79.9167	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
284.917	0.5000 A325N	3	0.0000	1	0.5000 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
179.917	0.6250 A325N	0	0.0000	0.75	0.5000 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
79.9167	0.6250 A325N	0	0.0000	0.75	0.5000 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z ksf	q_z Ice ksf	Ice Thickness in
284.917	A	139.458	0.024	0.005	1.7325
	B	149.458	0.024	0.005	1.7446
	C	137.958	0.024	0.005	1.7307
179.917	A	86.958	0.022	0.004	1.6526
	B	96.958	0.022	0.004	1.6707
	C	85.458	0.022	0.004	1.6497
79.9167	A	36.958	0.018	0.004	1.5171

Guy Elevation ft	Guy Location	z ft	q_z ksf	q_z Ice ksf	Ice Thickness in
	B	46.958	0.019	0.004	1.5539
	C	35.458	0.018	0.004	1.5108

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension K	0 F Intercept ft	20 F Initial Tension K	20 F Intercept ft	40 F Initial Tension K	40 F Intercept ft	60 F Initial Tension K	60 F Intercept ft	80 F Initial Tension K	80 F Intercept ft	100 F Initial Tension K	100 F Intercept ft	120 F Initial Tension K	120 F Intercept ft
284.917	A	237.72	290.92	4.433	10.27	4.219	10.79	4.007	11.34	3.800	11.95	3.597	12.61	3.399	13.32	3.208	14.10
	B	236.72	270.92	4.486	9.33	4.254	9.83	4.025	10.38	3.800	10.98	3.581	11.63	3.367	12.35	3.161	13.14
	C	237.72	293.92	4.425	10.42	4.213	10.93	4.005	11.49	3.800	12.09	3.600	12.75	3.404	13.47	3.215	14.24
179.917	A	237.69	185.92	4.368	6.89	4.071	7.38	3.781	7.94	3.500	8.57	3.229	9.28	2.971	10.07	2.720	10.98
	B	236.69	165.92	4.441	6.23	4.119	6.71	3.805	7.26	3.500	7.88	3.208	8.59	2.930	9.39	2.670	10.28
	C	237.69	188.92	4.357	6.99	4.064	7.49	3.778	8.05	3.500	8.68	3.232	9.38	2.977	10.17	2.729	11.08
79.9167	A	237.69	85.92	3.653	4.49	3.322	4.93	3.000	5.46	2.690	6.09	2.397	6.82	2.126	7.68	1.882	8.67
	B	236.69	65.92	3.703	4.19	3.354	4.62	3.015	5.14	2.690	5.76	2.383	6.50	2.101	7.37	1.848	8.37
	C	237.69	88.92	3.645	4.53	3.316	4.98	2.997	5.51	2.690	6.13	2.400	6.87	2.130	7.73	1.887	8.72

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
5/8" OD Smooth	C	No	No	Ar (CaAa)	300.000 - 8.000	0.0000	-0.5	1	1	0.5000	0.6250		0.000
7/8" Coax ***	C	No	No	Ar (CaAa)	300.000 - 8.000	-1.0000	-0.4	1	1	0.5000	1.1000		0.000
3/4" O.D Smooth	A	No	No	Ar (CaAa)	297.000 - 8.000	-3.0000	0.35	2	2	0.5000	0.7500		0.000
3/8" O.D.	A	No	No	Ar (CaAa)	297.000 - 8.000	-3.0000	0.35	1	1	0.3750	0.3750		0.000
1 5/8" coax ***	A	No	No	Ar (CaAa)	297.000 - 8.000	-3.0000	0.35	6	3	0.5000	1.9800		0.001
1/4" OD	B	No	No	Ar (CaAa)	102.000 - 8.000	-1.0000	0.4	1	1	0.5000	0.8400		0.001

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	300.000-297.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.517	0.000	0.000
T2	297.000-294.000	A	0.000	0.000	4.127	0.000	0.019
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.517	0.000	0.000

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T3	294.000-291.000	A	0.000	0.000	4.127	0.000	0.019
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.517	0.000	0.000
T4	291.000-288.000	A	0.000	0.000	4.127	0.000	0.019
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.517	0.000	0.000
T5	288.000-285.000	A	0.000	0.000	4.127	0.000	0.019
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.517	0.000	0.000
T6	285.000-280.000	A	0.000	0.000	6.877	0.000	0.032
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.863	0.000	0.000
T7	280.000-260.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.450	0.000	0.002
T8	260.000-240.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.450	0.000	0.002
T9	240.000-220.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.450	0.000	0.002
T10	220.000-200.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.450	0.000	0.002
T11	200.000-180.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.450	0.000	0.002
T12	180.000-160.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.450	0.000	0.002
T13	160.000-140.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.450	0.000	0.002
T14	140.000-120.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.450	0.000	0.002
T15	120.000-100.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	0.168	0.000	0.002
		C	0.000	0.000	3.450	0.000	0.002
T16	100.000-80.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	1.680	0.000	0.016
		C	0.000	0.000	3.450	0.000	0.002
T17	80.000-60.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	1.680	0.000	0.016
		C	0.000	0.000	3.450	0.000	0.002
T18	60.000-40.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	1.680	0.000	0.016
		C	0.000	0.000	3.450	0.000	0.002
T19	40.000-20.000	A	0.000	0.000	27.510	0.000	0.126
		B	0.000	0.000	1.680	0.000	0.016
		C	0.000	0.000	3.450	0.000	0.002
T20	20.000-1.000	A	0.000	0.000	16.506	0.000	0.076
		B	0.000	0.000	1.008	0.000	0.010
		C	0.000	0.000	2.070	0.000	0.001

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	300.000-297.000	A	1.870	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	2.761	0.000	0.038
T2	297.000-294.000	A	1.868	0.000	0.000	9.010	0.000	0.131
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	2.759	0.000	0.038
T3	294.000-291.000	A	1.866	0.000	0.000	9.005	0.000	0.130
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	2.756	0.000	0.038
T4	291.000-288.000	A	1.864	0.000	0.000	9.000	0.000	0.130
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	2.754	0.000	0.038
T5	288.000-285.000	A	1.862	0.000	0.000	8.995	0.000	0.130
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	2.752	0.000	0.037
T6	285.000-280.000	A	1.859	0.000	0.000	14.979	0.000	0.217
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	4.581	0.000	0.062
T7	280.000-260.000	A	1.851	0.000	0.000	59.766	0.000	0.863
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	18.257	0.000	0.247
T8	260.000-240.000	A	1.837	0.000	0.000	59.510	0.000	0.856
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	18.143	0.000	0.244
T9	240.000-220.000	A	1.821	0.000	0.000	59.235	0.000	0.848
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	18.021	0.000	0.241
T10	220.000-200.000	A	1.805	0.000	0.000	58.938	0.000	0.840
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	17.889	0.000	0.237
T11	200.000-180.000	A	1.787	0.000	0.000	58.614	0.000	0.832
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	17.746	0.000	0.233
T12	180.000-160.000	A	1.767	0.000	0.000	58.258	0.000	0.823
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	17.588	0.000	0.229
T13	160.000-140.000	A	1.745	0.000	0.000	57.862	0.000	0.812
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	17.412	0.000	0.224
T14	140.000-120.000	A	1.720	0.000	0.000	57.415	0.000	0.801
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	17.213	0.000	0.219
T15	120.000-100.000	A	1.692	0.000	0.000	56.901	0.000	0.788
		B		0.000	0.000	0.845	0.000	0.012
		C		0.000	0.000	16.985	0.000	0.213
T16	100.000-80.000	A	1.658	0.000	0.000	56.296	0.000	0.772
		B		0.000	0.000	8.313	0.000	0.118
		C		0.000	0.000	16.716	0.000	0.206
T17	80.000-60.000	A	1.617	0.000	0.000	55.554	0.000	0.754
		B		0.000	0.000	8.149	0.000	0.113
		C		0.000	0.000	16.387	0.000	0.198
T18	60.000-40.000	A	1.564	0.000	0.000	54.591	0.000	0.730
		B		0.000	0.000	7.935	0.000	0.108
		C		0.000	0.000	15.959	0.000	0.187
T19	40.000-20.000	A	1.486	0.000	0.000	53.189	0.000	0.696
		B		0.000	0.000	7.623	0.000	0.101
		C		0.000	0.000	15.336	0.000	0.173
T20	20.000-1.000	A	1.338	0.000	0.000	30.315	0.000	0.381
		B		0.000	0.000	4.218	0.000	0.053
		C		0.000	0.000	8.491	0.000	0.087

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	300.000-297.000	0.9163	0.6632	3.2323	2.1426
T2	297.000-294.000	0.4708	-3.3224	1.2060	-2.4782
T3	294.000-291.000	0.3975	-2.8323	0.6017	-1.2587
T4	291.000-288.000	0.3975	-2.8323	0.6025	-1.2610
T5	288.000-285.000	0.3975	-2.8323	0.6033	-1.2632
T6	285.000-280.000	0.4405	-3.1207	0.9526	-1.9741
T7	280.000-260.000	0.5910	-4.1064	1.8048	-3.6497
T8	260.000-240.000	0.5909	-4.1056	1.8063	-3.6637
T9	240.000-220.000	0.5909	-4.1056	1.8069	-3.6767
T10	220.000-200.000	0.5910	-4.1064	1.8064	-3.6889
T11	200.000-180.000	0.5311	-3.7185	1.6656	-3.4437
T12	180.000-160.000	0.5311	-3.7185	1.6656	-3.4590
T13	160.000-140.000	0.5311	-3.7185	1.6655	-3.4758
T14	140.000-120.000	0.5311	-3.7185	1.6650	-3.4948
T15	120.000-100.000	0.5636	-3.6931	1.7448	-3.4544
T16	100.000-80.000	0.8515	-3.4687	2.4383	-2.9446
T17	80.000-60.000	0.8515	-3.4687	2.4354	-2.9744
T18	60.000-40.000	0.8515	-3.4687	2.4300	-3.0132
T19	40.000-20.000	0.8515	-3.4687	2.4188	-3.0697
T20	20.000-1.000	0.5788	-2.4116	1.6918	-2.2917

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	5/8" OD Smooth	297.00 - 300.00	0.6000	0.5994
T1	2	7/8" Coax	297.00 - 300.00	0.6000	0.5994
T2	1	5/8" OD Smooth	294.00 - 297.00	0.6000	0.3831
T2	2	7/8" Coax	294.00 - 297.00	0.6000	0.3831
T2	4	3/4" O.D Smooth	294.00 - 297.00	0.6000	0.3831
T2	5	3/8" O.D.	294.00 - 297.00	0.6000	0.3831
T2	6	1 5/8" coax	294.00 - 297.00	0.6000	0.3831
T3	1	5/8" OD Smooth	291.00 - 294.00	0.6000	0.2287
T3	2	7/8" Coax	291.00 - 294.00	0.6000	0.2287
T3	4	3/4" O.D Smooth	291.00 - 294.00	0.6000	0.2287
T3	5	3/8" O.D.	291.00 - 294.00	0.6000	0.2287
T3	6	1 5/8" coax	291.00 -	0.6000	0.2287

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	1	5/8" OD Smooth	294.00 - 288.00	0.6000	0.2291
T4	2	7/8" Coax	291.00 - 288.00	0.6000	0.2291
T4	4	3/4" O.D Smooth	291.00 - 288.00	0.6000	0.2291
T4	5	3/8" O.D.	291.00 - 288.00	0.6000	0.2291
T4	6	1 5/8" coax	291.00 - 288.00	0.6000	0.2291
T5	1	5/8" OD Smooth	288.00 - 285.00	0.6000	0.2295
T5	2	7/8" Coax	288.00 - 285.00	0.6000	0.2295
T5	4	3/4" O.D Smooth	288.00 - 285.00	0.6000	0.2295
T5	5	3/8" O.D.	288.00 - 285.00	0.6000	0.2295
T5	6	1 5/8" coax	288.00 - 285.00	0.6000	0.2295
T6	1	5/8" OD Smooth	285.00 - 280.00	0.6000	0.3225
T6	2	7/8" Coax	285.00 - 280.00	0.6000	0.3225
T6	4	3/4" O.D Smooth	285.00 - 280.00	0.6000	0.3225
T6	5	3/8" O.D.	285.00 - 280.00	0.6000	0.3225
T6	6	1 5/8" coax	285.00 - 280.00	0.6000	0.3225
T7	1	5/8" OD Smooth	280.00 - 260.00	0.6000	0.5117
T7	2	7/8" Coax	280.00 - 260.00	0.6000	0.5117
T7	4	3/4" O.D Smooth	280.00 - 260.00	0.6000	0.5117
T7	5	3/8" O.D.	280.00 - 260.00	0.6000	0.5117
T7	6	1 5/8" coax	280.00 - 260.00	0.6000	0.5117
T8	1	5/8" OD Smooth	260.00 - 240.00	0.6000	0.5143
T8	2	7/8" Coax	260.00 - 240.00	0.6000	0.5143
T8	4	3/4" O.D Smooth	260.00 - 240.00	0.6000	0.5143
T8	5	3/8" O.D.	260.00 - 240.00	0.6000	0.5143
T8	6	1 5/8" coax	260.00 - 240.00	0.6000	0.5143
T9	1	5/8" OD Smooth	240.00 - 220.00	0.6000	0.5165
T9	2	7/8" Coax	240.00 - 220.00	0.6000	0.5165
T9	4	3/4" O.D Smooth	240.00 - 220.00	0.6000	0.5165
T9	5	3/8" O.D.	240.00 - 220.00	0.6000	0.5165
T9	6	1 5/8" coax	240.00 - 220.00	0.6000	0.5165
T10	1	5/8" OD Smooth	240.00 - 200.00	0.6000	0.5185

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	2	7/8" Coax	200.00 - 220.00	0.6000	0.5185
T10	4	3/4" O.D Smooth	200.00 - 220.00	0.6000	0.5185
T10	5	3/8" O.D.	200.00 - 220.00	0.6000	0.5185
T10	6	1 5/8" coax	200.00 - 220.00	0.6000	0.5185
T11	1	5/8" OD Smooth	180.00 - 200.00	0.6000	0.4995
T11	2	7/8" Coax	180.00 - 200.00	0.6000	0.4995
T11	4	3/4" O.D Smooth	180.00 - 200.00	0.6000	0.4995
T11	5	3/8" O.D.	180.00 - 200.00	0.6000	0.4995
T11	6	1 5/8" coax	180.00 - 200.00	0.6000	0.4995
T12	1	5/8" OD Smooth	160.00 - 180.00	0.6000	0.5023
T12	2	7/8" Coax	160.00 - 180.00	0.6000	0.5023
T12	4	3/4" O.D Smooth	160.00 - 180.00	0.6000	0.5023
T12	5	3/8" O.D.	160.00 - 180.00	0.6000	0.5023
T12	6	1 5/8" coax	160.00 - 180.00	0.6000	0.5023
T13	1	5/8" OD Smooth	140.00 - 160.00	0.6000	0.5055
T13	2	7/8" Coax	140.00 - 160.00	0.6000	0.5055
T13	4	3/4" O.D Smooth	140.00 - 160.00	0.6000	0.5055
T13	5	3/8" O.D.	140.00 - 160.00	0.6000	0.5055
T13	6	1 5/8" coax	140.00 - 160.00	0.6000	0.5055
T14	1	5/8" OD Smooth	120.00 - 140.00	0.6000	0.5091
T14	2	7/8" Coax	120.00 - 140.00	0.6000	0.5091
T14	4	3/4" O.D Smooth	120.00 - 140.00	0.6000	0.5091
T14	5	3/8" O.D.	120.00 - 140.00	0.6000	0.5091
T14	6	1 5/8" coax	120.00 - 140.00	0.6000	0.5091
T15	1	5/8" OD Smooth	100.00 - 120.00	0.6000	0.5132
T15	2	7/8" Coax	100.00 - 120.00	0.6000	0.5132
T15	4	3/4" O.D Smooth	100.00 - 120.00	0.6000	0.5132
T15	5	3/8" O.D.	100.00 - 120.00	0.6000	0.5132
T15	6	1 5/8" coax	100.00 - 120.00	0.6000	0.5132
T15	8	1/4" OD	100.00 - 102.00	0.6000	0.5132
T16	1	5/8" OD Smooth	80.00 - 100.00	0.6000	0.5181

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T16	2	7/8" Coax	80.00 - 100.00	0.6000	0.5181
T16	4	3/4" O.D Smooth	80.00 - 100.00	0.6000	0.5181
T16	5	3/8" O.D.	80.00 - 100.00	0.6000	0.5181
T16	6	1 5/8" coax	80.00 - 100.00	0.6000	0.5181
T16	8	1/4" OD	80.00 - 100.00	0.6000	0.5181
T17	1	5/8" OD Smooth	60.00 - 80.00	0.6000	0.5240
T17	2	7/8" Coax	60.00 - 80.00	0.6000	0.5240
T17	4	3/4" O.D Smooth	60.00 - 80.00	0.6000	0.5240
T17	5	3/8" O.D.	60.00 - 80.00	0.6000	0.5240
T17	6	1 5/8" coax	60.00 - 80.00	0.6000	0.5240
T17	8	1/4" OD	60.00 - 80.00	0.6000	0.5240
T18	1	5/8" OD Smooth	40.00 - 60.00	0.6000	0.5318
T18	2	7/8" Coax	40.00 - 60.00	0.6000	0.5318
T18	4	3/4" O.D Smooth	40.00 - 60.00	0.6000	0.5318
T18	5	3/8" O.D.	40.00 - 60.00	0.6000	0.5318
T18	6	1 5/8" coax	40.00 - 60.00	0.6000	0.5318
T18	8	1/4" OD	40.00 - 60.00	0.6000	0.5318
T19	1	5/8" OD Smooth	20.00 - 40.00	0.6000	0.5432
T19	2	7/8" Coax	20.00 - 40.00	0.6000	0.5432
T19	4	3/4" O.D Smooth	20.00 - 40.00	0.6000	0.5432
T19	5	3/8" O.D.	20.00 - 40.00	0.6000	0.5432
T19	6	1 5/8" coax	20.00 - 40.00	0.6000	0.5432
T19	8	1/4" OD	20.00 - 40.00	0.6000	0.5432
T20	1	5/8" OD Smooth	8.00 - 20.00	0.6000	0.5605
T20	2	7/8" Coax	8.00 - 20.00	0.6000	0.5605
T20	4	3/4" O.D Smooth	8.00 - 20.00	0.6000	0.5605
T20	5	3/8" O.D.	8.00 - 20.00	0.6000	0.5605
T20	6	1 5/8" coax	8.00 - 20.00	0.6000	0.5605
T20	8	1/4" OD	8.00 - 20.00	0.6000	0.5605

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
4' Lightning Rod	A	From Leg	0.000 0.000 2.000	0.0000	300.000	No Ice 1/2" Ice 1" Ice	0.590 0.610 0.630	0.590 0.610 0.630	0.008 0.010 0.013
Beacon (.035k 2.250CAAA)	B	From Leg	0.000 0.000 0.500	0.0000	300.000	No Ice 1/2" Ice 1" Ice	2.250 2.500 2.750	2.250 2.500 2.750	0.035 0.450 0.865
20' Dipole (City of Torrington)	B	From Leg	0.000 0.000 10.000	0.0000	300.000	No Ice 1/2" Ice 1" Ice	6.000 6.000 6.000	6.000 6.000 6.000	0.050 0.065 0.080
4' x 2' x2-1/2" rest Platform	A	From Face	1.000 0.000 0.000	0.0000	196.000	No Ice 1/2" Ice 1" Ice	1.170 1.500 1.830	0.580 0.760 0.940	0.075 0.120 0.165
4' x 2' x2-1/2" rest Platform	C	From Face	1.000 0.000 0.000	0.0000	196.000	No Ice 1/2" Ice 1" Ice	1.170 1.500 1.830	0.580 0.760 0.940	0.075 0.120 0.165
ODU (15 lbs, 1.5 CaAa)	B	From Leg	1.000	0.0000	102.250	No Ice	1.000	1.000	0.010

