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3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

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   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
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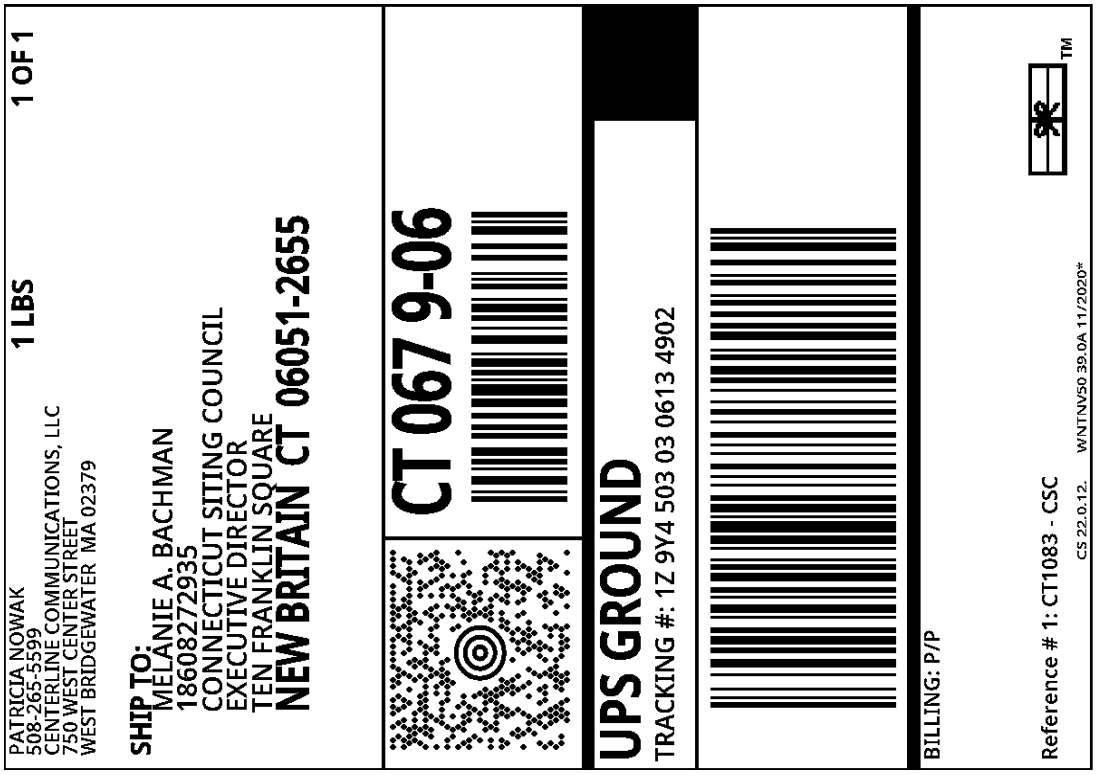
SOUTH EASTON ,MA 02375

UPS Access Point™
CVS STORE # 7232
689 DEPOT ST
NORTH EASTON ,MA 02356

UPS Access Point™
TOWN LINE GENERAL STORE
450 E CENTER ST
WEST BRIDGEWATER ,MA 02379

FOLD HERE



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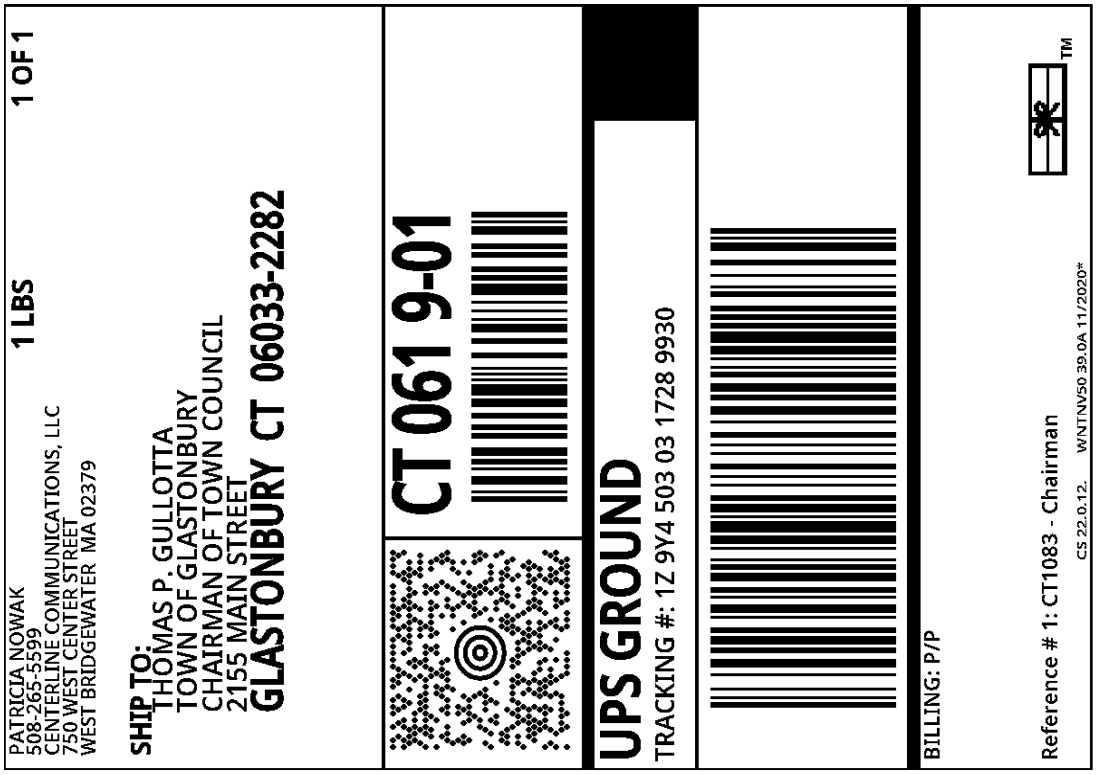

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January 12, 2021

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

Regarding: Notice of Exempt Modification – AT&T Site CT1083
Address: 2108 Main Street, Glastonbury, CT 06033

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (hereinafter "AT&T") currently maintains a wireless telecommunications facility on an existing 170' self-support tower (the "Tower") at the above-referenced address, latitude 41.706213, longitude -72.606916. Said Tower is owned by the Town of Glastonbury, CT.

AT&T desires to modify its existing telecommunications facility on the Tower by swapping (3) remote radio units and removing (3) antennas, as well as, other related modifications, as more particularly detailed and described in the enclosed Construction Drawings prepared by Hudson Design Group dated September 3, 2020 and last revised September 11, 2020. Please note this modification includes B2, B5, and B12 hardware that is both 4G (LTE) and 5GNR capable through remote software configuration and either or both services may be turned on or off at various times. Enclosed please also find a Mount Analysis Report prepared by Hudson Design Group LLC dated May 27, 2019 and last revised September 9, 2020. The centerline height of the antennas will be at 166 feet.

The Tower was originally approved by The Glastonbury Town Plan and Zoning Commission on January 3, 1989. Enclosed please find a copy of the above mentioned approval.

Please accept this letter as notification pursuant to 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 R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the following individuals: Richard J. Johnson, Town Manager of the Town of Glastonbury, CT; Thomas P. Gullotta, Chairman of Glastonbury, CT Town Council; Peter R. Carey, Building Official and Zoning Enforcement Officer of the Town of Glastonbury, CT. The Town of Glastonbury, CT is the Tower owner and the property owner. Enclosed please find a property card and GIS map of the property.

The planned modifications to 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. *Please see the enclosed Radio Frequency Emissions Analysis Report for enclosed herewith.*

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

6. The existing structure and its foundation can support the proposed loading. *Please see the Structural Analysis Report dated January 5, 2021 and prepared by Tectonic.*

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

Sincerely,

Patricia Nowak
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
pnowak@clinellc.com

Enclosures:
Exhibit 1 – Construction Drawings
Exhibit 2 - Mount Analysis
Exhibit 3 – Town Approval
Exhibit 4 – Property Card and GIS Map
Exhibit 5 – Radio Frequency Emissions Analysis Report
Exhibit 6 – Structural Analysis

cc: Richard J. Johnson, Town Manager, Town of Glastonbury, CT
Thomas P. Gullotta, Chairman of Glastonbury, CT Town Council
Peter R. Carey, Building Official and Zoning Enforcement Officer, Town of Glastonbury, CT.

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING SELF SUPPORT TOWER: • NEW AT&T RRUS: 4415 B25 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • ROTATE EXIST MOUNTS TO MATCH LTE AZIMUTHS (TOTAL OF 3). • PROPOSED MOUNT MODS (SEE S–1 SHEET). ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • NEW AT&T RRUS: RRUS E2 B29 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • ADD AT&T SURGE ARRESTORS: APTDC–BDFDM–DB (TYP. OF 2 PER SECTOR, TOTAL OF 6). • NEW BREAKER PANEL IN PROPOSED LTE RACK. ITEMS TO BE REMOVED: • EXISTING AT&T RRUS: RRUS–32 B2 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T ANTENNAS 800–10121 @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T TMA (TYP. OF 1 PER SECTOR, TOTAL OF 3). ITEMS TO REMAIN: • (9) ANTENNAS, (15) RRU'S, (12) TRIPLEXERS, (6) DIPLEXERS, (3) SURGE ARRESTORS, (12) 1–1/4" COAX, (6) DC POWER & (2) FIBER.
PTN:	2051A0V58H, 2051A0VNBR
SITE ADDRESS:	GLASTONBURY POLICE DEPARTMENT GLASTONBURY, CT 06033
LATITUDE:	41.706213° N, 41° 42' 22.37" N
LONGITUDE:	72.606916° W, 72° 36' 24.89" W
TYPE OF SITE:	SELF SUPPORT TOWER / INDOOR
STRUCTURE HEIGHT:	170'–0"±
RAD CENTER:	166'–0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	1
GN–1	GENERAL NOTES	1
A–1	COMPOUND & EQUIPMENT PLANS	1
A–2	ANTENNA LAYOUTS	1
A–3	ELEVATION	1
A–4	DETAILS	1
SN–1	STRUCTURAL NOTES	1
S–1	MOUNT MODIFICATION DESIGN	1
G–1	GROUNDING DETAILS	1
RF–1	RF PLUMBING DIAGRAM	1

SITE NUMBER: CT1083

SITE NAME: GLASTONBURY PD

FA CODE: 10035111

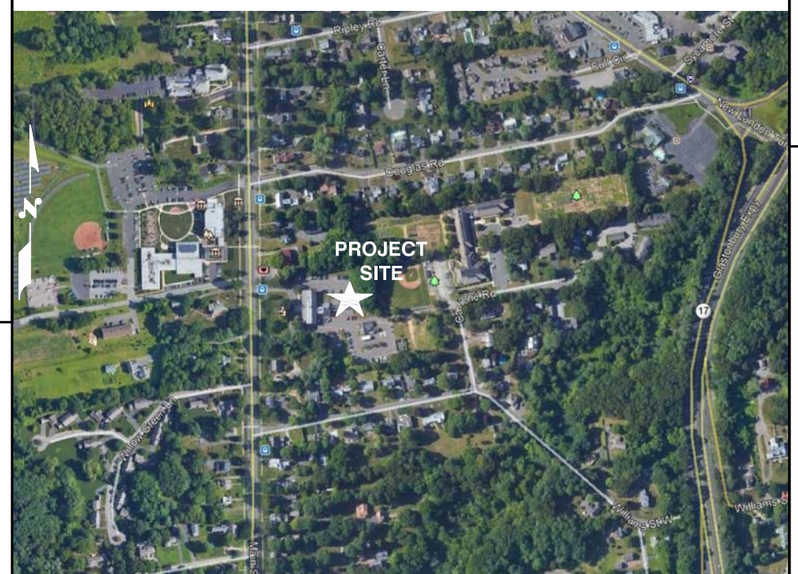
PACE ID: MRCTB046581, MRCTB047538

PROJECT: LTE 7C, BWE RRH SWAP 2021 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD (0.31 MI.), TURN LEFT ONTO CAPITAL BLVD (0.27 M), TURN LEFT ONTO WEST ST (0.16 MI.) MERGE ONTO CT–3 N VIA EXIT 25 TOWARD GLASTONBURY (1.80 MI.). TAKE THE EXIT TOWARD MAIN ST/GLASTONBURY (0.29 MI.), TURN LEFT ONTO GLASTONBURY BLVD (0.35 MI.). TURN RIGHT ONTO MAIN ST. (1.19 MI.). 2108 MAIN ST IS ON THE LEFT.



GENERAL NOTES

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

72 HOURS

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BEFORE YOU DIG
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OR CALL 811

UNDERGROUND SERVICE ALERT

STATE OF CONNECTICUT · DEPARTMENT OF ·
Daniel P. Hamm
No. 24178
LICENSED PROFESSIONAL ENGINEER

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

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

GLASTONBURY POLICE DEPARTMENT
GLASTONBURY, CT 06033
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/11/20	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	09/03/20	ISSUED FOR REVIEW	TR	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

AT&T

TITLE SHEET
LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	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 – CENTERLINE
   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

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

GLASTONBURY POLICE DEPARTMENT
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HARTFORD COUNTY

at&t
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	09/03/20	ISSUED FOR REVIEW	TR	AT	DPH

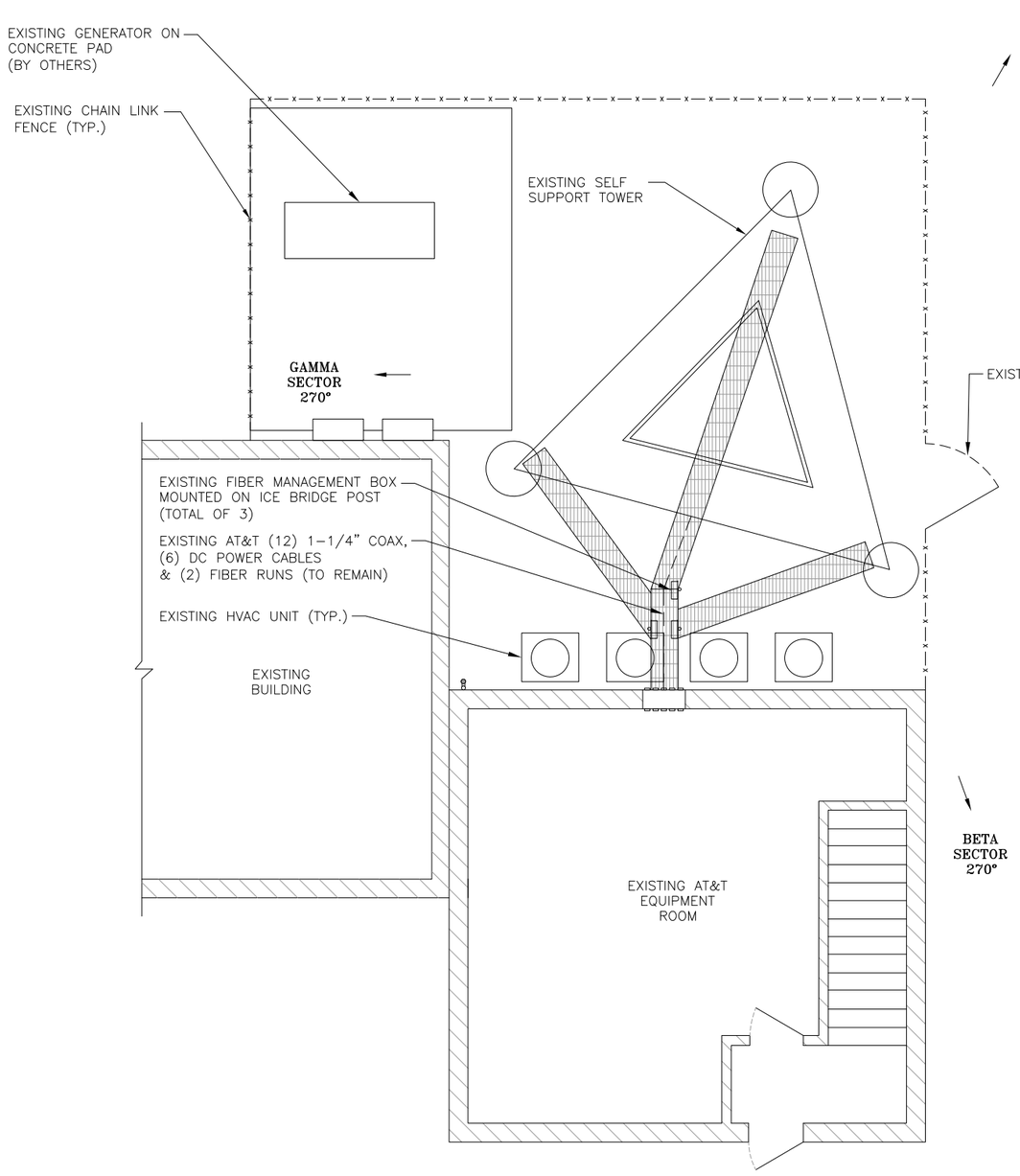
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

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

AT&T

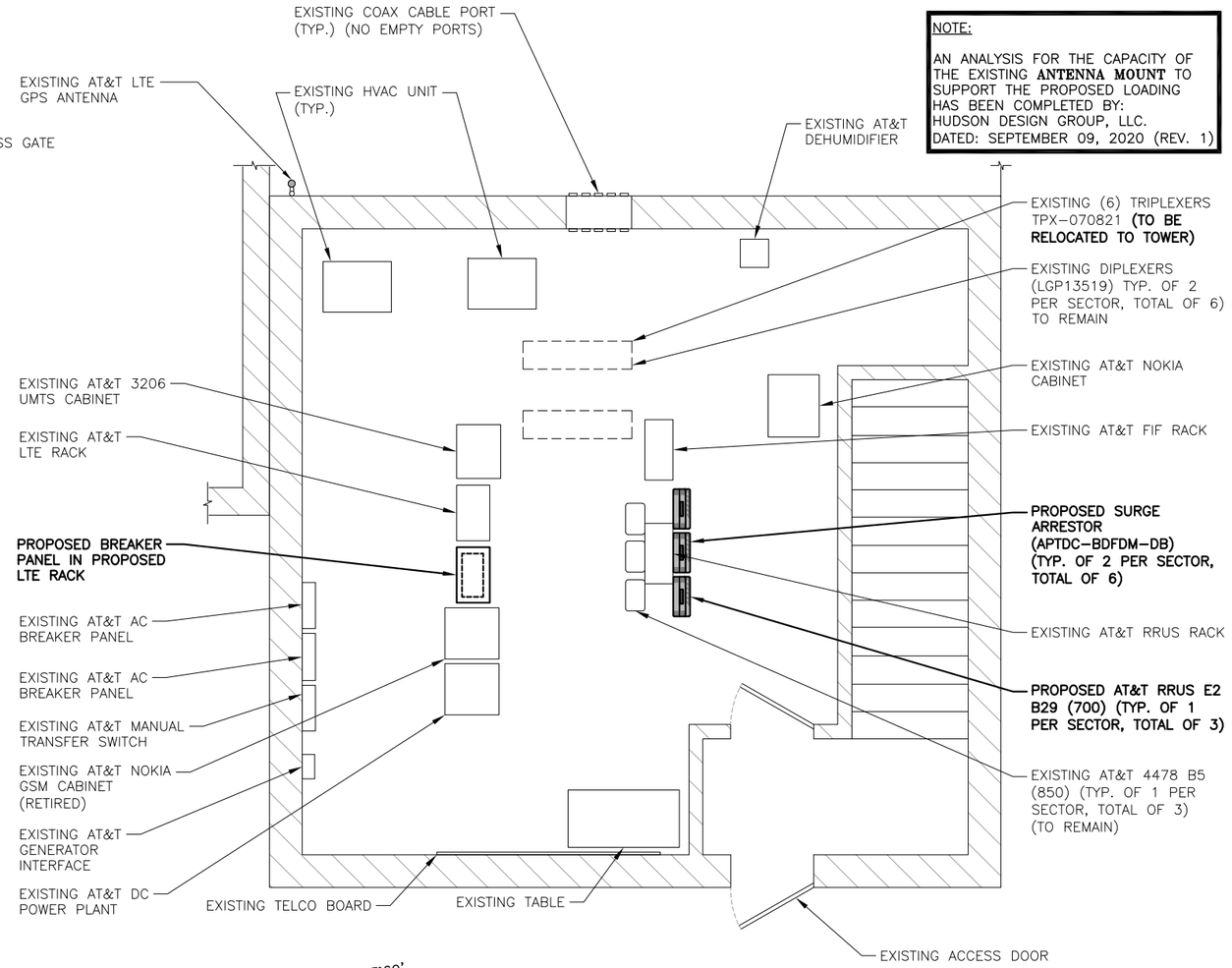
GENERAL NOTES
LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	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: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

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

NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TECTONIC, DATED: AUGUST 10, 2020, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: SEPTEMBER 09, 2020 (REV. 1)

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

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

GLASTONBURY POLICE DEPARTMENT
GLASTONBURY, CT 06033
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/11/20	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	09/03/20	ISSUED FOR REVIEW	TR	AT	DPH

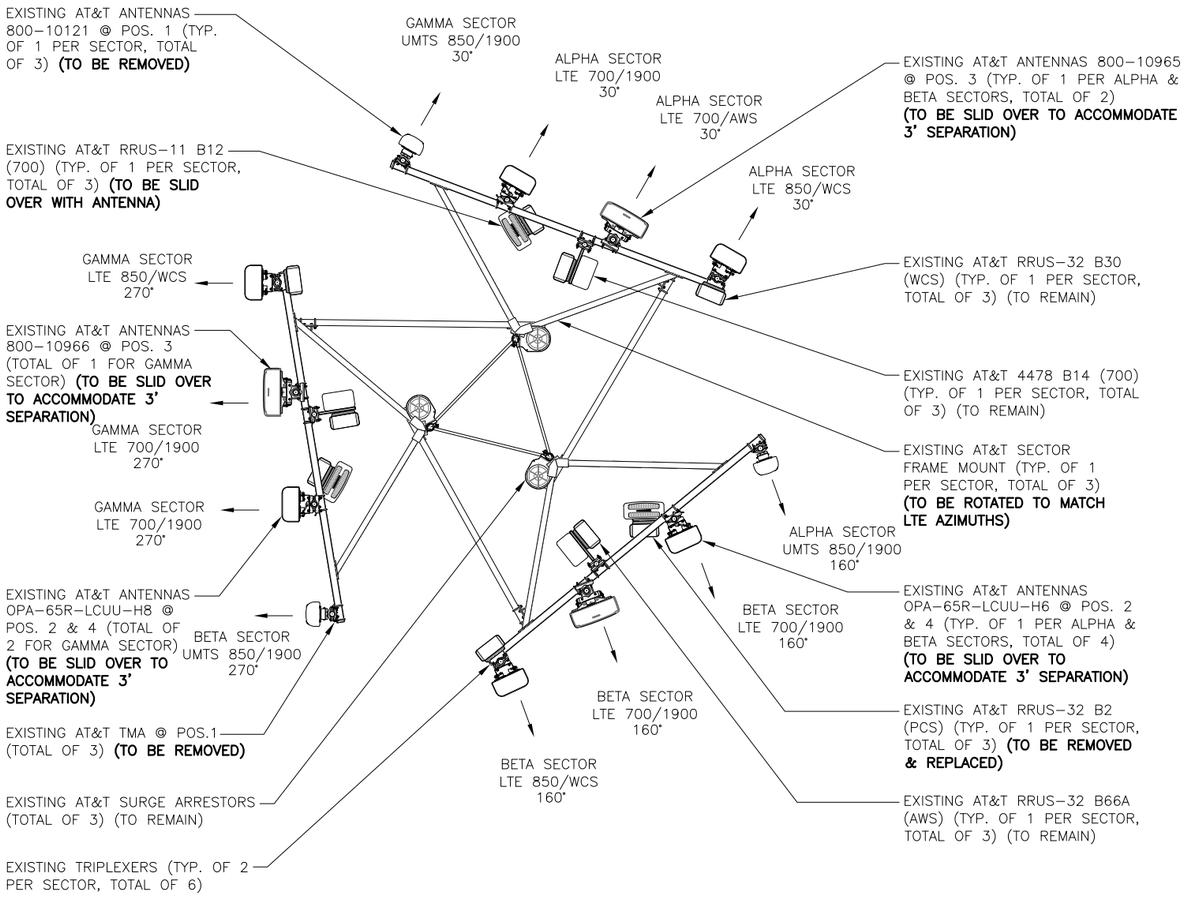
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

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

AT&T

COMPOUND & EQUIPMENT PLANS
LTE 7C, BWE RRH SWAP 2021 UPGRADE

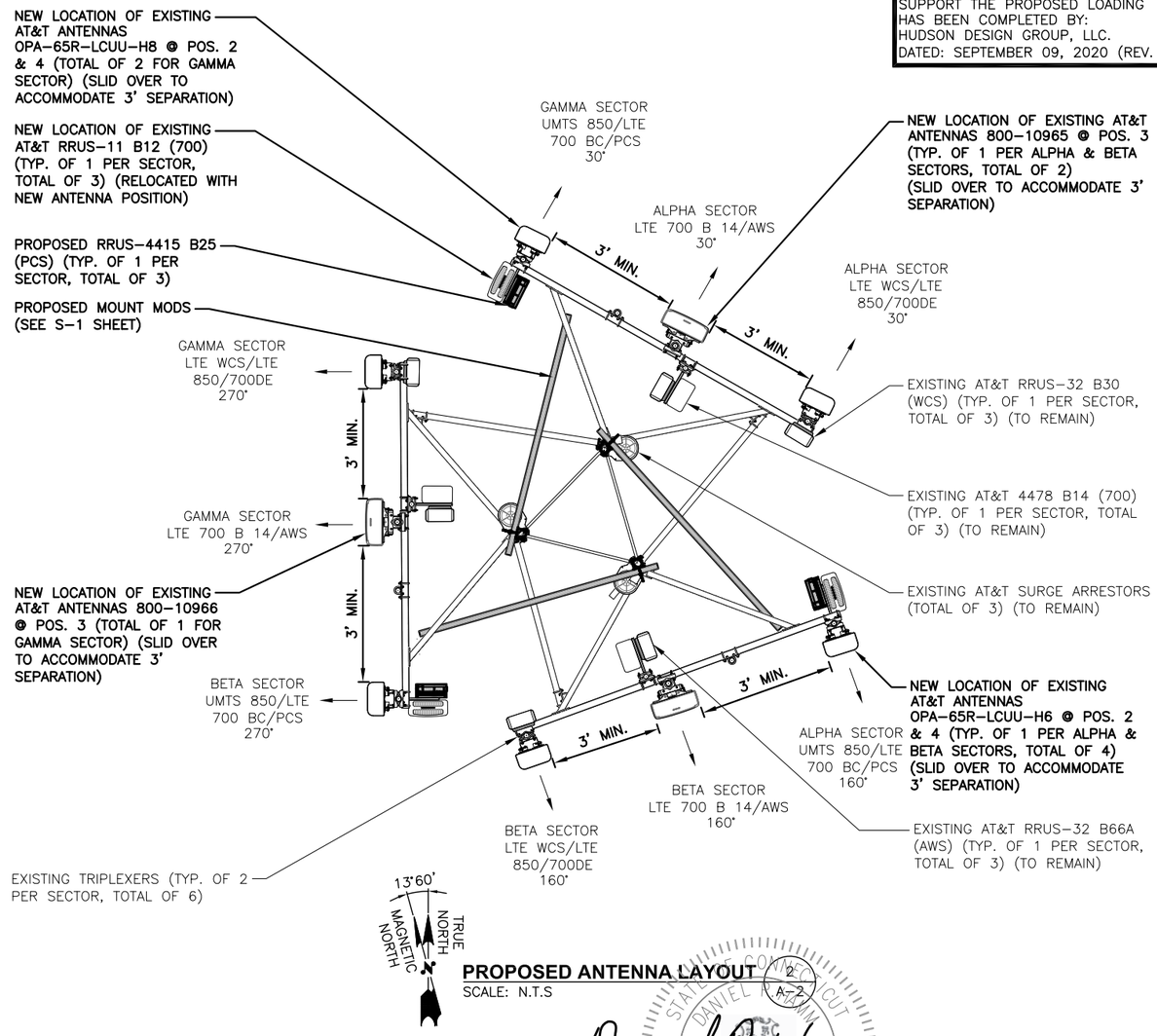
SITE NUMBER	DRAWING NUMBER	REV
CT1083	A-1	1



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

NOTE:
EXISTING MOUNT FRAME TO BE ROTATED TO MATCH LTE AZIMUTHS.

NOTE:
SECTOR DESIGNATION FOR THIS SITE IS DIFFERENT BETWEEN LTE & UMTS. AZIMUTHS MAYBE THE SAME.



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

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

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

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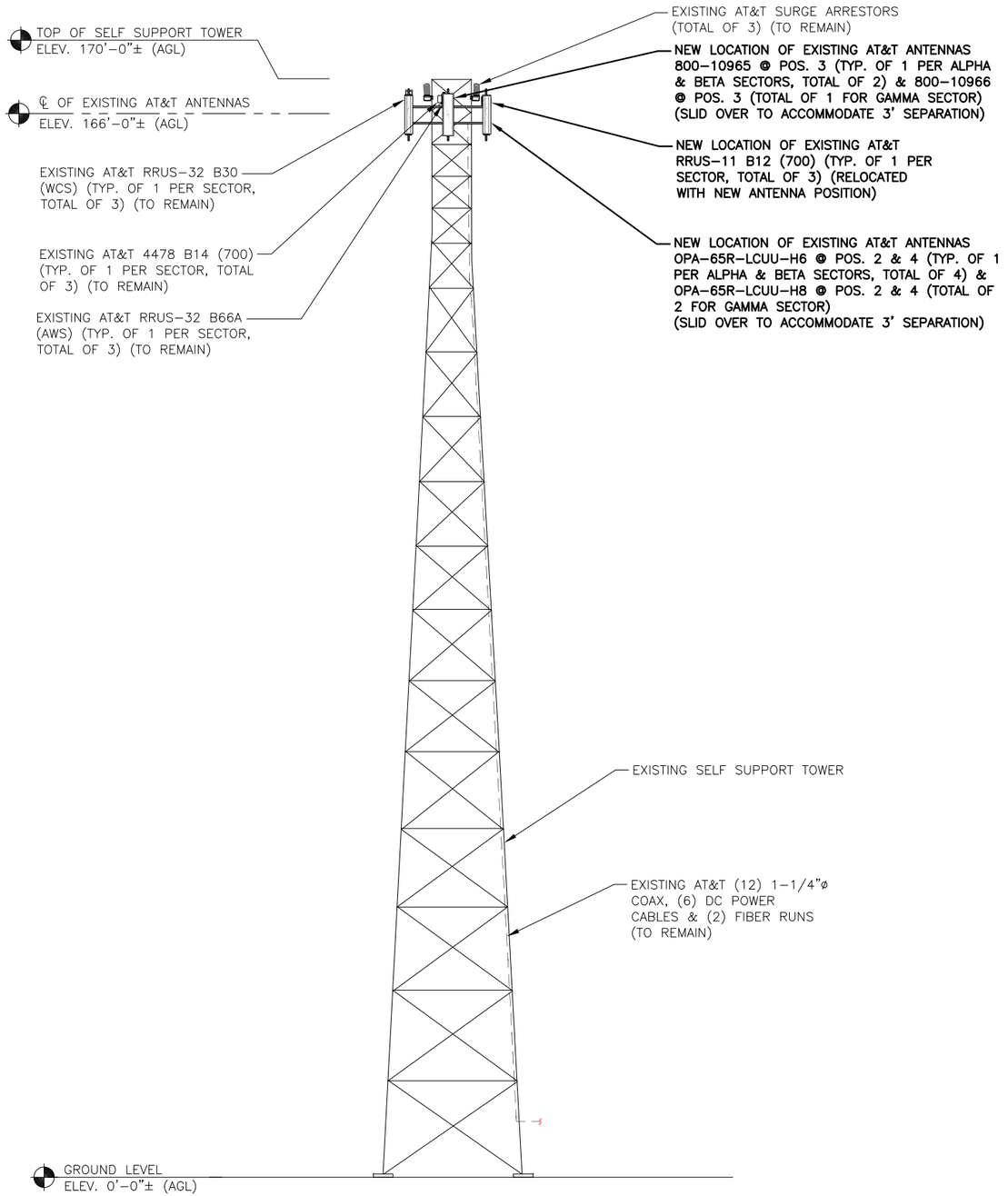
ANTENNA LAYOUTS
LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	A-2	1



ELEVATION 1 A-3
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TECTONIC, DATED: AUGUST 10, 2020, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

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

AT&T

ELEVATION
LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	A-3	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	–	–	–	–	–	–	–	–	–	(2)(E) 1–1/4" COAX	(E)(1) RAYCAP DC6–48–60–18–8F
C2	EXISTING	UMTS 850/LTE 700 BC/PCS	OPA–65R–LCUU–H6	72X14.8X7.4	166'–0"±	30°	(2)(E)(G) LGP 13519	(1)(E) RRUS–11 B12 (700) **(1)(P) 4415 B25 (PCS)**	– **16.5x13.4x5.9**	(2)(E) DC (1)(E) FIBER	
A3	EXISTING	LTE 700 B 14/AWS	800–10965	78.7X20X6.9	166'–0"±	30°	–	(1)(E) 4478 B14 (700) (1)(E) RRUS–32 B66A (AWS)	– –	–	
A4	EXISTING	LTE WCS/LTE 850/700DE	OPA–65R–LCUU–H6	72X14.8X7.4	166'–0"±	30°	(2)(E) TPX–070821 (2)(E)(G) TPX–070821 **(2)(P)(G) APTDC–BDFDM–DM**	**(1)(P)(G) RRUS–E2 B29** (1)(E)(G) 4478 B5 (850) (1)(E) RRUS–32 B30 (WCS)	**20.4x18.5x7.5** – –	(2)(E) 1–1/4" COAX	
B1	–	–	–	–	–	–	–	–	–	(2)(E) 1–1/4" COAX	(E)(1) RAYCAP DC6–48–60–18–8F
A2	EXISTING	UMTS 850/LTE 700 BC/PCS	OPA–65R–LCUU–H6	72X14.8X7.4	166'–0"±	160°	(2)(E)(G) LGP 13519	(1)(E) RRUS–11 B12 (700) **(1)(P) 4415 B25 (PCS)**	– **16.5x13.4x5.9**	(2)(E) DC (1)(E) FIBER	
B3	EXISTING	LTE 700 B 14/AWS	800–10965	78.7X20X6.9	166'–0"±	160°	–	(1)(E) 4478 B14 (700) (1)(E) RRUS–32 B66A (AWS)	– –	–	
B4	EXISTING	LTE WCS/LTE 850/700DE	OPA–65R–LCUU–H6	72X14.8X7.4	166'–0"±	160°	(2)(E) TPX–070821 (2)(E)(G) TPX–070821 **(2)(P)(G) APTDC–BDFDM–DM**	**(1)(P)(G) RRUS–E2 B29** (1)(E)(G) 4478 B5 (850) (1)(E) RRUS–32 B30 (WCS)	**20.4x18.5x7.5** – –	(2)(E) 1–1/4" COAX	
C1	–	–	–	–	–	–	–	–	–	(2)(E) 1–1/4" COAX	(E)(1) RAYCAP DC6–48–60–0–8F
B2	EXISTING	UMTS 850/LTE 700 BC/PCS	OPA–65R–LCUU–H8	92.7X14.4X7	166'–0"±	270°	(2)(E)(G) LGP 13519	(1)(E) RRUS–11 B12 (700) **(1)(P) 4415 B25 (PCS)**	– **16.5x13.4x5.9**	(2)(E) DC	
C3	EXISTING	LTE 700 B 14/AWS	800–10966	96X20X6.9	166'–0"±	270°	–	(1)(E) 4478 B14 (700) (1)(E) RRUS–32 B66A (AWS)	– –	–	
C4	EXISTING	LTE WCS/LTE 850/700DE	OPA–65R–LCUU–H8	92.7X14.4X7	166'–0"±	270°	(2)(E) TPX–070821 (2)(E)(G) TPX–070821 **(2)(P)(G) APTDC–BDFDM–DM**	**(1)(P)(G) RRUS–E2 B29** (1)(E)(G) 4478 B5 (850) (1)(E) RRUS–32 B30 (WCS)	**20.4x18.5x7.5** – –	(2)(E) 1–1/4" COAX	

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

NOTE:
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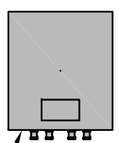
NOTE:
UMTS & LTE SECTOR DESIGNATION ARE NOT THE SAME.

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(E)	RRUS–11 (700)	19.7"x17.0"x7.2"
3(P)	**4415 B25 (PCS)**	**16.5"x13.4"x5.9"**
3(E)	4478 B14 (700)	18.1"x13.4"x8.3"
3(E)	RRUS–32 B66A (AWS)	27.2"x12.1"x7.0"
3(P)(G)	**RRUS–E2 B29 (700)**	**20.4"x18.5"x7.5"**
3(E)(G)	4478 B5 (850)	18.1"x13.4"x8.3"
3(E)	RRUS–32 (WCS)	27.2"x12.1"x7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

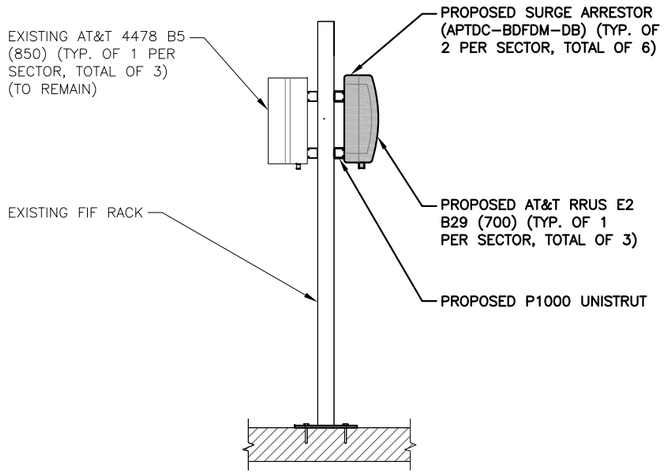


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

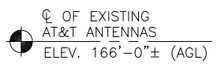
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

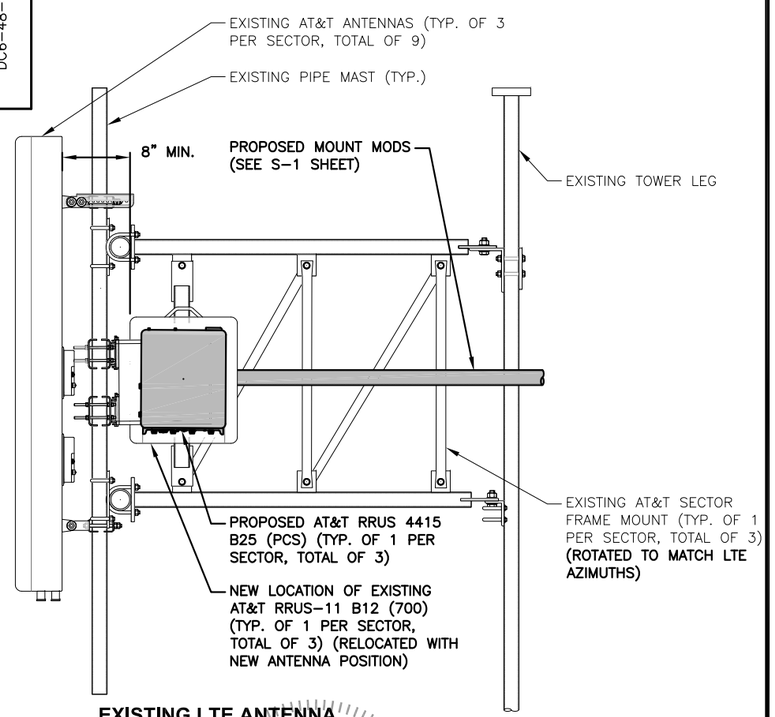
PROPOSED RRUS DETAIL (2 / A–4)
SCALE: N.T.S

FINAL ANTENNA SCHEDULE (1 / A–4)
SCALE: N.T.S



RRUS MOUNTING DETAIL (3 / A–4)
22x34 SCALE: 3/4"=1'–0"
11x17 SCALE: 3/8"=1'–0"
0 8" 1'–4" 2'–8" 4'–0"





EXISTING LTE ANTENNA & RRUS MOUNTING DETAIL (4 / A–4)
22x34 SCALE: 1"=1'–0"
11x17 SCALE: 1/2"=1'–0"
0 0'–6" 1'–0" 2'–0" 3'–0"

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

DANIEL P. HAMM No.24178 LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS

LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	A–4	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.

NOTES:

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

NOTES:

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

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
REQUIRED	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
REQUIRED	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:	

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

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

GLASTONBURY POLICE DEPARTMENT
GLASTONBURY, CT 06033
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/11/20	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	09/03/20	ISSUED FOR REVIEW	TR	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

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

AT&T

STRUCTURAL NOTES
LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	SN-1	1

NOTE:

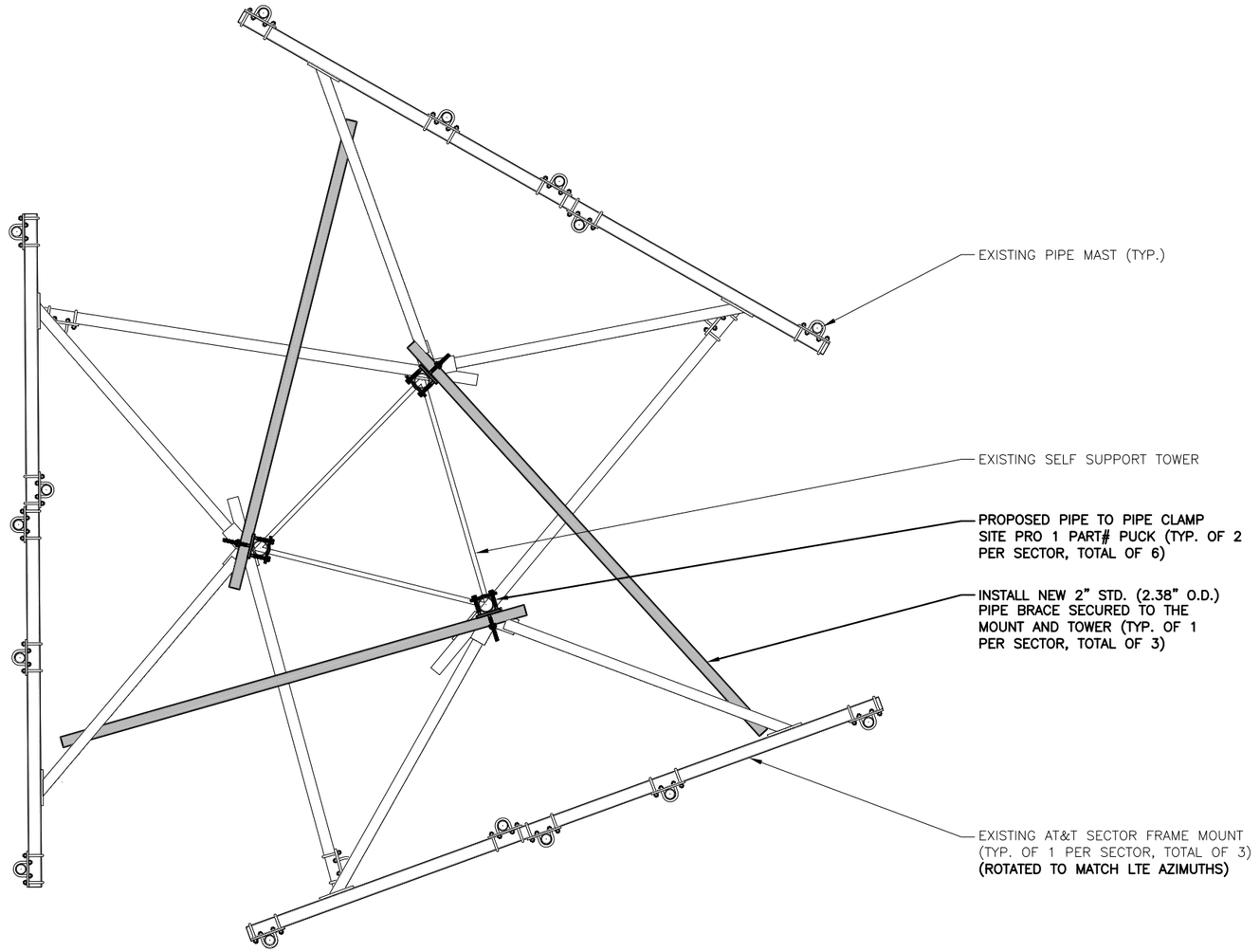
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: TECTONIC, DATED: AUGUST 10, 2020, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

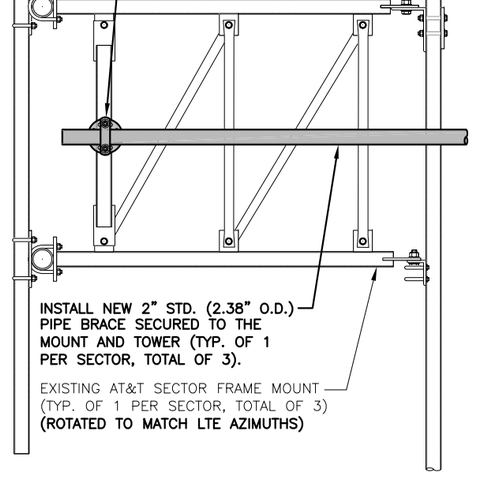
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: SEPTEMBER 09, 2020 (REV. 1)



PROPOSED MOUNT MODIFICATIONS PLAN (1 / S-1)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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



PROPOSED MOUNT MODIFICATIONS DETAIL (2 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

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

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

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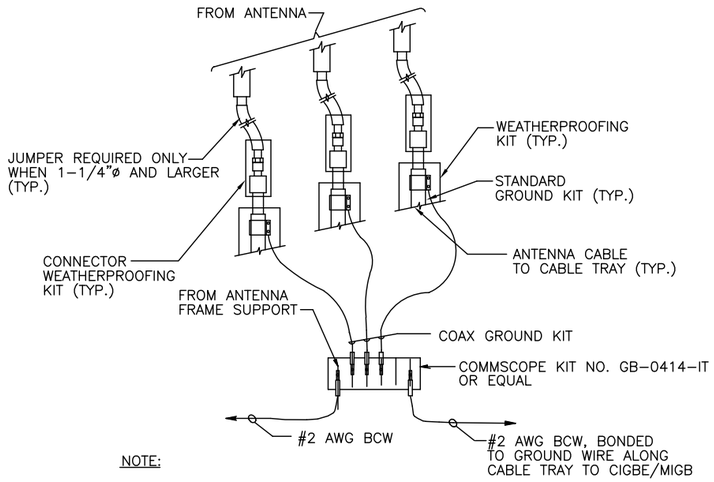
MOUNT MODIFICATION DESIGN
LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	S-1	1

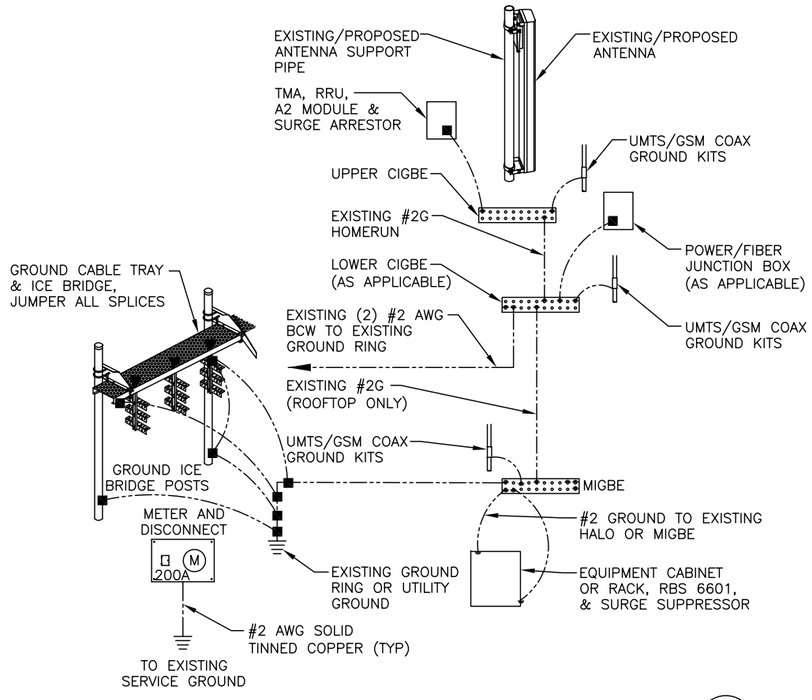


NOTE:

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

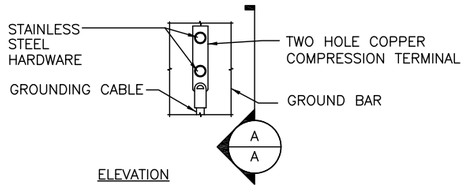
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

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

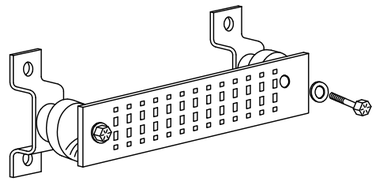
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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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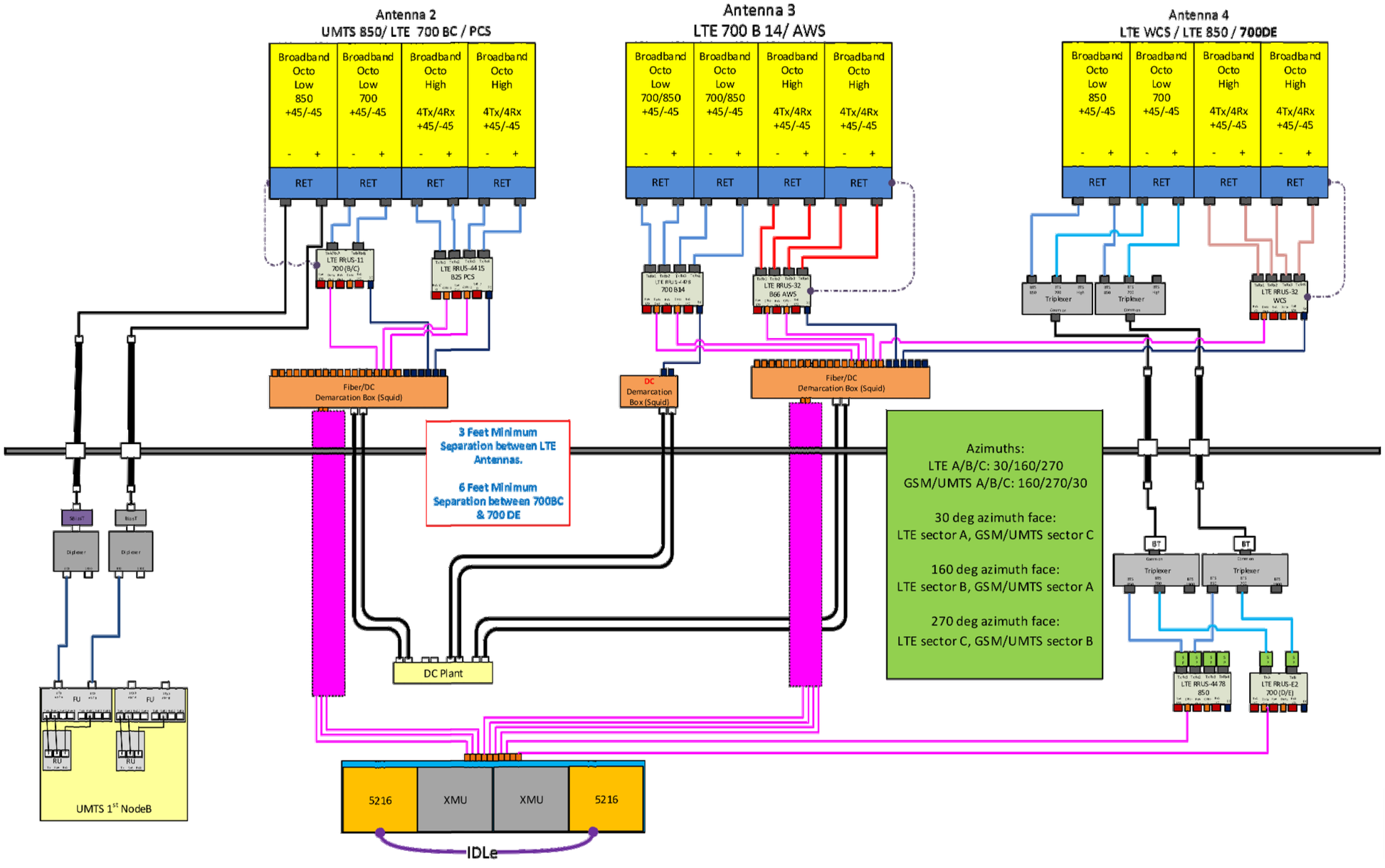
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

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

AT&T

GROUNDING DETAILS
LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	G-1	1



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

NOTE:

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

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

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

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RF PLUMBING DIAGRAM
LTE 7C, BWE RRH SWAP 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1083	RF–1	1

EXHIBIT 2

May 27, 2019
September 9, 2020 (Rev.1)

Centerline Communications
750 West Center Street, Suite #301
West Bridgewater, MA 02379

RE:		
	Site Number:	CT1083 (LTE 7C)
	FA Number:	10035111
	PACE Number:	MRCTB046581
	PT Number:	2051A0V58H
	Site Name:	GLASTONBURY PD
	Site Address:	Glastonbury Police Department Glastonbury, CT 06033

To Whom It May Concern:

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

- (2) OPA-65R-LCUU-H8 Antennas (92.7"x14.4"x7.0" – Wt. = 88 lbs. /each)
- (4) OPA-65R-LCUU-H6 Antennas (72.0"x14.8"x7.4" – Wt. = 73 lbs. /each)
- (1) 800-10966 Antennas (96.0"x20.0"x6.9"– Wt. = 115 lbs. /each)
- (2) 800-10965 Antennas (78.7"x20.0"x6.9"– Wt. = 109 lbs. /each)
- (3) RRUS-11 B12 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B66A RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (6) TPX-070821 Triplexers (5.9"x9.7"x2.1" – Wt. = 8 lbs. /each)
- (3) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.) (Tower Mounted)
- **(3) 4415 B25 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on May 07, 2020.