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	1.250	1.250	0.020
			0.000			1" Ice	1.500	1.500	0.030
1' Side Arm	B	From Leg	0.500	0.0000	102.250	No Ice	0.300	0.900	0.020
			0.000			1/2" Ice	0.376	1.020	0.027
			0.000			1" Ice	0.459	1.148	0.036
4' x 2' x2-1/2" rest Platform	A	From Face	1.000	0.0000	96.000	No Ice	1.170	0.580	0.075
			0.000			1/2" Ice	1.500	0.760	0.120
			0.000			1" Ice	1.830	0.940	0.165
4' x 2' x2-1/2" rest Platform	C	From Face	1.000	0.0000	96.000	No Ice	1.170	0.580	0.075
			0.000			1/2" Ice	1.500	0.760	0.120
			0.000			1" Ice	1.830	0.940	0.165
VFA12-WLL-30120	C	None		0.0000	297.000	No Ice	30.000	30.000	1.000
(AT&T)						1/2" Ice	35.000	35.000	1.250
						1" Ice	40.000	40.000	1.500
DC6-48-60-18-8F	C	None		0.0000	297.000	No Ice	4.818	2.901	0.019
(AT&T)						1/2" Ice	5.098	3.130	0.057
						1" Ice	5.385	3.366	0.100
Ericsson 4478 B14	A	From Leg	4.000	0.0000	297.000	No Ice	1.843	1.059	0.060
(16.5x13.4x7.7)			0.000			1/2" Ice	2.012	1.197	0.076
(AT&T)			0.000			1" Ice	2.190	1.342	0.094
Ericsson 4478 B14	B	From Leg	4.000	0.0000	297.000	No Ice	1.843	1.059	0.060
(16.5x13.4x7.7)			0.000			1/2" Ice	2.012	1.197	0.076
(AT&T)			0.000			1" Ice	2.190	1.342	0.094
Ericsson 4478 B14	C	From Leg	4.000	0.0000	297.000	No Ice	1.843	1.059	0.060
(16.5x13.4x7.7)			0.000			1/2" Ice	2.012	1.197	0.076
(AT&T)			0.000			1" Ice	2.190	1.342	0.094
Ericsson 4449 B5/B12	A	From Leg	4.000	0.0000	297.000	No Ice	1.980	1.410	0.070
(17.9x13.2x9.4)			0.000			1/2" Ice	2.157	1.566	0.089
(AT&T)			0.000			1" Ice	2.341	1.729	0.110
Ericsson 4449 B5/B12	B	From Leg	4.000	0.0000	297.000	No Ice	1.980	1.410	0.070
(17.9x13.2x9.4)			0.000			1/2" Ice	2.157	1.566	0.089
(AT&T)			0.000			1" Ice	2.341	1.729	0.110
Ericsson 4449 B5/B12	C	From Leg	4.000	0.0000	297.000	No Ice	1.980	1.410	0.070
(17.9x13.2x9.4)			0.000			1/2" Ice	2.157	1.566	0.089
(AT&T)			0.000			1" Ice	2.341	1.729	0.110
Ericsson 8843	A	From Leg	4.000	0.0000	297.000	No Ice	1.644	1.360	0.072
(14.9x13.2x10.9)			0.000			1/2" Ice	1.804	1.508	0.090
(AT&T)			0.000			1" Ice	1.972	1.662	0.110
Ericsson 8843	B	From Leg	4.000	0.0000	297.000	No Ice	1.644	1.360	0.072
(14.9x13.2x10.9)			0.000			1/2" Ice	1.804	1.508	0.090
(AT&T)			0.000			1" Ice	1.972	1.662	0.110
Ericsson 8843	C	From Leg	4.000	0.0000	297.000	No Ice	1.644	1.360	0.072
(14.9x13.2x10.9)			0.000			1/2" Ice	1.804	1.508	0.090
(AT&T)			0.000			1" Ice	1.972	1.662	0.110
DC9-48-60-24-8C-EV	C	From Leg	4.000	0.0000	297.000	No Ice	4.818	2.901	0.019
(AT&T)			0.000			1/2" Ice	5.098	3.130	0.057
			0.000			1" Ice	5.385	3.366	0.100
CCI TPA65R-BU6D	A	From Leg	4.000	0.0000	297.000	No Ice	12.871	5.673	0.068
(71.2x21x7.8)			0.000			1/2" Ice	13.369	6.125	0.143
(AT&T)			0.000			1" Ice	13.873	6.585	0.224
CCI TPA65R-BU6D	B	From Leg	4.000	0.0000	297.000	No Ice	12.871	5.673	0.068
(71.2x21x7.8)			0.000			1/2" Ice	13.369	6.125	0.143
(AT&T)			0.000			1" Ice	13.873	6.585	0.224
CCI TPA65R-BU6D	C	From Leg	4.000	0.0000	297.000	No Ice	12.871	5.673	0.068
(71.2x21x7.8)			0.000			1/2" Ice	13.369	6.125	0.143
(AT&T)			0.000			1" Ice	13.873	6.585	0.224
KMW	A	From Leg	4.000	0.0000	297.000	No Ice	8.024	4.642	0.049

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	8.480	5.088	0.095
(72x11.8x5.9)			0.000			1" Ice	8.943	5.542	0.147
(AT&T)									
KMW	B	From Leg	4.000	0.0000	297.000	No Ice	8.024	4.642	0.049
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	8.480	5.088	0.095
(72x11.8x5.9)			0.000			1" Ice	8.943	5.542	0.147
(AT&T)									
KMW	C	From Leg	4.000	0.0000	297.000	No Ice	8.024	4.642	0.049
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	8.480	5.088	0.095
(72x11.8x5.9)			0.000			1" Ice	8.943	5.542	0.147
(AT&T)									
CCI DTMABP7819VG12A	A	From Leg	4.000	0.0000	297.000	No Ice	1.361	0.512	0.026
(14.25x11.46x4.17)			0.000			1/2" Ice	1.507	0.614	0.036
(AT&T)			0.000			1" Ice	1.661	0.723	0.048
CCI DTMABP7819VG12A	B	From Leg	4.000	0.0000	297.000	No Ice	1.361	0.512	0.026
(14.25x11.46x4.17)			0.000			1/2" Ice	1.507	0.614	0.036
(AT&T)			0.000			1" Ice	1.661	0.723	0.048
CCI DTMABP7819VG12A	C	From Leg	4.000	0.0000	297.000	No Ice	1.361	0.512	0.026
(14.25x11.46x4.17)			0.000			1/2" Ice	1.507	0.614	0.036
(AT&T)			0.000			1" Ice	1.661	0.723	0.048
CCI DMP65R-BU6DA	A	From Leg	4.000	0.0000	297.000	No Ice	12.709	5.615	0.079
(71.2x20.7x7.7)			0.000			1/2" Ice	13.206	6.067	0.153
(AT&T)			0.000			1" Ice	13.709	6.526	0.234
CCI DMP65R-BU6DA	B	From Leg	4.000	0.0000	297.000	No Ice	12.709	5.615	0.079
(71.2x20.7x7.7)			0.000			1/2" Ice	13.206	6.067	0.153
(AT&T)			0.000			1" Ice	13.709	6.526	0.234
CCI DMP65R-BU6DA	C	From Leg	4.000	0.0000	297.000	No Ice	12.709	5.615	0.079
(71.2x20.7x7.7)			0.000			1/2" Ice	13.206	6.067	0.153
(AT&T)			0.000			1" Ice	13.709	6.526	0.234

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PCTEL MPRD 2449	B	Paraboloid w/Radome	From Leg	1.000	0.0000		102.250	2.500	No Ice	4.909	0.036
				0.000					1/2" Ice	5.241	0.063
				0.000					1" Ice	5.574	0.090

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2D+1.6W (pattern 1) 0 deg - No Ice+1.0 Guy

Comb. No.	Description
4	1.2D+1.6W (pattern 2) 0 deg - No Ice+1.0 Guy
5	1.2D+1.6W (pattern 3) 0 deg - No Ice+1.0 Guy
6	1.2D+1.6W (pattern 4) 0 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
8	1.2D+1.6W (pattern 1) 30 deg - No Ice+1.0 Guy
9	1.2D+1.6W (pattern 2) 30 deg - No Ice+1.0 Guy
10	1.2D+1.6W (pattern 3) 30 deg - No Ice+1.0 Guy
11	1.2D+1.6W (pattern 4) 30 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
13	1.2D+1.6W (pattern 1) 60 deg - No Ice+1.0 Guy
14	1.2D+1.6W (pattern 2) 60 deg - No Ice+1.0 Guy
15	1.2D+1.6W (pattern 3) 60 deg - No Ice+1.0 Guy
16	1.2D+1.6W (pattern 4) 60 deg - No Ice+1.0 Guy
17	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
18	1.2D+1.6W (pattern 1) 90 deg - No Ice+1.0 Guy
19	1.2D+1.6W (pattern 2) 90 deg - No Ice+1.0 Guy
20	1.2D+1.6W (pattern 3) 90 deg - No Ice+1.0 Guy
21	1.2D+1.6W (pattern 4) 90 deg - No Ice+1.0 Guy
22	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
23	1.2D+1.6W (pattern 1) 120 deg - No Ice+1.0 Guy
24	1.2D+1.6W (pattern 2) 120 deg - No Ice+1.0 Guy
25	1.2D+1.6W (pattern 3) 120 deg - No Ice+1.0 Guy
26	1.2D+1.6W (pattern 4) 120 deg - No Ice+1.0 Guy
27	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
28	1.2D+1.6W (pattern 1) 150 deg - No Ice+1.0 Guy
29	1.2D+1.6W (pattern 2) 150 deg - No Ice+1.0 Guy
30	1.2D+1.6W (pattern 3) 150 deg - No Ice+1.0 Guy
31	1.2D+1.6W (pattern 4) 150 deg - No Ice+1.0 Guy
32	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
33	1.2D+1.6W (pattern 1) 180 deg - No Ice+1.0 Guy
34	1.2D+1.6W (pattern 2) 180 deg - No Ice+1.0 Guy
35	1.2D+1.6W (pattern 3) 180 deg - No Ice+1.0 Guy
36	1.2D+1.6W (pattern 4) 180 deg - No Ice+1.0 Guy
37	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
38	1.2D+1.6W (pattern 1) 210 deg - No Ice+1.0 Guy
39	1.2D+1.6W (pattern 2) 210 deg - No Ice+1.0 Guy
40	1.2D+1.6W (pattern 3) 210 deg - No Ice+1.0 Guy
41	1.2D+1.6W (pattern 4) 210 deg - No Ice+1.0 Guy
42	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
43	1.2D+1.6W (pattern 1) 240 deg - No Ice+1.0 Guy
44	1.2D+1.6W (pattern 2) 240 deg - No Ice+1.0 Guy
45	1.2D+1.6W (pattern 3) 240 deg - No Ice+1.0 Guy
46	1.2D+1.6W (pattern 4) 240 deg - No Ice+1.0 Guy
47	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
48	1.2D+1.6W (pattern 1) 270 deg - No Ice+1.0 Guy
49	1.2D+1.6W (pattern 2) 270 deg - No Ice+1.0 Guy
50	1.2D+1.6W (pattern 3) 270 deg - No Ice+1.0 Guy
51	1.2D+1.6W (pattern 4) 270 deg - No Ice+1.0 Guy
52	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
53	1.2D+1.6W (pattern 1) 300 deg - No Ice+1.0 Guy
54	1.2D+1.6W (pattern 2) 300 deg - No Ice+1.0 Guy
55	1.2D+1.6W (pattern 3) 300 deg - No Ice+1.0 Guy
56	1.2D+1.6W (pattern 4) 300 deg - No Ice+1.0 Guy
57	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
58	1.2D+1.6W (pattern 1) 330 deg - No Ice+1.0 Guy
59	1.2D+1.6W (pattern 2) 330 deg - No Ice+1.0 Guy
60	1.2D+1.6W (pattern 3) 330 deg - No Ice+1.0 Guy
61	1.2D+1.6W (pattern 4) 330 deg - No Ice+1.0 Guy
62	1.2 Dead+1.0 Ice+1.0 Temp+Guy
63	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
64	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
65	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy

Comb. No.	Description
66	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
67	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
68	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
69	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
70	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
71	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
72	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
73	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
74	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
75	Dead+Wind 0 deg - Service+Guy
76	Dead+Wind 30 deg - Service+Guy
77	Dead+Wind 60 deg - Service+Guy
78	Dead+Wind 90 deg - Service+Guy
79	Dead+Wind 120 deg - Service+Guy
80	Dead+Wind 150 deg - Service+Guy
81	Dead+Wind 180 deg - Service+Guy
82	Dead+Wind 210 deg - Service+Guy
83	Dead+Wind 240 deg - Service+Guy
84	Dead+Wind 270 deg - Service+Guy
85	Dead+Wind 300 deg - Service+Guy
86	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Guy C @ 240 ft Elev -9 ft Azimuth 240 deg	Max. Vert	42	-1.616	-1.023	0.590
	Max. H_x	42	-1.616	-1.023	0.590
	Max. H_z	7	-33.920	-33.996	20.312
	Min. Vert	17	-34.935	-35.900	20.023
	Min. H_x	17	-34.935	-35.900	20.023
	Min. H_z	42	-1.616	-1.023	0.590
Guy B @ 239 ft Elev 14 ft Azimuth 120 deg	Max. Vert	22	-1.169	0.849	0.490
	Max. H_x	47	-31.543	36.065	20.154
	Max. H_z	57	-31.467	35.437	21.146
	Min. Vert	47	-31.543	36.065	20.154
	Min. H_x	22	-1.169	0.849	0.490
	Min. H_z	22	-1.169	0.849	0.490
Guy A @ 240 ft Elev -6 ft Azimuth 0 deg	Max. Vert	2	-1.556	-0.001	-1.157
	Max. H_x	47	-18.888	1.232	-21.973
	Max. H_z	2	-1.556	-0.001	-1.157
	Min. Vert	27	-34.368	-0.621	-41.053
	Min. H_x	17	-18.470	-1.245	-21.628
	Min. H_z	27	-34.368	-0.621	-41.053
Mast	Max. Vert	67	144.584	0.011	-0.049
	Max. H_x	50	68.516	1.607	0.027
	Max. H_z	5	73.804	0.022	1.679
	Max. M_x	1	0.000	0.001	-0.008
	Max. M_z	1	0.000	0.001	-0.008
	Max. Torsion	20	3.767	-1.549	0.025
	Min. Vert	1	43.710	0.001	-0.008
	Min. H_x	20	70.358	-1.549	0.025

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_z	34	66.246	-0.012	-1.557
	Min. M_x	1	0.000	0.001	-0.008
	Min. M_z	1	0.000	0.001	-0.008
	Min. Torsion	54	-3.857	1.443	0.827

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	43.710	-0.001	0.008	0.000	0.000	-0.000
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	82.287	-0.044	-1.112	0.000	0.000	0.847
1.2D+1.6W (pattern 1) 0 deg - No Ice+1.0 Guy	81.450	-0.047	0.036	0.000	0.000	0.857
1.2D+1.6W (pattern 2) 0 deg - No Ice+1.0 Guy	78.069	-0.036	-1.506	0.000	0.000	0.798
1.2D+1.6W (pattern 3) 0 deg - No Ice+1.0 Guy	73.804	-0.022	-1.679	0.000	0.000	0.896
1.2D+1.6W (pattern 4) 0 deg - No Ice+1.0 Guy	76.532	-0.040	-1.210	0.000	0.000	0.888
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	74.320	0.676	-0.895	0.000	0.000	-0.065
1.2D+1.6W (pattern 1) 30 deg - No Ice+1.0 Guy	73.702	0.214	-0.026	0.000	0.000	-0.074
1.2D+1.6W (pattern 2) 30 deg - No Ice+1.0 Guy	71.355	0.817	-1.142	0.000	0.000	-0.201
1.2D+1.6W (pattern 3) 30 deg - No Ice+1.0 Guy	68.565	0.766	-1.274	0.000	0.000	-0.021
1.2D+1.6W (pattern 4) 30 deg - No Ice+1.0 Guy	70.170	0.679	-0.946	0.000	0.000	0.008
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	67.859	1.120	-0.627	0.000	0.000	-1.956
1.2D+1.6W (pattern 1) 60 deg - No Ice+1.0 Guy	67.572	0.314	-0.160	0.000	0.000	-1.965
1.2D+1.6W (pattern 2) 60 deg - No Ice+1.0 Guy	66.471	1.338	-0.752	0.000	0.000	-2.082
1.2D+1.6W (pattern 3) 60 deg - No Ice+1.0 Guy	65.132	1.307	-0.737	0.000	0.000	-1.959
1.2D+1.6W (pattern 4) 60 deg - No Ice+1.0 Guy	65.867	1.114	-0.624	0.000	0.000	-1.944
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	76.846	1.130	-0.161	0.000	0.000	-3.644
1.2D+1.6W (pattern 1) 90 deg - No Ice+1.0 Guy	76.127	0.095	-0.197	0.000	0.000	-3.658
1.2D+1.6W (pattern 2) 90 deg - No Ice+1.0 Guy	73.435	1.450	-0.149	0.000	0.000	-3.759
1.2D+1.6W (pattern 3) 90 deg - No Ice+1.0 Guy	70.358	1.549	-0.025	0.000	0.000	-3.767
1.2D+1.6W (pattern 4) 90 deg - No Ice+1.0 Guy	72.394	1.188	-0.132	0.000	0.000	-3.752
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	86.329	0.879	0.523	0.000	0.000	-3.528
1.2D+1.6W (pattern 1) 120 deg - No Ice+1.0 Guy	85.343	-0.150	-0.070	0.000	0.000	-3.562
1.2D+1.6W (pattern 2) 120 deg - No Ice+1.0 Guy	81.510	1.277	0.751	0.000	0.000	-3.654

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2D+1.6W (pattern 3) 120 deg - No Ice+1.0 Guy	76.836	1.447	0.848	0.000	0.000	-3.635
1.2D+1.6W (pattern 4) 120 deg - No Ice+1.0 Guy	80.124	0.987	0.585	0.000	0.000	-3.593
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	76.577	0.421	1.085	0.000	0.000	-2.257
1.2D+1.6W (pattern 1) 150 deg - No Ice+1.0 Guy	75.867	-0.128	0.207	0.000	0.000	-2.284
1.2D+1.6W (pattern 2) 150 deg - No Ice+1.0 Guy	73.196	0.591	1.354	0.000	0.000	-2.299
1.2D+1.6W (pattern 3) 150 deg - No Ice+1.0 Guy	70.127	0.748	1.375	0.000	0.000	-2.274
1.2D+1.6W (pattern 4) 150 deg - No Ice+1.0 Guy	72.176	0.475	1.119	0.000	0.000	-2.264
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	67.593	0.012	1.307	0.000	0.000	-0.966
1.2D+1.6W (pattern 1) 180 deg - No Ice+1.0 Guy	67.318	0.013	0.377	0.000	0.000	-0.966
1.2D+1.6W (pattern 2) 180 deg - No Ice+1.0 Guy	66.246	0.012	1.557	0.000	0.000	-0.879
1.2D+1.6W (pattern 3) 180 deg - No Ice+1.0 Guy	64.910	0.010	1.520	0.000	0.000	-0.980
1.2D+1.6W (pattern 4) 180 deg - No Ice+1.0 Guy	65.645	0.010	1.300	0.000	0.000	-1.013
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	74.014	-0.454	1.059	0.000	0.000	0.069
1.2D+1.6W (pattern 1) 210 deg - No Ice+1.0 Guy	73.412	0.068	0.225	0.000	0.000	0.078
1.2D+1.6W (pattern 2) 210 deg - No Ice+1.0 Guy	71.111	-0.596	1.302	0.000	0.000	0.205
1.2D+1.6W (pattern 3) 210 deg - No Ice+1.0 Guy	68.339	-0.734	1.321	0.000	0.000	0.025
1.2D+1.6W (pattern 4) 210 deg - No Ice+1.0 Guy	69.893	-0.495	1.086	0.000	0.000	-0.004
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	82.016	-1.004	0.545	0.000	0.000	1.816
1.2D+1.6W (pattern 1) 240 deg - No Ice+1.0 Guy	81.193	-0.011	-0.032	0.000	0.000	1.831
1.2D+1.6W (pattern 2) 240 deg - No Ice+1.0 Guy	77.859	-1.338	0.745	0.000	0.000	1.957
1.2D+1.6W (pattern 3) 240 deg - No Ice+1.0 Guy	73.622	-1.479	0.841	0.000	0.000	1.842
1.2D+1.6W (pattern 4) 240 deg - No Ice+1.0 Guy	76.264	-1.086	0.596	0.000	0.000	1.830
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	74.384	-1.237	-0.162	0.000	0.000	3.626
1.2D+1.6W (pattern 1) 270 deg - No Ice+1.0 Guy	73.794	-0.203	-0.202	0.000	0.000	3.641
1.2D+1.6W (pattern 2) 270 deg - No Ice+1.0 Guy	71.430	-1.533	-0.155	0.000	0.000	3.735
1.2D+1.6W (pattern 3) 270 deg - No Ice+1.0 Guy	68.516	-1.607	-0.027	0.000	0.000	3.721
1.2D+1.6W (pattern 4) 270 deg - No Ice+1.0 Guy	70.304	-1.281	-0.136	0.000	0.000	3.717
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	66.840	-1.221	-0.699	0.000	0.000	3.807
1.2D+1.6W (pattern 1) 300 deg - No Ice+1.0 Guy	66.637	-0.379	-0.213	0.000	0.000	3.820
1.2D+1.6W (pattern 2) 300 deg - No Ice+1.0 Guy	65.683	-1.443	-0.827	0.000	0.000	3.857
1.2D+1.6W (pattern 3) 300 deg	64.263	-1.394	-0.799	0.000	0.000	3.830

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
- No Ice+1.0 Guy						
1.2D+1.6W (pattern 4) 300 deg - No Ice+1.0 Guy	64.993	-1.214	-0.695	0.000	0.000	3.838
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	74.450	-0.769	-0.971	0.000	0.000	2.203
1.2D+1.6W (pattern 1) 330 deg - No Ice+1.0 Guy	73.849	-0.286	-0.055	0.000	0.000	2.231
1.2D+1.6W (pattern 2) 330 deg - No Ice+1.0 Guy	71.459	-0.909	-1.231	0.000	0.000	2.249
1.2D+1.6W (pattern 3) 330 deg - No Ice+1.0 Guy	68.535	-0.835	-1.362	0.000	0.000	2.236
1.2D+1.6W (pattern 4) 330 deg - No Ice+1.0 Guy	70.386	-0.768	-1.022	0.000	0.000	2.216
1.2 Dead+1.0 Ice+1.0 Temp+Guy	142.145	-0.045	0.029	0.000	0.000	-0.002
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.788	-0.051	-0.025	0.000	0.000	0.482
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.458	-0.015	-0.026	0.000	0.000	0.350
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.251	0.012	-0.002	0.000	0.000	-0.258
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.926	0.014	0.027	0.000	0.000	-0.877
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	144.584	-0.011	0.049	0.000	0.000	-0.877
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.866	-0.017	0.082	0.000	0.000	-0.565
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.152	-0.044	0.095	0.000	0.000	-0.487
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.339	-0.079	0.084	0.000	0.000	-0.356
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.672	-0.098	0.053	0.000	0.000	0.252
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.057	-0.119	0.023	0.000	0.000	0.871
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	142.607	-0.115	-0.011	0.000	0.000	0.873
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	143.119	-0.087	-0.031	0.000	0.000	0.561
Dead+Wind 0 deg - Service+Guy	44.928	-0.004	-0.514	0.000	0.000	0.267
Dead+Wind 30 deg - Service+Guy	44.868	0.218	-0.378	0.000	0.000	-0.005
Dead+Wind 60 deg - Service+Guy	45.097	0.371	-0.204	0.000	0.000	-0.539
Dead+Wind 90 deg - Service+Guy	45.079	0.466	0.013	0.000	0.000	-1.061
Dead+Wind 120 deg - Service+Guy	45.358	0.462	0.276	0.000	0.000	-1.057
Dead+Wind 150 deg - Service+Guy	45.067	0.237	0.410	0.000	0.000	-0.644
Dead+Wind 180 deg - Service+Guy	45.081	0.002	0.437	0.000	0.000	-0.268
Dead+Wind 210 deg - Service+Guy	44.845	-0.226	0.392	0.000	0.000	0.005
Dead+Wind 240 deg - Service+Guy	44.890	-0.455	0.267	0.000	0.000	0.528
Dead+Wind 270 deg - Service+Guy	44.866	-0.472	0.009	0.000	0.000	1.052
Dead+Wind 300 deg - Service+Guy	45.027	-0.393	-0.218	0.000	0.000	1.064