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 135 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 2.20 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- 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 3.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing tower with U-Bolts/bent plates. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mounts **ARE NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Install new 2" std. (2.38" O.D.) pipe brace secured to the mount and tower (typ. of 1 per sector, total of 3).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 7C) Mount Rating	9	LC10	107%	**FAIL**
Modified (LTE 7C) Mount Rating	6	LC35	76%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:











HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 9/9/2020
Project Name: GLASTONBURY PD
Project No.: CT1083
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	166	(ft)
z_g=	1200	(ft)
α=	7.0	

K_z= 1.142

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=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	166	
z_s=	30	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	1.00	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i = 1.50	in
Importance Factor =	I= 1.25	(from Table 2-3)
	K_{iz} = 1.18	(from Sec. 2.6.10)

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

t_{iz} = 2.20 in

Date: 9/9/2020
Project Name: GLASTONBURY PD
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Designed By: KM 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=	170	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=	1.142	(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=	**45.25**	K_e=	1.00	(from 2.6.8)
$q_{z\ (ice)}$=	**6.21**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**2.23**	V_{max}=	135	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

Date: 9/9/2020
Project Name: GLASTONBURY PD
Project No.: CT1083
Designed By: KM 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 = **2.20** 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)
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	6.44	1.38	577	108	28
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	4.86	1.31	437	83	22
800-10966 Antenna	96.0	20.0	6.9	13.33	4.80	1.30	786	138	39
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	625	110	31
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.74	1.21	54	15	3
RRUS-11 RRH (Side)	19.7	3.6	17.0	0.49	5.47	1.33	30	11	1
4415 B25 RRH	16.5	5.9	13.4	0.68	2.80	1.21	37	11	2
4415 B25 RRH (Side)	16.5	3.0	13.4	0.34	5.59	1.34	20	9	1
B14 4478 RRH	18.1	8.3	13.4	1.04	2.18	1.20	57	15	3
B14 4478 RRH (Side)	18.1	4.2	13.4	0.52	4.36	1.28	30	11	1
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	3.89	1.26	75	20	4
RRUS-32 B66 RRH (Side)	27.2	3.5	12.1	0.66	7.77	1.43	43	15	2
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	124	27	6
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	0.00	0.00	0	0	0
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.61	1.20	22	8	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	51	12	3
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	13		
2" Pipe	2.4	12.0		0.20	0.20	1.20	11		
1-1/2" Pipe	1.9	12.0		0.16	0.16	1.20	9		

Date: 9/9/2020
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HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	2.20	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)	Force (lbs)	Force (lbs)
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	577	328	515
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	437	250	390
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	786	339	674
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	625	264	535
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	54	126	72
RRUS-11 RRH (Side)	19.7	3.6	17.0	0.49	2.33	5.47	1.16	1.33	1.20	30	126	54
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	49
4415 B25 RRH (Side)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	20	83	36
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	57	91	65
B14 4478 RRH (Side)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	30	91	46
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	75	124	88
RRUS-32 B66 RRH (Side)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	43	124	63
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	124	75	112
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	67	75	69
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	22	5	17

WIND LOADS WITH ICE:

OPA-65R-LCUU-H8 Antenna	97.1	18.8	11.4	12.68	7.69	5.16	8.51	1.32	1.45	104	69	95
OPA-65R-LCUU-H6 Antenna	76.4	19.2	11.8	10.19	6.27	3.98	6.47	1.27	1.38	80	54	73
800-10966 Antenna	100.4	24.4	11.3	17.02	7.88	4.11	8.88	1.27	1.46	134	72	119
800-10965 Antenna	83.1	24.4	11.3	14.09	6.53	3.41	7.35	1.24	1.41	108	57	96
RRUS-11 RRH	24.1	11.6	21.4	1.94	3.58	2.08	1.13	1.20	1.20	14	27	18
RRUS-11 RRH (Side)	24.1	5.8	21.4	0.97	3.58	4.15	1.13	1.27	1.20	8	27	12
4415 B25 RRH	20.9	10.3	17.8	1.50	2.59	2.03	1.17	1.20	1.20	11	19	13
4415 B25 RRH (Side)	20.9	5.2	17.8	0.75	2.59	4.06	1.17	1.27	1.20	6	19	9
B14 4478 RRH	22.5	12.7	17.8	1.99	2.78	1.77	1.26	1.20	1.20	15	21	16
B14 4478 RRH (Side)	22.5	6.4	17.8	0.99	2.78	3.54	1.26	1.25	1.20	8	21	11
RRUS-32 B66 RRH	31.6	11.4	16.5	2.50	3.62	2.77	1.91	1.21	1.20	19	27	21
RRUS-32 B66 RRH (Side)	31.6	5.7	16.5	1.25	3.62	5.54	1.91	1.34	1.20	10	27	15
RRUS-32 B30 RRH	31.6	16.5	11.4	3.62	2.50	1.91	2.77	1.20	1.21	27	19	25
RRUS-32 B30 RRH (Shielded)	31.6	8.3	11.4	1.81	2.50	3.83	2.77	1.26	1.21	14	19	15
TPX-070821 Triplexer	10.3	14.1	6.5	1.01	0.47	0.73	1.58	1.20	1.20	8	3	7

WIND LOADS AT 30 MPH:

OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	25
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	12	19
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	39	17	33
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	26
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	3	6	4
RRUS-11 RRH (Side)	19.7	3.6	17.0	0.49	2.33	5.47	1.16	1.33	1.20	1	6	3
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	2
4415 B25 RRH (Side)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	2
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
B14 4478 RRH (Side)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	5	2
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B66 RRH (Side)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	3
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	1	0	1

Date: 9/9/2020
Project Name: GLASTONBURY PD
Project No.: CT1083
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	2.20	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)	Force (lbs)	Force (lbs)
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	577	328	390
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	437	250	390
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	786	339	451
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	625	264	535
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	54	126	108
RRUS-11 RRH (Side)	19.7	5.4	17.0	0.74	2.33	3.65	1.16	1.25	1.20	42	126	105
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	72
4415 B25 RRH (Side)	16.5	4.4	13.4	0.51	1.54	3.73	1.23	1.25	1.20	29	83	70
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	57	91	83
B14 4478 RRH (Side)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	43	91	79
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	75	124	112
RRUS-32 B66 RRH (Side)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	59	124	108
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	124	75	88
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	95	75	80
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	22	5	9

WIND LOADS WITH ICE:

OPA-65R-LCUU-H8 Antenna	97.1	18.8	11.4	12.68	7.69	5.16	8.51	1.32	1.45	104	69	78
OPA-65R-LCUU-H6 Antenna	76.4	19.2	11.8	10.19	6.27	3.98	6.47	1.27	1.38	80	54	73
800-10966 Antenna	100.4	24.4	11.3	17.02	7.88	4.11	8.88	1.27	1.46	134	72	119
800-10965 Antenna	83.1	24.4	11.3	14.09	6.53	3.41	7.35	1.24	1.41	108	57	96
RRUS-11 RRH	24.1	11.6	21.4	1.94	3.58	2.08	1.13	1.20	1.20	14	27	24
RRUS-11 RRH (Side)	24.1	8.7	21.4	1.46	3.58	2.77	1.13	1.21	1.20	11	27	23
4415 B25 RRH	20.9	10.3	17.8	1.50	2.59	2.03	1.17	1.20	1.20	11	19	17
4415 B25 RRH (Side)	20.9	7.7	17.8	1.12	2.59	2.70	1.17	1.21	1.20	8	19	17
B14 4478 RRH	22.5	12.7	17.8	1.99	2.78	1.77	1.26	1.20	1.20	15	21	19
B14 4478 RRH (Side)	22.5	9.5	17.8	1.49	2.78	2.36	1.26	1.20	1.20	11	21	18
RRUS-32 B66 RRH	31.6	11.4	16.5	2.50	3.62	2.77	1.91	1.21	1.20	19	27	25
RRUS-32 B66 RRH (Side)	31.6	8.6	16.5	1.88	3.62	3.69	1.91	1.25	1.20	15	27	24
RRUS-32 B30 RRH	31.6	16.5	11.4	3.62	2.50	1.91	2.77	1.20	1.21	27	19	21
RRUS-32 B30 RRH (Shielded)	31.6	12.4	11.4	2.72	2.50	2.55	2.77	1.20	1.21	20	19	19
TPX-070821 Triplexer	10.3	14.1	6.5	1.01	0.47	0.73	1.58	1.20	1.20	8	3	4

WIND LOADS AT 30 MPH:

OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	19
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	12	19
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	39	17	33
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	26
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	3	6	5
RRUS-11 RRH (Side)	19.7	5.4	17.0	0.74	2.33	3.65	1.16	1.25	1.20	2	6	5
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B25 RRH (Side)	16.5	4.4	13.4	0.51	1.54	3.73	1.23	1.25	1.20	1	4	3
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
B14 4478 RRH (Side)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	2	5	4
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B66 RRH (Side)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	6	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	4
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	1	0	0

Date: 9/9/2020
Project Name: GLASTONBURY PD
Project No.: CT1083
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	2.20	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)	Force (lbs)	Force (lbs)
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	577	328	328
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	437	250	390
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	786	339	339
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	625	264	535
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	54	126	126
RRUS-11 RRH (Side)	19.7	3.6	17.0	0.49	2.33	5.47	1.16	1.33	1.20	30	126	126
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	83
4415 B25 RRH (Side)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	20	83	83
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	57	91	91
B14 4478 RRH (Side)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	30	91	91
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	75	124	124
RRUS-32 B66 RRH (Side)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	43	124	124
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	124	75	75
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	75	75
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	22	5	5

WIND LOADS WITH ICE:

OPA-65R-LCUU-H8 Antenna	97.1	18.8	11.4	12.68	7.69	5.16	8.51	1.32	1.45	104	69	69
OPA-65R-LCUU-H6 Antenna	76.4	19.2	11.8	10.19	6.27	3.98	6.47	1.27	1.38	80	54	73
800-10966 Antenna	100.4	24.4	11.3	17.02	7.88	4.11	8.88	1.27	1.46	134	72	119
800-10965 Antenna	83.1	24.4	11.3	14.09	6.53	3.41	7.35	1.24	1.41	108	57	96
RRUS-11 RRH	24.1	11.6	21.4	1.94	3.58	2.08	1.13	1.20	1.20	14	27	27
RRUS-11 RRH (Side)	24.1	8.0	21.4	1.34	3.58	3.01	1.13	1.22	1.20	10	27	27
4415 B25 RRH	20.9	10.3	17.8	1.50	2.59	2.03	1.17	1.20	1.20	11	19	19
4415 B25 RRH (Side)	20.9	7.4	17.8	1.07	2.59	2.84	1.17	1.22	1.20	8	19	19
B14 4478 RRH	22.5	12.7	17.8	1.99	2.78	1.77	1.26	1.20	1.20	15	21	21
B14 4478 RRH (Side)	22.5	8.6	17.8	1.34	2.78	2.63	1.26	1.21	1.20	10	21	21
RRUS-32 B66 RRH	31.6	11.4	16.5	2.50	3.62	2.77	1.91	1.21	1.20	19	27	27
RRUS-32 B66 RRH (Side)	31.6	7.9	16.5	1.74	3.62	4.00	1.91	1.27	1.20	14	27	27
RRUS-32 B30 RRH	31.6	16.5	11.4	3.62	2.50	1.91	2.77	1.20	1.21	27	19	19
RRUS-32 B30 RRH (Shielded)	31.6	4.4	11.4	0.97	2.50	7.17	2.77	1.41	1.21	8	19	19
TPX-070821 Triplexer	10.3	14.1	6.5	1.01	0.47	0.73	1.58	1.20	1.20	8	3	3

WIND LOADS AT 30 MPH:

OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	16
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	12	19
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	39	17	33
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	26
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	3	6	6
RRUS-11 RRH (Side)	19.7	3.6	17.0	0.49	2.33	5.47	1.16	1.33	1.20	1	6	6
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B25 RRH (Side)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	4
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
B14 4478 RRH (Side)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	5	5
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B66 RRH (Side)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	6
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	4	4
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	1	0	0

Date: 9/9/2020
Project Name: GLASTONBURY PD
Project No.: CT1083
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg) | Ice Thickness = 2.20 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)	Force (lbs)	Force (lbs)
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	577	328	390
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	437	250	390
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	786	339	451
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	625	264	535
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	54	126	108
RRUS-11 RRH (Side)	19.7	5.4	17.0	0.74	2.33	3.65	1.16	1.25	1.20	42	126	105
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	72
4415 B25 RRH (Side)	16.5	4.4	13.4	0.51	1.54	3.73	1.23	1.25	1.20	29	83	70
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	57	91	83
B14 4478 RRH (Side)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	43	91	79
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	75	124	112
RRUS-32 B66 RRH (Side)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	59	124	108
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	124	75	88
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	95	75	80
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	22	5	5

WIND LOADS WITH ICE:

OPA-65R-LCUU-H8 Antenna	97.1	18.8	11.4	12.68	7.69	5.16	8.51	1.32	1.45	104	69	78
OPA-65R-LCUU-H6 Antenna	76.4	19.2	11.8	10.19	6.27	3.98	6.47	1.27	1.38	80	54	73
800-10966 Antenna	100.4	24.4	11.3	17.02	7.88	4.11	8.88	1.27	1.46	134	72	119
800-10965 Antenna	83.1	24.4	11.3	14.09	6.53	3.41	7.35	1.24	1.41	108	57	96
RRUS-11 RRH	24.1	11.6	21.4	1.94	3.58	2.08	1.13	1.20	1.20	14	27	24
RRUS-11 RRH (Side)	24.1	8.7	21.4	1.46	3.58	2.77	1.13	1.21	1.20	11	27	23
4415 B25 RRH	20.9	10.3	17.8	1.50	2.59	2.03	1.17	1.20	1.20	11	19	17
4415 B25 RRH (Side)	20.9	7.7	17.8	1.12	2.59	2.70	1.17	1.21	1.20	8	19	17
B14 4478 RRH	22.5	12.7	17.8	1.99	2.78	1.77	1.26	1.20	1.20	15	21	19
B14 4478 RRH (Side)	22.5	9.5	17.8	1.49	2.78	2.36	1.26	1.20	1.20	11	21	18
RRUS-32 B66 RRH	31.6	11.4	16.5	2.50	3.62	2.77	1.91	1.21	1.20	19	27	25
RRUS-32 B66 RRH (Side)	31.6	8.6	16.5	1.88	3.62	3.69	1.91	1.25	1.20	15	27	24
RRUS-32 B30 RRH	31.6	16.5	11.4	3.62	2.50	1.91	2.77	1.20	1.21	27	19	21
RRUS-32 B30 RRH (Shielded)	31.6	12.4	11.4	2.72	2.50	2.55	2.77	1.20	1.21	20	19	19
TPX-070821 Triplexer	10.3	14.1	6.5	1.01	0.47	0.73	1.58	1.20	1.20	8	3	3

WIND LOADS AT 30 MPH:

OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	19
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	12	19
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	39	17	33
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	26
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	3	6	5
RRUS-11 RRH (Side)	19.7	5.4	17.0	0.74	2.33	3.65	1.16	1.25	1.20	2	6	5
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B25 RRH (Side)	16.5	4.4	13.4	0.51	1.54	3.73	1.23	1.25	1.20	1	4	3
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
B14 4478 RRH (Side)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	2	5	4
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B66 RRH (Side)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	6	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	4
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	1	0	0

Date: 9/9/2020
Project Name: GLASTONBURY PD
Project No.: CT1083
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	2.20	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)	Force (lbs)	Force (lbs)
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	577	328	515
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	437	250	390
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	786	339	674
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	625	264	535
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	54	126	72
RRUS-11 RRH (Side)	19.7	3.6	17.0	0.49	2.33	5.47	1.16	1.33	1.20	30	126	54
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	49
4415 B25 RRH (Side)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	20	83	36
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	57	91	65
B14 4478 RRH (Side)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	30	91	46
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	75	124	88
RRUS-32 B66 RRH (Side)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	43	124	63
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	124	75	112
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	67	75	69
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	22	5	5

WIND LOADS WITH ICE:

OPA-65R-LCUU-H8 Antenna	97.1	18.8	11.4	12.68	7.69	5.16	8.51	1.32	1.45	104	69	95
OPA-65R-LCUU-H6 Antenna	76.4	19.2	11.8	10.19	6.27	3.98	6.47	1.27	1.38	80	54	73
800-10966 Antenna	100.4	24.4	11.3	17.02	7.88	4.11	8.88	1.27	1.46	134	72	119
800-10965 Antenna	83.1	24.4	11.3	14.09	6.53	3.41	7.35	1.24	1.41	108	57	96
RRUS-11 RRH	24.1	11.6	21.4	1.94	3.58	2.08	1.13	1.20	1.20	14	27	18
RRUS-11 RRH (Side)	24.1	5.8	21.4	0.97	3.58	4.15	1.13	1.27	1.20	8	27	12
4415 B25 RRH	20.9	10.3	17.8	1.50	2.59	2.03	1.17	1.20	1.20	11	19	13
4415 B25 RRH (Side)	20.9	5.2	17.8	0.75	2.59	4.06	1.17	1.27	1.20	6	19	9
B14 4478 RRH	22.5	12.7	17.8	1.99	2.78	1.77	1.26	1.20	1.20	15	21	16
B14 4478 RRH (Side)	22.5	6.4	17.8	0.99	2.78	3.54	1.26	1.25	1.20	8	21	11
RRUS-32 B66 RRH	31.6	11.4	16.5	2.50	3.62	2.77	1.91	1.21	1.20	19	27	21
RRUS-32 B66 RRH (Side)	31.6	5.7	16.5	1.25	3.62	5.54	1.91	1.34	1.20	10	27	15
RRUS-32 B30 RRH	31.6	16.5	11.4	3.62	2.50	1.91	2.77	1.20	1.21	27	19	25
RRUS-32 B30 RRH (Shielded)	31.6	8.3	11.4	1.81	2.50	3.83	2.77	1.26	1.21	14	19	15
TPX-070821 Triplexer	10.3	14.1	6.5	1.01	0.47	0.73	1.58	1.20	1.20	8	3	3

WIND LOADS AT 30 MPH:

OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	25
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	12	19
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	39	17	33
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	26
RRUS-11 RRH	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	3	6	4
RRUS-11 RRH (Side)	19.7	3.6	17.0	0.49	2.33	5.47	1.16	1.33	1.20	1	6	3
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	2
4415 B25 RRH (Side)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	2
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
B14 4478 RRH (Side)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	5	2
RRUS-32 B66 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B66 RRH (Side)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	3
TPX-070821 Triplexer	5.9	9.7	2.1	0.40	0.09	0.61	2.81	1.20	1.21	1	0	0

Date: 9/9/2020
Project Name: GLASTONBURY PD
Project No.: CT1083
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 2.20 in.
Density of ice: 56 pcf

OPA-65R-LCUU-H8 Antenna

Weight of ice based on total radial SF area:

Height (in):	92.7	
Width (in):	14.4	
Depth (in):	7.0	
Total weight of ice on object:		378 lbs
Weight of object:	88.0 lbs	
Combined weight of ice and object:		466 lbs

OPA-65R-LCUU-H6 Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:		302 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		375 lbs

800-10966 Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		502 lbs
Weight of object:	115.0 lbs	
Combined weight of ice and object:		617 lbs

800-10965 Antenna

Weight of ice based on total radial SF area:

Height (in):	78.7	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		412 lbs
Weight of object:	109.0 lbs	
Combined weight of ice and object:		521 lbs

RRUS-11 RRH

Weight of ice based on total radial SF area:

Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		91 lbs
Weight of object:	51.0 lbs	
Combined weight of ice and object:		142 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.4	
Depth (in):	5.9	
Total weight of ice on object:		62 lbs
Weight of object:	46.0 lbs	
Combined weight of ice and object:		108 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		73 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		133 lbs

RRUS-32 B66A RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		99 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		159 lbs

RRUS-32 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		99 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		159 lbs

TPX-070821 Triplexer

Weight of ice based on total radial SF area:

Height (in):	5.9	
Width (in):	9.7	
Depth (in):	2.1	
Total weight of ice on object:		16 lbs
Weight of object:	8.0 lbs	
Combined weight of ice and object:		24 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:		64 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		97 lbs

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		14 plf

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		12 plf

1-1/2" Pipe

Per foot weight of ice:

diameter (in):	1.9	
Per foot weight of ice on object:		11 plf

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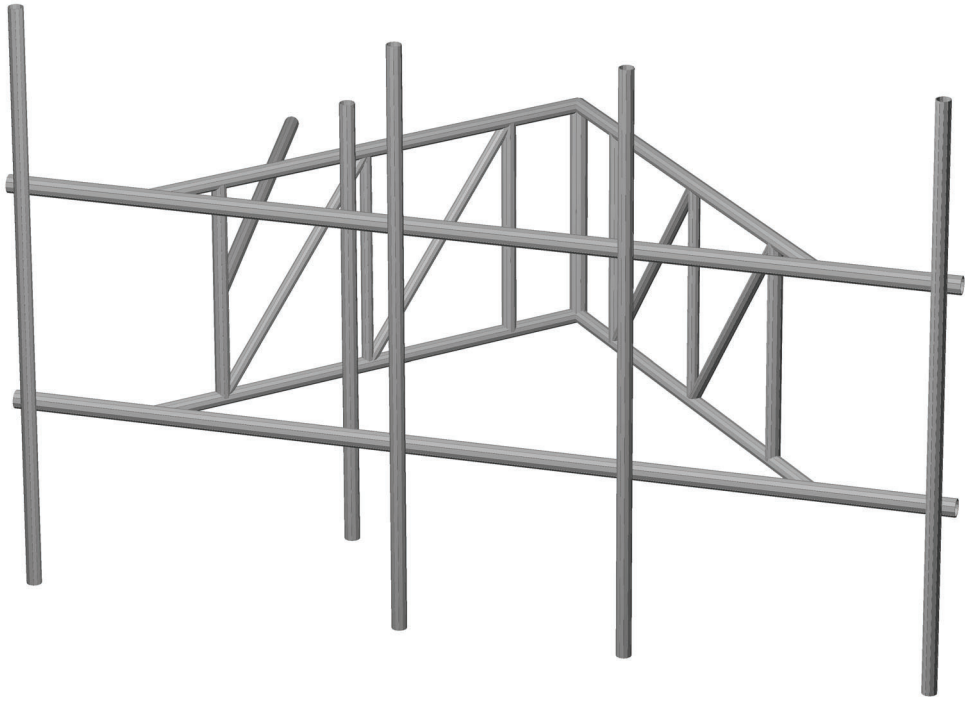
Design Group LLC