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg - Service+Guy	44.879	-0.236	-0.401	0.000	0.000	0.643

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-17.956	0.000	0.000	17.956	-0.000	0.000%
2	0.034	-21.281	-39.079	-0.034	21.277	39.071	0.022%
3	0.034	-21.281	-36.686	-0.034	21.278	36.679	0.018%
4	0.040	-21.281	-35.063	-0.040	21.278	35.055	0.020%
5	0.037	-21.281	-34.364	-0.038	21.276	34.355	0.025%
6	0.021	-21.281	-36.394	-0.021	21.277	36.387	0.021%
7	17.476	-21.061	-30.274	-17.477	21.058	30.267	0.019%
8	16.449	-21.061	-28.496	-16.450	21.059	28.491	0.016%
9	15.767	-21.061	-27.294	-15.769	21.059	27.287	0.018%
10	15.435	-21.061	-26.734	-15.437	21.058	26.726	0.022%
11	16.175	-21.061	-28.047	-16.176	21.058	28.041	0.018%
12	29.802	-20.840	-17.248	-29.799	20.840	17.253	0.014%
13	28.064	-20.840	-16.245	-28.062	20.840	16.249	0.014%
14	26.894	-20.840	-15.563	-26.892	20.840	15.567	0.012%
15	26.323	-20.840	-15.239	-26.320	20.840	15.244	0.015%
16	27.582	-20.840	-15.966	-27.579	20.840	15.971	0.014%
17	36.519	-21.102	-0.031	-36.516	21.099	0.034	0.011%
18	34.342	-21.102	-0.031	-34.339	21.100	0.034	0.010%
19	32.857	-21.102	-0.033	-32.854	21.100	0.035	0.012%
20	32.170	-21.102	-0.035	-32.166	21.099	0.038	0.013%
21	33.908	-21.102	-0.019	-33.905	21.100	0.021	0.011%
22	35.019	-21.355	20.196	-35.012	21.350	-20.193	0.019%
23	32.852	-21.355	18.945	-32.847	21.352	-18.942	0.016%
24	31.379	-21.355	18.091	-31.374	21.352	-18.089	0.013%
25	30.740	-21.355	17.721	-30.735	21.351	-17.719	0.015%
26	32.664	-21.355	18.851	-32.658	21.351	-18.848	0.018%
27	18.230	-21.096	31.603	-18.224	21.093	-31.602	0.016%
28	17.141	-21.096	29.717	-17.136	21.094	-29.716	0.014%
29	16.398	-21.096	28.427	-16.392	21.094	-28.425	0.016%
30	16.052	-21.096	27.831	-16.046	21.093	-27.829	0.019%
31	16.935	-21.096	29.361	-16.930	21.094	-29.360	0.015%
32	-0.055	-20.830	34.401	0.061	20.830	-34.401	0.014%
33	-0.055	-20.830	32.394	0.060	20.830	-32.394	0.011%
34	-0.053	-20.830	31.035	0.058	20.830	-31.035	0.012%
35	-0.059	-20.830	30.377	0.064	20.830	-30.377	0.015%
36	-0.043	-20.830	31.859	0.048	20.830	-31.859	0.014%
37	-17.510	-21.050	30.254	17.504	21.047	-30.252	0.017%
38	-16.483	-21.050	28.477	16.479	21.048	-28.475	0.014%
39	-15.788	-21.050	27.282	15.782	21.048	-27.280	0.016%
40	-15.470	-21.050	26.714	15.464	21.047	-26.712	0.019%
41	-16.209	-21.050	28.027	16.204	21.048	-28.025	0.016%
42	-33.864	-21.271	19.569	33.858	21.267	-19.565	0.019%
43	-31.791	-21.271	18.372	31.786	21.268	-18.369	0.016%
44	-30.389	-21.271	17.566	30.383	21.268	-17.563	0.018%
45	-29.786	-21.271	17.214	29.779	21.267	-17.210	0.022%
46	-31.520	-21.271	18.215	31.514	21.268	-18.212	0.018%
47	-36.561	-21.009	0.031	36.558	21.007	-0.028	0.012%
48	-34.383	-21.009	0.031	34.380	21.008	-0.028	0.010%
49	-32.882	-21.009	0.032	32.880	21.008	-0.030	0.009%
50	-32.211	-21.009	0.034	32.209	21.008	-0.032	0.010%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
51	-33.950	-21.009	0.018	33.948	21.008	-0.016	0.008%
52	-31.023	-20.756	-17.889	31.024	20.756	17.889	0.002%
53	-29.192	-20.756	-16.832	29.193	20.756	16.832	0.002%
54	-27.923	-20.756	-16.096	27.924	20.756	16.096	0.001%
55	-27.343	-20.756	-15.760	27.344	20.756	15.760	0.001%
56	-28.792	-20.756	-16.616	28.793	20.756	16.615	0.003%
57	-18.251	-21.015	-31.639	18.252	21.013	31.634	0.013%
58	-17.162	-21.015	-29.753	17.163	21.013	29.747	0.017%
59	-16.410	-21.015	-28.448	16.411	21.013	28.443	0.014%
60	-16.073	-21.015	-27.867	16.074	21.012	27.862	0.016%
61	-16.956	-21.015	-29.397	16.958	21.012	29.390	0.018%
62	0.000	-94.247	0.000	0.003	94.246	0.001	0.003%
63	0.028	-94.446	-10.718	-0.028	94.446	10.717	0.001%
64	5.169	-94.251	-8.954	-5.169	94.250	8.953	0.001%
65	8.892	-94.055	-5.165	-8.891	94.054	5.165	0.001%
66	10.485	-94.282	-0.015	-10.484	94.281	0.016	0.001%
67	9.424	-94.503	5.435	-9.423	94.502	-5.435	0.001%
68	5.226	-94.278	9.077	-5.225	94.277	-9.077	0.001%
69	-0.031	-94.047	10.275	0.032	94.047	-10.275	0.001%
70	-5.174	-94.243	8.951	5.173	94.242	-8.951	0.001%
71	-9.277	-94.439	5.383	9.276	94.438	-5.383	0.001%
72	-10.491	-94.212	0.015	10.490	94.211	-0.014	0.001%
73	-9.048	-93.991	-5.219	9.048	93.990	5.218	0.001%
74	-5.230	-94.216	-9.083	5.230	94.215	9.082	0.001%
75	0.009	-18.018	-10.855	-0.009	18.018	10.854	0.009%
76	4.854	-17.957	-8.410	-4.855	17.957	8.408	0.006%
77	8.278	-17.896	-4.791	-8.277	17.896	4.792	0.007%
78	10.144	-17.968	-0.009	-10.143	17.968	0.010	0.007%
79	9.727	-18.039	5.610	-9.726	18.039	-5.609	0.007%
80	5.064	-17.967	8.779	-5.062	17.967	-8.778	0.007%
81	-0.015	-17.893	9.556	0.017	17.893	-9.555	0.007%
82	-4.864	-17.954	8.404	4.862	17.954	-8.403	0.010%
83	-9.407	-18.016	5.436	9.405	18.015	-5.435	0.008%
84	-10.156	-17.943	0.009	10.155	17.943	-0.008	0.007%
85	-8.618	-17.873	-4.969	8.619	17.873	4.969	0.008%
86	-5.070	-17.944	-8.789	5.070	17.944	8.787	0.008%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	21	0.00000001	0.00000000
2	Yes	31	0.00005432	0.00007598
3	Yes	31	0.00005318	0.00007034
4	Yes	30	0.00007127	0.00008401
5	Yes	30	0.00007427	0.00008562
6	Yes	31	0.00005312	0.00007073
7	Yes	30	0.00006810	0.00008201
8	Yes	30	0.00006688	0.00007577
9	Yes	29	0.00008879	0.00008613
10	Yes	29	0.00009167	0.00009060
11	Yes	30	0.00006472	0.00007802
12	Yes	24	0.00008557	0.00007662
13	Yes	23	0.00009696	0.00008617
14	Yes	22	0.00008905	0.00007227
15	Yes	22	0.00009280	0.00007734

16	Yes	24	0.00008196	0.00007844
17	Yes	33	0.00003930	0.00008175
18	Yes	33	0.00003893	0.00007782
19	Yes	32	0.00005263	0.00009197
20	Yes	32	0.00005298	0.00009966
21	Yes	33	0.00003698	0.00008231
22	Yes	33	0.00004351	0.00009785
23	Yes	33	0.00004260	0.00009335
24	Yes	33	0.00003966	0.00008216
25	Yes	33	0.00004120	0.00008003
26	Yes	33	0.00004278	0.00009221
27	Yes	32	0.00005617	0.00008120
28	Yes	32	0.00005564	0.00007751
29	Yes	31	0.00007523	0.00009684
30	Yes	31	0.00007586	0.00008946
31	Yes	32	0.00005294	0.00007275
32	Yes	24	0.00009076	0.00007117
33	Yes	24	0.00007951	0.00006197
34	Yes	22	0.00009175	0.00006134
35	Yes	22	0.00009697	0.00006956
36	Yes	24	0.00008989	0.00007694
37	Yes	30	0.00006298	0.00007559
38	Yes	30	0.00006181	0.00006984
39	Yes	29	0.00008188	0.00007874
40	Yes	29	0.00008500	0.00008376
41	Yes	30	0.00005995	0.00007211
42	Yes	31	0.00005000	0.00008576
43	Yes	31	0.00004893	0.00008068
44	Yes	30	0.00006569	0.00009703
45	Yes	30	0.00006852	0.00009615
46	Yes	31	0.00004888	0.00007900
47	Yes	31	0.00004599	0.00009861
48	Yes	31	0.00004534	0.00009351
49	Yes	31	0.00004262	0.00007620
50	Yes	31	0.00004358	0.00008313
51	Yes	32	0.00003011	0.00006986
52	Yes	20	0.00000001	0.00008422
53	Yes	20	0.00000001	0.00008400
54	Yes	20	0.00000001	0.00008109
55	Yes	20	0.00000001	0.00007221
56	Yes	20	0.00000001	0.00007042
57	Yes	31	0.00005035	0.00007039
58	Yes	30	0.00007140	0.00009570
59	Yes	30	0.00006729	0.00008406
60	Yes	30	0.00006875	0.00007948
61	Yes	30	0.00006865	0.00009209
62	Yes	16	0.00010000	0.00005103
63	Yes	25	0.00000001	0.00002340
64	Yes	24	0.00000001	0.00001828
65	Yes	22	0.00000001	0.00003058
66	Yes	25	0.00000001	0.00002483
67	Yes	26	0.00000001	0.00002741
68	Yes	25	0.00000001	0.00002147
69	Yes	22	0.00000001	0.00001928
70	Yes	23	0.00000001	0.00002516
71	Yes	25	0.00000001	0.00002152
72	Yes	24	0.00000001	0.00002312
73	Yes	20	0.00000001	0.00002810
74	Yes	24	0.00000001	0.00002144
75	Yes	20	0.00000001	0.00006909
76	Yes	18	0.00000001	0.00005064
77	Yes	14	0.00000001	0.00006479
78	Yes	19	0.00000001	0.00007881
79	Yes	22	0.00000001	0.00006821

80	Yes	19	0.00000001	0.00006205
81	Yes	14	0.00000001	0.00006189
82	Yes	17	0.00000001	0.00008209
83	Yes	20	0.00000001	0.00006542
84	Yes	18	0.00000001	0.00008068
85	Yes	10	0.00000001	0.00009552
86	Yes	18	0.00000001	0.00006978

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 297	3.304	77	0.1561	0.1288
T2	297 - 294	3.309	77	0.1564	0.1355
T3	294 - 291	3.324	77	0.1566	0.1367
T4	291 - 288	3.342	77	0.1590	0.1371
T5	288 - 285	3.362	77	0.1629	0.1374
T6	285 - 280	3.384	77	0.1685	0.1376
T7	280 - 260	3.443	77	0.1769	0.1382
T8	260 - 240	3.864	79	0.1471	0.1729
T9	240 - 220	4.367	79	0.0845	0.1999
T10	220 - 200	4.569	79	0.0449	0.2188
T11	200 - 180	4.484	79	0.0684	0.2299
T12	180 - 160	4.300	79	0.0449	0.2336
T13	160 - 140	4.255	79	0.0293	0.2314
T14	140 - 120	4.126	79	0.0538	0.2220
T15	120 - 100	3.802	79	0.1013	0.2054
T16	100 - 80	3.279	79	0.1375	0.1822
T17	80 - 60	2.658	79	0.1373	0.1555
T18	60 - 40	2.120	79	0.1347	0.1232
T19	40 - 20	1.524	79	0.1565	0.0851
T20	20 - 1	0.809	79	0.1825	0.0419

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
300.000	4' Lightning Rod	77	3.304	0.1561	0.1288	18458
297.000	VFA12-WLL-30120	77	3.309	0.1564	0.1355	18458
284.917	Guy	77	3.385	0.1687	0.1376	11790
196.000	4' x 2' x2-1/2" rest Platform	79	4.445	0.0662	0.2312	83945
179.917	Guy	79	4.300	0.0448	0.2336	17905
102.250	PCTEL MPRD 2449	79	3.346	0.1352	0.1850	32564
96.000	4' x 2' x2-1/2" rest Platform	79	3.156	0.1400	0.1771	63454
79.917	Guy	79	2.656	0.1372	0.1554	29908

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 297	27.146	24	0.9296	0.5848
T2	297 - 294	27.173	24	0.9304	0.6088
T3	294 - 291	27.239	24	0.9312	0.6125
T4	291 - 288	27.338	23	0.9367	0.6133
T5	288 - 285	27.600	23	0.9456	0.6141
T6	285 - 280	27.870	23	0.9584	0.6143
T7	280 - 260	28.405	23	0.9757	0.6163
T8	260 - 240	30.407	23	0.7914	0.7208
T9	240 - 220	31.625	22	0.4878	0.7974
T10	220 - 200	31.687	22	0.4092	0.8452
T11	200 - 180	30.575	22	0.6010	0.8644
T12	180 - 160	28.979	22	0.5491	0.8584
T13	160 - 140	27.807	22	0.4804	0.8460
T14	140 - 120	26.473	26	0.5705	0.8072
T15	120 - 100	24.169	26	0.7600	0.7425
T16	100 - 80	20.888	26	0.8949	0.6630
T17	80 - 60	17.049	26	0.8923	0.5602
T18	60 - 40	13.386	26	0.9110	0.4457
T19	40 - 20	9.400	26	1.0139	0.3092
T20	20 - 1	4.895	26	1.1249	0.1527

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
300.000	4' Lightning Rod	24	27.146	0.9296	0.5848	3508
297.000	VFA12-WLL-30120	24	27.173	0.9304	0.6088	3508
284.917	Guy	23	27.878	0.9587	0.6143	3266
196.000	4' x 2' x2-1/2" rest Platform	22	30.256	0.6073	0.8642	8113
179.917	Guy	22	28.973	0.5487	0.8584	4852
102.250	PCTEL MPRD 2449	26	21.298	0.8870	0.6732	5413
96.000	4' x 2' x2-1/2" rest Platform	26	20.136	0.9027	0.6439	7555
79.917	Guy	26	17.033	0.8924	0.5598	7217

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	300	Top Girt	A325N	0.5000	2	0.015	5.811	0.003 ✔	1	Member Block Shear
T2	297	Diagonal	A325N	0.5000	2	1.822	5.811	0.314 ✔	1	Member Block Shear
T3	294	Diagonal	A325N	0.5000	2	1.247	5.811	0.215 ✔	1	Member Block Shear
		Top Girt	A325N	0.5000	2	0.147	7.952	0.018 ✔	1	Bolt Shear
T4	291	Diagonal	A325N	0.5000	2	1.362	5.811	0.234 ✔	1	Member Block Shear
		Top Girt	A325N	0.5000	2	0.294	7.952	0.037 ✔	1	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T5	288	Diagonal	A325N	0.5000	2	1.362	5.811	0.234 ✔	1	Member Block Shear
		Top Girt	A325N	0.5000	2	0.280	7.952	0.035 ✔	1	Bolt Shear
T6	285	Leg	A325N	0.5000	16	2.727	7.952	0.343 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	2.750	3.471	0.792 ✔	1	Member Block Shear
		Top Guy Pull-Off@284.917	A325N	0.5000	2	3.773	7.952	0.474 ✔	1	Bolt Shear
		Bottom Guy Pull-Off@284.917	A325N	0.5000	2	0.284	7.952	0.036 ✔	1	Bolt Shear
		Torque Arm Top@284.917	A325N	0.5000	3	4.113	7.952	0.517 ✔	1	Bolt Shear
		Torque Arm Bottom@284.917	A325N	0.5000	3	4.659	7.952	0.586 ✔	1	Bolt Shear
T7	280	Leg	A325N	0.5000	16	3.748	7.952	0.471 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	2.755	3.471	0.794 ✔	1	Member Block Shear
T8	260	Leg	A325N	0.5000	16	4.570	7.952	0.575 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	1.675	3.471	0.482 ✔	1	Member Block Shear
T9	240	Leg	A325N	0.5000	16	4.123	7.952	0.518 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	0.960	3.471	0.277 ✔	1	Member Block Shear
T10	220	Leg	A325N	0.5000	28	2.009	7.952	0.253 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	1.848	3.471	0.532 ✔	1	Member Block Shear
T11	200	Leg	A325N	0.5000	28	2.893	7.952	0.364 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	2.962	3.471	0.853 ✔	1	Member Block Shear
T12	180	Leg	A325N	0.5000	28	2.661	7.952	0.335 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	2.671	3.471	0.770 ✔	1	Member Block Shear
		Top Guy Pull-Off@179.917	A325N	0.5000	2	3.554	5.505	0.646 ✔	1	Member Block Shear
T13	160	Leg	A325N	0.5000	28	2.929	7.952	0.368 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	1.671	3.471	0.481 ✔	1	Member Block Shear
T14	140	Leg	A325N	0.5000	28	3.042	7.952	0.383 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	0.723	3.471	0.208 ✔	1	Member Block Shear
T15	120	Leg	A325N	0.5000	28	2.980	7.952	0.375 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	1.819	3.471	0.524 ✔	1	Member Block Shear
T16	100	Leg	A325N	0.5000	28	3.021	7.952	0.380 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	2.906	3.471	0.837 ✔	1	Member Block Shear
T17	80	Leg	A325N	0.5000	28	3.312	7.952	0.417 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	2.150	3.471	0.619 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Top Guy Pull-Off@79.9167	A325N	0.5000	2	2.996	5.505	0.544 ✔	1	Member Block Shear
T18	60	Leg	A325N	0.5000	28	3.484	7.952	0.438 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	1.457	3.471	0.420 ✔	1	Member Block Shear
T19	40	Leg	A325N	0.5000	28	3.522	7.952	0.443 ✔	1	Bolt SS
		Diagonal	A325N	0.5000	1	1.422	3.471	0.410 ✔	1	Member Block Shear
T20	20	Diagonal	A325N	0.5000	1	2.129	3.471	0.613 ✔	1	Member Block Shear

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T6	284.917 (A) (502)	9/16 BS	3.800	38.000	14.363	22.800	1.000	1.587 ✔
	284.917 (A) (503)	9/16 BS	3.800	38.000	14.086	22.800	1.000	1.619 ✔
	284.917 (B) (496)	9/16 BS	3.800	38.000	13.653	22.800	1.000	1.670 ✔
	284.917 (B) (497)	9/16 BS	3.800	38.000	14.096	22.800	1.000	1.617 ✔
	284.917 (C) (487)	9/16 BS	3.800	38.000	14.222	22.800	1.000	1.603 ✔
	284.917 (C) (488)	9/16 BS	3.800	38.000	14.115	22.800	1.000	1.615 ✔
T12	179.917 (A) (510)	9/16 EHS	3.500	35.000	16.626	21.000	1.000	1.263 ✔
	179.917 (B) (509)	9/16 EHS	3.500	35.000	16.125	21.000	1.000	1.302 ✔
	179.917 (C) (508)	9/16 EHS	3.500	35.000	16.683	21.000	1.000	1.259 ✔
T17	79.917 (A) (513)	1/2 EHS	2.690	26.900	10.932	16.140	1.000	1.476 ✔
	79.917 (B) (512)	1/2 EHS	2.690	26.900	10.563	16.140	1.000	1.528 ✔
	79.917 (C) (511)	1/2 EHS	2.690	26.900	10.983	16.140	1.000	1.470 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 297	V4x4x5/16	3.000	2.917	37.2 K=1.00	2.4023	1.00	-0.464	72.367	0.006
T2	297 - 294	V4x4x5/16	3.000	0.083	1.1 K=1.00	2.4023	1.00	-6.633	77.831	0.085 [1]
T3	294 - 291	V4x4x5/16	3.000	0.083	1.1 K=1.00	2.4023	1.00	-11.779	77.831	0.151 [1]
T4	291 - 288	V4x4x5/16	3.000	0.083	1.1 K=1.00	2.4023	1.00	-17.453	77.831	0.224 [1]
T5	288 - 285	V4x4x5/16	3.000	0.083	1.1 K=1.00	2.4023	1.00	-23.192	77.831	0.298 [1]
T6	285 - 280	V4x4x5/16	5.000	0.083	1.1 K=1.00	2.4023	0.80	-21.525	62.538	0.344 [1]
T7	280 - 260	V3x3x1/4	20.000	4.958	85.6 K=1.00	1.4375	1.00	-28.141	31.655	0.889 [1]
T8	260 - 240	V3x3x1/4 w/ 3/4" SR	20.000	4.958	87.4 K=1.00	1.8390	1.00	-35.925	39.871	0.901 [1]
T9	240 - 220	V3x3x1/4 w/ 3/4" SR	20.000	4.958	87.4 K=1.00	1.8390	1.00	-36.411	39.871	0.913 [1]
T10	220 - 200	V3x3x1/4	20.000	4.958	85.6 K=1.00	1.4375	1.00	-31.435	31.655	0.993 [1]
T11	200 - 180	V4x4x5/16	20.000	4.958	63.2 K=1.00	2.4023	0.99	-35.917	62.725	0.573 [1]
T12	180 - 160	V4x4x5/16	20.000	4.958	63.2 K=1.00	2.4023	1.00	-38.189	63.058	0.606 [1]
T13	160 - 140	V4x4x5/16	20.000	4.958	63.2 K=1.00	2.4023	1.00	-40.225	63.058	0.638 [1]
T14	140 - 120	V4x4x5/16	20.000	4.958	63.2 K=1.00	2.4023	1.00	-42.550	63.058	0.675 [1]
T15	120 - 100	V4x4x5/16	20.000	4.958	63.2 K=1.00	2.4023	1.00	-42.783	63.058	0.678 [1]
T16	100 - 80	V4x4x5/16	20.000	0.083	1.1 K=1.00	2.4023	0.82	-42.297	63.871	0.662 [1]
T17	80 - 60	V4x4x5/16	20.000	4.958	63.2 K=1.00	2.4023	1.00	-45.574	63.058	0.723 [1]
T18	60 - 40	V4x4x5/16	20.000	4.958	63.2 K=1.00	2.4023	1.00	-48.360	63.058	0.767 [1]
T19	40 - 20	V4x4x5/16	20.000	4.958	63.2 K=1.00	2.4023	1.00	-49.604	63.058	0.787 [1]
T20	20 - 1	V4x4x5/16	19.000	4.708	60.1 K=1.00	2.4023	1.00	-49.236	64.376	0.765 [1]