Mount Calculations
(Existing Conditions)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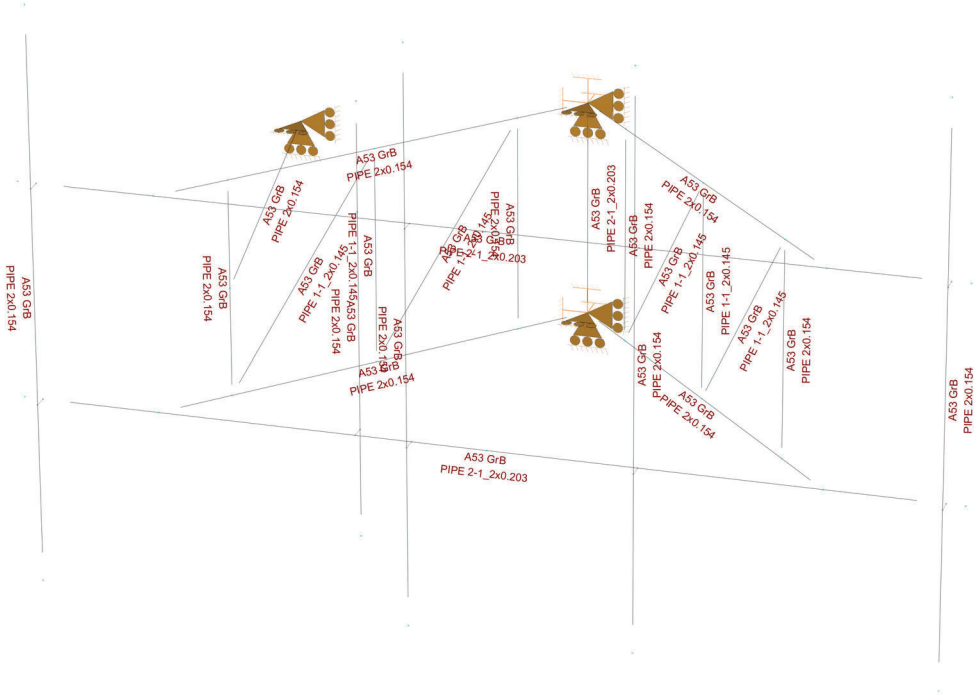
X
Z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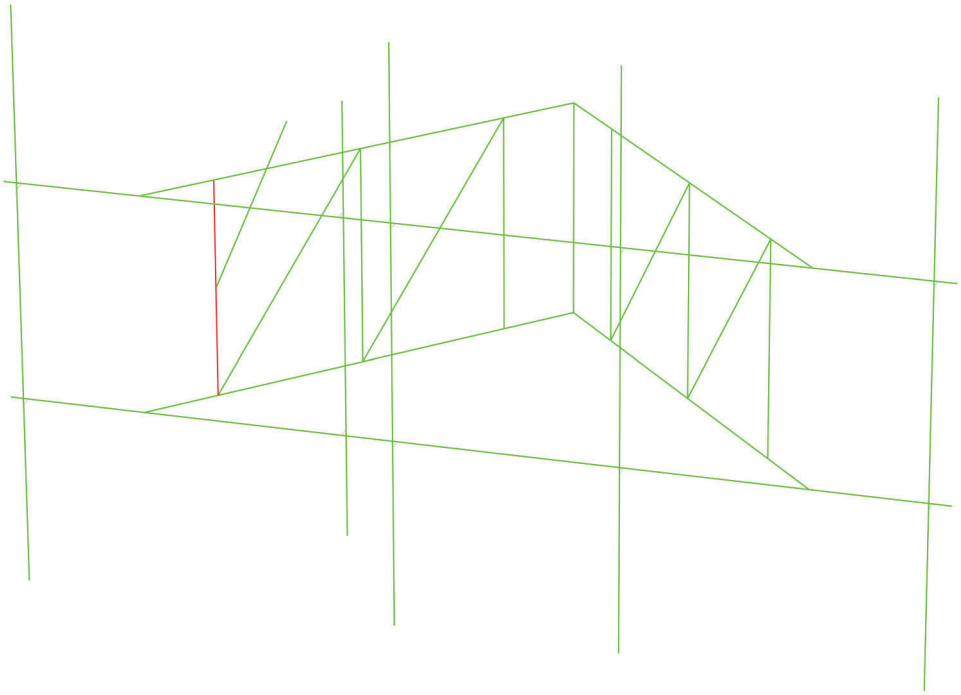
PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 1-1_2x0.145
Y
X
Z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X
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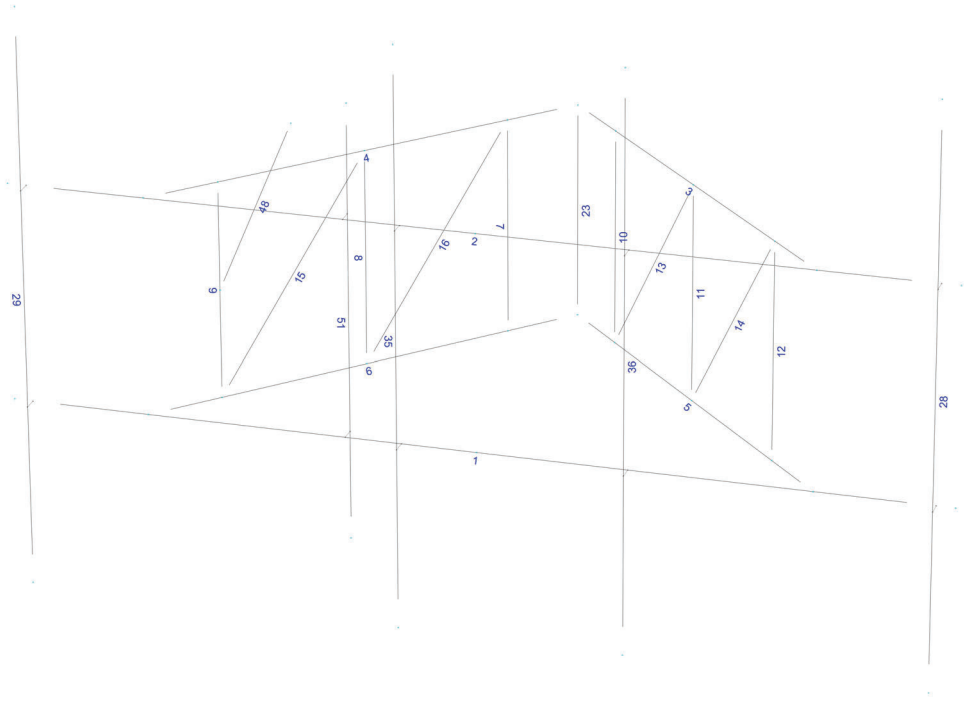
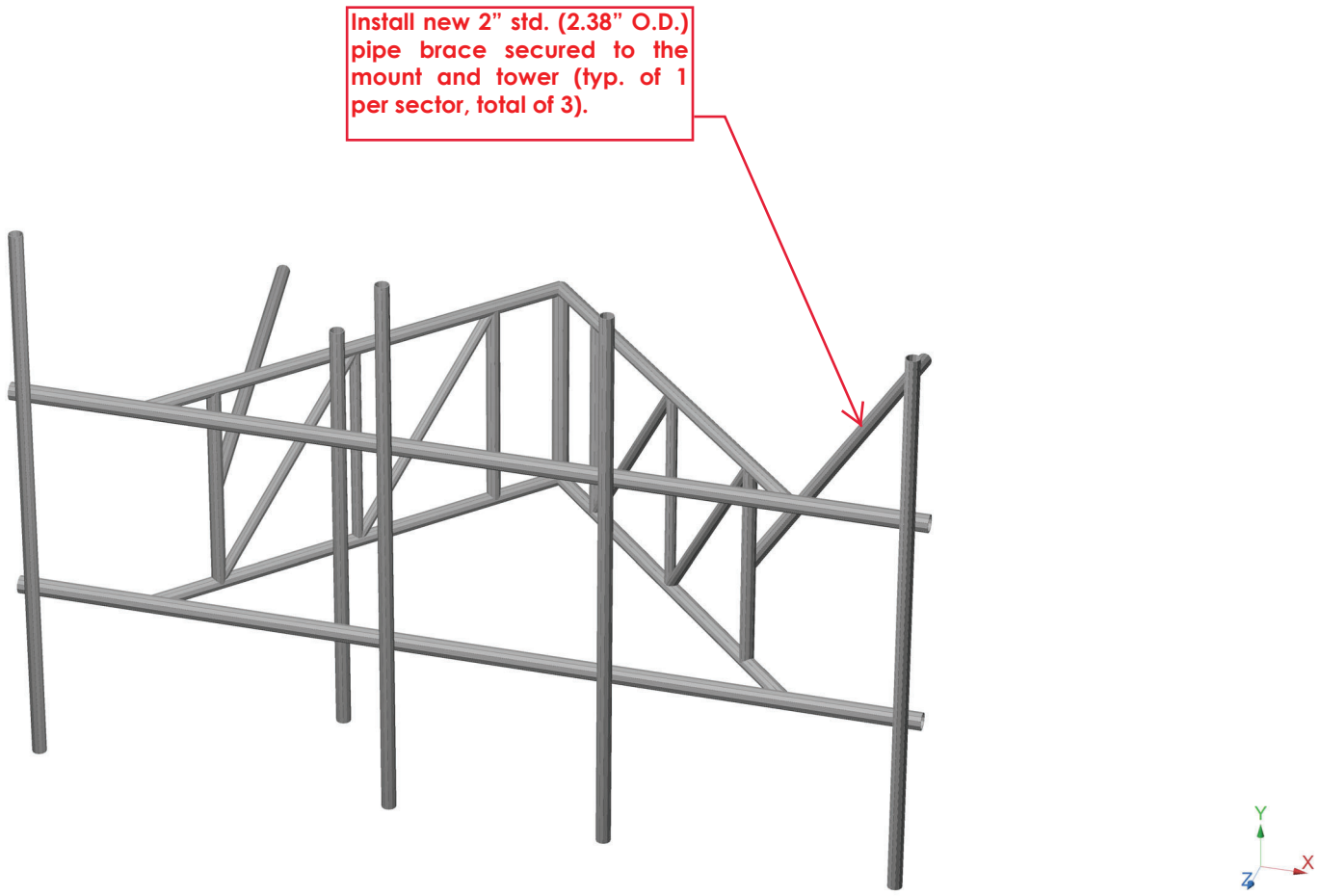
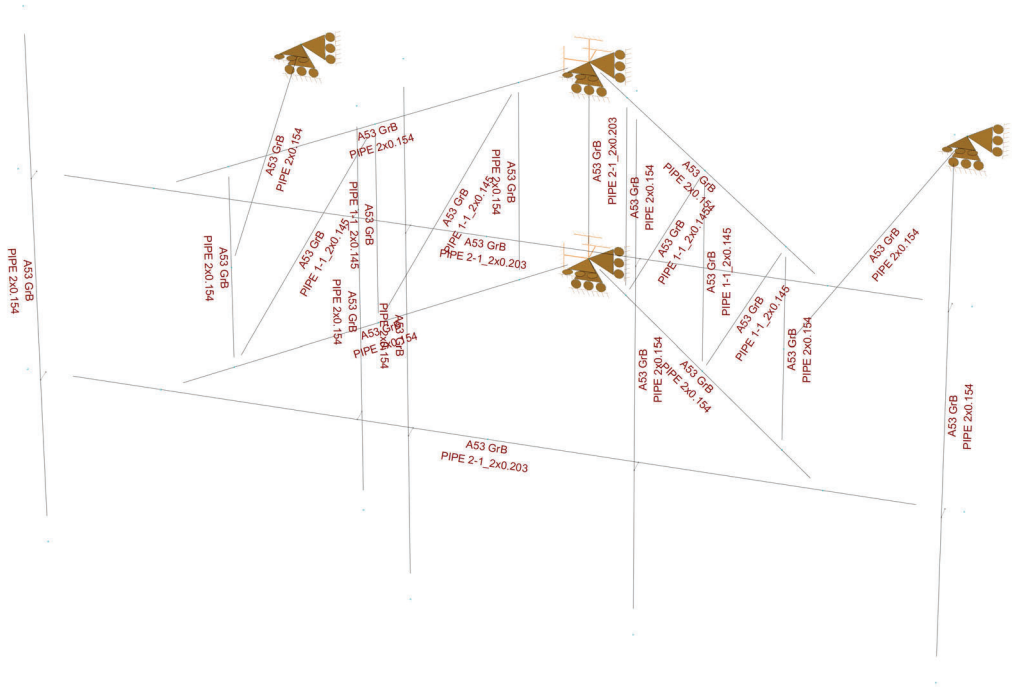


HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)


Install new 2" std. (2.38" O.D.) pipe brace secured to the mount and tower (typ. of 1 per sector, total of 3).
Y
X
Z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PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203
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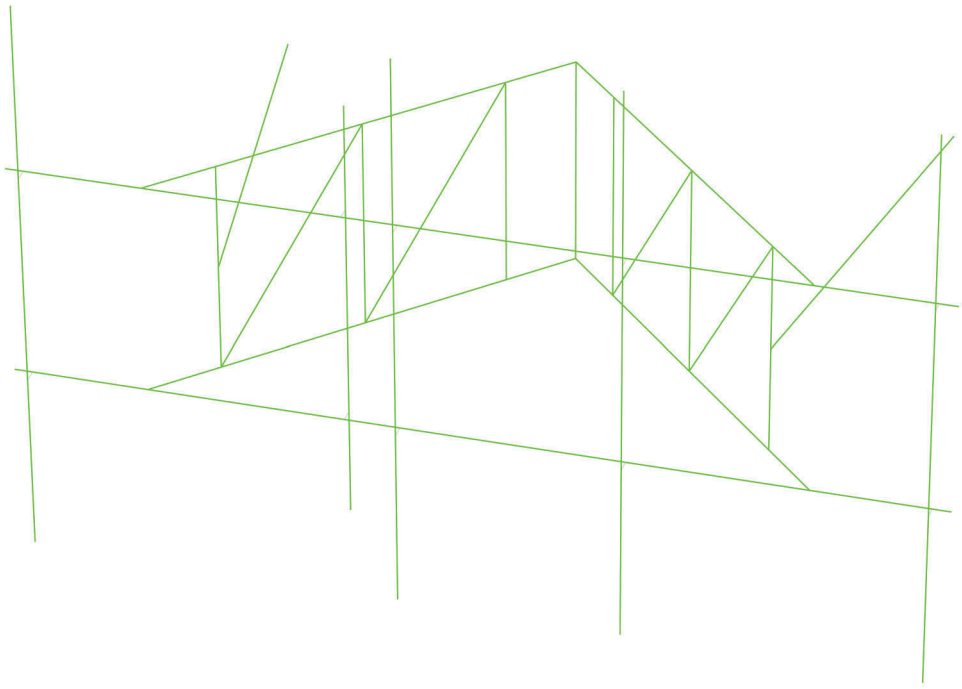
PIPE 1-1_2x0.148
Y
X
Z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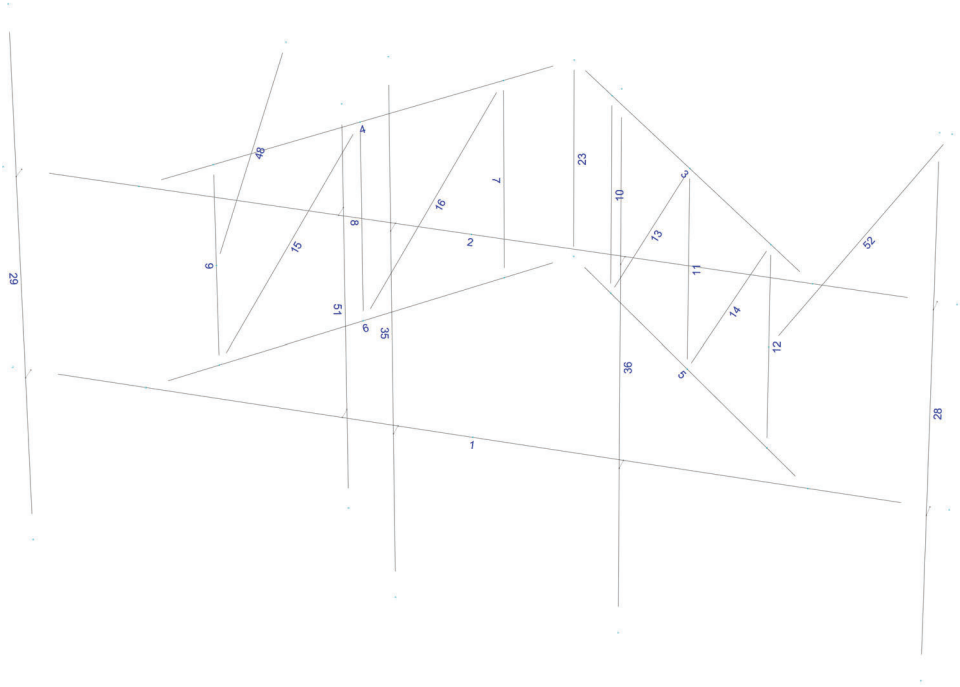


EXHIBIT 3

Town of Glastonbury

2155 MAIN STREET • GLASTONBURY, CONNECTICUT 06033 • (203) 659-2711

TOWN PLAN AND
ZONING COMMISSION

SECTION 12 SPECIAL PERMIT WITH DESIGN REVIEW

APPLICANT: TOWN OF GLASTONBURY
POLICE DEPARTMENT
2108 MAIN STREET
GLASTONBURY, CT 06033

OWNER: TOWN OF GLASTONBURY
2155 MAIN STREET
GLASTONBURY, CT 06033

FOR: INSTALLATION OF A NEW RADIO ANTENNA

MOVED, that the Town Plan and Zoning Commission approve the application of the Town of Glastonbury Police Department for a Section 12 Special Permit with Design Review for installation of a new 170' free-standing radio antenna - removal of old - 2108 Main Street, Reserved Land Zone.

APPROVED: TOWN PLAN AND ZONING COMMISSION
JANUARY 3, 1989

B. W. ERK, III, CHAIRMAN

bsw

EXHIBIT 4

2108 MAIN ST

Location	2108 MAIN ST	**Mblu**	D6/ 4140/ E0064/ /
Acct#	41402108	**Owner**	GLASTONBURY TOWN OF
Assessment	$5,567,790	**Appraisal**	$7,953,930
PID	12840	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$4,408,130	$3,545,800	$7,953,930
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$3,085,690	$2,482,100	$5,567,790

Owner of Record

Owner	GLASTONBURY TOWN OF	**Sale Price**	$0
Co-Owner	POLICE/AMBULANCE FACILITY	**Certificate**	
Address	C/O FACILITIES DEPT PO BOX 6523 GLASTONBURY, CT 06033-6523	**Book & Page**	0098/0515
		Sale Date	11/15/1956
		Instrument	76

Ownership History

Ownership History
No Data for Ownership History

Building Information

Building 1 : Section 1

Year Built:	0
Living Area:	0
Replacement Cost:	$0
Replacement Cost Less Depreciation:	$0

Building Attributes

Field	Description
STYLE	Town Owned
MODEL	Comm/Ind
Stories:	1
Occupancy	1
Exterior Wall 1	Average
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	None
Heating Type	None
AC Type	None
Bldg Use	922
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	922
Heat/AC	HEAT/AC SPLIT
Frame Type	WOOD FRAME
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	9
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/GlastonburyCTPhotos//default.jpg)

Building Layout

(http://images.vgsi.com/photos/GlastonburyCTPhotos//Sketches/12840_12

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	901
Description	Town MDL-94
Zone	A
Category	

Land Line Valuation

Size (Acres)	12.6
Assessed Value	$2,482,100
Appraised Value	$3,545,800

Outbuildings

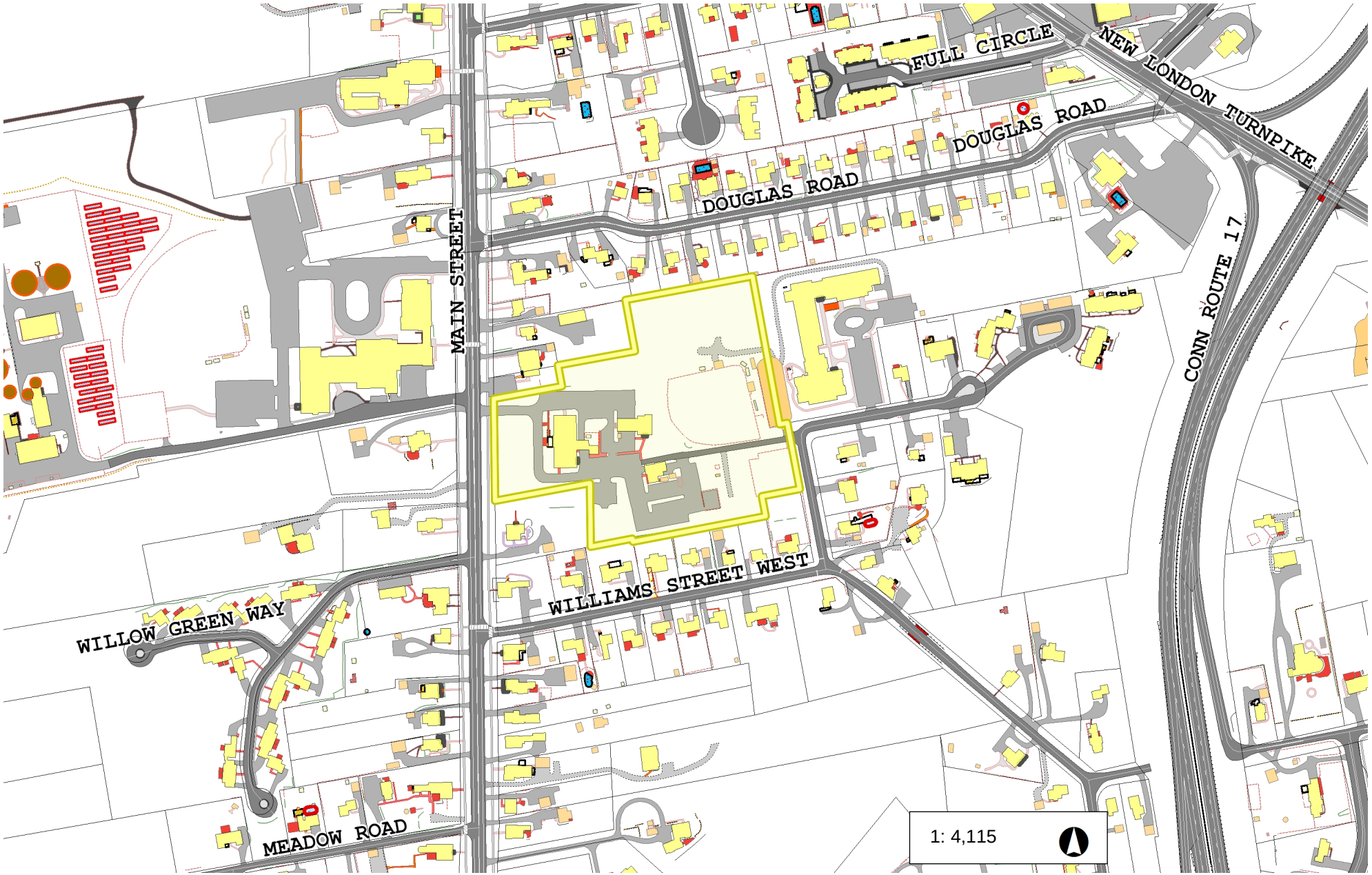
Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$4,408,130	$3,545,800	$7,953,930

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$3,085,690	$2,482,100	$5,567,790

Town of Glastonbury GIS



686 0 343 686 Feet

NAD_1983_StatePlane_Connecticut_FIPS_0600_Feet

EXHIBIT 5

Radio Frequency Emissions Analysis Report

January 6, 2021

Centerline Communications on behalf of AT&T

Site Name: GLASTONBURY PD
Site Address: GLASTONBURY POLICE DEPARTMENT, GLASTONBURY, CT 06033
FA#: 10035111
USID: 59372

Site Compliance Summary

Compliance Status:	Compliant
Carrier MPE% of FCC General Population Allowable Limit:	1.16999774%
Composite MPE% of FCC General Population Allowable Limit:	0.17994170%

January 6, 2021

AT&T New England
Attn: John Benedetto
550 Cochituate Road Suite 550 – 13&14
Framingham, MA 01701

Emissions Analysis for Site: **GLASTONBURY PD**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility to be located a tower near **GLASTONBURY POLICE DEPARTMENT, GLASTONBURY CT 06033** for the purpose of determining whether the emissions from the proposed facility are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 MHz is 466.67 $\mu W/cm^2$, The general population exposure limits for the 850 MHz is 566.67 $\mu W/cm^2$, and The general population exposure limits for the 1900 MHz, 2100 MHz, and 2300 MHz bands is 1000 $\mu W/cm^2$.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Additional details can be found in FCC OET 65.

Calculations

Calculations were performed for the proposed facility using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing focused omnidirectional antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. This is a very conservative estimate since the gain reduction in actual applications is typically greater than 10 dB in the direction of ground immediately surrounding the facility. Real world emissions values from this facility are expected to be lower than values listed in this report at ground level. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

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

RRH #	Frequency Band	Technology	Channel Count	Transmit Power per Channel (W)
1	700	LTE	2	30
1	850	UMTS	2	40
1	1900	LTE	4	40
2	700	LTE	4	40
2	2100	LTE	4	40
3	850	LTE	4	40
3	700	LTE	2	40
3	2300	LTE	4	25
4	700	LTE	2	30
4	850	UMTS	2	40
4	1900	LTE	4	40
5	700	LTE	4	40
5	2100	LTE	4	40
6	850	LTE	4	40
6	700	LTE	2	40
6	2300	LTE	4	25

7	700	LTE	2	30
7	850	UMTS	2	40
7	1900	LTE	4	40
8	700	LTE	4	40
8	2100	LTE	4	40
9	850	LTE	4	40
9	700	LTE	2	40
9	2300	LTE	4	25

Table 1: Channel Data Table

The following antennas listed in Table 2 were used in the modeling for transmission in the 700MHz, 850 MHz, 1900 MHz, 2100 MHz, and 2300 MHz frequency bands. This is based on information from the carrier with regard to anticipated antenna selection.

Sector	Antenna Number	Make / Model	Centerline (ft)
A	1	CCI OPA-65R-LCUU-H6	167.3
A	1	CCI OPA-65R-LCUU-H6	167.3
A	1	CCI OPA-65R-LCUU-H6	167.3
A	2	KATHREIN 80010965	167.3
A	2	KATHREIN 80010965	167.3
A	3	CCI OPA-65R-LCUU-H6	167.3
A	3	CCI OPA-65R-LCUU-H6	167.3
A	3	CCI OPA-65R-LCUU-H6	167.3
B	4	CCI OPA-65R-LCUU-H6	167.3
B	4	CCI OPA-65R-LCUU-H6	167.3
B	4	CCI OPA-65R-LCUU-H6	167.3
B	5	KATHREIN 80010965	167.3
B	5	KATHREIN 80010965	167.3
B	6	CCI OPA-65R-LCUU-H6	167.3
B	6	CCI OPA-65R-LCUU-H6	167.3
B	6	CCI OPA-65R-LCUU-H6	167.3
C	7	CCI OPA-65R-LCUU-H8	167.3
C	7	CCI OPA-65R-LCUU-H8	167.3
C	7	CCI OPA-65R-LCUU-H8	167.3
C	8	KATHREIN 80010966	167.3
C	8	KATHREIN 80010966	167.3
C	9	CCI OPA-65R-LCUU-H8	167.3
C	9	CCI OPA-65R-LCUU-H8	167.3
C	9	CCI OPA-65R-LCUU-H8	167.3

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

Results

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

ID	Make / Model	Frequency Band	Gain (dBd)	Centerline (ft)	Channel Count	TX Power (W)	ERP (W)	MPE %
AT&T A 1	CCI OPA-65R-LCUU-H6	700	11.56	167.3	2	30	859.3127396	0.005389910
AT&T A 1	CCI OPA-65R-LCUU-H6	850	12.56	167.3	2	40	1442.414193	0.006592896
AT&T A 1	CCI OPA-65R-LCUU-H6	1900	14.86	167.3	4	40	4899.141494	0.007225335
AT&T A 2	KATHREIN 80010965	700	11.85	167.3	4	40	2449.739939	0.013377719
AT&T A 2	KATHREIN 80010965	2100	16.45	167.3	4	40	7065.127158	0.006890666
AT&T A 3	CCI OPA-65R-LCUU-H6	850	12.36	167.3	4	40	2754.98972	0.013354713
AT&T A 3	CCI OPA-65R-LCUU-H6	700	11.76	167.3	2	40	1199.747868	0.007223865
AT&T A 3	CCI OPA-65R-LCUU-H6	2300	15.06	167.3	4	25	3206.269325	0.004223611
AT&T B 4	CCI OPA-65R-LCUU-H6	700	11.96	167.3	2	30	942.2176826	0.005291195
AT&T B 4	CCI OPA-65R-LCUU-H6	850	12.36	167.3	2	40	1377.49486	0.006641221
AT&T B 4	CCI OPA-65R-LCUU-H6	1900	14.86	167.3	4	40	4899.141494	0.007122850
AT&T B 5	KATHREIN 80010965	700	12.15	167.3	4	40	2624.943637	0.013879965
AT&T B 5	KATHREIN 80010965	2100	16.45	167.3	4	40	7065.127158	0.006890884
AT&T B 6	CCI OPA-65R-LCUU-H6	850	12.76	167.3	4	40	3020.786159	0.013126612
AT&T B 6	CCI OPA-65R-LCUU-H6	700	11.96	167.3	2	40	1256.290243	0.007105924
AT&T B 6	CCI OPA-65R-LCUU-H6	2300	15.36	167.3	4	25	3435.579479	0.004353299
AT&T C 7	CCI OPA-65R-LCUU-H8	700	12.66	167.3	2	30	1107.009252	0.004318853
AT&T C 7	CCI OPA-65R-LCUU-H8	850	13.26	167.3	2	40	1694.688908	0.005145816
AT&T C 7	CCI OPA-65R-LCUU-H8	1900	15.16	167.3	4	40	5249.52469	0.005313068
AT&T C 8	KATHREIN 80010966	700	13.15	167.3	4	40	3304.608249	0.010718875
AT&T C 8	KATHREIN 80010966	2100	16.45	167.3	4	40	7065.127158	0.005828389
AT&T C 9	CCI OPA-65R-LCUU-H8	850	13.66	167.3	4	40	3716.378874	0.010411134
AT&T C 9	CCI OPA-65R-LCUU-H8	700	12.66	167.3	2	40	1476.012335	0.005800983
AT&T C 9	CCI OPA-65R-LCUU-H8	2300	15.06	167.3	4	25	3206.269325	0.003713915
AT&T MPE%								**0.17994170%**

Table 3: AT&T Antenna Inventory & Power Level

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 4* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s).

Frequency Band	Technology	Centerline (ft.)	# of Channels	ERP W (Per Channel)	Total Power Density ($\mu W/cm^2$)	Allowable MPE ($\mu W/cm^2$)	MPE %
700	LTE	167.3	2	429.6563698	0.0251529	467	0.00538991
850	UMTS	167.3	2	721.2070963	0.0373597	567	0.00659290
1900	LTE	167.3	4	1224.785373	0.0722533	1000	0.00722533
700	LTE	167.3	4	612.4349847	0.0624294	467	0.01337772
2100	LTE	167.3	4	1766.281789	0.0689067	1000	0.00689067
850	LTE	167.3	4	688.74743	0.0756767	567	0.01335471
700	LTE	167.3	2	599.8739342	0.0337114	467	0.00722386
2300	LTE	167.3	4	801.5673311	0.0422361	1000	0.00422361
						AT&T Sector A MPE%	**0.06427871**
700	LTE	167.3	2	471.1088413	0.0246922	467	0.00529119
850	UMTS	167.3	2	688.74743	0.0376336	567	0.00664122
1900	LTE	167.3	4	1224.785373	0.0712285	1000	0.00712285
700	LTE	167.3	4	656.2359093	0.0647732	467	0.01387996
2100	LTE	167.3	4	1766.281789	0.0689088	1000	0.00689088
850	LTE	167.3	4	755.1965396	0.0743841	567	0.01312661
700	LTE	167.3	2	628.1451217	0.0331610	467	0.00710592
2300	LTE	167.3	4	858.8948697	0.0435330	1000	0.00435330
						AT&T Sector B MPE%	**0.06441195**
700	LTE	167.3	2	553.5046258	0.0201546	467	0.00431885
850	UMTS	167.3	2	847.3444541	0.0291596	567	0.00514582
1900	LTE	167.3	4	1312.381172	0.0531307	1000	0.00531307
700	LTE	167.3	4	826.1520623	0.0500214	467	0.01071888
2100	LTE	167.3	4	1766.281789	0.0582839	1000	0.00582839
850	LTE	167.3	4	929.0947185	0.0589964	567	0.01041113
700	LTE	167.3	2	738.0061677	0.0270713	467	0.00580098
2300	LTE	167.3	4	801.5673311	0.0371392	1000	0.00371392
						AT&T Sector C MPE%	**0.05125103**
						AT&T Total MPE%	**0.17994170 %**

Table 4: AT&T Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Carrier	Predicted MPE %
AT&T	0.17994170%
Composite	**0.17994170%**

Table 5: Total Predicted MPE(%) by Carrier

Compliance Status:

The anticipated composite MPE value for this site assuming all carriers present is **0.17994170%** of the allowable FCC established general population limit sampled at the ground level.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Samuel Cosgrove
RF Compliance Consultant
Centerline Communications, LLC
750 West Center St. Suite 301
West Bridgewater, MA 02379

EXHIBIT 6

Tectonic

PRACTICAL SOLUTIONS EXCEPTIONAL SERVICE

Date: **January 5, 2021**

Structural Modification Analysis Report

Tower Owner:	Town of Glastonbury
Carrier:	AT&T
FA Location:	10035111
Site Name:	Glastonbury PD
Site Data:	2108 Main Street, Glastonbury, Hartford County, CT 06033 Latitude *41° 42' 22.37"*, Longitude *-72° 36' 24.89"* 170 ft Self-Support Tower
Tectonic Project Number:	10178.CTL01083, Revision 1

Tectonic Engineering & Surveying Consultants P.C. is pleased to submit this **"Structural Modification Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level upon proposed modifications. Based on our analysis we have determined the tower stress level for the structure and foundation upon installation of proposed modifications to be:

Structure:	**Sufficient Capacity – 99.9%**
Foundation:	**Sufficient Capacity – 82.5%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Structure Class 3 were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with drawing for the determined available structural capacity to be effective.