[1] $P_u / \phi P_n$ controls

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	300 - 297	V4x4x5/16	0.510	7.024	0.073	-0.139	4.877	0.029
T2	297 - 294	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T3	294 - 291	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T4	291 - 288	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T5	288 - 285	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T6	285 - 280	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T7	280 - 260	V3x3x1/4	0.000	3.267	0.000	0.000	2.144	0.000
T8	260 - 240	V3x3x1/4 w/ 3/4" SR	0.000	4.158	0.000	0.000	2.583	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T9	240 - 220	V3x3x1/4 w/ 3/4" SR	0.000	4.158	0.000	0.000	2.583	0.000
T10	220 - 200	V3x3x1/4	0.000	3.267	0.000	0.000	2.144	0.000
T11	200 - 180	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T12	180 - 160	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T13	160 - 140	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T14	140 - 120	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T15	120 - 100	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T16	100 - 80	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T17	80 - 60	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T18	60 - 40	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T19	40 - 20	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T20	20 - 1	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000

Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	300 - 297	V4x4x5/16	0.006	0.073	0.029	0.104 ✔	1.000	4.8.1 ✔
T2	297 - 294	V4x4x5/16	0.085	0.000	0.000	0.085 [1] ✔	1.000	4.8.1 ✔
T3	294 - 291	V4x4x5/16	0.151	0.000	0.000	0.151 [1] ✔	1.000	4.8.1 ✔
T4	291 - 288	V4x4x5/16	0.224	0.000	0.000	0.224 [1] ✔	1.000	4.8.1 ✔
T5	288 - 285	V4x4x5/16	0.298	0.000	0.000	0.298 [1] ✔	1.000	4.8.1 ✔
T6	285 - 280	V4x4x5/16	0.344	0.000	0.000	0.344 [1] ✔	1.000	4.8.1 ✔
T7	280 - 260	V3x3x1/4	0.889	0.000	0.000	0.889 [1] ✔	1.000	4.8.1 ✔
T8	260 - 240	V3x3x1/4 w/ 3/4" SR	0.901	0.000	0.000	0.901 [1] ✔	1.000	4.8.1 ✔
T9	240 - 220	V3x3x1/4 w/ 3/4" SR	0.913	0.000	0.000	0.913 [1] ✔	1.000	4.8.1 ✔
T10	220 - 200	V3x3x1/4	0.993	0.000	0.000	0.993 [1] ✔	1.000	4.8.1 ✔
T11	200 - 180	V4x4x5/16	0.573	0.000	0.000	0.573 [1] ✔	1.000	4.8.1 ✔
T12	180 - 160	V4x4x5/16	0.606	0.000	0.000	0.606 [1] ✔	1.000	4.8.1 ✔
T13	160 - 140	V4x4x5/16	0.638	0.000	0.000	0.638 [1] ✔	1.000	4.8.1 ✔
T14	140 - 120	V4x4x5/16	0.675	0.000	0.000	0.675 [1] ✔	1.000	4.8.1 ✔
T15	120 - 100	V4x4x5/16	0.678	0.000	0.000	0.678 [1] ✔	1.000	4.8.1 ✔
T16	100 - 80	V4x4x5/16	0.662	0.000	0.000	0.662 [1] ✔	1.000	4.8.1 ✔
T17	80 - 60	V4x4x5/16	0.723	0.000	0.000	0.723 [1] ✔	1.000	4.8.1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T18	60 - 40	V4x4x5/16	0.767	0.000	0.000	0.767 [1]	1.000	4.8.1
T19	40 - 20	V4x4x5/16	0.787	0.000	0.000	0.787 [1]	1.000	4.8.1
T20	20 - 1	V4x4x5/16	0.765	0.000	0.000	0.765 [1]	1.000	4.8.1

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	297 - 294	L2x2x3/16	3.468	3.114	107.4 K=1.13	0.7150	-3.667	12.619	0.291 [1]
T3	294 - 291	L2x2x3/16	4.902	2.274	81.9 K=1.18	0.7150	-2.644	16.268	0.163 [1]
T4	291 - 288	L2x2x3/16	4.902	2.274	81.9 K=1.18	0.7150	-2.884	16.268	0.177 [1]
T5	288 - 285	L2x2x3/16	4.902	2.274	81.9 K=1.18	0.7150	-2.861	16.268	0.176 [1]
T6	285 - 280	L1 1/2x1 1/2x1/8	6.274	3.022	122.4 K=1.00	0.3594	-3.048	5.288	0.576 [1]
T7	280 - 260	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-3.115	5.155	0.604 [1]
T8	260 - 240	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-1.789	5.155	0.347 [1]
T9	240 - 220	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-1.091	5.155	0.212 [1]
T10	220 - 200	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-2.035	5.155	0.395 [1]
T11	200 - 180	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-3.114	5.155	0.604 [1]
T12	180 - 160	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-2.850	5.155	0.553 [1]
T13	160 - 140	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-1.942	5.155	0.377 [1]
T14	140 - 120	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-0.995	5.155	0.193 [1]
T15	120 - 100	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-2.147	5.155	0.416 [1]
T16	100 - 80	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-3.318	5.155	0.644 [1]
T17	80 - 60	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-2.442	5.155	0.474 [1]
T18	60 - 40	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-1.803	5.155	0.350 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	40 - 20	L1 1/2x1 1/2x1/8	6.371	3.071	124.4 K=1.00	0.3594	-1.740	5.155	0.338 [1] ✔
T20	20 - 1	L1 1/2x1 1/2x1/8	6.178	2.974	120.5 K=1.00	0.3594	-2.306	5.421	0.425 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	297 - 294	L2x2x3/16	4.000	2.000	90.5 K=1.49	0.7150	-2.453	15.058	0.163 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 297	L2x2x3/16	4.000	3.646	115.5 K=1.04	0.7150	-0.015	11.475	0.001
T3	294 - 291	L5x3x1/4	4.000	3.646	93.0 K=1.41	1.9400	-0.163	33.887	0.005 [1]
T4	291 - 288	L5x3x1/4	4.000	3.646	93.0 K=1.41	1.9400	-0.333	33.887	0.010 [1]
T5	288 - 285	L5x3x1/4	4.000	3.646	93.0 K=1.41	1.9400	-0.293	33.887	0.009 [1]
T7	280 - 260	L2x2x3/16	4.000	4.000	121.1 K=0.99	0.7150	-0.203	10.701	0.019 [1]
T8	260 - 240	L2x2x3/16	4.000	4.000	121.1 K=0.99	0.7150	-0.212	10.701	0.020 [1]
T9	240 - 220	L2x2x3/16	4.000	4.000	121.1 K=0.99	0.7150	-0.301	10.701	0.028 [1]
T10	220 - 200	L2x2x3/16	4.000	4.000	121.1 K=0.99	0.7150	-0.248	10.701	0.023 [1]
T14	140 - 120	L2x2x3/16	4.000	4.000	121.1 K=0.99	0.7150	-0.112	10.701	0.010 [1]
T15	120 - 100	L2x2x3/16	4.000	4.000	121.1 K=0.99	0.7150	-0.150	10.701	0.014 [1]

[1] P_u / ϕP_n controls

Top Girt Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	300 - 297	L2x2x3/16	0.112	1.301	0.086	0.053	0.664	0.080
T3	294 - 291	L5x3x1/4	0.000	5.310	0.000	0.000	1.583	0.000
T4	291 - 288	L5x3x1/4	0.000	5.310	0.000	0.000	1.583	0.000
T5	288 - 285	L5x3x1/4	0.000	5.310	0.000	0.000	1.583	0.000
T7	280 - 260	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T8	260 - 240	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T9	240 - 220	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T10	220 - 200	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T14	140 - 120	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T15	120 - 100	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000

Top Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	300 - 297	L2x2x3/16	0.001	0.086	0.080	0.167 ✔	1.000	4.8.1 ✔
T3	294 - 291	L5x3x1/4	0.005	0.000	0.000	0.005 [1] ✔	1.000	4.8.1 ✔
T4	291 - 288	L5x3x1/4	0.010	0.000	0.000	0.010 [1] ✔	1.000	4.8.1 ✔
T5	288 - 285	L5x3x1/4	0.009	0.000	0.000	0.009 [1] ✔	1.000	4.8.1 ✔
T7	280 - 260	L2x2x3/16	0.019	0.000	0.000	0.019 [1] ✔	1.000	4.8.1 ✔
T8	260 - 240	L2x2x3/16	0.020	0.000	0.000	0.020 [1] ✔	1.000	4.8.1 ✔
T9	240 - 220	L2x2x3/16	0.028	0.000	0.000	0.028 [1] ✔	1.000	4.8.1 ✔
T10	220 - 200	L2x2x3/16	0.023	0.000	0.000	0.023 [1] ✔	1.000	4.8.1 ✔
T14	140 - 120	L2x2x3/16	0.010	0.000	0.000	0.010 [1] ✔	1.000	4.8.1 ✔
T15	120 - 100	L2x2x3/16	0.014	0.000	0.000	0.014 [1] ✔	1.000	4.8.1 ✔

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	285 - 280	L3 1/2x3 1/2x1/4	4.000	4.000	69.2 K=1.00	1.6900	-7.545	42.566	0.177 [1] ✔

[1] P_u / ϕP_n controls

Bottom Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	285 - 280	L3 1/2x3 1/2x1/4	4.000	4.000	69.2 K=1.00	1.6900	-0.568	42.566	0.013 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	285 - 280 (491)	L3x3x1/4	6.274	6.274	127.2 K=1.00	1.4400	-13.977	19.913	0.702 [1] ✔
T6	285 - 280 (492)	L3x3x1/4	6.274	6.274	127.2 K=1.00	1.4400	-13.374	19.913	0.672 [1] ✔
T6	285 - 280 (500)	L3x3x1/4	6.274	6.274	127.2 K=1.00	1.4400	-13.342	19.913	0.670 [1] ✔
T6	285 - 280 (501)	L3x3x1/4	6.274	6.274	127.2 K=1.00	1.4400	-12.888	19.913	0.647 [1] ✔
T6	285 - 280 (506)	L3x3x1/4	6.274	6.274	127.2 K=1.00	1.4400	-13.427	19.913	0.674 [1] ✔
T6	285 - 280 (507)	L3x3x1/4	6.274	6.274	127.2 K=1.00	1.4400	-13.522	19.913	0.679 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 297	V4x4x5/16	3.000	2.917	29.4	2.4023	0.195	77.836	0.003
T2	297 - 294	V4x4x5/16	3.000	0.083	0.8	2.4023	4.429	77.836	0.057 [1]
T3	294 - 291	V4x4x5/16	3.000	0.083	0.8	2.4023	9.269	77.836	0.119 [1]
T4	291 - 288	V4x4x5/16	3.000	0.083	0.8	2.4023	14.554	77.836	0.187 [1]
T5	288 - 285	V4x4x5/16	3.000	0.083	0.8	2.4023	19.855	77.836	0.255 [1]
T6	285 - 280	V4x4x5/16	5.000	0.083	0.8	2.4023	19.854	77.836	0.255 [1]
T7	280 - 260	V3x3x1/4	20.000	0.083	1.1	1.4375	13.178	46.575	0.283 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T8	260 - 240	V3x3x1/4 w/ 3/4" SR	20.000	0.083	1.1	1.8390	23.317	59.584	0.391 [1]
T9	240 - 220	V3x3x1/4 w/ 3/4" SR	20.000	4.958	65.1	1.8390	23.607	59.584	0.396 [1]
T10	220 - 200	V3x3x1/4	20.000	0.083	1.1	1.4375	19.840	46.575	0.426 [1]
T11	200 - 180	V4x4x5/16	20.000	0.083	0.8	2.4023	13.087	77.836	0.168 [1]
T12	180 - 160	V4x4x5/16	20.000	0.083	0.8	2.4023	13.086	77.836	0.168 [1]
T13	160 - 140	V4x4x5/16	20.000	0.083	0.8	2.4023	11.002	77.836	0.141 [1]
T14	140 - 120	V4x4x5/16	20.000	4.958	50.0	2.4023	13.770	77.836	0.177 [1]
T15	120 - 100	V4x4x5/16	20.000	0.083	0.8	2.4023	13.088	77.836	0.168 [1]
T16	100 - 80	V4x4x5/16	20.000	0.083	0.8	2.4023	1.803	77.836	0.023 [1]

[1] $P_u / \phi P_n$ controls

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	300 - 297	V4x4x5/16	-0.531	7.024	0.076	0.146	4.877	0.030
T2	297 - 294	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T3	294 - 291	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T4	291 - 288	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T5	288 - 285	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T6	285 - 280	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T7	280 - 260	V3x3x1/4	0.000	3.267	0.000	0.000	2.144	0.000
T8	260 - 240	V3x3x1/4 w/ 3/4" SR	0.000	4.158	0.000	0.000	2.583	0.000
T9	240 - 220	V3x3x1/4 w/ 3/4" SR	0.000	4.158	0.000	0.000	2.583	0.000
T10	220 - 200	V3x3x1/4	0.000	3.267	0.000	0.000	2.144	0.000
T11	200 - 180	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T12	180 - 160	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T13	160 - 140	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T14	140 - 120	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T15	120 - 100	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000
T16	100 - 80	V4x4x5/16	0.000	7.024	0.000	0.000	4.877	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	300 - 297	V4x4x5/16	0.003	0.076	0.030	0.107 ✔	1.000	4.8.1 ✔
T2	297 - 294	V4x4x5/16	0.057	0.000	0.000	0.057 [1] ✔	1.000	4.8.1 ✔
T3	294 - 291	V4x4x5/16	0.119	0.000	0.000	0.119 [1] ✔	1.000	4.8.1 ✔
T4	291 - 288	V4x4x5/16	0.187	0.000	0.000	0.187 [1] ✔	1.000	4.8.1 ✔
T5	288 - 285	V4x4x5/16	0.255	0.000	0.000	0.255 [1] ✔	1.000	4.8.1 ✔
T6	285 - 280	V4x4x5/16	0.255	0.000	0.000	0.255 [1] ✔	1.000	4.8.1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T7	280 - 260	V3x3x1/4	0.283	0.000	0.000	0.283 [1]	1.000	4.8.1
T8	260 - 240	V3x3x1/4 w/ 3/4" SR	0.391	0.000	0.000	0.391 [1]	1.000	4.8.1
T9	240 - 220	V3x3x1/4 w/ 3/4" SR	0.396	0.000	0.000	0.396 [1]	1.000	4.8.1
T10	220 - 200	V3x3x1/4	0.426	0.000	0.000	0.426 [1]	1.000	4.8.1
T11	200 - 180	V4x4x5/16	0.168	0.000	0.000	0.168 [1]	1.000	4.8.1
T12	180 - 160	V4x4x5/16	0.168	0.000	0.000	0.168 [1]	1.000	4.8.1
T13	160 - 140	V4x4x5/16	0.141	0.000	0.000	0.141 [1]	1.000	4.8.1
T14	140 - 120	V4x4x5/16	0.177	0.000	0.000	0.177 [1]	1.000	4.8.1
T15	120 - 100	V4x4x5/16	0.168	0.000	0.000	0.168 [1]	1.000	4.8.1
T16	100 - 80	V4x4x5/16	0.023	0.000	0.000	0.023 [1]	1.000	4.8.1

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	297 - 294	L2x2x3/16	3.468	3.114	67.5	0.4484	3.645	19.504	0.187 [1]
T3	294 - 291	L2x2x3/16	4.902	2.274	47.7	0.4484	2.494	19.504	0.128 [1]
T4	291 - 288	L2x2x3/16	4.902	2.274	47.7	0.4484	2.724	19.504	0.140 [1]
T5	288 - 285	L2x2x3/16	4.902	2.274	47.7	0.4484	2.723	19.504	0.140 [1]
T6	285 - 280	L1 1/2x1 1/2x1/8	6.274	3.022	80.9	0.2109	2.750	9.176	0.300 [1]
T7	280 - 260	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	2.755	9.176	0.300 [1]
T8	260 - 240	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	1.675	9.176	0.182 [1]
T9	240 - 220	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	0.960	9.176	0.105 [1]
T10	220 - 200	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	1.848	9.176	0.201 [1]
T11	200 - 180	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	2.962	9.176	0.323 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	180 - 160	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	2.671	9.176	0.291 [1] ✔
T13	160 - 140	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	1.671	9.176	0.182 [1] ✔
T14	140 - 120	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	0.723	9.176	0.079 [1] ✔
T15	120 - 100	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	1.819	9.176	0.198 [1] ✔
T16	100 - 80	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	2.906	9.176	0.317 [1] ✔
T17	80 - 60	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	2.150	9.176	0.234 [1] ✔
T18	60 - 40	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	1.457	9.176	0.159 [1] ✔
T19	40 - 20	L1 1/2x1 1/2x1/8	6.371	3.071	82.2	0.2109	1.422	9.176	0.155 [1] ✔
T20	20 - 1	L1 1/2x1 1/2x1/8	6.178	2.974	79.7	0.2109	2.129	9.176	0.232 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	297 - 294	L2x2x3/16	4.000	2.000	58.3	0.7150	2.420	23.166	0.104 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 297	L2x2x3/16	4.000	3.646	77.8	0.4484	0.000	19.504	0.000
T3	294 - 291	L5x3x1/4	4.000	3.646	55.7	1.3378	0.294	58.195	0.005 [1]
T4	291 - 288	L5x3x1/4	4.000	3.646	55.7	1.3378	0.588	58.195	0.010 [1]
T5	288 - 285	L5x3x1/4	4.000	3.646	55.7	1.3378	0.560	58.195	0.010 [1]
T7	280 - 260	L2x2x3/16	4.000	4.000	77.8	0.7150	0.380	23.166	0.016 [1]
T8	260 - 240	L2x2x3/16	4.000	4.000	77.8	0.7150	0.530	23.166	0.023 [1]
T9	240 - 220	L2x2x3/16	4.000	4.000	77.8	0.7150	0.656	23.166	0.028 [1]
T10	220 - 200	L2x2x3/16	4.000	4.000	77.8	0.7150	0.645	23.166	0.028 [1]
T11	200 - 180	L2x2x3/16	4.000	4.000	77.8	0.7150	0.492	23.166	0.021 [1]
T13	160 - 140	L2x2x3/16	4.000	4.000	77.8	0.7150	0.720	23.166	0.031 [1]
T14	140 - 120	L2x2x3/16	4.000	4.000	77.8	0.7150	0.927	23.166	0.040 [1]
T15	120 - 100	L2x2x3/16	4.000	4.000	77.8	0.7150	0.952	23.166	0.041 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T16	100 - 80	L2x2x3/16	4.000	4.000	77.8	0.7150	0.810	23.166	0.035 [1]
T18	60 - 40	L2x2x3/16	4.000	4.000	77.8	0.7150	0.701	23.166	0.030 [1]
T19	40 - 20	L2x2x3/16	4.000	4.000	77.8	0.7150	0.759	23.166	0.033 [1]
T20	20 - 1	L2x2x3/16	4.000	4.000	77.8	0.7150	0.676	23.166	0.029 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	300 - 297	L2x2x3/16	0.106	1.301	0.081	0.056	0.664	0.085
T3	294 - 291	L5x3x1/4	0.000	5.310	0.000	0.000	1.583	0.000
T4	291 - 288	L5x3x1/4	0.000	5.310	0.000	0.000	1.583	0.000
T5	288 - 285	L5x3x1/4	0.000	5.310	0.000	0.000	1.583	0.000
T7	280 - 260	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T8	260 - 240	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T9	240 - 220	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T10	220 - 200	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T11	200 - 180	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T13	160 - 140	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T14	140 - 120	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T15	120 - 100	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T16	100 - 80	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T18	60 - 40	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T19	40 - 20	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000
T20	20 - 1	L2x2x3/16	0.000	1.301	0.000	0.000	0.664	0.000