We at Tectonic appreciate the opportunity of providing our continuing professional services to you and AT&T. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: John-Fritz Julien / Ian Marinaccio

Respectfully submitted by:
Tectonic Engineering & Surveying Consultants P.C.

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
PEN.0025406
LICENSED PROFESSIONAL ENGINEER

Antonio A. Gualtieri, P.E.
Executive Vice President

Antonio A. Gualtieri
I have reviewed this document
2021-01-14 11:06-05:00

Project Contact Info

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
Equal Opportunity Employer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 170 ft Self Support tower designed by Rohn. The site was visited on June 12, 2020 by Tectonic for a visual ground inspection.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Structure Class:	3
Wind Speed:	97 mph
Exposure Category:	C
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
166.0	166.0	3	ericsson	RRUS 4415 B25	-	-	-

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
173.0	173.0	1	miscl	10' x 1" Dia Omni	3	7/8	1
		2	miscl	8' x 2" Dia Omni			
166.0	166.0	3	tower mounts	14' Sector Mount	12 3 6	1-1/4 3/8 3/4	1
		4	cci antennas	OPA-65R-LCUU-H6			
		2	cci antennas	OPA-65R-LCUU-H8			
		6	cci triplex	TPX-070821			
		3	ericsson	RRUS 11 B12			
		3	ericsson	RRUS 32 B30			
		3	ericsson	RRUS 32 B66			
		3	ericsson	RRUS 4478 B14			
		2	kathrein	800-10965			
		1	kathrein	800-10966			
		3	miscl	Polyphaser 1000860			
		12	miscl	TSXDC-4310FM			
		3	raycap	DC6-48-60-18			
		6	miscl	APTDCBDFDM-DB			
		3	powerwave technologies	TT19-08BP111-001			
		3	kathrein	800 10121	-	-	2
		3	miscl	TT19-08BP111-001			
		3	ericsson	RRUS 32 B2			
152.0	152.0	1	tower mounts	3' Side Mount Standoff	1	7/8	1
		1	kathrein	PR-950			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
140.0	142.5	1	miscl	5' x 1" Dia Omni	1	7/8	1
	140.0	2	tower mounts	3' Side Mount Standoff			
129.0	134.0	1	miscl	10' x 1" Dia Omni	1	7/8	1
	129.0	1	tower mounts	3' Side Mount Standoff			
124.0	130.0	1	miscl	12' x 3" Dia Omni	2	1/2	1
	129.0	1	miscl	10' x 1" Dia Omni			
	124.0	2	tower mounts	3' Side Mount Standoff			
	124.0	1	commscope	VHLP3-11W-SE1			
117.0	115.0	1	andrew	Andrew 6' w/Radome	1	1-5/8	1
107.0	112.0	1	miscl	10' Dipole	1	7/8	1
100.0	110.0	1	miscl	20' x 2" Dia Omni	3	7/8	1
	105.0	1	miscl	10' x 1" Dia Omni			
		1	miscl	10' x 2" Dia Omni			
	100.0	3	tower mounts	3' Side Mount Standoff			
84.0	89.0	1	miscl	10' x 2" Dia Omni	1	7/8	1
	84.0	1	tower mounts	3' Side Mount Standoff			
70.0	76.0	1	miscl	12' x 3" Dia Omni	1	7/8	1
	70.0	1	tower mounts	3' Side Mount Standoff			
67.0	71.0	1	miscl	12' x 3" Dia Omni	1	7/8	1
	67.0	1	tower mounts	3' Side Mount Standoff			
50.0	60.0	1	miscl	20' x 3" Dia Omni	2 1	7/8 3/8	1
	55.0	1	miscl	10' x 2" Dia Omni			
	50.0	3	tower mounts	3' Side Mount Standoff			
		1	miscl	Ground Plane			
30.0	40.0	1	miscl	20' x 2" Dia Omni	1 2	1/2 7/8	1
		1	miscl	20' x 3" Dia Omni			
	35.0	1	celwave	PD1150			
	30.0	3	tower mounts	3' Side Mount Standoff			
22.0	27.0	1	miscl	2' x 1" Dia Omni	1	1/2	1
	22.0	1	miscl	3' Side Mount Standoff			

Notes:
1) Existing Equipment
2) Existing Equipment to be removed; not considered in the analysis.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Dated
TOWER AND FOUNDATION DRAWINGS	Rohn	08/01/97
STRUCTURAL ANALYSIS REPORT	Centek Engineering	01/09/17
STRUCTURAL ANALYSIS REPORT	Tectonic	10/06/17
STRUCTURAL MODIFICATION ANALYSIS REPORT	Fullerton Engineering Consultants, Inc.	04/24/18

Document	Remarks	Dated
STRUCTURAL MODIFICATION DRAWINGS	Fullerton Engineering Consultants, Inc.	04/24/18
RFDS	AT&T	03/10/20
MOUNT MAPPING REPORT	ProVertic	06/02/20
STRUCTURAL ANALYSIS REPORT	Tectonic	07/01/20

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) The existing antennas and feedlines are based on the previous analysis by Fullerton Engineering and a limited visual inspection from ground performed by Tectonic on 6/12/20.
4) The soil parameters for the foundation analysis are based on the original presumptive values used in the foundation design by Rohn, referenced above.

This analysis is solely for the supporting tower structure and it may be affected if any assumptions are not valid or have been made in error. Tectonic should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	170 - 166.667	Leg	ROHN 2.5 STD	2	-0.6230	67.3119	0.9	Pass
T2	166.667 - 163.333	Leg	ROHN 2.5 STD	13	-9.8152	67.3119	14.6	Pass
T3	163.333 - 160	Leg	ROHN 2.5 STD	22	-12.0334	67.3119	17.9	Pass
T4	160 - 140	Leg	ROHN 2.5 STD	31	-42.8564	63.5190	67.5	Pass
T5	140 - 120	Leg	ROHN 3 STD	67	-71.8266	82.5074	87.1	Pass
T6	120 - 100	Leg	Rohn 3.5 X-STR	94	-101.3910	125.7260	80.6	Pass
T7	100 - 80	Leg	ROHN 4 X-STR	115	-133.2360	159.9140	83.3	Pass
T8	80 - 60	Leg	ROHN 4 X-STR	136	-164.4610	187.4430	87.7	Pass
T9	60 - 40	Leg	ROHN 5 X-STR	166	-250.1440	253.0900	98.8	Pass
T10	40 - 20	Leg	ROHN 6 EHS	187	-257.1340	285.5660	90.0	Pass
T11	20 - 0	Leg	ROHN 6 EHS	208	-265.0960	285.6450	92.8	Pass
T1	170 - 166.667	Diagonal	L1 1/2x1 1/2x1/8	10	-0.6765	6.2909	10.8 21.3 (b)	Pass
T2	166.667 - 163.333	Diagonal	L1 1/2x1 1/2x1/8	17	-2.4641	6.2909	39.2 78.8 (b)	Pass
T3	163.333 - 160	Diagonal	L2x2x1/4	30	-3.3477	19.9920	16.7 39.7 (b)	Pass
T4	160 - 140	Diagonal	L1 1/2x1 1/2x3/16	42	-3.3335	5.3520	62.3 72.8 (b)	Pass
T5	140 - 120	Diagonal	L1 3/4x1 3/4x3/16	75	-3.9649	5.0805	78.0	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T6	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	102	-5.6691	9.4665	59.9 89.6 (b)	Pass
T7	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	123	-6.4075	7.3068	87.7 99.1 (b)	Pass
T8	80 - 60	Diagonal	L2 1/2x2 1/2x3/8	144	-7.4082	10.5105	70.5 93.2 (b)	Pass
T9	60 - 40	Diagonal	L3x3x3/8	174	-9.2914	12.6681	73.3 74.8 (b)	Pass
T10	40 - 20	Diagonal	L3x3x3/8	195	-10.7358	10.7502	99.9	Pass
T11	20 - 0	Diagonal	L3 1/2x3 1/2x3/8	216	-11.3958	14.6544	77.8 91.7 (b)	Pass
T8	80 - 60	Secondary Horizontal	L2 1/2x2 1/2x1/4	147	-2.8527	9.4126	30.3 35.9 (b)	Pass
T9	60 - 40	Secondary Horizontal	L3x3x1/4	175	-4.2670	12.9964	32.8 37.5 (b)	Pass
T10	40 - 20	Secondary Horizontal	L3x3x1/4	196	-4.4221	10.2885	43.0	Pass
T11	20 - 0	Secondary Horizontal	L3 1/2 x 3 1/2 x 1/4	217	-4.9697	13.3256	37.3 40.0 (b)	Pass
T1	170 - 166.667	Top Girt	L1 1/2x1 1/2x1/8	5	-0.4683	2.9700	15.8	Pass
T4	160 - 140	Top Girt	L1 1/2x1 1/2x3/16	34	-0.0478	4.2104	1.1 1.2 (b)	Pass
							Summary	
						Leg (T9)	98.8	Pass
						Diagonal (T10)	99.9	Pass
						Secondary Horizontal (T10)	43.0	Pass
						Top Girt (T1)	15.8	Pass
						Bolt Checks	99.1	Pass
						Rating =	99.9	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	77.0	Pass
1	Base Foundation Soil Interaction	0	82.5	Pass
1	Base Foundation	0	27.6	Pass

Structure Rating (max from all components) =	99.9%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

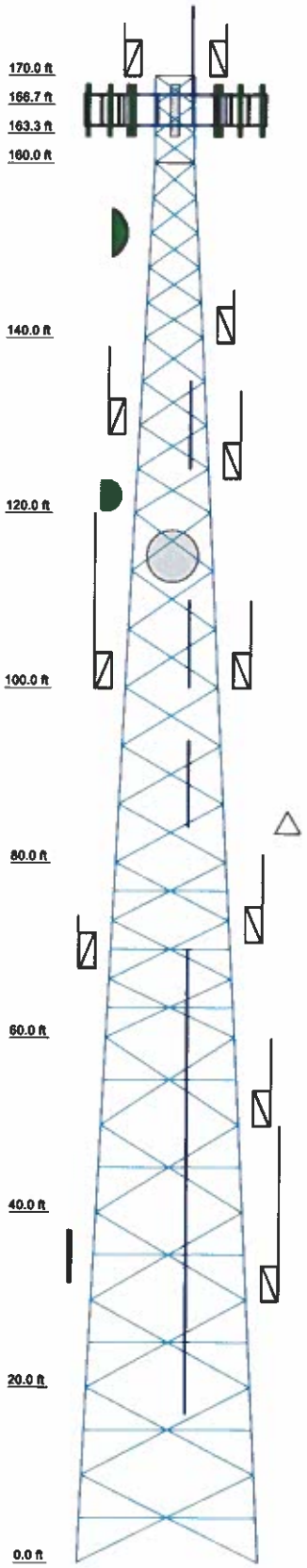
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration once the proposed modifications are installed as detailed in the drawings.

APPENDIX A

TNXTOWER OUTPUT

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 6 EHS		ROHN 5 X-STR		ROHN 4 X-STR		Rohn 3.5 X-STR	ROHN 3 STD	ROHN 2.5 STD		
Leg Grade	A572-50										
Diagonals	L3 1/2x3 1/2x3/8		L3x3x3/8		L2 1/2x2 1/2x3/8		L2 1/2x2 1/2x3/16	L1 3/4x1 3/4x3/16	L1 1/2x1 1/2x3/16	B	A
Diagonal Grade	A572-50						A36				
Top Girts	N.A.								L1 1/2x1 1/2x3/16	N.A.	A
Sec. Horizontals	L3 1/2 x 3 1/2 x 1/4		L3x3x1/4		L2 1/2x2 1/2x1/4		N.A.				
Face Width (ft)	20.86	18.85		16.85		14.77		12.68	10.68	8.64	6.6	4.56
# Panels @ (ft)		6 @ 10					9 @ 6.66667			4 @ 5	5 @ 4	3 @ 3.33333
Weight (K)	20.4	4.6	3.8		3.8		3.2	1.7	1.5	1.3	0.8	0.2	0.1	0.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10' x 1" Dia Omni	173	PR-950	152
8' x 2" Dia Omni	173	3' Side Mount Standoff	140
8' x 2" Dia Omni	173	5' x 1" Dia Omni	140
80010965_TIA w/ Mount Pipe	166	3' Side Mount Standoff	140
80010965_TIA w/ Mount Pipe	166	10' x 1" Dia Omni	129
80010966_TIA w/ Mount Pipe	166	3' Side Mount Standoff	129
(2) OPA-65R-LCUU-H6_TIA w/ Mount Pipe	166	12' x 3" Dia Omni	124
		3' Side Mount Standoff	124
(2) OPA-65R-LCUU-H8_TIA w/ Mount Pipe	166	10' x 1" Dia Omni	124
		3' Side Mount Standoff	124
(2) OPA-65R-LCUU-H8_TIA w/ Mount Pipe	166	Dish Mount	122
		Dish Tie-Back	122
(2) TPX-070821	166	VHLP3-11W-SEI	122
(2) TPX-070821	166	Dish Mount	115
(2) TPX-070821	166	Dish Tie-Back	115
RRUS 11 B12	166	Andrew 6' w/Radome	115
RRUS 11 B12	166	10' Dipole	107
RRUS 11 B12	166	10' x 2" Dia Omni	100
RRUS 4415 B25	166	3' Side Mount Standoff	100
RRUS 4415 B25	166	10' x 1" Dia Omni	100
RRUS 4415 B25	166	3' Side Mount Standoff	100
RRUS 32 B66	166	20' x 2" Dia Omni	100
RRUS 32 B66	166	3' Side Mount Standoff	100
RRUS 32 B66	166	10' x 2" Dia Omni	84
RRUS 4478 B14	166	3' Side Mount Standoff	84
RRUS 4478 B14	166	12' x 3" Dia Omni	70
RRUS 4478 B14	166	3' Side Mount Standoff	70
RRUS 32 B30	166	12' x 3" Dia Omni	67
RRUS 32 B30	166	3' Side Mount Standoff	67
RRUS 32 B30	166	20' x 3" Dia Omni	50
(4) TSXDC-4310FM	166	3' Side Mount Standoff	50
(4) TSXDC-4310FM	166	10' x 2" Dia Omni	50
(4) TSXDC-4310FM	166	3' Side Mount Standoff	50
Polyphaser 1000860	166	Ground Plane	50
Polyphaser 1000860	166	3' Side Mount Standoff	50
Polyphaser 1000860	166	20' x 3" Dia Omni	30
14' Sector Mount	166	3' Side Mount Standoff	30
(2) APTDC-BDFDM-DBW	166	20' x 2" Dia Omni	30
(2) APTDC-BDFDM-DBW	166	3' Side Mount Standoff	30
(2) APTDC-BDFDM-DBW	166	PD1150	30
DC6-48-60-18-8F	166	3' Side Mount Standoff	30
DC6-48-60-18-8F	166	3' Side Mount Standoff	22
DC6-48-60-18-8F	166	2' x 1" Dia. Omni	22
3' Side Mount Standoff	152		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x1/8	B	L2x2x1/4

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

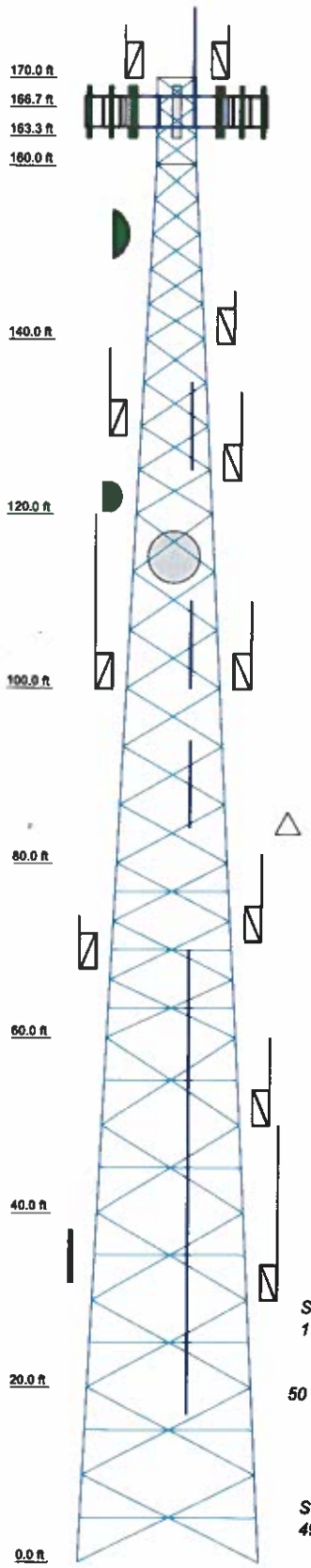
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0.00 ft

Tectonic

Tectonic
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job: *Glastonbury PD _ Modification Analysis*		
Project: *10178.CTL01083*		
Client: AT&T	Drawn by: Ian Marinaccio	App'd:
Code: TIA-222-G	Date: 08/10/20	Scale: NT
Path:		Dwg No. E

Section		T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs		ROHN 6 EHS		ROHN 5 X-STR	ROHN 4 X-STR		Rohn 3.5 X-STR	ROHN 3 STD	ROHN 2.5 STD			
Leg Grade		A572-50										
Diagonals		L3 1/2x3 1/2x3/8		L3x3x3/8	L2 1/2x2 1/2x3/8		L2 1/2x2 1/2x3/16	L1 3/4x1 3/4x3/16	L1 1/2x1 1/2x3/16	B	A	
Diagonal Grade		A572-50					A36					
Top Girts		N.A.							L1 1/2x1 1/2x3/16	N.A.	A	
Sec. Horizontals		L3 1/2 x 3 1/2 x 1/4		L3x3x1/4	L2 1/2x2 1/2x1/4		N.A.					
Face Width (ft)	20.86	18.85		16.85	14.77	12.68	10.68	8.64	6.6			4.56
# Panels @ (ft)		6 @ 10				9 @ 6.66667			4 @ 5	5 @ 4	3 @ 3.33333	
Weight (K)	20.4	4.6	3.8	3.8	3.2	1.7	1.6	1.0	0.8	0.2	0.1	0.1



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x1/8	B	L2x2x1/4

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

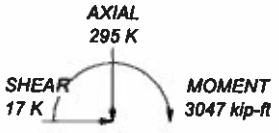
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.9%

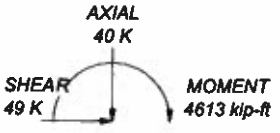
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 269 K
SHEAR: 31 K

UPLIFT: -231 K
SHEAR: 27 K



TORQUE 7 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 33 kip-ft
REACTIONS - 97 mph WIND

Tectonic

Tectonic
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job: *Glastonbury PD _ Modification Analysis*		
Project: *10178.CTL01083*		
Client: AT&T	Drawn by: Ian Marinaccio	App'd:
Code: TIA-222-G	Date: 08/10/20	Scale: NT
Path:		Dwg No. E

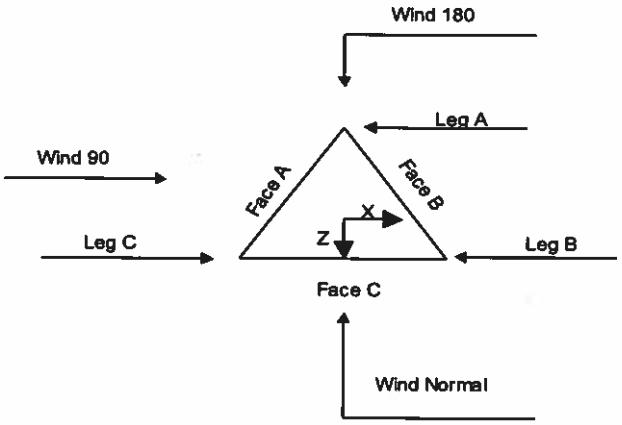
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 170.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.56 ft at the top and 20.86 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 97 mph.
3) Structure Class III.
4) Exposure Category C.
5) Topographic Category 1.
6) Crest Height 0.00 ft.
7) Nominal ice thickness of 1.0000 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) Pressures are calculated at each section.
14) Stress ratio used in tower member design is 1.
15) 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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	170.00-166.67			4.56	1	3.33
T2	166.67-163.33			4.56	1	3.33
T3	163.33-160.00			4.56	1	3.33
T4	160.00-140.00			4.56	1	20.00
T5	140.00-120.00			6.60	1	20.00
T6	120.00-100.00			8.64	1	20.00
T7	100.00-80.00			10.68	1	20.00
T8	80.00-60.00			12.68	1	20.00
T9	60.00-40.00			14.77	1	20.00
T10	40.00-20.00			16.85	1	20.00
T11	20.00-0.00			18.85	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	170.00-166.67	3.33	X Brace	No	No	0.0000	0.0000
T2	166.67-163.33	3.33	X Brace	No	No	0.0000	0.0000
T3	163.33-160.00	3.33	X Brace	No	No	0.0000	0.0000
T4	160.00-140.00	4.00	X Brace	No	No	0.0000	0.0000
T5	140.00-120.00	5.00	X Brace	No	No	0.0000	0.0000
T6	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000
T7	100.00-80.00	6.67	X Brace	No	No	0.0000	0.0000
T8	80.00-60.00	6.67	X Brace	No	Yes	0.0000	0.0000
T9	60.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	40.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T11	20.00-0.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 170.00-166.67	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 166.67-163.33	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T3 163.33-160.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T4 160.00-140.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 140.00-120.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T6 120.00-100.00	Pipe	Rohn 3.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 100.00-80.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T8 80.00-60.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/8	A36 (36 ksi)
T9 60.00-40.00	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x3/8	A572-50 (50 ksi)
T10 40.00-20.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L3x3x3/8	A572-50 (50 ksi)
T11 20.00-0.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x3/8	A572-50 (50 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 170.00-166.67	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 160.00-140.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T8 80.00-60.00	Equal Angle	L2 1/2x2 1/2x1/4	A572-50 (50 ksi)	Equal Angle		A36 (36 ksi)
T9 60.00-40.00	Equal Angle	L3x3x1/4	A572-50 (50 ksi)	Equal Angle		A36 (36 ksi)
T10 40.00-20.00	Equal Angle	L3x3x1/4	A572-50 (50 ksi)	Equal Angle		A36 (36 ksi)
T11 20.00-0.00	Equal Angle	L3 1/2 x 3 1/2 x 1/4	A572-50 (50 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	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 170.00-166.67	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T2 166.67-163.33	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T3 163.33-160.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T4 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T5 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T6 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T7 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T8 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T9 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T10 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000
T11 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1.03	1.05	0.0000	0.0000	0.0000

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 170.00-166.67	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 166.67-163.33	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 163.33-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 160.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 140.00-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 120.00-100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 100.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 80.00-60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T9 60.00-40.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T10 40.00-20.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T11 20.00-0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	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 170.00-166.67	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 166.67-163.33	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 163.33-160.00	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 160.00-140.00	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 140.00-120.00	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 120.00-100.00	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 100.00-80.00	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 80.00-60.00	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 60.00-40.00	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 40.00-20.00	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 20.00-0.00	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 170.00-166.67	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 166.67-163.33	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 163.33-160.00	Flange	0.7500 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 160.00-140.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 140.00-120.00	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 120.00-100.00	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 100.00-80.00	Flange	0.8750 A325N	4	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 80.00-60.00	Flange	1.0000 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1
T9 60.00-40.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T10 40.00-20.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	1
T11 20.00-0.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1

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 plf
LDF2-50(3/8")	A	No	No	Ar (CaAa)	50.00 - 20.00	0.0000	-0.46	1	1	0.5000	0.4400		0.08
LDF4-50A(1/2")	A	No	No	Ar (CaAa)	22.00 - 20.00	0.0000	-0.44	4	4	0.5000	0.6300		0.15
LDF4-50A(1/2")	A	No	No	Ar (CaAa)	30.00 - 22.00	0.0000	-0.44	3	3	0.5000	0.6300		0.15
LDF4-50A(1/2") **	A	No	No	Ar (CaAa)	124.00 - 30.00	0.0000	-0.44	2	2	0.5000	0.6300		0.15
LDF5-50A(7/8")	A	No	No	Ar (CaAa)	100.00 - 20.00	0.0000	-0.4	5	5	0.5000	1.0900		0.33
LDF5-50A(7/8")	A	No	No	Ar (CaAa)	129.00 - 100.00	0.0000	-0.4	3	3	0.5000	1.0900		0.33
LDF5-50A(7/8")	A	No	No	Ar (CaAa)	140.00 - 129.00	0.0000	-0.4	2	2	0.5000	1.0900		0.33
LDF5-50A(7/8") **	A	No	No	Ar (CaAa)	152.00 - 140.00	0.0000	-0.4	1	1	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	30.00 - 20.00	0.0000	-0.42	12	12	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	50.00 - 30.00	0.0000	-0.42	10	10	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	67.00 - 50.00	0.0000	-0.42	8	8	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	70.00 - 67.00	0.0000	-0.42	7	7	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	84.00 - 70.00	0.0000	-0.42	6	6	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	100.00 - 84.00	0.0000	-0.42	5	5	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	107.00 - 100.00	0.0000	-0.42	4	4	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	170.00 - 107.00	0.0000	-0.42	3	3	0.5000	1.0900		0.33
LDF7-50A(1-5/8) **	C	No	No	Ar (CaAa)	115.00 - 20.00	0.0000	-0.4	1	1	0.5000	1.9800		0.82
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	166.00 - 10.00	0.0000	-0.28	12	6	0.5000	1.5500		0.66
LDF2-50(3/8)	B	No	No	Ar (CaAa)	166.00 - 10.00	0.0000	-0.39	3	3	0.5000	0.4400		0.08
WR-VG86ST-BRD(3/4") **	B	No	No	Ar (CaAa)	166.00 - 10.00	0.0000	-0.38	6	6	0.5000	0.7950		0.58
Safety Line 3/8	B	No	No	Ar (CaAa)	170.00 - 0.00	0.0000	0.5	1	1	0.3750	0.3750		0.22
Step Bolts	B	No	No	Ar (CaAa)	170.00 - 0.00	0.0000	0.5	1	1	0.3750	0.3750		2.00
Step Bolts	A	No	No	Ar (CaAa)	60.00 - 10.00	0.0000	0.5	1	1	0.3750	0.3750		2.00
Step Bolts	C	No	No	Ar (CaAa)	60.00 - 10.00	0.0000	0.5	1	1	0.3750	0.3750		2.00
Feedline Ladder (Af)	A	No	No	Af (CaAa)	170.00 - 20.00	0.0000	-0.4	1	1	3.0000	2.5000		8.40
Feedline Ladder (Af)	B	No	No	Af (CaAa)	170.00 - 10.00	0.0000	-0.4	1	1	3.0000	2.5000		8.40
Feedline Ladder (Af)	C	No	No	Af (CaAa)	170.00 - 20.00	0.0000	-0.4	1	1	3.0000	2.5000		8.40

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	170.00-166.67	A	0.000	0.000	1.389	0.000	0.0280
		B	0.000	0.000	1.639	0.000	0.0354
		C	0.000	0.000	2.479	0.000	0.0313
T2	166.67-163.33	A	0.000	0.000	1.389	0.000	0.0280
		B	0.000	0.000	8.223	0.000	0.0665
		C	0.000	0.000	2.479	0.000	0.0313
T3	163.33-160.00	A	0.000	0.000	1.389	0.000	0.0280
		B	0.000	0.000	9.869	0.000	0.0743
		C	0.000	0.000	2.479	0.000	0.0313
T4	160.00-140.00	A	0.000	0.000	9.641	0.000	0.1720
		B	0.000	0.000	59.213	0.000	0.4457
		C	0.000	0.000	14.873	0.000	0.1878
T5	140.00-120.00	A	0.000	0.000	14.178	0.000	0.1854
		B	0.000	0.000	59.213	0.000	0.4457
		C	0.000	0.000	14.873	0.000	0.1878
T6	120.00-100.00	A	0.000	0.000	17.393	0.000	0.1938
		B	0.000	0.000	59.213	0.000	0.4457
		C	0.000	0.000	18.606	0.000	0.2024
T7	100.00-80.00	A	0.000	0.000	21.753	0.000	0.2070
		B	0.000	0.000	59.213	0.000	0.4457
		C	0.000	0.000	23.629	0.000	0.2187
T8	80.00-60.00	A	0.000	0.000	21.753	0.000	0.2070
		B	0.000	0.000	59.213	0.000	0.4457
		C	0.000	0.000	27.226	0.000	0.2296
T9	60.00-40.00	A	0.000	0.000	22.943	0.000	0.2478
		B	0.000	0.000	59.213	0.000	0.4457
		C	0.000	0.000	32.663	0.000	0.2838
T10	40.00-20.00	A	0.000	0.000	24.139	0.000	0.2504
		B	0.000	0.000	59.213	0.000	0.4457
		C	0.000	0.000	37.023	0.000	0.2970
T11	20.00-0.00	A	0.000	0.000	0.375	0.000	0.0200
		B	0.000	0.000	30.357	0.000	0.2450
		C	0.000	0.000	0.375	0.000	0.0200

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	170.00-166.67	A	2.942	0.000	0.000	3.351	0.000	0.0972
		B		0.000	0.000	7.524	0.000	0.1841
		C		0.000	0.000	8.484	0.000	0.1751
T2	166.67-163.33	A	2.937	0.000	0.000	3.347	0.000	0.0970
		B		0.000	0.000	22.556	0.000	0.4747
		C		0.000	0.000	8.473	0.000	0.1747
T3	163.33-160.00	A	2.931	0.000	0.000	3.343	0.000	0.0967
		B		0.000	0.000	26.285	0.000	0.5462
		C		0.000	0.000	8.462	0.000	0.1743
T4	160.00-140.00	A	2.909	0.000	0.000	27.749	0.000	0.7499
		B		0.000	0.000	156.999	0.000	3.2477
		C		0.000	0.000	50.532	0.000	1.0358
T5	140.00-120.00	A	2.867	0.000	0.000	53.241	0.000	1.0324
		B		0.000	0.000	155.656	0.000	3.1924
		C		0.000	0.000	50.080	0.000	1.0175
T6	120.00-100.00	A	2.820	0.000	0.000	73.807	0.000	1.2932
		B		0.000	0.000	154.113	0.000	3.1295
		C		0.000	0.000	62.167	0.000	1.2860
T7	100.00-80.00	A	2.764	0.000	0.000	79.660	0.000	1.4219
		B		0.000	0.000	152.295	0.000	3.0561
		C		0.000	0.000	71.539	0.000	1.4880
T8	80.00-60.00	A	2.695	0.000	0.000	78.441	0.000	1.3779
		B		0.000	0.000	150.069	0.000	2.9677
		C		0.000	0.000	76.529	0.000	1.5738
T9	60.00-40.00	A	2.606	0.000	0.000	93.684	0.000	1.6495
		B		0.000	0.000	147.177	0.000	2.8548
		C		0.000	0.000	94.429	0.000	1.9083

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
T10	40.00-20.00	A	2.476	0.000	0.000	97.351	0.000	1.6630
		B		0.000	0.000	142.973	0.000	2.6948
		C		0.000	0.000	99.667	0.000	1.9450
T11	20.00-0.00	A	2.219	0.000	0.000	4.812	0.000	0.0903
		B		0.000	0.000	76.946	0.000	1.3590
		C		0.000	0.000	4.812	0.000	0.0903

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	170.00-166.67	2.7295	0.2720	1.4278	0.7050
T2	166.67-163.33	3.6456	-6.5338	3.4304	-2.2894
T3	163.33-160.00	3.4375	-7.1485	3.1808	-2.8395
T4	160.00-140.00	3.8745	-8.6883	4.1124	-3.9288
T5	140.00-120.00	3.4395	-9.6396	4.5439	-4.9546
T6	120.00-100.00	3.9058	-9.0414	5.0780	-3.9560
T7	100.00-80.00	5.0518	-8.8810	6.7154	-3.7742
T8	80.00-60.00	5.7104	-8.4748	7.3633	-3.7947
T9	60.00-40.00	7.4024	-9.5994	6.4759	-4.9697
T10	40.00-20.00	8.8014	-9.8051	7.1085	-4.7408
T11	20.00-0.00	1.7294	-9.2415	5.9126	-9.7371

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	18	LDF5-50A(7/8")	166.67 - 170.00	0.6000	0.1789
T1	25	Safety Line 3/8	166.67 - 170.00	0.6000	0.1789
T1	26	Step Bolts	166.67 - 170.00	0.6000	0.1789
T1	29	Feedline Ladder (Af)	166.67 - 170.00	0.6000	0.1789
T1	30	Feedline Ladder (Af)	166.67 - 170.00	0.6000	0.1789
T1	31	Feedline Ladder (Af)	166.67 - 170.00	0.6000	0.1789
T2	18	LDF5-50A(7/8")	163.33 - 166.67	0.6000	0.3341
T2	21	LDF6-50A(1-1/4")	163.33 - 166.00	0.6000	0.3341
T2	22	LDF2-50(3/8)	163.33 - 166.00	0.6000	0.3341
T2	23	WR-VG86ST-BRD(3/4")	163.33 - 166.00	0.6000	0.3341
T2	25	Safety Line 3/8	163.33 - 166.67	0.6000	0.3341
T2	26	Step Bolts	163.33 - 166.67	0.6000	0.3341
T2	29	Feedline Ladder (Af)	163.33 - 166.67	0.6000	0.3341
T2	30	Feedline Ladder (Af)	163.33 - 166.67	0.6000	0.3341
T2	31	Feedline Ladder (Af)	163.33 - 166.67	0.6000	0.3341

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	18	LDF5-50A(7/8")	160.00 - 163.33	0.6000	0.3097
T3	21	LDF6-50A(1-1/4")	160.00 - 163.33	0.6000	0.3097
T3	22	LDF2-50(3/8)	160.00 - 163.33	0.6000	0.3097
T3	23	WR-VG86ST-BRD(3/4")	160.00 - 163.33	0.6000	0.3097
T3	25	Safety Line 3/8	160.00 - 163.33	0.6000	0.3097
T3	26	Step Bolts	160.00 - 163.33	0.6000	0.3097
T3	29	Feedline Ladder (Af)	160.00 - 163.33	0.6000	0.3097
T3	30	Feedline Ladder (Af)	160.00 - 163.33	0.6000	0.3097
T3	31	Feedline Ladder (Af)	160.00 - 163.33	0.6000	0.3097
T4	9	LDF5-50A(7/8")	140.00 - 152.00	0.6000	0.4158
T4	18	LDF5-50A(7/8")	140.00 - 160.00	0.6000	0.4158
T4	21	LDF6-50A(1-1/4")	140.00 - 160.00	0.6000	0.4158
T4	22	LDF2-50(3/8)	140.00 - 160.00	0.6000	0.4158
T4	23	WR-VG86ST-BRD(3/4")	140.00 - 160.00	0.6000	0.4158
T4	25	Safety Line 3/8	140.00 - 160.00	0.6000	0.4158
T4	26	Step Bolts	140.00 - 160.00	0.6000	0.4158
T4	29	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4158
T4	30	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4158
T4	31	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4158
T5	4	LDF4-50A(1/2")	120.00 - 124.00	0.6000	0.5437
T5	7	LDF5-50A(7/8")	120.00 - 129.00	0.6000	0.5437
T5	8	LDF5-50A(7/8")	129.00 - 140.00	0.6000	0.5437
T5	18	LDF5-50A(7/8")	120.00 - 140.00	0.6000	0.5437
T5	21	LDF6-50A(1-1/4")	120.00 - 140.00	0.6000	0.5437
T5	22	LDF2-50(3/8)	120.00 - 140.00	0.6000	0.5437
T5	23	WR-VG86ST-BRD(3/4")	120.00 - 140.00	0.6000	0.5437
T5	25	Safety Line 3/8	120.00 - 140.00	0.6000	0.5437
T5	26	Step Bolts	120.00 - 140.00	0.6000	0.5437
T5	29	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.5437
T5	30	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.5437
T5	31	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.5437
T6	4	LDF4-50A(1/2")	100.00 - 120.00	0.6000	0.6000
T6	7	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.6000
T6	17	LDF5-50A(7/8")	100.00 - 107.00	0.6000	0.6000
T6	18	LDF5-50A(7/8")	107.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	19	LDF7-50A(1-5/8)	120.00 100.00 -	0.6000	0.6000
T6	21	LDF6-50A(1-1/4")	115.00 100.00 -	0.6000	0.6000
T6	22	LDF2-50(3/8)	120.00 100.00 -	0.6000	0.6000
T6	23	WR-VG86ST-BRD(3/4")	120.00 100.00 -	0.6000	0.6000
T6	25	Safety Line 3/8	120.00 100.00 -	0.6000	0.6000
T6	26	Step Bolts	120.00 100.00 -	0.6000	0.6000
T6	29	Feedline Ladder (Af)	120.00 100.00 -	0.6000	0.6000
T6	30	Feedline Ladder (Af)	120.00 100.00 -	0.6000	0.6000
T6	31	Feedline Ladder (Af)	120.00 100.00 -	0.6000	0.6000
T7	4	LDF4-50A(1/2")	120.00 80.00 -	0.6000	0.6000
T7	6	LDF5-50A(7/8")	100.00 80.00 -	0.6000	0.6000
T7	15	LDF5-50A(7/8")	100.00 80.00 -	0.6000	0.6000
T7	16	LDF5-50A(7/8")	84.00 84.00 -	0.6000	0.6000
T7	19	LDF7-50A(1-5/8)	100.00 80.00 -	0.6000	0.6000
T7	21	LDF6-50A(1-1/4")	100.00 80.00 -	0.6000	0.6000
T7	22	LDF2-50(3/8)	100.00 80.00 -	0.6000	0.6000
T7	23	WR-VG86ST-BRD(3/4")	100.00 80.00 -	0.6000	0.6000
T7	25	Safety Line 3/8	100.00 80.00 -	0.6000	0.6000
T7	26	Step Bolts	100.00 80.00 -	0.6000	0.6000
T7	29	Feedline Ladder (Af)	100.00 80.00 -	0.6000	0.6000
T7	30	Feedline Ladder (Af)	100.00 80.00 -	0.6000	0.6000
T7	31	Feedline Ladder (Af)	100.00 80.00 -	0.6000	0.6000
T8	4	LDF4-50A(1/2")	100.00 60.00 -	0.6000	0.5854
T8	6	LDF5-50A(7/8")	80.00 60.00 -	0.6000	0.5854
T8	13	LDF5-50A(7/8")	80.00 60.00 -	0.6000	0.5854
T8	14	LDF5-50A(7/8")	67.00 67.00 -	0.6000	0.5854
T8	15	LDF5-50A(7/8")	70.00 70.00 -	0.6000	0.5854
T8	19	LDF7-50A(1-5/8)	80.00 60.00 -	0.6000	0.5854
T8	21	LDF6-50A(1-1/4")	80.00 60.00 -	0.6000	0.5854
T8	22	LDF2-50(3/8)	80.00 60.00 -	0.6000	0.5854
T8	23	WR-VG86ST-BRD(3/4")	80.00 60.00 -	0.6000	0.5854
T8	25	Safety Line 3/8	80.00 60.00 -	0.6000	0.5854
T8	26	Step Bolts	80.00 60.00 -	0.6000	0.5854
T8	29	Feedline Ladder (Af)	80.00 60.00 -	0.6000	0.5854
			80.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_e No Ice	K_e Ice
T8	30	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.5854
T8	31	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.5854
T9	1	LDF2-50(3/8")	40.00 - 50.00	0.6000	0.6000
T9	4	LDF4-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T9	6	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.6000
T9	12	LDF5-50A(7/8")	40.00 - 50.00	0.6000	0.6000
T9	13	LDF5-50A(7/8")	50.00 - 60.00	0.6000	0.6000
T9	19	LDF7-50A(1-5/8)	40.00 - 60.00	0.6000	0.6000
T9	21	LDF6-50A(1-1/4")	40.00 - 60.00	0.6000	0.6000
T9	22	LDF2-50(3/8)	40.00 - 60.00	0.6000	0.6000
T9	23	WR-VG86ST-BRD(3/4")	40.00 - 60.00	0.6000	0.6000
T9	25	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T9	26	Step Bolts	40.00 - 60.00	0.6000	0.6000
T9	27	Step Bolts	40.00 - 60.00	0.6000	0.6000
T9	28	Step Bolts	40.00 - 60.00	0.6000	0.6000
T9	29	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T9	30	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T9	31	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T10	1	LDF2-50(3/8")	20.00 - 40.00	0.6000	0.6000
T10	2	LDF4-50A(1/2")	20.00 - 22.00	0.6000	0.6000
T10	3	LDF4-50A(1/2")	22.00 - 30.00	0.6000	0.6000
T10	4	LDF4-50A(1/2")	30.00 - 40.00	0.6000	0.6000
T10	6	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.6000
T10	11	LDF5-50A(7/8")	20.00 - 30.00	0.6000	0.6000
T10	12	LDF5-50A(7/8")	30.00 - 40.00	0.6000	0.6000
T10	19	LDF7-50A(1-5/8)	20.00 - 40.00	0.6000	0.6000
T10	21	LDF6-50A(1-1/4")	20.00 - 40.00	0.6000	0.6000
T10	22	LDF2-50(3/8)	20.00 - 40.00	0.6000	0.6000
T10	23	WR-VG86ST-BRD(3/4")	20.00 - 40.00	0.6000	0.6000
T10	25	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T10	26	Step Bolts	20.00 - 40.00	0.6000	0.6000
T10	27	Step Bolts	20.00 - 40.00	0.6000	0.6000
T10	28	Step Bolts	20.00 - 40.00	0.6000	0.6000
T10	29	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T10	30	Feedline Ladder (Af)	20.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	31	Feedline Ladder (Af)	40.00 20.00 - 40.00	0.6000	0.6000
T11	21	LDF6-50A(1-1/4")	10.00 - 20.00	0.6000	0.6000
T11	22	LDF2-50(3/8)	10.00 - 20.00	0.6000	0.6000
T11	23	WR-VG86ST-BRD(3/4")	10.00 - 20.00	0.6000	0.6000
T11	25	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T11	26	Step Bolts	0.00 - 20.00	0.6000	0.6000
T11	27	Step Bolts	10.00 - 20.00	0.6000	0.6000
T11	28	Step Bolts	10.00 - 20.00	0.6000	0.6000
T11	30	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000

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
10' x 1" Dia Omni	A	From Leg	3.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	1.00 2.02 3.05	1.00 2.02 3.05	0.0300 0.0393 0.0549
8' x 2" Dia Omni	B	From Leg	3.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	1.60 2.42 3.24	1.60 2.42 3.24	0.0200 0.0324 0.0501
8' x 2" Dia Omni	C	From Leg	3.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice 1" Ice	1.60 2.42 3.24	1.60 2.42 3.24	0.0200 0.0324 0.0501
**									
3' Side Mount Standoff	A	From Leg	1.50 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
**									
3' Side Mount Standoff	A	From Leg	1.50 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
5' x 1" Dia Omni	B	From Leg	3.00 0.00 2.50	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.50 1.02 1.43	0.50 1.02 1.43	0.0100 0.0147 0.0227
3' Side Mount Standoff	B	From Leg	1.50 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
**									
10' x 1" Dia Omni	C	From Leg	3.00 0.00 5.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	1.00 2.02 3.05	1.00 2.02 3.05	0.0300 0.0393 0.0549

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
3' Side Mount Standoff	C	From Leg	1.50 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
**									
12' x 3" Dia Omni	A	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	3.60 4.83 6.08	3.60 4.83 6.08	0.0400 0.0661 0.0999
3' Side Mount Standoff	A	From Leg	1.50 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
10' x 1" Dia Omni	B	From Leg	3.00 0.00 5.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	1.00 2.02 3.05	1.00 2.02 3.05	0.0300 0.0393 0.0549
3' Side Mount Standoff	B	From Leg	1.50 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
Dish Mount	C	From Leg	1.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
Dish Tie-Back	C	From Face	0.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	2.88 3.91 4.96	2.88 3.91 4.96	0.0580 0.0790 0.1066
**									
Dish Mount	A	From Leg	0.60 0.00 2.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice	1.56 2.08 2.40	1.56 2.08 2.40	0.0540 0.0700 0.0897
Dish Tie-Back	A	From Face	0.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice	1.66 2.39 2.83	1.66 2.39 2.83	0.0256 0.0382 0.0555
10' Dipole	A	From Leg	1.00 0.00 5.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	4.50 6.03 7.58	4.50 6.03 7.58	0.0240 0.0565 0.0986
**									
10' x 2" Dia Omni	A	From Leg	3.00 0.00 5.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	2.00 3.02 4.07	2.00 3.02 4.07	0.0200 0.0355 0.0575
3' Side Mount Standoff	A	From Leg	1.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
10' x 1" Dia Omni	B	From Leg	3.00 0.00 5.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.00 2.02 3.05	1.00 2.02 3.05	0.0300 0.0393 0.0549
3' Side Mount Standoff	B	From Leg	1.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.67 2.43 3.21	4.53 6.41 8.37	0.0620 0.0987 0.1479
20' x 2" Dia Omni	C	From Leg	3.00 0.00 10.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	4.00 6.03 8.07	4.00 6.03 8.07	0.0200 0.0508 0.0941
3' Side Mount Standoff	C	From Leg	1.50 0.00	0.0000	100.00	No Ice 1/2"	1.67 2.43	4.53 6.41	0.0620 0.0987

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
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
**									
10' x 2" Dia Omni	A	From Leg	3.00	0.0000	84.00	No Ice	2.00	2.00	0.0200
			0.00			1/2"	3.02	3.02	0.0355
			5.00			Ice	4.07	4.07	0.0575
						1" Ice			
3' Side Mount Standoff	A	From Leg	1.50	0.0000	84.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
**									
12' x 3" Dia Omni	B	From Leg	3.00	0.0000	70.00	No Ice	3.60	3.60	0.0400
			0.00			1/2"	4.83	4.83	0.0661
			6.00			Ice	6.08	6.08	0.0999
						1" Ice			
3' Side Mount Standoff	B	From Leg	1.50	0.0000	70.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
**									
12' x 3" Dia Omni	C	From Leg	3.00	0.0000	67.00	No Ice	3.60	3.60	0.0400
			0.00			1/2"	4.83	4.83	0.0661
			4.00			Ice	6.08	6.08	0.0999
						1" Ice			
3' Side Mount Standoff	C	From Leg	1.50	0.0000	67.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
**									
20' x 3" Dia Omni	A	From Leg	3.00	0.0000	50.00	No Ice	6.00	6.00	0.0500
			0.00			1/2"	8.03	8.03	0.0932
			10.00			Ice	10.08	10.08	0.1490
						1" Ice			
3' Side Mount Standoff	A	From Leg	1.50	0.0000	50.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
10' x 2" Dia Omni	B	From Leg	3.00	0.0000	50.00	No Ice	2.00	2.00	0.0200
			0.00			1/2"	3.02	3.02	0.0355
			5.00			Ice	4.07	4.07	0.0575
						1" Ice			
3' Side Mount Standoff	B	From Leg	1.50	0.0000	50.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
Ground Plane	C	From Leg	3.00	0.0000	50.00	No Ice	3.33	3.33	0.0419
			0.00			1/2"	9.34	9.34	23.5969
			0.00			Ice	14.03	14.03	47.2499
						1" Ice			
3' Side Mount Standoff	C	From Leg	1.50	0.0000	50.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
**									
20' x 3" Dia Omni	A	From Leg	3.00	0.0000	30.00	No Ice	6.00	6.00	0.0500
			0.00			1/2"	8.03	8.03	0.0932
			10.00			Ice	10.08	10.08	0.1490
						1" Ice			
3' Side Mount Standoff	A	From Leg	1.50	0.0000	30.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
20' x 2" Dia Omni	B	From Leg	3.00	0.0000	30.00	No Ice	4.00	4.00	0.0200
			0.00			1/2"	6.03	6.03	0.0508

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight K
			10.00			Ice	8.07	8.07	0.0941
						1" Ice			
3' Side Mount Standoff	B	From Leg	1.50	0.0000	30.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
3' Side Mount Standoff	C	From Leg	1.50	0.0000	30.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
PD1150	C	From Leg	3.00	0.0000	30.00	No Ice	1.22	1.22	0.0080
			0.00			1/2"	2.43	2.43	0.0160
			5.00			Ice	3.64	3.64	0.0240
						1" Ice			
**									
2' x 1" Dia. Omni	A	From Leg	3.00	0.0000	22.00	No Ice	0.20	0.20	0.0050
			0.00			1/2"	0.32	0.32	0.0069
			5.00			Ice	0.45	0.45	0.0103
						1" Ice			
3' Side Mount Standoff	A	From Leg	1.50	0.0000	22.00	No Ice	1.67	4.53	0.0620
			0.00			1/2"	2.43	6.41	0.0987
			0.00			Ice	3.21	8.37	0.1479
						1" Ice			
**									
80010965_TIA w/ Mount Pipe	A	From Leg	3.00	0.0000	166.00	No Ice	14.05	7.63	0.1362
			0.00			1/2"	14.69	8.90	0.2327
			0.00			Ice	15.30	9.96	0.3382
						1" Ice			
80010965_TIA w/ Mount Pipe	B	From Leg	3.00	0.0000	166.00	No Ice	14.05	7.63	0.1362
			0.00			1/2"	14.69	8.90	0.2327
			0.00			Ice	15.30	9.96	0.3382
						1" Ice			
80010966_TIA w/ Mount Pipe	C	From Leg	3.00	0.0000	166.00	No Ice	14.05	7.63	0.1362
			0.00			1/2"	14.69	8.90	0.2327
			0.00			Ice	15.30	9.96	0.3382
						1" Ice			
(2) OPA-65R-LCUU-H6_TIA w/ Mount Pipe	A	From Leg	3.00	0.0000	166.00	No Ice	9.68	7.12	0.1056
			0.00			1/2"	10.25	8.30	0.1812
			0.00			Ice	10.79	9.20	0.2649
						1" Ice			
(2) OPA-65R-LCUU-H6_TIA w/ Mount Pipe	B	From Leg	3.00	0.0000	166.00	No Ice	9.68	7.12	0.1056
			0.00			1/2"	10.25	8.30	0.1812
			0.00			Ice	10.79	9.20	0.2649
						1" Ice			
(2) OPA-65R-LCUU-H8_TIA w/ Mount Pipe	C	From Leg	3.00	0.0000	166.00	No Ice	13.00	9.56	0.1028
			0.00			1/2"	13.69	11.03	0.1982
			0.00			Ice	14.38	12.49	0.3035
						1" Ice			
(2) TPX-070821	A	From Leg	3.00	0.0000	166.00	No Ice	0.40	0.27	0.0100
			0.00			1/2"	0.48	0.34	0.0140
			0.00			Ice	0.57	0.41	0.0193
						1" Ice			
(2) TPX-070821	B	From Leg	3.00	0.0000	166.00	No Ice	0.40	0.27	0.0100
			0.00			1/2"	0.48	0.34	0.0140
			0.00			Ice	0.57	0.41	0.0193
						1" Ice			
(2) TPX-070821	C	From Leg	3.00	0.0000	166.00	No Ice	0.40	0.27	0.0100
			0.00			1/2"	0.48	0.34	0.0140
			0.00			Ice	0.57	0.41	0.0193
						1" Ice			
RRUS 11 B12	A	From Leg	3.00	0.0000	166.00	No Ice	2.83	1.18	0.0507
			0.00			1/2"	3.04	1.33	0.0716
			0.00			Ice	3.26	1.48	0.0955
						1" Ice			
RRUS 11 B12	B	From Leg	3.00	0.0000	166.00	No Ice	2.83	1.18	0.0507

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	3.04	1.33	0.0716
			0.00			Ice	3.26	1.48	0.0955
						1" Ice			
RRUS 11 B12	C	From Leg	3.00	0.0000	166.00	No Ice	2.83	1.18	0.0507
			0.00			1/2"	3.04	1.33	0.0716
			0.00			Ice	3.26	1.48	0.0955
						1" Ice			
RRUS 4415 B25	A	From Leg	3.00	0.0000	166.00	No Ice	1.64	0.68	0.0440
			0.00			1/2"	1.80	0.79	0.0564
			0.00			Ice	1.97	0.91	0.0712
						1" Ice			
RRUS 4415 B25	B	From Leg	3.00	0.0000	166.00	No Ice	1.64	0.68	0.0440
			0.00			1/2"	1.80	0.79	0.0564
			0.00			Ice	1.97	0.91	0.0712
						1" Ice			
RRUS 4415 B25	C	From Leg	3.00	0.0000	166.00	No Ice	1.64	0.68	0.0440
			0.00			1/2"	1.80	0.79	0.0564
			0.00			Ice	1.97	0.91	0.0712
						1" Ice			
RRUS 32 B66	A	From Leg	3.00	0.0000	166.00	No Ice	2.74	1.67	0.0530
			0.00			1/2"	2.96	1.86	0.0741
			0.00			Ice	3.19	2.05	0.0984
						1" Ice			
RRUS 32 B66	B	From Leg	3.00	0.0000	166.00	No Ice	2.74	1.67	0.0530
			0.00			1/2"	2.96	1.86	0.0741
			0.00			Ice	3.19	2.05	0.0984
						1" Ice			
RRUS 32 B66	C	From Leg	3.00	0.0000	166.00	No Ice	2.74	1.67	0.0530
			0.00			1/2"	2.96	1.86	0.0741
			0.00			Ice	3.19	2.05	0.0984
						1" Ice			
RRUS 4478 B14	A	From Leg	3.00	0.0000	166.00	No Ice	1.84	1.06	0.0599
			0.00			1/2"	2.01	1.20	0.0758
			0.00			Ice	2.19	1.34	0.0943
						1" Ice			
RRUS 4478 B14	B	From Leg	3.00	0.0000	166.00	No Ice	1.84	1.06	0.0599
			0.00			1/2"	2.01	1.20	0.0758
			0.00			Ice	2.19	1.34	0.0943
						1" Ice			
RRUS 4478 B14	C	From Leg	3.00	0.0000	166.00	No Ice	1.84	1.06	0.0599
			0.00			1/2"	2.01	1.20	0.0758
			0.00			Ice	2.19	1.34	0.0943
						1" Ice			
RRUS 32 B30	A	From Leg	3.00	0.0000	166.00	No Ice	2.69	1.57	0.0600
			0.00			1/2"	2.91	1.76	0.0804
			0.00			Ice	3.14	1.95	0.1039
						1" Ice			
RRUS 32 B30	B	From Leg	3.00	0.0000	166.00	No Ice	2.69	1.57	0.0600
			0.00			1/2"	2.91	1.76	0.0804
			0.00			Ice	3.14	1.95	0.1039
						1" Ice			
RRUS 32 B30	C	From Leg	3.00	0.0000	166.00	No Ice	2.69	1.57	0.0600
			0.00			1/2"	2.91	1.76	0.0804
			0.00			Ice	3.14	1.95	0.1039
						1" Ice			
(4) TSXDC-4310FM	A	From Leg	3.00	0.0000	166.00	No Ice	0.04	0.04	0.0050
			0.00			1/2"	0.07	0.07	0.0057
			0.00			Ice	0.11	0.11	0.0069
						1" Ice			
(4) TSXDC-4310FM	B	From Leg	3.00	0.0000	166.00	No Ice	0.04	0.04	0.0050
			0.00			1/2"	0.07	0.07	0.0057
			0.00			Ice	0.11	0.11	0.0069
						1" Ice			
(4) TSXDC-4310FM	C	From Leg	3.00	0.0000	166.00	No Ice	0.04	0.04	0.0050
			0.00			1/2"	0.07	0.07	0.0057