Top Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	300 - 297	L2x2x3/16	0.000	0.081	0.085	0.166 ✔	1.000	4.8.1 ✔
T3	294 - 291	L5x3x1/4	0.005	0.000	0.000	0.005 [1] ✔	1.000	4.8.1 ✔
T4	291 - 288	L5x3x1/4	0.010	0.000	0.000	0.010 [1] ✔	1.000	4.8.1 ✔
T5	288 - 285	L5x3x1/4	0.010	0.000	0.000	0.010 [1] ✔	1.000	4.8.1 ✔
T7	280 - 260	L2x2x3/16	0.016	0.000	0.000	0.016 [1] ✔	1.000	4.8.1 ✔
T8	260 - 240	L2x2x3/16	0.023	0.000	0.000	0.023 [1] ✔	1.000	4.8.1 ✔
T9	240 - 220	L2x2x3/16	0.028	0.000	0.000	0.028 [1] ✔	1.000	4.8.1 ✔
T10	220 - 200	L2x2x3/16	0.028	0.000	0.000	0.028 [1] ✔	1.000	4.8.1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T11	200 - 180	L2x2x3/16	0.021	0.000	0.000	0.021 [1]	1.000	4.8.1
T13	160 - 140	L2x2x3/16	0.031	0.000	0.000	0.031 [1]	1.000	4.8.1
T14	140 - 120	L2x2x3/16	0.040	0.000	0.000	0.040 [1]	1.000	4.8.1
T15	120 - 100	L2x2x3/16	0.041	0.000	0.000	0.041 [1]	1.000	4.8.1
T16	100 - 80	L2x2x3/16	0.035	0.000	0.000	0.035 [1]	1.000	4.8.1
T18	60 - 40	L2x2x3/16	0.030	0.000	0.000	0.030 [1]	1.000	4.8.1
T19	40 - 20	L2x2x3/16	0.033	0.000	0.000	0.033 [1]	1.000	4.8.1
T20	20 - 1	L2x2x3/16	0.029	0.000	0.000	0.029 [1]	1.000	4.8.1

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	285 - 280	L3 1/2x3 1/2x1/4	4.000	4.000	44.0	1.1503	7.300	50.039	0.146 [1]
T12	180 - 160	L2x2x3/16	4.000	4.000	77.8	0.4484	7.108	19.504	0.364 [1]
T17	80 - 60	L2x2x3/16	4.000	4.000	77.8	0.4484	5.991	19.504	0.307 [1]

[1] P_u / ϕP_n controls

Bottom Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	285 - 280	L3 1/2x3 1/2x1/4	4.000	4.000	44.0	1.1503	0.398	50.039	0.008 [1]

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	285 - 280 (489)	L3x4x1/4	4.000	4.000	53.5	1.6900	12.035	54.756	0.220 [1] ✔
T6	285 - 280 (490)	L3x4x1/4	4.000	4.000	53.5	1.6900	12.287	54.756	0.224 [1] ✔
T6	285 - 280 (498)	L3x4x1/4	4.000	4.000	53.5	1.6900	12.082	54.756	0.221 [1] ✔
T6	285 - 280 (499)	L3x4x1/4	4.000	4.000	53.5	1.6900	11.848	54.756	0.216 [1] ✔
T6	285 - 280 (504)	L3x4x1/4	4.000	4.000	53.5	1.6900	11.841	54.756	0.216 [1] ✔
T6	285 - 280 (505)	L3x4x1/4	4.000	4.000	53.5	1.6900	12.338	54.756	0.225 [1] ✔

[1] $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	300 - 297	Leg	V4x4x5/16	2	-0.464	72.367	10.7	Pass
T2	297 - 294	Leg	V4x4x5/16	7	-6.633	77.831	11.9	Pass
T3	294 - 291	Leg	V4x4x5/16	19	-11.779	77.831	15.1	Pass
T4	291 - 288	Leg	V4x4x5/16	31	-17.453	77.831	22.4	Pass
T5	288 - 285	Leg	V4x4x5/16	43	-23.192	77.831	29.8	Pass
T6	285 - 280	Leg	V4x4x5/16	56	-21.525	62.538	34.4	Pass
T7	280 - 260	Leg	V3x3x1/4	69	-28.141	31.655	88.9	Pass
T8	260 - 240	Leg	V3x3x1/4 w/ 3/4" SR	97	-35.925	39.871	90.1	Pass
T9	240 - 220	Leg	V3x3x1/4 w/ 3/4" SR	127	-36.411	39.871	91.3	Pass
T10	220 - 200	Leg	V3x3x1/4	157	-31.435	31.655	99.3	Pass
T11	200 - 180	Leg	V4x4x5/16	187	-35.917	62.725	57.3	Pass
T12	180 - 160	Leg	V4x4x5/16	217	-38.189	63.058	60.6	Pass
T13	160 - 140	Leg	V4x4x5/16	249	-40.225	63.058	63.8	Pass
T14	140 - 120	Leg	V4x4x5/16	279	-42.550	63.058	67.5	Pass
T15	120 - 100	Leg	V4x4x5/16	309	-42.783	63.058	67.8	Pass
T16	100 - 80	Leg	V4x4x5/16	337	-42.297	63.871	66.2	Pass
T17	80 - 60	Leg	V4x4x5/16	367	-45.574	63.058	72.3	Pass
T18	60 - 40	Leg	V4x4x5/16	399	-48.360	63.058	76.7	Pass
T19	40 - 20	Leg	V4x4x5/16	429	-49.604	63.058	78.7	Pass
T20	20 - 1	Leg	V4x4x5/16	459	-49.236	64.376	76.5	Pass
T2	297 - 294	Diagonal	L2x2x3/16	11	-3.667	12.619	29.1 31.4 (b)	Pass
T3	294 - 291	Diagonal	L2x2x3/16	25	-2.644	16.268	16.3 21.5 (b)	Pass
T4	291 - 288	Diagonal	L2x2x3/16	37	-2.884	16.268	17.7 23.4 (b)	Pass
T5	288 - 285	Diagonal	L2x2x3/16	50	-2.861	16.268	17.6 23.4 (b)	Pass
T6	285 - 280	Diagonal	L1 1/2x1 1/2x1/8	64	-3.048	5.288	57.6 79.2 (b)	Pass
T7	280 - 260	Diagonal	L1 1/2x1 1/2x1/8	94	-3.115	5.155	60.4 79.4 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T8	260 - 240	Diagonal	L1 1/2x1 1/2x1/8	124	-1.789	5.155	34.7 48.2 (b)	Pass
T9	240 - 220	Diagonal	L1 1/2x1 1/2x1/8	133	-1.091	5.155	21.2 27.7 (b)	Pass
T10	220 - 200	Diagonal	L1 1/2x1 1/2x1/8	164	-2.035	5.155	39.5 53.2 (b)	Pass
T11	200 - 180	Diagonal	L1 1/2x1 1/2x1/8	195	-3.114	5.155	60.4 85.3 (b)	Pass
T12	180 - 160	Diagonal	L1 1/2x1 1/2x1/8	244	-2.850	5.155	55.3 77.0 (b)	Pass
T13	160 - 140	Diagonal	L1 1/2x1 1/2x1/8	272	-1.942	5.155	37.7 48.1 (b)	Pass
T14	140 - 120	Diagonal	L1 1/2x1 1/2x1/8	302	-0.995	5.155	19.3 20.8 (b)	Pass
T15	120 - 100	Diagonal	L1 1/2x1 1/2x1/8	315	-2.147	5.155	41.6 52.4 (b)	Pass
T16	100 - 80	Diagonal	L1 1/2x1 1/2x1/8	345	-3.318	5.155	64.4 83.7 (b)	Pass
T17	80 - 60	Diagonal	L1 1/2x1 1/2x1/8	391	-2.442	5.155	47.4 61.9 (b)	Pass
T18	60 - 40	Diagonal	L1 1/2x1 1/2x1/8	421	-1.803	5.155	35.0 42.0 (b)	Pass
T19	40 - 20	Diagonal	L1 1/2x1 1/2x1/8	435	-1.740	5.155	33.8 41.0 (b)	Pass
T20	20 - 1	Diagonal	L1 1/2x1 1/2x1/8	465	-2.306	5.421	42.5 61.3 (b)	Pass
T2	297 - 294	Horizontal	L2x2x3/16	10	-2.453	15.058	16.3	Pass
T1	300 - 297	Top Girt	L2x2x3/16	4	-0.015	11.475	16.7	Pass
T3	294 - 291	Top Girt	L5x3x1/4	23	0.294	58.195	0.5 1.8 (b)	Pass
T4	291 - 288	Top Girt	L5x3x1/4	35	0.588	58.195	1.0 3.7 (b)	Pass
T5	288 - 285	Top Girt	L5x3x1/4	47	0.560	58.195	1.0 3.5 (b)	Pass
T7	280 - 260	Top Girt	L2x2x3/16	72	-0.203	10.701	1.9	Pass
T8	260 - 240	Top Girt	L2x2x3/16	102	0.530	23.166	2.3	Pass
T9	240 - 220	Top Girt	L2x2x3/16	132	0.656	23.166	2.8	Pass
T10	220 - 200	Top Girt	L2x2x3/16	162	0.645	23.166	2.8	Pass
T11	200 - 180	Top Girt	L2x2x3/16	192	0.492	23.166	2.1	Pass
T13	160 - 140	Top Girt	L2x2x3/16	252	0.720	23.166	3.1	Pass
T14	140 - 120	Top Girt	L2x2x3/16	282	0.927	23.166	4.0	Pass
T15	120 - 100	Top Girt	L2x2x3/16	312	0.952	23.166	4.1	Pass
T16	100 - 80	Top Girt	L2x2x3/16	342	0.810	23.166	3.5	Pass
T18	60 - 40	Top Girt	L2x2x3/16	402	0.701	23.166	3.0	Pass
T19	40 - 20	Top Girt	L2x2x3/16	432	0.759	23.166	3.3	Pass
T20	20 - 1	Top Girt	L2x2x3/16	462	0.676	23.166	2.9	Pass
T6	285 - 280	Guy A@284.917	9/16	502	14.363	22.800	63.0	Pass
T12	180 - 160	Guy A@179.917	9/16	510	16.626	21.000	79.2	Pass
T17	80 - 60	Guy A@79.9167	1/2	513	10.932	16.140	67.7	Pass
T6	285 - 280	Guy B@284.917	9/16	497	14.096	22.800	61.8	Pass
T12	180 - 160	Guy B@179.917	9/16	509	16.125	21.000	76.8	Pass
T17	80 - 60	Guy B@79.9167	1/2	512	10.563	16.140	65.4	Pass
T6	285 - 280	Guy C@284.917	9/16	487	14.222	22.800	62.4	Pass
T12	180 - 160	Guy C@179.917	9/16	508	16.683	21.000	79.4	Pass
T17	80 - 60	Guy C@79.9167	1/2	511	10.983	16.140	68.0	Pass
T6	285 - 280	Top Guy Pull-Off@284.917	L3 1/2x3 1/2x1/4	60	-7.545	42.566	17.7 47.4 (b)	Pass
T12	180 - 160	Top Guy Pull-Off@179.917	L2x2x3/16	222	7.108	19.504	36.4 64.6 (b)	Pass
T17	80 - 60	Top Guy Pull-Off@79.9167	L2x2x3/16	372	5.991	19.504	30.7 54.4 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T6	285 - 280	Bottom Guy Pull-Off@284.917	L3 1/2x3 1/2x1/4	494	-0.568	42.566	1.3 3.6 (b)	Pass
T6	285 - 280	Torque Arm Top@284.917	L3x4x1/4	505	12.338	54.756	22.5 51.7 (b)	Pass
T6	285 - 280	Torque Arm Bottom@284.917	L3x3x1/4	491	-13.977	19.913	70.2	Pass
							Summary	
							Leg (T10)	99.3 Pass
							Diagonal (T11)	85.3 Pass
							Horizontal (T2)	16.3 Pass
							Top Girt (T1)	16.7 Pass
							Guy A (T12)	79.2 Pass
							Guy B (T12)	76.8 Pass
							Guy C (T12)	79.4 Pass
							Top Guy Pull-Off (T12)	64.6 Pass
							Bottom Guy Pull-Off (T6)	3.6 Pass
							Torque Arm Top (T6)	51.7 Pass
							Torque Arm Bottom (T6)	70.2 Pass
							Bolt Checks	85.3 Pass
							RATING =	**99.3** **Pass**

Attachment 2:
Collocation Application

Vertical Bridge
750 Park of Commerce
Drive
Suite 200
Boca Raton, FL 33487

Broadband Application

C-101847
Application Version 1
AMENDMENT TO EXISTING LEASE

Primary Information

VB Site Number
US-CT-5011

Tenant Legal Name
New Cingular Wireless PCS, LLC

Application Name
AT&T Application LTE 2C, LTE 4C, 5G NR Radio

VB Site Name
Torrington Tower

Applicant and Additional Contact Information

Applicant

Name: Emily Barnes
Email: ebarnes@saigrp.com
Email Alt:
Mobile:
Other:
Fax:

Address:

,

Emergency Contact

Name: Jane Barnett
Email: jb3838@att.com
(mailto:jb3838@att.com)
Phone: (203)317-5699

Leasing Contact

Name: Jane Barnett
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(mailto:g20444@att.com)
Phone: (203)317-5699

Construction Contact

Name: Mike Cypranowski
Email:
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(mailto:mcypranowski@empiretelecomm.c
Phone: (201)245-9987

RF Contact

Name: Mohammed Rahman
Email: MR673A@ATT.COM
(mailto:MR673A@ATT.COM)
Phone: (860)997-9698

Carrier Contact Information

Invoice Contact

Name: SAP Coordinators
Title: Jhana Arsenault & Kayla Gagnon
Email: SAPORMOD@SAI-Comm.com
(mailto:SAPORMOD@SAI-Comm.com)
Mobile: (603)421-0470

Address
12 Industrial Way
Salem, New Hampshire 03079

Notice

To: Network Real Estate Administration
Attn:

Address:
1025 Lenox Park Blvd NE
3rd Floor
Atlanta, Georgia 30319-5309

Copy Notice

To: AT&T Legal Department – Network Counsel
Attn:

Address:
208 S. Akard Street
Dallas, Texas 75202-4206

Broadband Application

Vertical Bridge
750 Park of Commerce
Drive
Suite 200
Boca Raton, FL 33487

C-101847
Application Version 1
AMENDMENT TO EXISTING LEASE

Carrier Information

Tenant Site Number
CT2579

State Of Registration
Delaware

Carrier NOC#

Tenant Site Name
TORRINGTON

Type of Entity
LLC

Site Information

Latitude
41.84053611

Site Address
855 University Drive
Torrington, CT 06790

Structure Type
Guyed Tower

Longitude
-73.16190833

Structure Height
306.43

Frequency and Technology Information

TX Frequency (MHz)
Unlicensed

704-716, 835-848, 1850-1855, 1770-1780, 788-798

Type of Technology
Broadband Wireless

RX Frequency (MHz)
Unlicensed

716-728, 734-746, 880-893, 1930-1935, 2170-2180, 758-768

General Scope of Work

swap (3) panels, add (3) panels, swap (3) radios, add (6) radios, andd (1) DC9 squid with DC/fiber lines.

Broadband Application

Vertical Bridge
750 Park of Commerce
Drive
Suite 200
Boca Raton, FL 33487

C-101847
Application Version 1
AMENDMENT TO EXISTING LEASE

Ground and Interior Space Requirements

swap (3) panels, add (3) panels, swap (3) radios, add (6) radios, andd (1) DC9 squid with DC/fiber lines

No Changes

Generator Requirements

No Changes

AC Power Requirements

Existing Tenant Meter

Comments

Using Existing Power 50A Service Power Consumption < 800 Watts

Backhaul Requirements

No Changes

Broadband Application

Vertical Bridge
750 Park of Commerce
Drive
Suite 200
Boca Raton, FL 33487

C-101847
Application Version 1
AMENDMENT TO EXISTING LEASE

Structural Analysis Hard Copies

Structural Hard Copies Required

No

Mount Analysis

Will Tenant Provide Mount Analysis?

Yes

Broadband Application

Vertical Bridge
750 Park of Commerce Drive
Suite 200
Boca Raton, FL 33487

C-101847
Application Version 1
AMENDMENT TO EXISTING LEASE

Existing Equipment

Qty	Equipment Type	RAD	Mount (H')	Mount Type	Manufacturer	Model Number	Dimensions (H" x W" x D")	Weight (Lbs)	Azimuth	Remain	Comments
3	Panel Antenna	297.00	297.00	Sector Frames	KMW	AM-X-CD-16-65-00T-RET	72.00 x 11.80 x 5.90	48.50	0,120, 240	Yes	proposed on new mount - spec uploaded
6	RRU	297.00	297.00	Sector Frames	ericsson	RRUS 11 B12	19.70 x 17.00 x 7.20	50.60	0,120, 240	No	
1	Surge	297.00	297.00	Sector Frames	Raycap	DC6-48-60-18-8F	24.00 x 11.00 x 18.50	32.80	0,120, 240	Yes	
3	TMA	297.00	297.00	Sector Frames	CCI	DTMABP7819VG12A	14.25 x 11.46 x 4.17	26.00	0,120, 240	Yes	
3	Panel Antenna	297.00	297.00	Sector Frames	KMW	AM-X-CD-16-65-00T-RET	72.00 x 11.80 x 5.90	48.50	0,120, 240	No	removing

New Equipment

Qty	Equipment Type	RAD	Mount (H')	Mount Type	Manufacturer	Model Number	Dimensions (H" x W" x D")	Weight (Lbs)	Azimuth	Comments
3	RRU	297.00	297.00	Sector Frames	ericsson	4478 B14	16.50 x 13.40 x 7.70	59.90	0,120, 240	
3	RRU	297.00	297.00	Sector Frames	ericsson	4449 B5/B12	17.90 x 13.20 x 9.40	71.00	0,120, 240	
3	RRU	297.00	297.00	Sector Frames	ericsson	8843 B2/B66A	14.90 x 13.20 x 10.90	72.00	0,120, 240	
1	Surge	297.00	297.00	Sector Frames	Raycap	DC9-48-60-24-8C-EV	18.30 x 10.20 x 31.40	26.20	0,120, 240	
3	Panel Antenna	297.00	297.00	Sector Frames	CCI	OPA65R-BU6DA	71.20 x 21.00 x 7.80	60.20	0,120, 240	
3	Panel Antenna	297.00	297.00	Sector Frames	CCI	DMP65R-BU6DA	71.20 x 20.70 x 7.70	79.40	0,120, 240	
1	Mount	297.00	297.00	Sector Frames	SitePro1	VFA12-WLL-30120	120.00 x 143.00 x 143.00	1024.51	0,120, 240	replacing 12' sector mounts

Existing Line

Qty	Line Type	Line Size (Inches)	Line Location	Comments	Remain
6	Coax	2 1/4"	Exterior		Yes
1	Fiber	7/16"	Exterior		Yes
2	DC Power	3/4"	Exterior		Yes

New Line

Qty	Line Type	Line Size (Inches)	Line Location	Comments

3	DC Power	1"	Exterior
1	Fiber	7/16"	Exterior

Equipment Cabinet

Qty	Dimensions (H" x W" x D")	Cabinet Manufacturer	Comments
3	30.00 x 25.00 x 27.12	RBS	(1) 6601, (2) 6630

Broadband Application

Vertical Bridge
750 Park of Commerce
Drive
Suite 200
Boca Raton, FL 33487

C-101847
Application Version 1
AMENDMENT TO EXISTING LEASE

FINAL LEASED RIGHTS CONFIGURATION TOTALS
Any remaining existing equipment PLUS your new equipment

Final Equipments

Qty	Equipment Type
9	Panel Antenna
2	Surge
3	TMA
9	RRU
1	Mount

Final Lines

Qty	Equipment Type
6	Coax
2	Fiber
5	DC Power

May 12, 2020
May 19, 2020 (Rev. 1)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT2579 (LTE 2C/3C/4C/4TX4RX/5G NR)
	FA Number:	10128145
	PACE Number:	MRCTB046682
	PT Number:	2051A0V4Z9
	Site Name:	TORRINGTON UNIVERSITY DRIVE
	Site Address:	855 University Drive Torrington, CT 06790

To Whom It May Concern:

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

- (3) AM-X-CD-16-65-00T-RET Antennas (72.0"x11.8"x5.9" – Wt. = 49 lbs. /each)
- (3) DTMABP7819VG12A TMA's (10.7"x11.1"x3.8" - Wt. = 20 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7"Ø – Wt. = 33 lbs.) (tower mounted)
- **(3) OPA65R-BU6DA Antennas (71.2"x21.0"x7.8" – Wt. = 64 lbs. /each)**
- **(3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 96 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.5" – Wt. = 71 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7"Ø – Wt. = 33 lbs.) (tower mounted)**

**Proposed equipment shown in bold*

HDG's subconsultant, ProVertic LLC, conducted a ground audit of the existing AT&T antenna mounts on March 11, 2020. Mount fabrication drawings prepared by SitePro1, P/N VFA12-WLL-30120, dated May 03, 2018 were used to perform the proposed mount 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 120 mph with a max basic wind speed with ice of 40 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.25 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.
- The mount has been analyzed with load combinations consisting of 250 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.

Based on our evaluation, we have determined that the New SitePro1 VFA12-WLL-30120 mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
New Mount Rating (LTE 2C/3C/4C/4TX4RX/5G NR)	123	LC36	70%	**PASS**

Reference Documents:

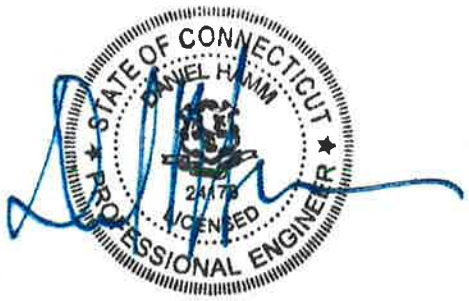
- Fabrication drawings prepared by SitePro1, P/N VFA12-WLL-30120, dated May 3, 2018

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 proposed mount will be 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.