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				Ice	0.11	0.11	0.0069
							1" Ice			
Polyphaser 1000860	A	From Leg	3.00		0.0000	166.00	No Ice	0.04	0.04	0.0050
			0.00				1/2"	0.07	0.07	0.0057
			0.00				Ice	0.11	0.11	0.0069
							1" Ice			
Polyphaser 1000860	B	From Leg	3.00		0.0000	166.00	No Ice	0.04	0.04	0.0050
			0.00				1/2"	0.07	0.07	0.0057
			0.00				Ice	0.11	0.11	0.0069
							1" Ice			
Polyphaser 1000860	C	From Leg	3.00		0.0000	166.00	No Ice	0.04	0.04	0.0050
			0.00				1/2"	0.07	0.07	0.0057
			0.00				Ice	0.11	0.11	0.0069
							1" Ice			
14' Sector Mount	C	None			0.0000	166.00	No Ice	39.83	39.83	1.8795
							1/2"	56.05	56.05	2.6477
							Ice	71.96	71.96	3.6578
							1" Ice			
(2) APTDC-BDFDM-DBW	A	From Leg	3.00		0.0000	166.00	No Ice	0.05	0.10	0.0013
			0.00				1/2"	0.08	0.14	0.0024
			0.00				Ice	0.12	0.19	0.0042
							1" Ice			
(2) APTDC-BDFDM-DBW	B	From Leg	3.00		0.0000	166.00	No Ice	0.05	0.10	0.0013
			0.00				1/2"	0.08	0.14	0.0024
			0.00				Ice	0.12	0.19	0.0042
							1" Ice			
(2) APTDC-BDFDM-DBW	C	From Leg	3.00		0.0000	166.00	No Ice	0.05	0.10	0.0013
			0.00				1/2"	0.08	0.14	0.0024
			0.00				Ice	0.12	0.19	0.0042
							1" Ice			
DC6-48-60-18-8F	A	From Leg	3.00		0.0000	166.00	No Ice	0.92	0.92	0.0189
			0.00				1/2"	1.46	1.46	0.0366
			0.00				Ice	1.64	1.64	0.0568
							1" Ice			
DC6-48-60-18-8F	B	From Leg	3.00		0.0000	166.00	No Ice	0.92	0.92	0.0189
			0.00				1/2"	1.46	1.46	0.0366
			0.00				Ice	1.64	1.64	0.0568
							1" Ice			
DC6-48-60-18-8F	C	From Leg	3.00		0.0000	166.00	No Ice	0.92	0.92	0.0189
			0.00				1/2"	1.46	1.46	0.0366
			0.00				Ice	1.64	1.64	0.0568
							1" Ice			
***										

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
PR-950	C	Grid	From Leg	3.00		0.0000		152.00	5.67	No Ice	25.22	0.0380
				0.00						1/2" Ice	25.97	0.1700
				0.00						1" Ice	26.71	0.3000
**												
VHLP3-11W-SEI	C	Paraboloid w/Shroud (HP)	From Leg	2.00		0.0000		122.00	3.27	No Ice	8.42	0.0370
				0.00						1/2" Ice	8.86	0.0820
				0.00						1" Ice	9.29	0.1280
**												

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
Andrew 6' w/Radome **	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	35.0500		115.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	0.3800 0.4500 0.5200

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	170 - 166.667	Leg	Max Tension	19	0.3175	0.0000	0.0000
			Max. Compression	31	-0.6230	-0.1429	-0.0792
			Max. Mx	20	0.1045	0.3822	-0.0731
			Max. My	2	0.0944	-0.0127	0.4217
			Max. Vy	20	-0.1369	0.3822	-0.0731
			Max. Vx	2	-0.1510	-0.0127	0.4217
		Diagonal	Max Tension	19	0.6653	0.0000	0.0000
			Max. Compression	6	-0.6765	0.0000	0.0000
			Max. Mx	29	-0.2819	0.0169	0.0000
			Max. My	16	-0.0192	0.0013	0.0020
			Max. Vy	29	0.0285	0.0169	0.0000
			Max. Vx	16	-0.0007	0.0012	0.0020
		Top Girt	Max Tension	6	0.4691	0.0000	0.0000
			Max. Compression	19	-0.4683	0.0000	0.0000
			Max. Mx	26	-0.0177	-0.0513	0.0000
			Max. Vy	26	0.0450	0.0000	0.0000
T2	166.667 - 163.333	Leg	Max Tension	7	2.1658	-0.3542	0.2071
			Max. Compression	35	-9.8152	0.0178	-0.0102
			Max. Mx	8	-1.7931	0.8083	-0.0116
			Max. My	2	-0.5577	0.0581	-0.8352
			Max. Vy	20	1.7119	0.3822	-0.0731
			Max. Vx	2	1.7122	-0.0127	0.4217
		Diagonal	Max Tension	22	2.4649	0.0000	0.0000
			Max. Compression	11	-2.4641	0.0000	0.0000
			Max. Mx	31	0.3125	0.0168	-0.0001
			Max. My	8	-2.4185	0.0000	-0.0024
			Max. Vy	27	-0.0284	0.0168	0.0001
			Max. Vx	8	0.0008	0.0017	-0.0024
T3	163.333 - 160	Leg	Max Tension	7	7.0419	-0.2476	0.1464
			Max. Compression	35	-12.0334	0.0178	-0.0102
			Max. Mx	8	-1.8462	-0.4250	-0.0116
			Max. My	2	2.4581	0.0581	0.4063
			Max. Vy	8	-0.1924	-0.4250	-0.0116
			Max. Vx	2	0.1724	-0.0493	0.3872
		Diagonal	Max Tension	5	3.2842	0.0000	0.0000
			Max. Compression	16	-3.3477	0.0000	0.0000
			Max. Mx	34	0.4005	0.0422	-0.0005
			Max. My	24	2.9846	0.0108	0.0033
			Max. Vy	34	-0.0430	0.0422	-0.0005
			Max. Vx	24	0.0012	0.0000	0.0000
T4	160 - 140	Leg	Max Tension	7	37.7758	-0.0748	0.0099
			Max. Compression	18	-42.8564	0.1098	-0.0140
			Max. Mx	6	37.1784	-0.1130	0.0148
			Max. My	8	-2.2449	-0.0133	0.1466
			Max. Vy	18	0.3078	0.0816	-0.0097
			Max. Vx	4	0.3791	0.0689	-0.0090
		Diagonal	Max Tension	5	3.4155	0.0000	0.0000
			Max. Compression	16	-3.4471	0.0000	0.0000
			Max. Mx	27	0.8969	0.0335	-0.0041
			Max. My	30	-0.6177	0.0280	0.0045
			Max. Vy	29	0.0413	0.0316	0.0043
			Max. Vx	30	-0.0023	0.0000	0.0000
		Top Girt	Max Tension	14	0.0583	0.0000	0.0000
			Max. Compression	3	-0.0478	0.0000	0.0000
			Max. Mx	26	0.0145	-0.0523	0.0000
			Max. My	26	0.0158	0.0000	0.0015
			Max. Vy	26	0.0459	0.0000	0.0000
			Max. Vx	26	-0.0014	0.0000	0.0000
T5	140 - 120	Leg	Max Tension	7	64.0599	-0.4008	0.0937
			Max. Compression	18	-71.8266	0.4075	-0.1003
			Max. Mx	19	-71.0029	0.4088	-0.1005
			Max. My	21	-2.1828	-0.0343	-0.5066
			Max. Vy	6	0.2219	-0.4022	0.0939
			Max. Vx	13	0.2728	0.0128	-0.4157
		Diagonal	Max Tension	4	3.9757	0.0000	0.0000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	16	-3.9649	0.0000	0.0000
			Max. Mx	27	1.1450	0.0598	-0.0074
			Max. My	30	-0.9213	0.0542	0.0079
			Max. Vy	29	0.0580	0.0593	0.0075
			Max. Vx	30	-0.0032	0.0000	0.0000
T6	120 - 100	Leg	Max Tension	7	90.7644	-0.2033	-0.0039
			Max. Compression	18	-101.3909	0.2785	-0.0322
			Max. Mx	19	-79.4600	0.4276	-0.1851
			Max. My	20	-3.8350	-0.0409	-0.5390
			Max. Vy	14	0.3741	-0.4239	-0.0125
			Max. Vx	20	0.5940	-0.0409	-0.5390
		Diagonal	Max Tension	16	5.5554	0.0000	0.0000
			Max. Compression	18	-5.6691	0.0000	0.0000
			Max. Mx	27	1.6015	0.1126	0.0142
			Max. My	30	1.4836	0.1090	0.0154
			Max. Vy	29	0.0861	0.1101	-0.0138
			Max. Vx	30	-0.0048	0.0000	0.0000
T7	100 - 80	Leg	Max Tension	7	118.8429	-0.3842	0.0457
			Max. Compression	18	-133.2361	0.1964	-0.1059
			Max. Mx	6	117.5652	-0.3891	0.0458
			Max. My	21	-3.2783	-0.0074	-0.7018
			Max. Vy	14	-0.2294	-0.2699	0.0123
			Max. Vx	25	0.2738	-0.0049	0.2286
		Diagonal	Max Tension	16	6.1421	0.0000	0.0000
			Max. Compression	18	-6.4076	0.0000	0.0000
			Max. Mx	29	1.2225	0.1535	0.0183
			Max. My	36	1.8394	0.1485	-0.0190
			Max. Vy	29	0.1010	0.1535	0.0183
			Max. Vx	36	0.0053	0.0000	0.0000
T8	80 - 60	Leg	Max Tension	7	145.3878	0.6782	-0.0042
			Max. Compression	18	-164.4746	1.5231	0.0049
			Max. Mx	18	-164.4100	1.5231	0.0049
			Max. My	21	-4.0554	-0.0789	-1.1072
			Max. Vy	18	0.8004	1.5231	0.0049
			Max. Vx	21	0.4362	-0.0789	-1.1072
		Diagonal	Max Tension	17	6.7273	0.0724	-0.0005
			Max. Compression	18	-7.4082	0.0000	0.0000
			Max. Mx	27	1.2768	0.2178	-0.0241
			Max. My	35	-2.4401	0.1613	-0.0294
			Max. Vy	37	0.1271	0.1955	0.0239
			Max. Vx	35	-0.0070	0.0000	0.0000
		Secondary Horizontal	Max Tension	18	2.8527	0.0000	0.0000
			Max. Compression	18	-2.8527	0.0280	0.0004
			Max. Mx	36	0.7960	0.1666	0.0194
			Max. My	28	0.0500	0.1482	0.0232
			Max. Vy	36	0.1135	0.1528	0.0230
			Max. Vx	28	0.0060	0.0000	0.0000
T9	60 - 40	Leg	Max Tension	7	169.6119	1.3217	0.0134
			Max. Compression	35	-250.1438	-4.4901	0.0059
			Max. Mx	35	-250.1438	-4.4901	0.0059
			Max. My	36	-32.1878	-2.1942	-1.8156
			Max. Vy	35	-9.7897	-0.5987	0.0098
			Max. Vx	21	-0.7042	-0.1122	-1.5430
		Diagonal	Max Tension	7	8.2226	0.1282	0.0003
			Max. Compression	18	-9.2914	0.0000	0.0000
			Max. Mx	35	-2.6449	0.3279	0.0350
			Max. My	36	-1.4882	0.1866	-0.0549
			Max. Vy	37	0.1615	0.3118	0.0328
			Max. Vx	36	-0.0101	0.0000	0.0000
		Secondary Horizontal	Max Tension	35	4.3913	0.0000	0.0000
			Max. Compression	35	-4.3571	0.0000	0.0000
			Max. Mx	29	-3.5453	0.2273	0.0382
			Max. My	36	-0.1292	0.2166	0.0450
			Max. Vy	30	-0.1411	0.2203	0.0399
			Max. Vx	36	0.0089	0.0000	0.0000
T10	40 - 20	Leg	Max Tension	7	196.9250	-2.9894	-0.0065
			Max. Compression	35	-257.1337	-4.8267	-0.0084

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	35	-257.1337	-4.8267	-0.0084
			Max. My	4	-11.7216	-0.2835	-2.1162
			Max. Vy	35	-1.9001	4.7208	-0.0024
			Max. Vx	21	-0.7551	-0.1809	-2.1086
		Diagonal	Max Tension	7	9.4209	0.1342	-0.0040
			Max. Compression	18	-10.7358	0.0000	0.0000
			Max. Mx	35	0.5872	0.4263	0.0490
			Max. My	35	0.2430	0.4263	-0.0500
			Max. Vy	37	0.1706	0.3465	0.0402
			Max. Vx	35	0.0093	0.0000	0.0000
		Secondary Horizontal	Max Tension	35	4.6417	0.2500	0.0309
			Max. Compression	35	-4.6471	0.2838	0.0249
			Max. Mx	29	-3.7748	0.2880	0.0315
			Max. My	36	0.0028	0.2527	0.0442
			Max. Vy	30	-0.1495	0.2571	0.0397
			Max. Vx	36	0.0083	0.0000	0.0000
T11	20 - 0	Leg	Max Tension	7	224.0547	2.0387	0.0135
			Max. Compression	35	-265.0962	0.0000	0.0000
			Max. Mx	35	-261.2651	-4.8267	-0.0084
			Max. My	4	-14.4689	-0.3540	-3.0041
			Max. Vy	35	-1.8898	4.3663	-0.0014
			Max. Vx	21	0.7823	-0.2335	-2.9911
		Diagonal	Max Tension	7	9.8362	0.1878	-0.0141
			Max. Compression	18	-11.3958	0.0000	0.0000
			Max. Mx	35	-0.0785	0.5395	-0.0520
			Max. My	35	0.2089	0.4609	-0.0679
			Max. Vy	37	0.1927	0.4866	-0.0423
			Max. Vx	35	0.0110	0.0000	0.0000
		Secondary Horizontal	Max Tension	18	4.4883	0.0000	0.0000
			Max. Compression	35	-4.9697	0.0000	0.0000
			Max. Mx	28	2.4171	0.3628	0.0387
			Max. My	36	0.1948	0.2792	0.0505
			Max. Vy	28	0.1664	0.3628	0.0387
			Max. Vx	36	0.0089	0.0000	0.0000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	268.6189	26.5367	-16.2371
	Max. H_x	18	268.6189	26.5367	-16.2371
	Max. H_z	7	-231.2124	-22.7391	14.0061
	Min. Vert	7	-231.2124	-22.7391	14.0061
	Min. H_x	7	-231.2124	-22.7391	14.0061
	Min. H_z	18	268.6189	26.5367	-16.2371
Leg B	Max. Vert	10	246.2115	-24.6675	-14.6244
	Max. H_x	23	-210.1751	21.0251	12.5040
	Max. H_z	23	-210.1751	21.0251	12.5040
	Min. Vert	23	-210.1751	21.0251	12.5040
	Min. H_x	10	246.2115	-24.6675	-14.6244
	Min. H_z	10	246.2115	-24.6675	-14.6244
Leg A	Max. Vert	2	248.7173	0.2931	28.9172
	Max. H_x	20	11.7259	3.7189	1.1104
	Max. H_z	2	248.7173	0.2931	28.9172
	Min. Vert	15	-213.0099	-0.2440	-24.8561
	Min. H_x	9	12.1474	-3.6661	1.1250
	Min. H_z	15	-213.0099	-0.2440	-24.8561

Tower Mast Reaction Summary

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 Only	33.5221	0.0000	-0.0000	-11.1570	-4.0444	0.0000
1.2 Dead+1.6 Wind 0 deg - No Ice	40.2265	0.3600	-45.7886	-4250.9160	-52.6318	10.6631
0.9 Dead+1.6 Wind 0 deg - No Ice	30.1699	0.3600	-45.7886	-4247.5689	-51.4184	10.6631
1.2 Dead+1.6 Wind 30 deg - No Ice	40.2265	23.1535	-39.5392	-3746.1352	-2201.6892	-0.5315
0.9 Dead+1.6 Wind 30 deg - No Ice	30.1699	23.1535	-39.5392	-3742.7881	-2200.4759	-0.5315
1.2 Dead+1.6 Wind 60 deg - No Ice	40.2265	39.6140	-22.7775	-2181.1868	-3776.7088	-27.9588
0.9 Dead+1.6 Wind 60 deg - No Ice	30.1699	39.6140	-22.7775	-2177.8397	-3775.4955	-27.9588
1.2 Dead+1.6 Wind 90 deg - No Ice	40.2265	45.0485	-0.2020	-41.1177	-4271.1996	-32.1432
0.9 Dead+1.6 Wind 90 deg - No Ice	30.1699	45.0485	-0.2020	-37.7706	-4269.9863	-32.1432
1.2 Dead+1.6 Wind 120 deg - No Ice	40.2265	39.4665	22.4618	2057.8694	-3668.1523	-11.6736
0.9 Dead+1.6 Wind 120 deg - No Ice	30.1699	39.4665	22.4618	2061.2166	-3666.9389	-11.6736
1.2 Dead+1.6 Wind 150 deg - No Ice	40.2265	20.7391	36.2284	3374.8866	-1937.0526	-2.6572
0.9 Dead+1.6 Wind 150 deg - No Ice	30.1699	20.7391	36.2284	3378.2337	-1935.8393	-2.6572
1.2 Dead+1.6 Wind 180 deg - No Ice	40.2265	-0.3209	42.7334	4026.4151	39.0282	-9.1440
0.9 Dead+1.6 Wind 180 deg - No Ice	30.1699	-0.3209	42.7334	4029.7622	40.2415	-9.1440
1.2 Dead+1.6 Wind 210 deg - No Ice	40.2265	-23.2432	39.6395	3729.7973	2202.9477	1.4412
0.9 Dead+1.6 Wind 210 deg - No Ice	30.1699	-23.2432	39.6395	3733.1444	2204.1610	1.4412
1.2 Dead+1.6 Wind 240 deg - No Ice	40.2265	-42.7927	24.6176	2290.2946	4001.3804	28.5196
0.9 Dead+1.6 Wind 240 deg - No Ice	30.1699	-42.7927	24.6176	2293.6417	4002.5938	28.5196
1.2 Dead+1.6 Wind 270 deg - No Ice	40.2265	-45.3075	0.3320	30.4033	4290.6471	33.3189
0.9 Dead+1.6 Wind 270 deg - No Ice	30.1699	-45.3075	0.3320	33.7504	4291.8604	33.3189
1.2 Dead+1.6 Wind 300 deg - No Ice	40.2265	-36.6929	-20.5686	-1943.2205	3472.8338	12.4327
0.9 Dead+1.6 Wind 300 deg - No Ice	30.1699	-36.6929	-20.5686	-1939.8734	3474.0472	12.4327
1.2 Dead+1.6 Wind 330 deg - No Ice	40.2265	-20.9574	-35.8095	-3351.1212	1956.5552	3.9515
0.9 Dead+1.6 Wind 330 deg - No Ice	30.1699	-20.9574	-35.8095	-3347.7741	1957.7685	3.9515
1.2 Dead+1.0 Ice+1.0 Temp	294.7681	-0.0000	0.0000	700.7067	1266.7795	-0.0000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	294.7681	0.2863	-16.1157	-835.3437	1224.2731	4.2385
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	294.7681	8.3405	-14.0026	-640.9960	455.8433	1.1671
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	294.7681	14.2188	-8.1525	-86.6103	-107.9147	-5.6111
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	294.7681	16.2367	-0.1729	674.7535	-298.2379	-6.9109
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	294.7681	14.0785	7.7710	1429.8315	-86.1301	-2.9829
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	294.7681	7.7872	13.4531	1984.6343	523.5026	-1.8696
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	294.7681	-0.0644	15.7181	2206.1664	1275.9208	-3.5010
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	294.7681	-8.1863	14.0162	2043.7209	2053.8702	-0.3588
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	294.7681	-14.4932	8.3118	1495.6350	2654.4970	5.7023

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
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	294.7681	-16.1921	0.0493	707.2716	2823.3910	6.4419
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	294.7681	-13.6056	-7.6995	-34.5414	2574.4914	2.6161
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	294.7681	-7.8116	-13.3914	-575.9965	2013.0761	2.0802
Dead+Wind 0 deg - Service	33.5221	0.0749	-9.5214	-892.3149	-13.9795	2.2173
Dead+Wind 30 deg - Service	33.5221	4.8146	-8.2218	-787.3500	-460.8578	-0.1105
Dead+Wind 60 deg - Service	33.5221	8.2374	-4.7364	-461.9323	-788.3698	-5.8138
Dead+Wind 90 deg - Service	33.5221	9.3675	-0.0420	-16.9231	-891.1949	-6.6839
Dead+Wind 120 deg - Service	33.5221	8.2067	4.6707	419.5435	-765.7964	-2.4274
Dead+Wind 150 deg - Service	33.5221	4.3125	7.5334	693.4060	-405.8289	-0.5525
Dead+Wind 180 deg - Service	33.5221	-0.0667	8.8860	828.8859	5.0804	-1.9014
Dead+Wind 210 deg - Service	33.5221	-4.8332	8.2427	767.2067	455.0491	0.2997
Dead+Wind 240 deg - Service	33.5221	-8.8984	5.1190	467.8743	829.0179	5.9304
Dead+Wind 270 deg - Service	33.5221	-9.4213	0.0690	-2.0509	889.1685	6.9284
Dead+Wind 300 deg - Service	33.5221	-7.6300	-4.2771	-412.4492	719.1111	2.5853
Dead+Wind 330 deg - Service	33.5221	-4.3579	-7.4463	-705.2102	403.8138	0.8217

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.0000	-33.5221	0.0000	0.0000	33.5221	0.0000	0.000%
2	0.3600	-40.2265	-45.7886	-0.3600	40.2265	45.7886	0.000%
3	0.3600	-30.1699	-45.7886	-0.3600	30.1699	45.7886	0.000%
4	23.1535	-40.2265	-39.5392	-23.1535	40.2265	39.5392	0.000%
5	23.1535	-30.1699	-39.5392	-23.1535	30.1699	39.5392	0.000%
6	39.6140	-40.2265	-22.7775	-39.6140	40.2265	22.7775	0.000%
7	39.6140	-30.1699	-22.7775	-39.6140	30.1699	22.7775	0.000%
8	45.0485	-40.2265	-0.2020	-45.0485	40.2265	0.2020	0.000%
9	45.0485	-30.1699	-0.2020	-45.0485	30.1699	0.2020	0.000%
10	39.4665	-40.2265	22.4618	-39.4665	40.2265	-22.4618	0.000%
11	39.4665	-30.1699	22.4618	-39.4665	30.1699	-22.4618	0.000%
12	20.7391	-40.2265	36.2284	-20.7391	40.2265	-36.2284	0.000%
13	20.7391	-30.1699	36.2284	-20.7391	30.1699	-36.2284	0.000%
14	-0.3209	-40.2265	42.7334	0.3209	40.2265	-42.7334	0.000%
15	-0.3209	-30.1699	42.7334	0.3209	30.1699	-42.7334	0.000%
16	-23.2432	-40.2265	39.6395	23.2432	40.2265	-39.6395	0.000%
17	-23.2432	-30.1699	39.6395	23.2432	30.1699	-39.6395	0.000%
18	-42.7926	-40.2265	24.6176	42.7927	40.2265	-24.6176	0.000%
19	-42.7926	-30.1699	24.6176	42.7927	30.1699	-24.6176	0.000%
20	-45.3075	-40.2265	0.3320	45.3075	40.2265	-0.3320	0.000%
21	-45.3075	-30.1699	0.3320	45.3075	30.1699	-0.3320	0.000%
22	-36.6929	-40.2265	-20.5686	36.6929	40.2265	20.5686	0.000%
23	-36.6929	-30.1699	-20.5686	36.6929	30.1699	20.5686	0.000%
24	-20.9574	-40.2265	-35.8095	20.9574	40.2265	35.8095	0.000%
25	-20.9574	-30.1699	-35.8095	20.9574	30.1699	35.8095	0.000%
26	0.0000	-294.7681	0.0000	0.0000	294.7681	-0.0000	0.000%
27	0.2863	-294.7681	-16.1157	-0.2863	294.7681	16.1157	0.000%
28	8.3405	-294.7681	-14.0026	-8.3405	294.7681	14.0026	0.000%
29	14.2188	-294.7681	-8.1525	-14.2188	294.7681	8.1525	0.000%
30	16.2367	-294.7681	-0.1729	-16.2367	294.7681	0.1729	0.000%
31	14.0785	-294.7681	7.7710	-14.0785	294.7681	-7.7710	0.000%
32	7.7872	-294.7681	13.4531	-7.7872	294.7681	-13.4531	0.000%
33	-0.0644	-294.7681	15.7181	0.0644	294.7681	-15.7181	0.000%
34	-8.1863	-294.7681	14.0162	8.1863	294.7681	-14.0162	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
35	-14.4932	-294.7681	8.3118	14.4932	294.7681	-8.3118	0.000%
36	-16.1921	-294.7681	0.0493	16.1921	294.7681	-0.0493	0.000%
37	-13.6056	-294.7681	-7.6995	13.6056	294.7681	7.6995	0.000%
38	-7.8116	-294.7681	-13.3914	7.8116	294.7681	13.3914	0.000%
39	0.0749	-33.5221	-9.5214	-0.0749	33.5221	9.5214	0.000%
40	4.8146	-33.5221	-8.2218	-4.8146	33.5221	8.2218	0.000%
41	8.2374	-33.5221	-4.7364	-8.2374	33.5221	4.7364	0.000%
42	9.3675	-33.5221	-0.0420	-9.3675	33.5221	0.0420	0.000%
43	8.2067	-33.5221	4.6707	-8.2067	33.5221	-4.6707	0.000%
44	4.3125	-33.5221	7.5334	-4.3125	33.5221	-7.5334	0.000%
45	-0.0667	-33.5221	8.8860	0.0667	33.5221	-8.8860	0.000%
46	-4.8332	-33.5221	8.2427	4.8332	33.5221	-8.2427	0.000%
47	-8.8984	-33.5221	5.1190	8.8984	33.5221	-5.1190	0.000%
48	-9.4213	-33.5221	0.0690	9.4213	33.5221	-0.0690	0.000%
49	-7.6300	-33.5221	-4.2771	7.6300	33.5221	4.2771	0.000%
50	-4.3579	-33.5221	-7.4463	4.3579	33.5221	7.4463	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 166.667	4.570	47	0.2610	0.0257
T2	166.667 - 163.333	4.389	47	0.2611	0.0258
T3	163.333 - 160	4.202	47	0.2604	0.0259
T4	160 - 140	4.019	47	0.2579	0.0259
T5	140 - 120	2.987	47	0.2193	0.0223
T6	120 - 100	2.139	47	0.1729	0.0182
T7	100 - 80	1.462	47	0.1396	0.0132
T8	80 - 60	0.916	47	0.1085	0.0078
T9	60 - 40	0.515	47	0.0747	0.0050
T10	40 - 20	0.241	47	0.0492	0.0032
T11	20 - 0	0.068	47	0.0250	0.0015