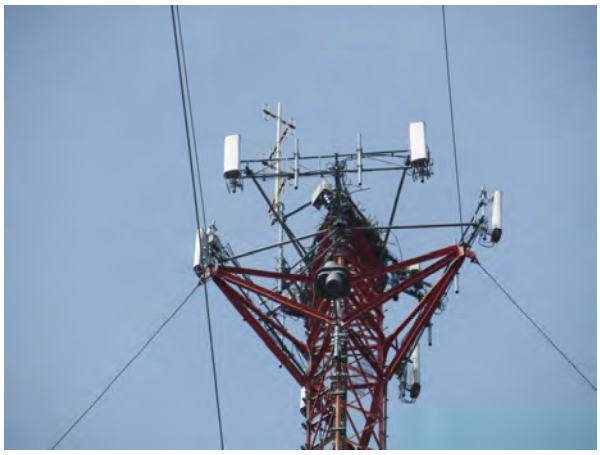
Respectfully Submitted,
Hudson Design Group LLC



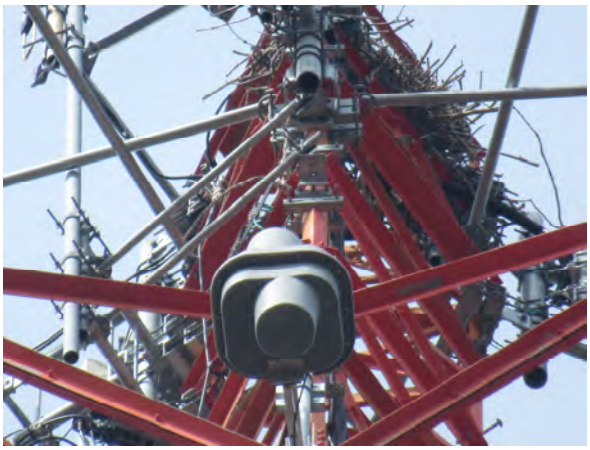
Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:
** Existing mount to be removed*








p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	297	(ft)
z_g=	900	(ft)
α=	9.5	
K_z=	**1.592**	

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}= **#DIV/0!**

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

Category= **1**

K_h=	#DIV/0!	
K_c=	1	(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
z=	297	
z_s=	1055	(Mean elevation of base of structure above sea level)
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.96	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =
Importance Factor =

t_i =	1.00	in
I=	1.0	(from Table 2-3)
K_{iz} =	1.25	(from Sec. 2.6.10)

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

t_{iz} = 1.25 in

Date: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL Checked By: MSC

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=	300	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=	1.592	(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=	**48.00**	K_e=	0.96	(from 2.6.8)
$q_{z\ (ice)}$=	**5.33**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**3.00**	V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	40	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: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL Checked By: MSC

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 = **1.25** 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)
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	6.10	1.36	385	54	24
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.39	1.24	618	79	39
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	610	79	38
B14 4478 RRH	18.1	8.3	13.4	1.04	2.18	1.20	60	10	4
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	0.00	1.20	0	2	0
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.88	1.20	68	11	4
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	0.00	1.20	0	2	0
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.20	65	10	4
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	0.06	1.20	3	2	0
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.96	1.20	48	8	3
DTMABP7819VG12A TMA (Shielded)	10.7	0.0	3.8	0.00	0.00	1.20	0	1	0
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	54	8	3
2-1/2" Pipe	2.9	12.0		0.24	0.24	0.70	8	2	1
2" Pipe	2.4	12.0		0.20	0.20	0.70	7	2	0
5/8" Round Bar	0.6	12.0		0.05	0.05	0.70	2	1	0
3/4" Round Bar	0.8	12.0		0.06	0.06	0.70	2	1	0
3-1/2x5/8 Plate	0.6	12.0		0.05	0.05	0.70	2	1	0
11-1/4x5/8" Plate	0.6	12.0		0.05	0.05	0.70	2	1	0

Date: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.25	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	385	223	345
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	618	272	531
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	270	525
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	60	97	69
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	97	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	68	95	75
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	95	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	65	79	68
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	6	79	24
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	48	16	40
DTMABP7819VG12A TMA (Shielded	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	16	#DIV/0!

WIND LOADS WITH ICE:

AM-X-CD-16-65-00T-RET Antenna	74.5	14.3	8.4	7.39	4.34	5.21	8.88	1.32	1.46	52	34	48
OPA65R-BU6DA Antenna	73.7	23.5	10.3	12.02	5.27	3.14	7.16	1.23	1.41	79	39	69
DMP65R-BU6DA Antenna	73.7	23.2	10.2	11.87	5.22	3.18	7.23	1.23	1.41	78	39	68
B14 4478 RRH	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	10	15	11
B14 4478 RRH (Shielded)	20.6	2.5	15.9	0.36	2.27	8.26	1.30	1.44	1.20	3	15	6
B5/B12 4449 RRH (Back to Back)	20.4	12.0	15.7	1.70	2.22	1.70	1.30	1.20	1.20	11	14	12
B5/B12 4449 RRH (Shielded)	20.4	2.5	15.7	0.35	2.22	8.18	1.30	1.44	1.20	3	14	6
B2/B66A 8843 RRH (Back to Back)	17.4	13.4	15.7	1.62	1.90	1.30	1.11	1.20	1.20	10	12	11
B2/B66A 8843 RRH (Shielded)	17.4	3.0	15.7	0.37	1.90	5.72	1.11	1.34	1.20	3	12	5
DTMABP7819VG12A TMA	13.2	13.6	6.3	1.25	0.58	0.97	2.10	1.20	1.20	8	4	7
DTMABP7819VG12A TMA (Shielded	13.2	2.5	6.3	0.23	0.58	5.29	2.10	1.32	1.20	2	4	2

WIND LOADS AT 30 MPH:

AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	24	14	22
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	39	17	33
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	33
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	4	6	5
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	4
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	0	5	1
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	2
DTMABP7819VG12A TMA (Shielded	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	1	#DIV/0!

Date: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.25	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	385	223	263
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	618	272	359
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	270	355
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	60	97	88
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	97	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	68	95	88
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	95	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	65	79	75
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	6	79	60
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	48	16	24
DTMABP7819VG12A TMA (Shielded	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	16	#DIV/0!

WIND LOADS WITH ICE:

AM-X-CD-16-65-00T-RET Antenna	74.5	14.3	8.4	7.39	4.34	5.21	8.88	1.32	1.46	52	34	38
OPA65R-BU6DA Antenna	73.7	23.5	10.3	12.02	5.27	3.14	7.16	1.23	1.41	79	39	49
DMP65R-BU6DA Antenna	73.7	23.2	10.2	11.87	5.22	3.18	7.23	1.23	1.41	78	39	49
B14 4478 RRH	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	10	15	13
B14 4478 RRH (Shielded)	20.6	2.5	15.9	0.36	2.27	8.26	1.30	1.44	1.20	3	15	12
B5/B12 4449 RRH (Back to Back)	20.4	12.0	15.7	1.70	2.22	1.70	1.30	1.20	1.20	11	14	13
B5/B12 4449 RRH (Shielded)	20.4	2.5	15.7	0.35	2.22	8.18	1.30	1.44	1.20	3	14	11
B2/B66A 8843 RRH (Back to Back)	17.4	13.4	15.7	1.62	1.90	1.30	1.11	1.20	1.20	10	12	12
B2/B66A 8843 RRH (Shielded)	17.4	3.0	15.7	0.37	1.90	5.72	1.11	1.34	1.20	3	12	10
DTMABP7819VG12A TMA	13.2	13.6	6.3	1.25	0.58	0.97	2.10	1.20	1.20	8	4	5
DTMABP7819VG12A TMA (Shielded	13.2	2.5	6.3	0.23	0.58	5.29	2.10	1.32	1.20	2	4	3

WIND LOADS AT 30 MPH:

AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	24	14	16
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	39	17	22
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	22
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	5
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	4	6	5
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	0	5	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	2
DTMABP7819VG12A TMA (Shielded	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	1	#DIV/0!

Date: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.25	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	385	223	223
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	618	272	272
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	270	270
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	60	97	97
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	97	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	68	95	95
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	95	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	65	79	79
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	6	79	79
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	48	16	16
DTMABP7819VG12A TMA (Shielded)	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	16	#DIV/0!

WIND LOADS WITH ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	74.5	14.3	8.4	7.39	4.34	5.21	8.88	1.32	1.46	52	34	34
OPA65R-BU6DA Antenna	73.7	23.5	10.3	12.02	5.27	3.14	7.16	1.23	1.41	79	39	39
DMP65R-BU6DA Antenna	73.7	23.2	10.2	11.87	5.22	3.18	7.23	1.23	1.41	78	39	39
B14 4478 RRH	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	10	15	15
B14 4478 RRH (Shielded)	20.6	2.5	15.9	0.36	2.27	8.26	1.30	1.44	1.20	3	15	15
B5/B12 4449 RRH (Back to Back)	20.4	12.0	15.7	1.70	2.22	1.70	1.30	1.20	1.20	11	14	14
B5/B12 4449 RRH (Shielded)	20.4	2.5	15.7	0.35	2.22	8.18	1.30	1.44	1.20	3	14	14
B2/B66A 8843 RRH (Back to Back)	17.4	13.4	15.7	1.62	1.90	1.30	1.11	1.20	1.20	10	12	12
B2/B66A 8843 RRH (Shielded)	17.4	3.0	15.7	0.37	1.90	5.72	1.11	1.34	1.20	3	12	12
DTMABP7819VG12A TMA	13.2	13.6	6.3	1.25	0.58	0.97	2.10	1.20	1.20	8	4	4
DTMABP7819VG12A TMA (Shielded)	13.2	2.5	6.3	0.23	0.58	5.29	2.10	1.32	1.20	2	4	4

WIND LOADS AT 30 MPH:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	24	14	14
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	39	17	17
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	17
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	4	6	6
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	0	5	5
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	1
DTMABP7819VG12A TMA (Shielded)	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	1	#DIV/0!

Date: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.25	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	385	223	263
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	618	272	359
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	270	355
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	60	97	88
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	97	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	68	95	88
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	95	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	65	79	75
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	6	79	60
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	48	16	24
DTMABP7819VG12A TMA (Shielded)	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	16	#DIV/0!

WIND LOADS WITH ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	74.5	14.3	8.4	7.39	4.34	5.21	8.88	1.32	1.46	52	34	38
OPA65R-BU6DA Antenna	73.7	23.5	10.3	12.02	5.27	3.14	7.16	1.23	1.41	79	39	49
DMP65R-BU6DA Antenna	73.7	23.2	10.2	11.87	5.22	3.18	7.23	1.23	1.41	78	39	49
B14 4478 RRH	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	10	15	13
B14 4478 RRH (Shielded)	20.6	2.5	15.9	0.36	2.27	8.26	1.30	1.44	1.20	3	15	12
B5/B12 4449 RRH (Back to Back)	20.4	12.0	15.7	1.70	2.22	1.70	1.30	1.20	1.20	11	14	13
B5/B12 4449 RRH (Shielded)	20.4	2.5	15.7	0.35	2.22	8.18	1.30	1.44	1.20	3	14	11
B2/B66A 8843 RRH (Back to Back)	17.4	13.4	15.7	1.62	1.90	1.30	1.11	1.20	1.20	10	12	12
B2/B66A 8843 RRH (Shielded)	17.4	3.0	15.7	0.37	1.90	5.72	1.11	1.34	1.20	3	12	10
DTMABP7819VG12A TMA	13.2	13.6	6.3	1.25	0.58	0.97	2.10	1.20	1.20	8	4	5
DTMABP7819VG12A TMA (Shielded)	13.2	2.5	6.3	0.23	0.58	5.29	2.10	1.32	1.20	2	4	3

WIND LOADS AT 30 MPH:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	24	14	16
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	39	17	22
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	22
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	5
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	4	6	5
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	0	5	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	2
DTMABP7819VG12A TMA (Shielded)	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	1	#DIV/0!

Date: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.25	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	385	223	345
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	618	272	531
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	270	525
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	60	97	69
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	97	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	68	95	75
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	95	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	65	79	68
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	6	79	24
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	48	16	40
DTMABP7819VG12A TMA (Shielded)	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	16	#DIV/0!

WIND LOADS WITH ICE:

AM-X-CD-16-65-00T-RET Antenna	74.5	14.3	8.4	7.39	4.34	5.21	8.88	1.32	1.46	52	34	48
OPA65R-BU6DA Antenna	73.7	23.5	10.3	12.02	5.27	3.14	7.16	1.23	1.41	79	39	69
DMP65R-BU6DA Antenna	73.7	23.2	10.2	11.87	5.22	3.18	7.23	1.23	1.41	78	39	68
B14 4478 RRH	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	10	15	11
B14 4478 RRH (Shielded)	20.6	2.5	15.9	0.36	2.27	8.26	1.30	1.44	1.20	3	15	6
B5/B12 4449 RRH (Back to Back)	20.4	12.0	15.7	1.70	2.22	1.70	1.30	1.20	1.20	11	14	12
B5/B12 4449 RRH (Shielded)	20.4	2.5	15.7	0.35	2.22	8.18	1.30	1.44	1.20	3	14	6
B2/B66A 8843 RRH (Back to Back)	17.4	13.4	15.7	1.62	1.90	1.30	1.11	1.20	1.20	10	12	11
B2/B66A 8843 RRH (Shielded)	17.4	3.0	15.7	0.37	1.90	5.72	1.11	1.34	1.20	3	12	5
DTMABP7819VG12A TMA	13.2	13.6	6.3	1.25	0.58	0.97	2.10	1.20	1.20	8	4	7
DTMABP7819VG12A TMA (Shielded)	13.2	2.5	6.3	0.23	0.58	5.29	2.10	1.32	1.20	2	4	2

WIND LOADS AT 30 MPH:

AM-X-CD-16-65-00T-RET Antenna	72.0	11.8	5.9	5.90	2.95	6.10	12.20	1.36	1.57	24	14	22
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	39	17	33
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	33
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
B14 4478 RRH (Shielded)	18.1	0.0	13.4	0.00	1.68	#DIV/0!	1.35	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B5/B12 4449 RRH (Back to Back)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	4	6	5
B5/B12 4449 RRH (Shielded)	17.9	0.0	13.2	0.00	1.64	#DIV/0!	1.36	#DIV/0!	1.20	#DIV/0!	6	#DIV/0!
B2/B66A 8843 RRH (Back to Back)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	4
B2/B66A 8843 RRH (Shielded)	14.9	0.6	13.2	0.06	1.37	27.09	1.13	2.07	1.20	0	5	1
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	2
DTMABP7819VG12A TMA (Shielded)	10.7	0.0	3.8	0.00	0.28	#DIV/0!	2.82	#DIV/0!	1.21	#DIV/0!	1	#DIV/0!

Date: 5/19/2020
Project Name: TORRINGTON UNIVERSITY DRIVE
Project No.: CT2579
Designed By: CL **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.25 in.
Density of ice: 56 pcf

AM-X-CD-16-65-00T-RET Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	11.8	
Depth (in):	5.9	
Total weight of ice on object:		132 lbs
Weight of object:	49.0 lbs	
Combined weight of ice and object:		181 lbs

OPA65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	21.0	
Depth (in):	7.8	
Total weight of ice on object:		214 lbs
Weight of object:	64.0 lbs	
Combined weight of ice and object:		278 lbs

DMP65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		211 lbs
Weight of object:	96.0 lbs	
Combined weight of ice and object:		307 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	8.3	
Depth (in):	13.4	
Total weight of ice on object:		39 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		99 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	9.5	
Depth (in):	13.2	
Total weight of ice on object:		40 lbs
Weight of object:	71.0 lbs	
Combined weight of ice and object:		111 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	10.9	
Depth (in):	13.2	
Total weight of ice on object:		35 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		107 lbs

DTMABP7819VG12A TMA

Weight of ice based on total radial SF area:

Height (in):	10.7	
Width (in):	11.1	
Depth (in):	3.8	
Total weight of ice on object:		18 lbs
Weight of object:	20.0 lbs	
Combined weight of ice and object:		38 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:		33 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		66 lbs

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		6 plf

2" Pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		6 plf

5/8" Round Bar

Per foot weight of ice:

diameter (in):	0.625	
Per foot weight of ice on object:		3 plf

3/4" Round Bar

Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		3 plf

PL 11-1/4x5/8"

Weight of ice based on total radial SF area:

Height (in):	11.25	
Width (in):	0.625	
Per foot weight of ice on object:		19 plf

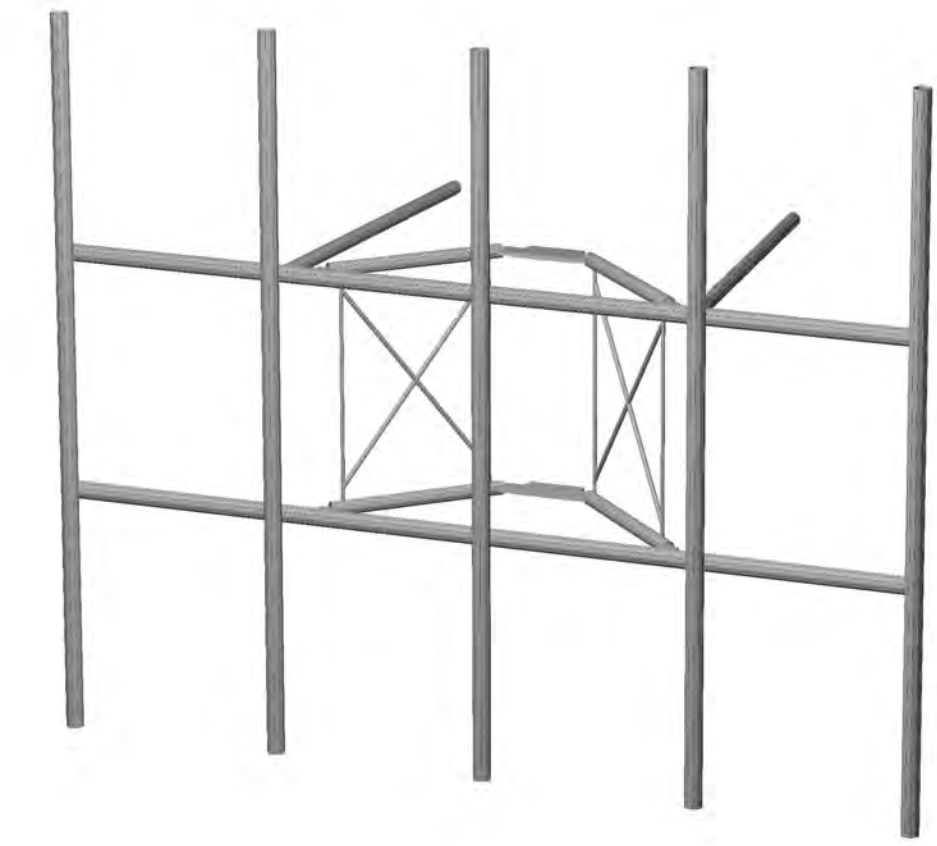
PL 3-1/2x5/8"

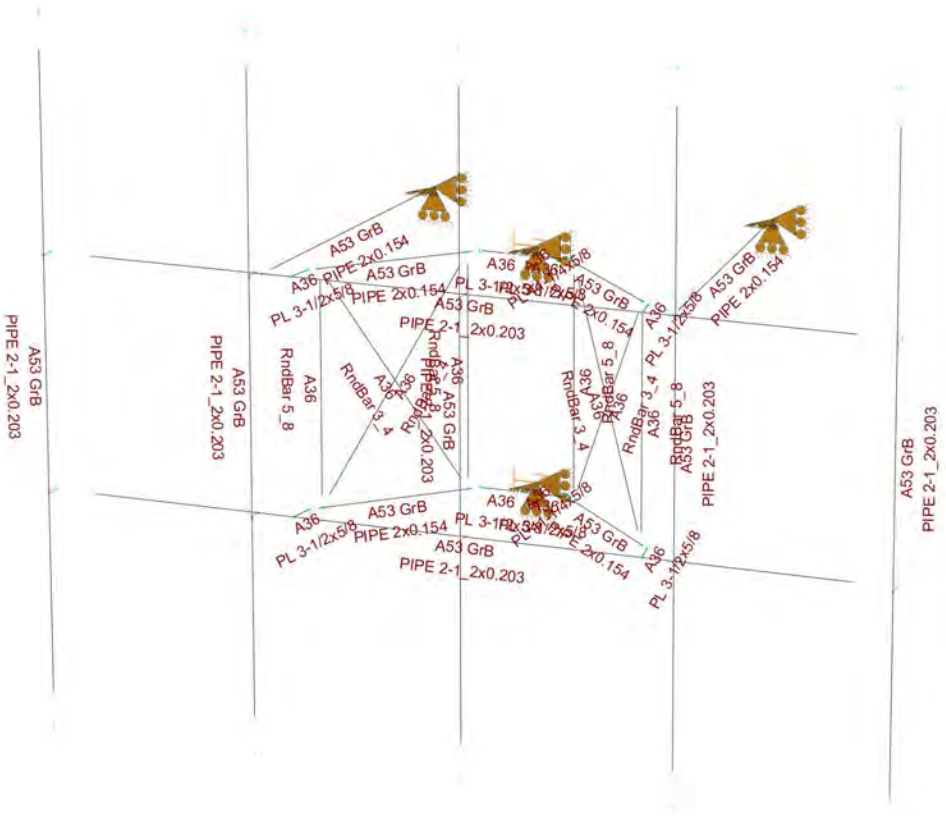
Weight of ice based on total radial SF area:

Height (in):	3.5	
Width (in):	0.625	
Per foot weight of ice on object:		7 plf

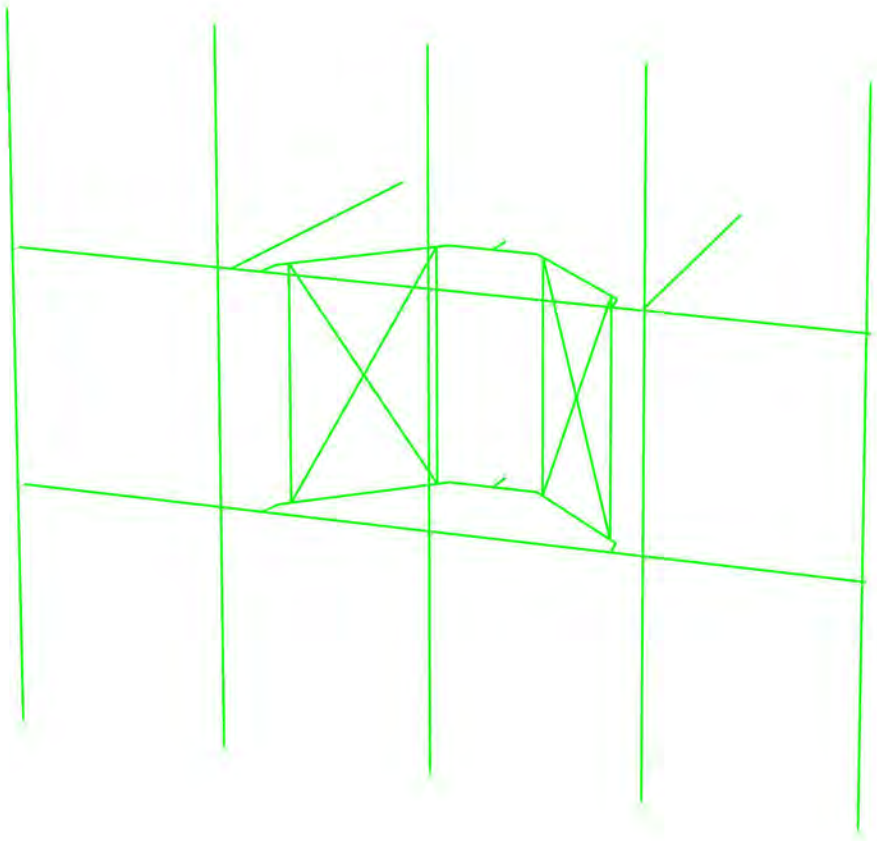
HUDSON
Design Group LLC

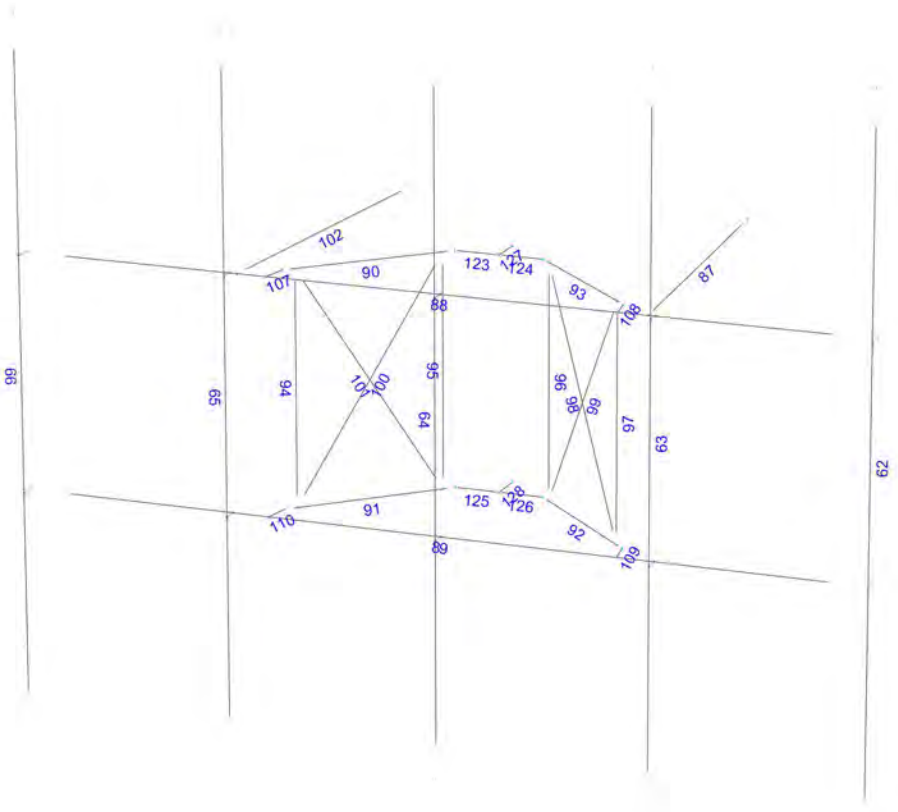
Mount Calculations
(New Conditions)


Y
Z
X


A53 GrB
PIPE 2x0.154
A36
PL 3-1/2x5/8
PIPE 2-1_2x0.203
RndBar 5_8
RndBar 3_4
PIPE 2-1_2x0.203
Y
Z
X

Not designed
Error on design
Design O.K.
With warnings




102
107
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Y
Z
X

Current Date: 5/19/2020 1:27 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2579\LTE 5G\CT2579 (New).retx\

Load data

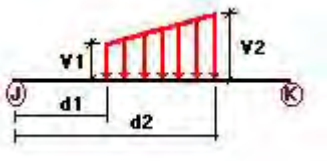
GLOSSARY

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	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 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	62	z	-0.008	-0.008	0.00	No	100.00	Yes
	63	z	-0.008	-0.008	0.00	No	100.00	Yes
	64	z	-0.008	-0.008	0.00	No	100.00	Yes
	65	z	-0.008	-0.008	0.00	No	100.00	Yes
	66	z	-0.008	-0.008	0.00	No	100.00	Yes
	87	z	-0.007	-0.007	0.00	No	100.00	Yes
	88	z	-0.008	-0.008	0.00	No	100.00	Yes
	89	z	-0.008	-0.008	0.00	No	100.00	Yes
	90	z	-0.007	-0.007	0.00	No	100.00	Yes
	91	z	-0.007	-0.007	0.00	No	100.00	Yes
	92	z	-0.007	-0.007	0.00	No	100.00	Yes
	93	z	-0.007	-0.007	0.00	No	100.00	Yes
	94	z	-0.002	-0.002	0.00	No	100.00	Yes
	95	z	-0.002	-0.002	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.002	-0.002	0.00	No	100.00	Yes
	101	z	-0.002	-0.002	0.00	No	100.00	Yes
	102	z	-0.007	-0.007	0.00	No	100.00	Yes
	107	z	-0.002	-0.002	0.00	No	100.00	Yes
	108	z	-0.002	-0.002	0.00	No	100.00	Yes
	109	z	-0.002	-0.002	0.00	No	100.00	Yes
	110	z	-0.002	-0.002	0.00	No	100.00	Yes
	123	z	-0.002	-0.002	0.00	No	100.00	Yes
	124	z	-0.002	-0.002	0.00	No	100.00	Yes
	125	z	-0.002	-0.002	0.00	No	100.00	Yes
	126	z	-0.002	-0.002	0.00	No	100.00	Yes
	127	z	-0.002	-0.002	0.00	No	100.00	Yes
	128	z	-0.002	-0.002	0.00	No	100.00	Yes
W30	62	z	-0.008	-0.008	0.00	No	100.00	Yes
	63	z	-0.008	-0.008	0.00	No	100.00	Yes
	64	z	-0.008	-0.008	0.00	No	100.00	Yes
	65	z	-0.008	-0.008	0.00	No	100.00	Yes
	66	z	-0.008	-0.008	0.00	No	100.00	Yes
	87	z	-0.007	-0.007	0.00	No	100.00	Yes
	88	z	-0.008	-0.008	0.00	No	100.00	Yes
	89	z	-0.008	-0.008	0.00	No	100.00	Yes
	90	z	-0.007	-0.007	0.00	No	100.00	Yes
	91	z	-0.007	-0.007	0.00	No	100.00	Yes
	92	z	-0.007	-0.007	0.00	No	100.00	Yes
	93	z	-0.007	-0.007	0.00	No	100.00	Yes
	94	z	-0.002	-0.002	0.00	No	100.00	Yes
	95	z	-0.002	-0.002	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.002	-0.002	0.00	No	100.00	Yes
	101	z	-0.002	-0.002	0.00	No	100.00	Yes
	102	z	-0.007	-0.007	0.00	No	100.00	Yes
	107	z	-0.002	-0.002	0.00	No	100.00	Yes
	108	z	-0.002	-0.002	0.00	No	100.00	Yes
	109	z	-0.002	-0.002	0.00	No	100.00	Yes
	110	z	-0.002	-0.002	0.00	No	100.00	Yes
	123	z	-0.002	-0.002	0.00	No	100.00	Yes
	124	z	-0.002	-0.002	0.00	No	100.00	Yes
	125	z	-0.002	-0.002	0.00	No	100.00	Yes
	126	z	-0.002	-0.002	0.00	No	100.00	Yes

	127	z	-0.002	-0.002	0.00	No	100.00	Yes
	128	z	-0.002	-0.002	0.00	No	100.00	Yes
W60	62	x	-0.008	-0.008	0.00	No	100.00	Yes
	63	x	-0.008	-0.008	0.00	No	100.00	Yes
	64	x	-0.008	-0.008	0.00	No	100.00	Yes
	65	x	-0.008	-0.008	0.00	No	100.00	Yes
	66	x	-0.008	-0.008	0.00	No	100.00	Yes
	87	x	-0.007	-0.007	0.00	No	100.00	Yes
	88	x	-0.008	-0.008	0.00	No	100.00	Yes
	89	x	-0.008	-0.008	0.00	No	100.00	Yes
	90	x	-0.007	-0.007	0.00	No	100.00	Yes
	91	x	-0.007	-0.007	0.00	No	100.00	Yes
	92	x	-0.007	-0.007	0.00	No	100.00	Yes
	93	x	-0.007	-0.007	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	102	x	-0.007	-0.007	0.00	No	100.00	Yes
	107	x	-0.002	-0.002	0.00	No	100.00	Yes
	108	x	-0.002	-0.002	0.00	No	100.00	Yes
	109	x	-0.002	-0.002	0.00	No	100.00	Yes
	110	x	-0.002	-0.002	0.00	No	100.00	Yes
	123	x	-0.002	-0.002	0.00	No	100.00	Yes
	124	x	-0.002	-0.002	0.00	No	100.00	Yes
	125	x	-0.002	-0.002	0.00	No	100.00	Yes
	126	x	-0.002	-0.002	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
W90	62	x	-0.008	-0.008	0.00	No	100.00	Yes
	63	x	-0.008	-0.008	0.00	No	100.00	Yes
	64	x	-0.008	-0.008	0.00	No	100.00	Yes
	65	x	-0.008	-0.008	0.00	No	100.00	Yes
	66	x	-0.008	-0.008	0.00	No	100.00	Yes
	87	x	-0.007	-0.007	0.00	No	100.00	Yes
	88	x	-0.008	-0.008	0.00	No	100.00	Yes
	89	x	-0.008	-0.008	0.00	No	100.00	Yes
	90	x	-0.007	-0.007	0.00	No	100.00	Yes
	91	x	-0.007	-0.007	0.00	No	100.00	Yes
	92	x	-0.007	-0.007	0.00	No	100.00	Yes
	93	x	-0.007	-0.007	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	102	x	-0.007	-0.007	0.00	No	100.00	Yes
	107	x	-0.002	-0.002	0.00	No	100.00	Yes
	108	x	-0.002	-0.002	0.00	No	100.00	Yes
	109	x	-0.002	-0.002	0.00	No	100.00	Yes
	110	x	-0.002	-0.002	0.00	No	100.00	Yes
	123	x	-0.002	-0.002	0.00	No	100.00	Yes
	124	x	-0.002	-0.002	0.00	No	100.00	Yes

	125	x	-0.002	-0.002	0.00	No	100.00	Yes
	126	x	-0.002	-0.002	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
W120	62	x	-0.008	-0.008	0.00	No	100.00	Yes
	63	x	-0.008	-0.008	0.00	No	100.00	Yes
	64	x	-0.008	-0.008	0.00	No	100.00	Yes
	65	x	-0.008	-0.008	0.00	No	100.00	Yes
	66	x	-0.008	-0.008	0.00	No	100.00	Yes
	87	x	-0.007	-0.007	0.00	No	100.00	Yes
	88	x	-0.008	-0.008	0.00	No	100.00	Yes
	89	x	-0.008	-0.008	0.00	No	100.00	Yes
	90	x	-0.007	-0.007	0.00	No	100.00	Yes
	91	x	-0.007	-0.007	0.00	No	100.00	Yes
	92	x	-0.007	-0.007	0.00	No	100.00	Yes
	93	x	-0.007	-0.007	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	102	x	-0.007	-0.007	0.00	No	100.00	Yes
	107	x	-0.002	-0.002	0.00	No	100.00	Yes
	108	x	-0.002	-0.002	0.00	No	100.00	Yes
	109	x	-0.002	-0.002	0.00	No	100.00	Yes
	110	x	-0.002	-0.002	0.00	No	100.00	Yes
	123	x	-0.002	-0.002	0.00	No	100.00	Yes
	124	x	-0.002	-0.002	0.00	No	100.00	Yes
	125	x	-0.002	-0.002	0.00	No	100.00	Yes
	126	x	-0.002	-0.002	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
W150	62	z	0.008	0.008	0.00	No	100.00	Yes
	63	z	0.008	0.008	0.00	No	100.00	Yes
	64	z	0.008	0.008	0.00	No	100.00	Yes
	65	z	0.008	0.008	0.00	No	100.00	Yes
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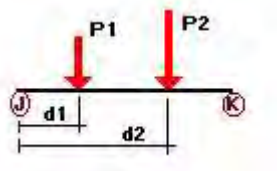
	88	z	0.008	0.008	0.00	No	100.00	Yes
	89	z	0.008	0.008	0.00	No	100.00	Yes
	90	z	0.007	0.007	0.00	No	100.00	Yes
	91	z	0.007	0.007	0.00	No	100.00	Yes
	92	z	0.007	0.007	0.00	No	100.00	Yes
	93	z	0.007	0.007	0.00	No	100.00	Yes
	94	z	0.002	0.002	0.00	No	100.00	Yes
	95	z	0.002	0.002	0.00	No	100.00	Yes
	96	z	0.002	0.002	0.00	No	100.00	Yes
	97	z	0.002	0.002	0.00	No	100.00	Yes
	98	z	0.002	0.002	0.00	No	100.00	Yes
	99	z	0.002	0.002	0.00	No	100.00	Yes
	100	z	0.002	0.002	0.00	No	100.00	Yes
	101	z	0.002	0.002	0.00	No	100.00	Yes
	102	z	0.007	0.007	0.00	No	100.00	Yes
	107	z	0.002	0.002	0.00	No	100.00	Yes
	108	z	0.002	0.002	0.00	No	100.00	Yes
	109	z	0.002	0.002	0.00	No	100.00	Yes
	110	z	0.002	0.002	0.00	No	100.00	Yes

	123	z	0.002	0.002	0.00	No	100.00	Yes
	124	z	0.002	0.002	0.00	No	100.00	Yes
	125	z	0.002	0.002	0.00	No	100.00	Yes
	126	z	0.002	0.002	0.00	No	100.00	Yes
	127	z	0.002	0.002	0.00	No	100.00	Yes
	128	z	0.002	0.002	0.00	No	100.00	Yes
Di	62	y	-0.006	-0.006	0.00	No	100.00	Yes
	63	y	-0.006	-0.006	0.00	No	100.00	Yes
	64	y	-0.006	-0.006	0.00	No	100.00	Yes
	65	y	-0.006	-0.006	0.00	No	100.00	Yes
	66	y	-0.006	-0.006	0.00	No	100.00	Yes
	87	y	-0.006	-0.006	0.00	No	100.00	Yes
	88	y	-0.006	-0.006	0.00	No	100.00	Yes
	89	y	-0.006	-0.006	0.00	No	100.00	Yes
	90	y	-0.006	-0.006	0.00	No	100.00	Yes
	91	y	-0.006	-0.006	0.00	No	100.00	Yes
	92	y	-0.006	-0.006	0.00	No	100.00	Yes
	93	y	-0.006	-0.006	0.00	No	100.00	Yes
	94	y	-0.003	-0.003	0.00	No	100.00	Yes
	95	y	-0.003	-0.003	0.00	No	100.00	Yes
	96	y	-0.003	-0.003	0.00	No	100.00	Yes
	97	y	-0.003	-0.003	0.00	No	100.00	Yes
	98	y	-0.003	-0.003	0.00	No	100.00	Yes
	99	y	-0.003	-0.003	0.00	No	100.00	Yes
	100	y	-0.003	-0.003	0.00	No	100.00	Yes
	101	y	-0.003	-0.003	0.00	No	100.00	Yes
	102	y	-0.006	-0.006	0.00	No	100.00	Yes
	107	y	-0.007	-0.007	0.00	No	100.00	Yes
	108	y	-0.007	-0.007	0.00	No	100.00	Yes
	109	y	-0.007	-0.007	0.00	No	100.00	Yes
	110	y	-0.007	-0.007	0.00	No	100.00	Yes
	123	y	-0.007	-0.007	0.00	No	100.00	Yes
	124	y	-0.007	-0.007	0.00	No	100.00	Yes
	125	y	-0.007	-0.007	0.00	No	100.00	Yes
	126	y	-0.007	-0.007	0.00	No	100.00	Yes
	127	y	-0.019	-0.019	0.00	No	100.00	Yes
	128	y	-0.019	-0.019	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	62	y	-0.025	2.50	No
		y	-0.025	7.50	No
		y	-0.02	5.00	No
	64	y	-0.032	2.50	No
		y	-0.032	7.50	No
		y	-0.06	5.00	No
	66	y	-0.048	2.50	No
		y	-0.048	7.50	No

		y	-0.072	5.00	No
		y	-0.071	5.00	No
Wo	62	z	-0.193	2.50	No
		z	-0.193	7.50	No
		z	-0.001	5.00	No
	64	z	-0.309	2.50	No
		z	-0.309	7.50	No
		z	-0.001	5.00	No
	66	z	-0.305	2.50	No
		z	-0.305	7.50	No
		z	-0.003	5.00	No
		z	-0.001	5.00	No
W30	62	3	-0.173	2.50	No
		3	-0.173	7.50	No
		3	-0.04	5.00	No
	64	3	-0.266	2.50	No
		3	-0.266	7.50	No
		3	-0.069	5.00	No
	66	3	-0.263	2.50	No
		3	-0.263	7.50	No
		3	-0.068	5.00	No
		3	-0.075	5.00	No
W60	62	3	-0.132	2.50	No
		3	-0.132	7.50	No
		3	-0.024	5.00	No
	64	3	-0.18	2.50	No
		3	-0.18	7.50	No
		3	-0.088	5.00	No
	66	3	-0.178	2.50	No
		3	-0.178	7.50	No
		3	-0.075	5.00	No
		3	-0.088	5.00	No
W90	62	x	-0.112	2.50	No
		x	-0.112	7.50	No
		x	-0.016	5.00	No
	64	x	-0.136	2.50	No
		x	-0.136	7.50	No
		x	-0.097	5.00	No
	66	x	-0.135	2.50	No
		x	-0.135	7.50	No
		x	-0.079	5.00	No
		x	-0.095	5.00	No
W120	62	2	-0.132	2.50	No
		2	-0.132	7.50	No
		2	-0.024	5.00	No
	64	2	-0.18	2.50	No
		2	-0.18	7.50	No
		2	-0.088	5.00	No
	66	2	-0.178	2.50	No
		2	-0.178	7.50	No
		2	-0.075	5.00	No
		2	-0.088	5.00	No
W150	62	2	-0.173	2.50	No
		2	-0.173	7.50	No
		2	-0.04	5.00	No
	64	2	-0.266	2.50	No
		2	-0.266	7.50	No
		2	-0.069	5.00	No
	66	2	-0.263	2.50	No
		2	-0.263	7.50	No

		2	-0.068	5.00	No
		2	-0.075	5.00	No
Di	62	y	-0.066	2.50	No
		y	-0.066	7.50	No
		y	-0.018	5.00	No
	64	y	-0.107	2.50	No
		y	-0.107	7.50	No
		y	-0.039	5.00	No
	66	y	-0.106	2.50	No
		y	-0.106	7.50	No
		y	-0.035	5.00	No
		y	-0.04	5.00	No
WI0	62	z	-0.027	2.50	No
		z	-0.027	7.50	No
		z	-0.001	5.00	No
	64	z	-0.04	2.50	No
		z	-0.04	7.50	No
		z	-0.002	5.00	No
	66	z	-0.04	2.50	No
		z	-0.04	7.50	No
		z	-0.002	5.00	No
		z	-0.002	5.00	No
WI30	62	3	-0.024	2.50	No
		3	-0.024	7.50	No
		3	-0.007	5.00	No
	64	3	-0.035	2.50	No
		3	-0.035	7.50	No
		3	-0.011	5.00	No
	66	3	-0.034	2.50	No
		3	-0.034	7.50	No
		3	-0.011	5.00	No
		3	-0.012	5.00	No
WI60	62	3	-0.019	2.50	No
		3	-0.019	7.50	No
		3	-0.005	5.00	No
	64	3	-0.025	2.50	No
		3	-0.025	7.50	No
		3	-0.013	5.00	No
	66	3	-0.025	2.50	No
		3	-0.025	7.50	No
		3	-0.012	5.00	No
		3	-0.013	5.00	No
WI90	62	x	-0.017	2.50	No
		x	-0.017	7.50	No
		x	-0.004	5.00	No
	64	x	-0.02	2.50	No
		x	-0.02	7.50	No
		x	-0.015	5.00	No
	66	x	-0.02	2.50	No
		x	-0.02	7.50	No
		x	-0.012	5.00	No
		x	-0.014	5.00	No
WI120	62	2	-0.019	2.50	No
		2	-0.019	7.50	No
		2	-0.005	5.00	No
	64	2	-0.025	2.50	No
		2	-0.025	7.50	No
		2	-0.013	5.00	No
	66	2	-0.025	2.50	No
		2	-0.025	7.50	No

		2	-0.012	5.00	No
		2	-0.013	5.00	No
WI150	62	2	-0.024	2.50	No
		2	-0.024	7.50	No
		2	-0.007	5.00	No
	64	2	-0.035	2.50	No
		2	-0.035	7.50	No
		2	-0.011	5.00	No
	66	2	-0.034	2.50	No
		2	-0.034	7.50	No
		2	-0.011	5.00	No
		2	-0.012	5.00	No
WL0	62	z	-0.012	2.50	No
		z	-0.012	7.50	No
		z	-0.001	5.00	No
	64	z	-0.02	2.50	No
		z	-0.02	7.50	No
		z	-0.001	5.00	No
	66	z	-0.019	2.50	No
		z	-0.019	7.50	No
		z	-0.001	5.00	No
		z	-0.001	5.00	No
WL30	62	3	-0.011	2.50	No
		3	-0.011	7.50	No
		3	-0.002	5.00	No
	64	3	-0.017	2.50	No
		3	-0.017	7.50	No
		3	-0.004	5.00	No
	66	3	-0.017	2.50	No
		3	-0.017	7.50	No
		3	-0.004	5.00	No
		3	-0.005	5.00	No
WL60	62	3	-0.008	2.50	No
		3	-0.008	7.50	No
		3	-0.002	5.00	No
	64	3	-0.011	2.50	No
		3	-0.011	7.50	No
		3	-0.005	5.00	No
	66	3	-0.011	2.50	No
		3	-0.011	7.50	No
		3	-0.005	5.00	No
		3	-0.005	5.00	No
WL90	62	x	-0.007	2.50	No
		x	-0.007	7.50	No
		x	-0.001	5.00	No
	64	x	-0.009	2.50	No
		x	-0.009	7.50	No
		x	-0.006	5.00	No
	66	x	-0.009	2.50	No
		x	-0.009	7.50	No
		x	-0.005	5.00	No
		x	-0.006	5.00	No
WL120	62	2	-0.008	2.50	No
		2	-0.008	7.50	No
		2	-0.002	5.00	No
	64	2	-0.011	2.50	No
		2	-0.011	7.50	No
		2	-0.005	5.00	No
	66	2	-0.011	2.50	No
		2	-0.011	7.50	No

		2	-0.005	5.00	No
		2	-0.005	5.00	No
WL150	62	2	-0.011	2.50	No
		2	-0.011	7.50	No
		2	-0.002	5.00	No
	64	2	-0.017	2.50	No
		2	-0.017	7.50	No
		2	-0.004	5.00	No
	66	2	-0.017	2.50	No
		2	-0.017	7.50	No
		2	-0.004	5.00	No
		2	-0.005	5.00	No
LL1	88	y	-0.25	50.00	Yes
LL2	88	y	-0.25	100.00	Yes
LL3	88	y	-0.25	0.00	Yes
LLa1	62	y	-0.25	5.00	No
LLa2	63	y	-0.25	5.00	No
LLa3	65	y	-0.25	5.00	No
LLa4	66	y	-0.25	5.00	No

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	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 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

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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
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2

LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**62**	LC48 at 33.33%	0.22	OK	Eq. H1-1b
		63	LC48 at 33.33%	0.19	OK	Eq. H1-1b
		64	LC9 at 33.33%	0.23	OK	Eq. H1-1b
		65	LC78 at 33.33%	0.23	OK	Eq. H1-1b
		66	LC78 at 33.33%	0.30	OK	Eq. H1-1b
		88	LC8 at 25.78%	**0.67**	**OK**	Eq. H1-1b
		89	LC12 at 29.17%	0.65	OK	Eq. H1-1b
	PIPE 2x0.154	**87**	LC24 at 100.00%	0.08	OK	Sec. E1
		90	LC31 at 93.75%	**0.34**	**OK**	Eq. H1-1b
		91	LC12 at 93.75%	0.30	OK	Eq. H1-1b
		92	LC2 at 93.75%	0.24	OK	Eq. H1-1b
		93	LC2 at 93.75%	0.25	OK	Eq. H1-1b
		102	LC14 at 100.00%	0.11	OK	Sec. E1
	PL 11-1/4x5/8	**127**	LC25 at 100.00%	**0.29**	**OK**	Eq. H1-1b
		128	LC31 at 100.00%	0.18	OK	Eq. H1-1b
	PL 3-1/2x5/8	**107**	LC32 at 100.00%	0.39	OK	Eq. H1-1b
		108	LC39 at 100.00%	0.26	OK	Eq. H1-1b
		109	LC42 at 100.00%	0.34	OK	Eq. H1-1b
		110	LC32 at 100.00%	0.50	OK	Eq. H1-1b
		123	LC36 at 100.00%	**0.70**	**OK**	Eq. H3-6
		124	LC41 at 0.00%	0.40	OK	Eq. H1-1b
		125	LC36 at 100.00%	0.61	OK	Eq. H1-1b
		126	LC42 at 0.00%	0.41	OK	Eq. H1-1b
	RndBar 3_4	**98**	LC39 at 0.00%	0.20	OK	Eq. H1-1b

	99	LC42 at 0.00%	0.21	OK	Eq. H1-1b
	100	LC84 at 100.00%	0.29	OK	Eq. H1-1b
	101	LC88 at 100.00%	**0.31**	**OK**	Eq. H1-1b
RndBar 5_8	**94**	LC36 at 87.50%	0.57	OK	Eq. H1-1a
	95	LC32 at 87.50%	**0.58**	**OK**	Eq. H1-1a
	96	LC42 at 87.50%	0.40	OK	Eq. H1-1a
	97	LC39 at 87.50%	0.40	OK	Eq. H1-1a

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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
142	0.00	0.00	0.00	0
143	-0.6362	0.00	0.4783	0
144	0.00	-3.3333	0.00	0
145	-0.6362	-3.3333	0.4783	0
146	0.6362	-3.3333	0.4783	0
147	0.6362	0.00	0.4783	0
152	6.00	-6.6667	2.83	0
153	6.00	3.3333	2.83	0
154	-6.00	-6.6667	2.83	0
155	-6.00	3.3333	2.83	0
157	2.50	0.00	-2.50	0
162	-2.4126	0.00	2.2374	0
163	-2.4126	-3.3333	2.2374	0
164	2.4126	-3.3333	2.2374	0
165	2.4126	0.00	2.2374	0
166	-2.2835	0.00	2.1096	0
167	-2.2835	-3.3333	2.1096	0
168	-0.7653	0.00	0.6062	0
169	-0.7653	-3.3333	0.6062	0
170	0.7653	0.00	0.6062	0
171	0.7653	-3.3333	0.6062	0
172	2.2835	0.00	2.1096	0

173	2.2835	-3.3333	2.1096	0
175	-2.50	0.00	-2.50	0
176	-3.00	-6.6667	2.83	0
177	-3.00	3.3333	2.83	0
180	3.00	-6.6667	2.83	0
181	3.00	3.3333	2.83	0
184	-2.4792	0.00	2.63	0
185	2.4792	0.00	2.63	0
186	2.4792	-3.3333	2.63	0
187	-2.4792	-3.3333	2.63	0
188	0.00	-6.6667	2.83	0
189	0.00	3.3333	2.83	0
208	0.00	0.00	0.4783	0
209	0.00	-3.3333	0.4783	0
159	6.00	0.00	2.63	0
161	6.00	-3.3333	2.63	0
158	-6.00	0.00	2.63	0
160	-6.00	-3.3333	2.63	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
142	1	1	1	1	0	1
144	1	1	1	1	0	1
157	1	1	1	0	0	0
175	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
62	153	152		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
63	181	180		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
64	189	188		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
65	177	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
66	155	154		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
87	156	157		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	158	159		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	160	161		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
90	162	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	163	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
92	164	146		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	165	147		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	166	167		RndBar 5_8	A36	0.00	0.00	0.00
95	168	169		RndBar 5_8	A36	0.00	0.00	0.00
96	170	171		RndBar 5_8	A36	0.00	0.00	0.00
97	172	173		RndBar 5_8	A36	0.00	0.00	0.00
98	170	173		RndBar 3_4	A36	0.00	0.00	0.00
99	171	172		RndBar 3_4	A36	0.00	0.00	0.00
100	167	168		RndBar 3_4	A36	0.00	0.00	0.00
101	166	169		RndBar 3_4	A36	0.00	0.00	0.00

102	174	175	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
107	162	184	PL 3-1/2x5/8	A36	0.00	0.00	0.00
108	165	185	PL 3-1/2x5/8	A36	0.00	0.00	0.00
109	164	186	PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	163	187	PL 3-1/2x5/8	A36	0.00	0.00	0.00
123	143	208	PL 3-1/2x5/8	A36	0.00	0.00	0.00
124	208	147	PL 3-1/2x5/8	A36	0.00	0.00	0.00
125	145	209	PL 3-1/2x5/8	A36	0.00	0.00	0.00
126	209	146	PL 3-1/2x5/8	A36	0.00	0.00	0.00
127	208	142	PL 11-1/4x5/8	A36	11.25	9.25	0.00
128	209	144	PL 11-1/4x5/8	A36	11.25	9.25	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
62	315.00	0	0.00	0.00	0.00
63	315.00	0	0.00	0.00	0.00
64	315.00	0	0.00	0.00	0.00
65	315.00	0	0.00	0.00	0.00
66	315.00	0	0.00	0.00	0.00
94	0.00	2	0.00	0.00	1.00
95	0.00	2	0.00	0.00	1.00
96	0.00	2	0.00	0.00	1.00
97	0.00	2	0.00	0.00	1.00
107	90.00	0	0.00	0.00	0.00
108	90.00	0	0.00	0.00	0.00
109	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
123	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00
126	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00
128	90.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
98	0.00	-3.50	0.00	0.00	3.50	0.00
99	0.00	3.50	0.00	0.00	-3.50	0.00
100	0.00	3.50	0.00	0.00	-3.50	0.00
101	0.00	-3.50	0.00	0.00	3.50	0.00
127	0.00	-0.625	0.00	0.00	-0.625	0.00
128	0.00	-0.625	0.00	0.00	-0.625	0.00

Hinges

	Node-J				Node-K						
Member	**M33**	**M22**	**V3**	**V2**	**M33**	**M22**	**V3**	**V2**	**TOR**	**AXL**	**Axial rigidity**
87	1	1	0	0	0	0	0	0	0	0	Full
99	0	0	0	0	0	0	0	0	0	0	Tension only
101	0	0	0	0	0	0	0	0	0	0	Tension only
102	1	1	0	0	0	0	0	0	0	0	Full
107	1	1	0	0	0	0	0	0	0	0	Full
108	1	1	0	0	0	0	0	0	0	0	Full
109	1	1	0	0	0	0	0	0	0	0	Full
110	1	1	0	0	0	0	0	0	0	0	Full

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2019.

Information on the Property Records for the Municipality of Torrington was last updated on 6/4/2020.

Parcel Information

Location:	855 UNIVERSITY DR	Property Use:	School	Primary Use:	College
Unique ID:	90013	Map Block Lot:	213/003/014	Acres:	91.00
490 Acres:	0.00	Zone:	R60	Volume / Page:	0224/0052
Developers Map / Lot:		Census:	3107-0N		

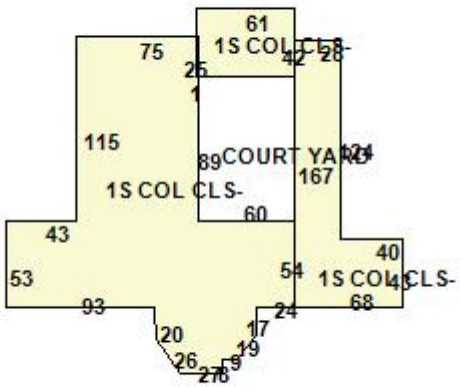
Value Information

	Appraised Value	Assessed Value
Land	1,020,500	714,350
Buildings	4,788,809	3,352,170
Detached Outbuildings	272,791	190,950
Total	6,082,100	4,257,470

Owner's Information

Owner's Data
CONNECTICUT STATE OF UNIV/CT TORR BRANCH TORRINGTON, CT 06790

Building 1



Category:	School	Use:	College Classroom	GLA:	29,446
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	1966

Heating:	Hot Water	Fuel:	Oil	Cooling Percent:	0
Siding:	B. V. Solid	Roof Material:	Asphalt	Beds/Units:	0

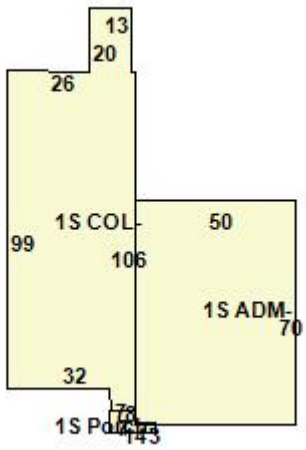
Special Features

Mezzanine Finished Area	1200

Attached Components

Type:	Year Built:	Area:
Canopy	1966	420
Glass/Wood Grnhouse	1966	126

Building 2



Category:	School	Use:	College Classroom	GLA:	7,776
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	2001
Heating:	Hot Water	Fuel:	Oil	Cooling Percent:	100
Siding:	B. V. Solid	Roof Material:	Other	Beds/Units:	0

Special Features

Attached Components

Type:	Year Built:	Area:

Type:	Year Built:	Area:
Enclosed Porch	2001	73

Detached Outbuildings

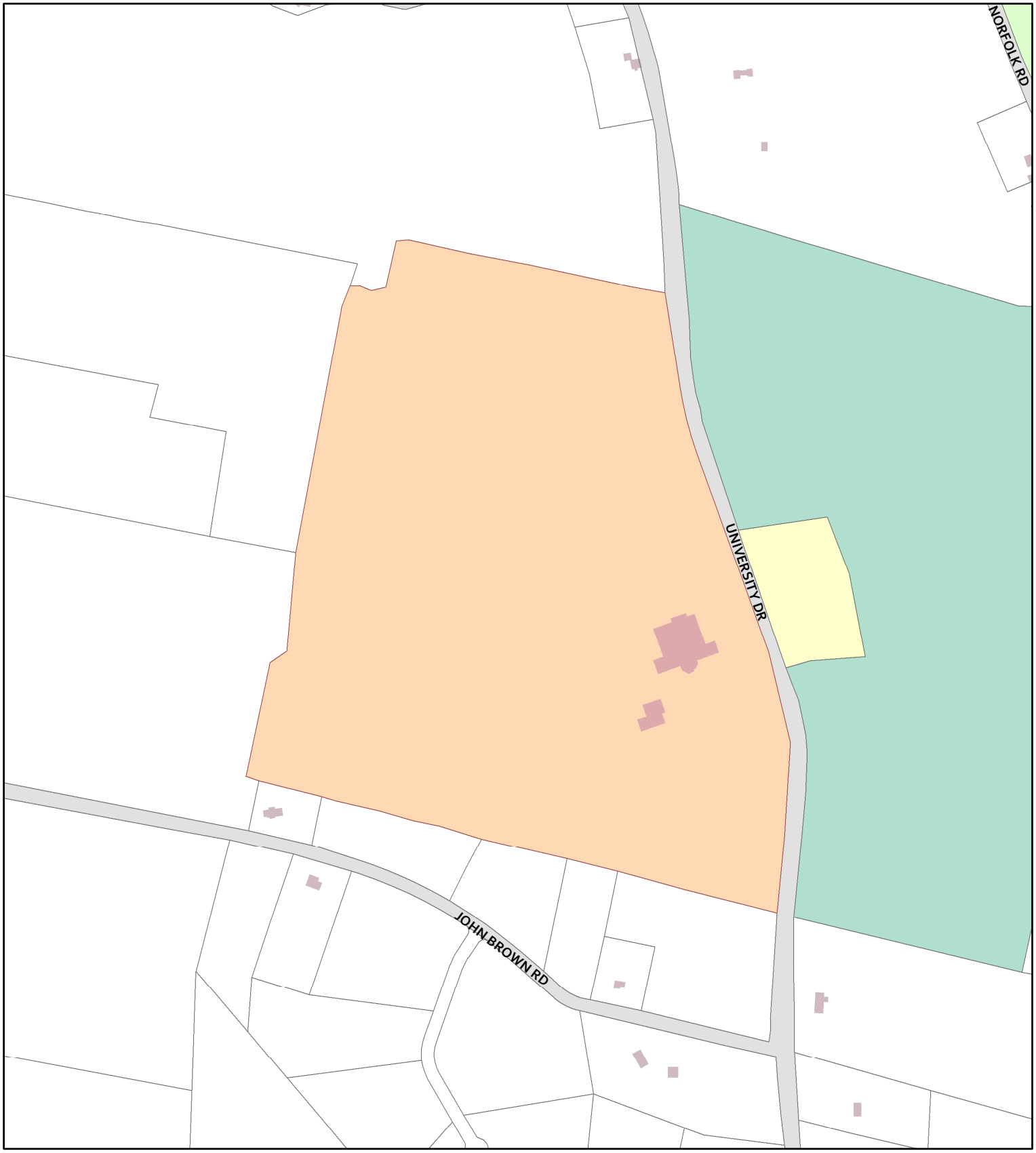
Type:	Year Built:	Length:	Width:	Area:
Concrete Block/Fr Garage	1972	23.00	51.00	1,173
Concrete Patio	1999	0.00	0.00	3,500
Paving	1999	0.00	0.00	81,600
Poles	1999	0.00	0.00	6
Metal Radio Tower	1990	0.00	0.00	160

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
CONNECTICUT STATE OF	0224	0052	11/03/1961	Quit Claim	No	$0

City of Torrington, Connecticut - Assessment Parcel Map

Map/Block/Lot 213-003-014 **Address:** 855 UNIVERSITY DR



Approximate Scale: 1 inch = 500 feet

Map Produced May 2017

Hollis Redding

From: Martin J Connor <Martin_Connor@torringtonct.org>
Sent: Tuesday, June 9, 2020 10:55 AM
To: Hollis Redding; Lona Kirk
Cc: Victor Muschell
Subject: RE: 855 University Drive (UCONN)

Hi Hollis, since it was State of CT property the City wasn't a party in that cell tower application. Of course CT Siting Council had jurisdiction anyway. Best, Marty

Martin J Connor, AICP, City Planner
City of Torrington
140 Main Street
Torrington, CT 06790
860-489-2220

From: Hollis Redding <HRedding@saigrp.com>
Sent: Tuesday, June 09, 2020 10:43 AM
To: Lona Kirk <Lona_Kirk@torringtonct.org>
Cc: Martin J Connor <Martin_Connor@torringtonct.org>
Subject: RE: 855 University Drive (UCONN)

Thank you so much, Lona. I appreciate your efforts and am happy City Hall has reopened. Since the tower is on UCONN property, it may have been by right. Good idea checking with the building dept. I'll give it a shot.

Thank you both for your help. Have a great day. Hollis

From: Lona Kirk <Lona_Kirk@torringtonct.org>
Sent: Tuesday, June 9, 2020 10:38 AM
To: Hollis Redding <HRedding@saigrp.com>
Cc: Martin J Connor <Martin_Connor@torringtonct.org>
Subject: RE: 855 University Drive (UCONN)

Good morning Hollis. The Torrington City Hall has just reopened to the public this week. Our Land Use Office is open 8:30 – 4:00 Monday – Wednesday; 8:30 – 6:30 on Thursday, and 8:30 – 12:30 on Friday. Please contact individual other departments for their hours. The Building Department (860-489-2244) may have records/files on 855 University Drive.

I have searched our Land Use Office records for permits/approvals on 855 University Drive. The only approval we have is a recent one in 2019 for a Site Plan/Special Exception for educational use for Five Points Gallery. I have searched our site plan file listings going back to 1989, 1990 and 1991 for any site plan approvals at this location and there are none.

I am copying City Planner Martin Connor, if he has any additional information we will get back to you. Please let us know if you have any further questions.

Thank you.

Lona Kirk, Secretary
Land Use Office
City of Torrington
140 Main Street
Torrington, CT 06790
860-489-2221

From: Hollis Redding <HRedding@saigrp.com>
Sent: Tuesday, June 09, 2020 10:01 AM
To: Lona Kirk <Lona_Kirk@torringtonct.org>
Subject: FW: 855 University Drive (UCONN)

Good morning, Lona

My name is Hollis Redding. I am working on filing an exempt modification with the CT Siting Council to allow AT&T to make some changes to its facility at 855 University Drive. As part of the filing, I need a copy of the original zoning approval for the tower. I understand the tower was approved by the City in 1990.

The company that manages the tower can't seem to track down a copy of the approval. With the town hall building closed, I was hoping the approval would be available in your database somewhere. Is it possible for you to check your records for the approval? I would greatly appreciate it. If not in your databases, can I make an appointment to review the files in town hall? Thank you.

I hope you and your family are healthy & safe. Hollis 860-834-6964

Hollis M. Redding

SAI Communications LLC
Mobile: 860-834-6964
hredding@saigrp.com

LETTER OF AUTHORIZATION

This Letter of Authorization provides written authorization for New Cingular Wireless PCS, LLC and its affiliates (“AT&T"), its agents or representatives, to apply for any necessary zoning applications or petitions, permits or any other approvals, including, but not limited to, the filing of applications for building permits, which are necessary for AT&T's placement and operation of a wireless telecommunications facility on and within a portion of the real property with an address of **855 University Dr; Torrington, CT 06790.**

OWNER:

BY:
(Signature)

NAME: Floyd Jenkins

DATED: March 29, 2020

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CITY OF TORRINGTON MAYOR'S OFFICE
140 MAIN ST
TORRINGTON CT 06790-5201

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39 WESTVIEW DR
MERIDEN CT 06450-4723

Expected Delivery Date: 06/17/20

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SHIP TO: FACILITIES DEPARTMENT
STATE OF CONNECTICUT UCONN TORRINGTON
855 UNIVERSITY DR
TORRINGTON CT 06790-2635

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MERIDEN CT 06450-4723

Expected Delivery Date: 06/17/20
Ref#: Torrington
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SHIP TO: MELANIE BACHMAN
CT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN CT 06051-2655

USPS TRACKING #

9405 5036 9930 0418 2297 71

Electronic Rate Approved #038555749

Cut on dotted line.

Hollis Redding

To: Floyd Jenkins
Subject: Vertical Bridge US-CT-5004 AT&T CT 257 855 University Drive, Torrington, CT

Hello Floyd-

Attached please find the exempt mod filing which will be filed with the CSC today, June 16, 2020. Thank you.

Have a great day. Hollis

Hollis M. Redding

SAI Communications LLC
Mobile: 860-834-6964
hredding@saigrp.com