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
173.00	10' x 1" Dia Omni	47	4.570	0.2610	0.0257	184576
166.00	80010965_TIA w/ Mount Pipe	47	4.352	0.2611	0.0259	184576
152.00	PR-950	47	3.591	0.2461	0.0250	39851
140.00	3' Side Mount Standoff	47	2.987	0.2193	0.0223	22389
129.00	10' x 1" Dia Omni	47	2.496	0.1927	0.0200	24555
124.00	12' x 3" Dia Omni	47	2.293	0.1813	0.0190	26214
122.00	VHLP3-11W-SEI	47	2.215	0.1771	0.0186	26947
115.00	Andrew 6' w/Radome	47	1.956	0.1635	0.0171	30347
107.00	10' Dipole	47	1.683	0.1502	0.0151	35722
100.00	10' x 2" Dia Omni	47	1.462	0.1396	0.0132	40662
84.00	10' x 2" Dia Omni	47	1.014	0.1151	0.0087	32349
70.00	12' x 3" Dia Omni	47	0.697	0.0911	0.0061	33437
67.00	12' x 3" Dia Omni	47	0.639	0.0860	0.0057	34430
50.00	20' x 3" Dia Omni	47	0.364	0.0611	0.0041	44510
30.00	20' x 3" Dia Omni	47	0.140	0.0372	0.0024	43395
22.00	2' x 1" Dia. Omni	47	0.080	0.0275	0.0017	37299

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 166.667	22.189	19	1.2688	0.1235
T2	166.667 - 163.333	21.307	19	1.2695	0.1242
T3	163.333 - 160	20.397	19	1.2657	0.1246
T4	160 - 140	19.509	19	1.2534	0.1245
T5	140 - 120	14.491	19	1.0657	0.1074
T6	120 - 100	10.373	19	0.8402	0.0873
T7	100 - 80	7.087	19	0.6779	0.0637
T8	80 - 60	4.436	19	0.5265	0.0374
T9	60 - 40	2.492	19	0.3621	0.0241
T10	40 - 20	1.164	19	0.2383	0.0156
T11	20 - 0	0.329	19	0.1214	0.0072

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
173.00	10' x 1" Dia Omni	19	22.189	1.2688	0.1235	39538
166.00	80010965_TIA w/ Mount Pipe	19	21.126	1.2692	0.1243	39538
152.00	PR-950	19	17.426	1.1960	0.1201	8413
140.00	3' Side Mount Standoff	19	14.491	1.0657	0.1074	4639
129.00	10' x 1" Dia Omni	19	12.107	0.9363	0.0960	5059
124.00	12' x 3" Dia Omni	19	11.121	0.8811	0.0913	5399
122.00	VHLP3-11W-SEI	19	10.743	0.8602	0.0893	5550
115.00	Andrew 6' w/Radome	19	9.484	0.7942	0.0820	6244
107.00	10' Dipole	19	8.159	0.7296	0.0727	7357
100.00	10' x 2" Dia Omni	19	7.087	0.6779	0.0637	8396
84.00	10' x 2" Dia Omni	19	4.912	0.5585	0.0419	6655
70.00	12' x 3" Dia Omni	19	3.377	0.4421	0.0293	6887
67.00	12' x 3" Dia Omni	19	3.094	0.4170	0.0275	7092
50.00	20' x 3" Dia Omni	19	1.763	0.2961	0.0198	9172
30.00	20' x 3" Dia Omni	19	0.679	0.1806	0.0114	8948
22.00	2' x 1" Dia. Omni	19	0.387	0.1333	0.0080	7692

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	170	Diagonal	A325N	0.5000	1	0.6653	3.1266	0.213	1	Member Block Shear
		Top Girt	A325N	0.6250	1	0.4691	3.1945	0.147	1	Member Block Shear
T2	166.667	Diagonal	A325N	0.5000	1	2.4649	3.1266	0.788	1	Member Block Shear
T3	163.333	Leg	A325N	0.7500	4	1.7605	29.8206	0.059	1	Bolt Tension
		Diagonal	A325X	0.5000	1	3.2842	8.2650	0.397	1	Member Bearing
T4	160	Leg	A325N	0.7500	4	9.4439	29.8206	0.317	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3.4155	4.6898	0.728	1	Member Block Shear
		Top Girt	A325N	0.5000	1	0.0583	4.6898	0.012	1	Member Block Shear
T5	140	Leg	A325N	0.8750	4	16.0150	40.5891	0.395	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3.9757	5.7094	0.696	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
T6	120	Leg	A325N	0.8750	4	22.6911	40.5891	0.559	1	Bolt Tension
		Diagonal	A325N	0.5000	1	5.5554	6.1988	0.896	1	Member Bearing
T7	100	Leg	A325N	0.8750	4	29.7107	40.5891	0.732	1	Bolt Tension
		Diagonal	A325N	0.5000	1	6.1421	6.1988	0.991	1	Member Bearing
T8	80	Leg	A325N	1.0000	4	36.3147	53.0144	0.685	1	Bolt Tension
		Diagonal	A325N	0.5000	1	7.4082	7.9522	0.932	1	Bolt Shear
		Secondary Horizontal	A325N	0.5000	1	2.8527	7.9522	0.359	1	Bolt Shear
T9	60	Leg	A325N	1.0000	6	28.2472	53.0144	0.533	1	Bolt Tension
		Diagonal	A325N	0.6250	1	9.2914	12.4252	0.748	1	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	4.3913	11.7000	0.375	1	Member Bearing
T10	40	Leg	A325N	1.0000	6	32.7967	53.0144	0.619	1	Bolt Tension
		Diagonal	A325N	0.6250	1	10.7358	12.4252	0.864	1	Bolt Shear
		Secondary Horizontal	A325X	0.6250	1	4.6417	11.7000	0.397	1	Member Bearing
T11	20	Diagonal	A325N	0.6250	1	11.3958	12.4252	0.917	1	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	4.9697	12.4252	0.400	1	Bolt Shear

Compression Checks

Leg 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	170 - 166.667	ROHN 2.5 STD	3.33	3.33	42.2 K=1.00	1.7040	-0.6230	67.3119	0.009 [1]
T2	166.667 - 163.333	ROHN 2.5 STD	3.33	3.33	42.2 K=1.00	1.7040	-9.8152	67.3119	0.146 [1]
T3	163.333 - 160	ROHN 2.5 STD	3.33	3.33	42.2 K=1.00	1.7040	-12.0334	67.3119	0.179 [1]
T4	160 - 140	ROHN 2.5 STD	20.03	4.01	50.8 K=1.00	1.7040	-42.8564	63.5190	0.675 [1]
T5	140 - 120	ROHN 3 STD	20.03	5.01	51.7 K=1.00	2.2285	-71.8266	82.5074	0.871 [1]
T6	120 - 100	Rohn 3.5 X-STR	20.03	6.68	61.3 K=1.00	3.6784	-101.3910	125.7260	0.806 [1]
T7	100 - 80	ROHN 4 X-STR	20.03	6.68	54.3 K=1.00	4.4074	-133.2360	159.9140	0.833 [1]
T8	80 - 60	ROHN 4 X-STR	20.04	3.42	27.8 K=1.00	4.4074	-164.4610	187.4430	0.877 [1]
T9	60 - 40	ROHN 5 X-STR	20.04	5.17	33.7 K=1.00	6.1120	-250.1440	253.0900	0.988 [1]
T10	40 - 20	ROHN 6 EHS	20.03	5.14	27.7 K=1.00	6.7133	-257.1340	285.5660	0.900 [1]
T11	20 - 0	ROHN 6 EHS	20.03	5.13	27.7 K=1.00	6.7133	-265.0960	285.6450	0.928 [1]

[1] $P_u / \phi P_n$ 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 $\frac{P_u}{\phi P_n}$
T1	170 - 166.667	L1 1/2x1 1/2x1/8	5.65	2.57	108.1 K=1.04	0.3594	-0.6765	6.2909	0.108 [1]
T2	166.667 - 163.333	L1 1/2x1 1/2x1/8	5.65	2.57	108.1 K=1.04	0.3594	-2.4641	6.2909	0.392 [1]
T3	163.333 - 160	L2x2x1/4	5.65	2.57	89.2 K=1.13	0.9380	-3.3477	19.9920	0.167 [1]
T4	160 - 140	L1 1/2x1 1/2x3/16	7.54	3.65	149.2 K=1.00	0.5273	-3.3335	5.3520	0.623 [1]
T5	140 - 120	L1 3/4x1 3/4x3/16	9.76	4.76	166.2 K=1.00	0.6211	-3.9649	5.0805	0.780 [1]
T6	120 - 100	L2 1/2x2 1/2x3/16	12.30	6.05	146.7 K=1.00	0.9020	-5.6691	9.4665	0.599 [1]
T7	100 - 80	L2 1/2x2 1/2x3/16	14.03	6.89	167.0 K=1.00	0.9020	-6.4075	7.3068	0.877 [1]
T8	80 - 60	L2 1/2x2 1/2x3/8	15.89	7.83	192.8 K=1.00	1.7300	-7.4082	10.5105	0.705 [1]
T9	60 - 40	L3x3x3/8	19.15	9.49	194.0 K=1.00	2.1100	-9.2914	12.6681	0.733 [1]
T10	40 - 20	L3x3x3/8	20.90	10.30	210.6 K=1.00	2.1100	-10.7358	10.7502	0.999 [1]
T11	20 - 0	KL/R > 200 (C) - 195 L3 1/2x3 1/2x3/8	22.68	11.19	195.5 K=1.00	2.4800	-11.3958	14.6544	0.778 [1]

[1] $P_u / \phi P_n$ controls

Secondary 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 $\frac{P_u}{\phi P_n}$
T8	80 - 60	L2 1/2x2 1/2x1/4	14.41	6.91	169.0 K=1.00	1.1900	-2.8527	9.4126	0.303 [1]
T9	60 - 40	L3x3x1/4	16.31	7.81	158.2 K=1.00	1.4400	-4.2670	12.9964	0.328 [1]
T10	40 - 20	L3x3x1/4	18.34	8.77	177.8 K=1.00	1.4400	-4.4221	10.2885	0.430 [1]
T11	20 - 0	L3 1/2 x 3 1/2 x 1/4	20.35	9.78	169.1 K=1.00	1.6875	-4.9697	13.3256	0.373 [1]

[1] $P_u / \phi P_n$ 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	170 - 166.667	L1 1/2x1 1/2x1/8	4.56	4.08	165.3 K=1.00	0.3594	-0.4683	2.9700	0.158 [1]
T4	160 - 140	L1 1/2x1 1/2x3/16	4.56	4.11	168.2 K=1.00	0.5273	-0.0478	4.2104	0.011 [1]

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	170 - 166.667	ROHN 2.5 STD	3.33	3.33	42.2	1.7040	0.3175	76.6823	0.004 [1]
T2	166.667 - 163.333	ROHN 2.5 STD	3.33	3.33	42.2	1.7040	2.1658	76.6823	0.028 [1]
T3	163.333 - 160	ROHN 2.5 STD	3.33	3.33	42.2	1.7040	7.0419	76.6823	0.092 [1]
T4	160 - 140	ROHN 2.5 STD	20.03	4.01	50.8	1.7040	37.7758	76.6823	0.493 [1]
T5	140 - 120	ROHN 3 STD	20.03	5.01	51.7	2.2285	64.0599	100.2810	0.639 [1]
T6	120 - 100	Rohn 3.5 X-STR	20.03	6.68	61.3	3.6784	90.7644	165.5290	0.548 [1]
T7	100 - 80	ROHN 4 X-STR	20.03	6.68	54.3	4.4074	118.8430	198.3350	0.599 [1]
T8	80 - 60	ROHN 4 X-STR	20.04	3.26	26.5	4.4074	145.3880	198.3350	0.733 [1]
T9	60 - 40	ROHN 5 X-STR	20.04	4.85	31.6	6.1120	169.6770	275.0390	0.617 [1]
T10	40 - 20	ROHN 6 EHS	20.03	4.87	26.3	6.7133	197.0070	302.0970	0.652 [1]
T11	20 - 0	ROHN 6 EHS	20.03	4.88	26.3	6.7133	224.0550	302.0970	0.742 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	170 - 166.667	L1 1/2x1 1/2x1/8	5.65	2.57	69.0	0.2109	0.6653	9.1758	0.073 [1]
T2	166.667 - 163.333	L1 1/2x1 1/2x1/8	5.65	2.57	69.0	0.2109	2.4649	9.1758	0.269 [1]
T3	163.333 - 160	L2x2x1/4	5.65	2.57	52.7	0.5863	3.2842	25.5046	0.129 [1]
T4	160 - 140	L1 1/2x1 1/2x3/16	6.87	3.31	89.8	0.3076	3.4155	13.3813	0.255 [1]
T5	140 - 120	L1 3/4x1 3/4x3/16	9.76	4.76	108.6	0.3779	3.9757	16.4399	0.242 [1]
T6	120 - 100	L2 1/2x2 1/2x3/16	12.30	6.05	95.0	0.5886	5.5554	25.6045	0.217 [1]
T7	100 - 80	L2 1/2x2 1/2x3/16	14.03	6.89	107.9	0.5886	6.1421	25.6045	0.240 [1]
T8	80 - 60	L2 1/2x2 1/2x3/8	15.89	7.83	126.4	1.1217	6.7273	48.7948	0.138 [1]
T9	60 - 40	L3x3x3/8	19.15	9.49	126.3	1.3716	8.2226	66.8637	0.123 [1]
T10	40 - 20	L3x3x3/8	20.90	10.30	137.0	1.3716	9.4209	66.8637	0.141 [1]
T11	20 - 0	L3 1/2x3 1/2x3/8	22.68	11.19	126.9	1.6491	9.8362	80.3918	0.122 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T8	80 - 60	L2 1/2x2 1/2x1/4	14.41	6.91	219.1	0.7753	2.8527	37.7965	0.075 [1]
T9	60 - 40	L3x3x1/4	16.31	7.81	204.5	0.9394	4.3913	45.7945	0.096 [1]
T10	40 - 20	L3x3x1/4	18.34	8.77	229.5	0.9394	4.6417	45.7945	0.101 [1]
T11	20 - 0	L3 1/2 x 3 1/2 x 1/4	20.35	9.78	217.6	1.1250	4.4883	54.8438	0.082 [1]

[1] $P_u / \phi P_n$ 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	170 - 166.667	L1 1/2x1 1/2x1/8	4.56	4.08	111.5	0.1992	0.4691	8.6660	0.054 [1]
T4	160 - 140	L1 1/2x1 1/2x3/16	4.56	4.11	113.5	0.3076	0.0583	13.3813	0.004 [1]

[1] $P_u / \phi P_n$ controls

Section Capacity Table

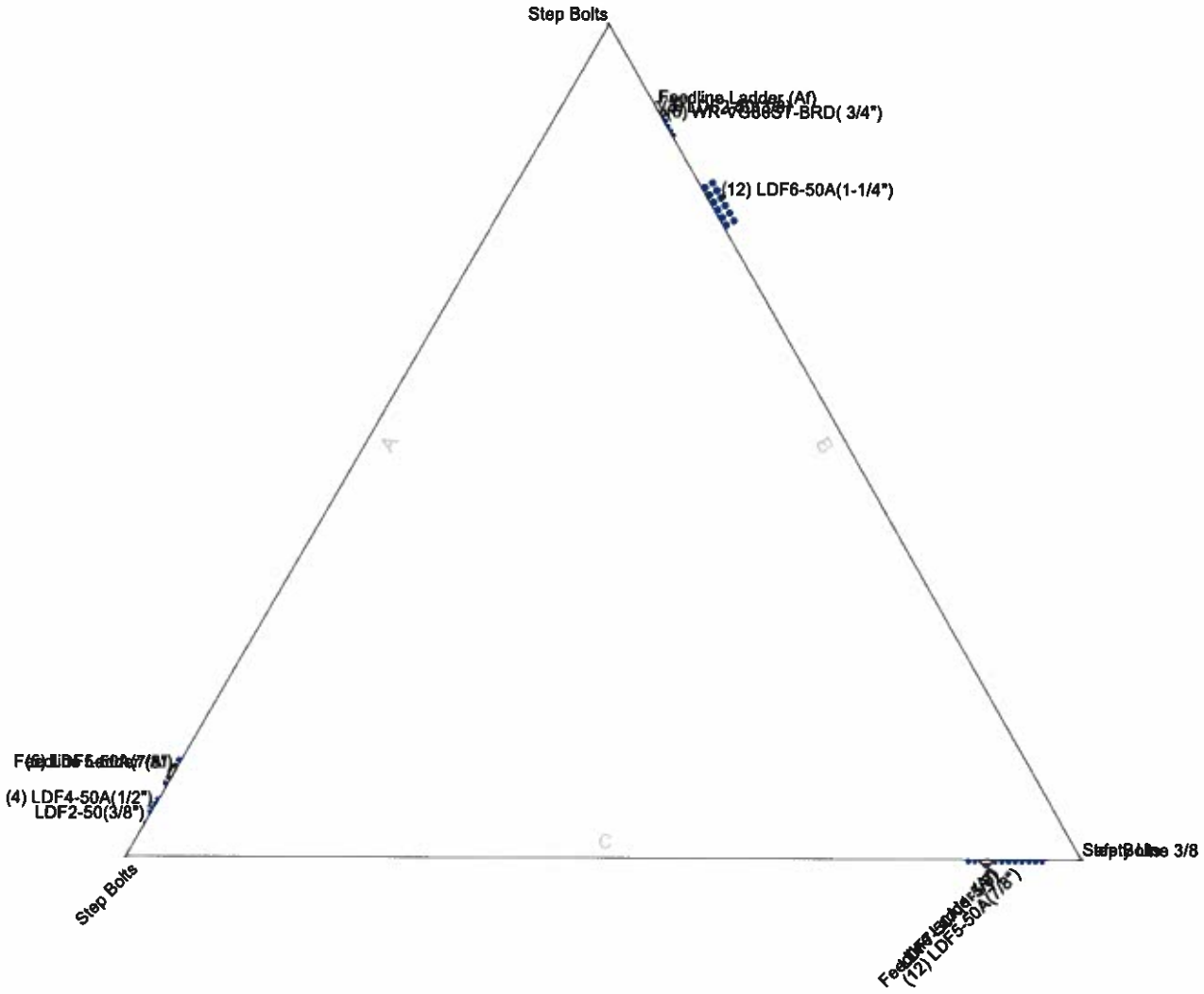
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	170 - 166.667	Leg	ROHN 2.5 STD	2	-0.6230	67.3119	0.9	Pass
T2	166.667 - 163.333	Leg	ROHN 2.5 STD	13	-9.8152	67.3119	14.6	Pass
T3	163.333 - 160	Leg	ROHN 2.5 STD	22	-12.0334	67.3119	17.9	Pass
T4	160 - 140	Leg	ROHN 2.5 STD	31	-42.8564	63.5190	67.5	Pass
T5	140 - 120	Leg	ROHN 3 STD	67	-71.8266	82.5074	87.1	Pass
T6	120 - 100	Leg	Rohn 3.5 X-STR	94	-101.3910	125.7260	80.6	Pass
T7	100 - 80	Leg	ROHN 4 X-STR	115	-133.2360	159.9140	83.3	Pass
T8	80 - 60	Leg	ROHN 4 X-STR	136	-164.4610	187.4430	87.7	Pass
T9	60 - 40	Leg	ROHN 5 X-STR	166	-250.1440	253.0900	98.8	Pass
T10	40 - 20	Leg	ROHN 6 EHS	187	-257.1340	285.5660	90.0	Pass
T11	20 - 0	Leg	ROHN 6 EHS	208	-265.0960	285.6450	92.8	Pass
T1	170 - 166.667	Diagonal	L1 1/2x1 1/2x1/8	10	-0.6765	6.2909	10.8 21.3 (b)	Pass
T2	166.667 - 163.333	Diagonal	L1 1/2x1 1/2x1/8	17	-2.4641	6.2909	39.2 78.8 (b)	Pass
T3	163.333 - 160	Diagonal	L2x2x1/4	30	-3.3477	19.9920	16.7 39.7 (b)	Pass
T4	160 - 140	Diagonal	L1 1/2x1 1/2x3/16	42	-3.3335	5.3520	62.3 72.8 (b)	Pass
T5	140 - 120	Diagonal	L1 3/4x1 3/4x3/16	75	-3.9649	5.0805	78.0	Pass
T6	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	102	-5.6691	9.4665	59.9 89.6 (b)	Pass
T7	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	123	-6.4075	7.3068	87.7 99.1 (b)	Pass
T8	80 - 60	Diagonal	L2 1/2x2 1/2x3/8	144	-7.4082	10.5105	70.5 93.2 (b)	Pass
T9	60 - 40	Diagonal	L3x3x3/8	174	-9.2914	12.6681	73.3 74.8 (b)	Pass
T10	40 - 20	Diagonal	L3x3x3/8	195	-10.7358	10.7502	99.9	Pass
T11	20 - 0	Diagonal	L3 1/2x3 1/2x3/8	216	-11.3958	14.6544	77.8 91.7 (b)	Pass
T8	80 - 60	Secondary Horizontal	L2 1/2x2 1/2x1/4	147	-2.8527	9.4126	30.3 35.9 (b)	Pass
T9	60 - 40	Secondary Horizontal	L3x3x1/4	175	-4.2670	12.9964	32.8 37.5 (b)	Pass
T10	40 - 20	Secondary Horizontal	L3x3x1/4	196	-4.4221	10.2885	43.0	Pass
T11	20 - 0	Secondary Horizontal	L3 1/2 x 3 1/2 x 1/4	217	-4.9697	13.3256	37.3 40.0 (b)	Pass
T1	170 - 166.667	Top Girt	L1 1/2x1 1/2x1/8	5	-0.4683	2.9700	15.8	Pass
T4	160 - 140	Top Girt	L1 1/2x1 1/2x3/16	34	-0.0478	4.2104	1.1 1.2 (b)	Pass
						Summary		
						Leg (T9)	98.8	Pass
						Diagonal (T10)	99.9	Pass
						Secondary Horizontal (T10)	43.0	Pass
						Top Girt (T1)	15.8	Pass
						Bolt Checks	99.1	Pass
						RATING =	**99.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

Feed Line Plan
20'

Round Flat App In Face App Out Face



Tectonic	Tectonic 1279 Route 300 Newburgh, NY 12550 Phone: (845) 567-6656 FAX: (845) 567-8703	Job: Glastonbury PD _ Modification Analysis	
		Project: 10178.CTL01083	
		Client: AT&T	Drawn by: Ian Marinaccio / App'd:
		Code: TIA-222-G	Date: 08/10/20 / Scale: NTS
		Path:	Dwg No. E-

APPENDIX C

ADDITIONAL CALCULATIONS

Anchor Rod Check for Self Supporting Towers

TIA-222-G, Section 4.9.9 Rev. 6.1

Site Data	
WO#:	10178.CTL01083
Site Name:	Glastonbury PD

Anchor Rod Data		
Qty:	6	
Diam:	1	in
Rod Material:	A354 Gr. BC (1/4 to 2-1/2 incl.)	
Strength (Fu):	125	ksi
Yield (Fy):	109	ksi

* Rod Circle:		in
* e:		in
* # of Rods		1 or 2

Mu= Pu x e:		ft-kips

** Only enter rod circle, offset (e) and number of anchor rods at the extreme fiber to consider if eccentric load due to leg reinforcement exist.*

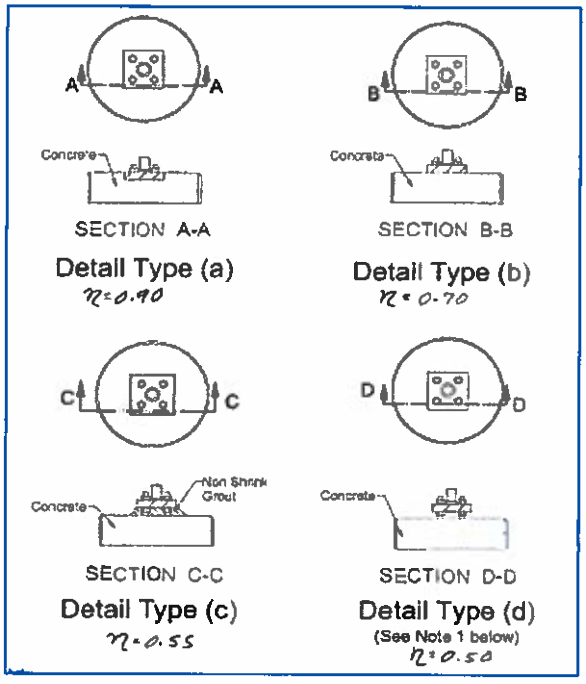


Figure 4-4 of TIA-222-G

Reactions		
Eta Factor, η	0.55	Detail Type
Uplift, Pu:	231	kips
Shear, Vu:	27	kips

l_{ar}:		in
Mu = 0.65*l_{ar}*V_u		ft-kips

Anchor Rod Results:

Max Rod (Cu+ Vu/ή):	46.7	Kips
Design Axial, Φ*Fu*Anet:	60.6	Kips
Anchor Rod Stress Ratio:	77.0%	

If Applicable;

Anchor Rod Results with Bending Considered:

When the clear distance from the top of concrete to the bottom of level nut excceeds 1.0 times the diameter of the anchor rod, the following interaction equation shall also be satisfied (see Figure 4-4 of Rev. G):

$$(V_u/\phi R_{nv})^2 + [(P_u/\phi R_{nt}) + (M_u/\phi R_{nm})]^2 <= 1$$

$\phi R_{nv}=\phi*0.45*F_{ub}*A_b=$		kips
$\phi R_{nt}=\phi*F_u*A_{net}=$		kips
$\phi R_{nm}=\phi*F_y*Z=$		ft-kips

Maximum Acceptable Ratio: 105 %

Governing Stress Ratio: 77.0% **Pass**

Drilled Pier Foundation

WO # :	10178.CTL01083
Site Name:	Glastonbury PD
TIA-222 Revison:	G
Tower Type:	Self Support

Applied Loads	Comp.	Uplift
Moment (kip-ft)	0	0
Axial Force (kips)	269	231
Shear Force (kips)	31	27

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	45	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 45' below grade		
Pier Diameter	5	ft
Rebar Quantity	16	
Rebar Size	9	
Clear Cover to Ties	3	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
D_{ND} (ft from TOC)	23.30	23.30
Soil Safety Factor	43.96	50.47
Max Moment (kip-ft)	499.54	435.08
Rating	*3.0%*	*2.6%*
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	280.15	280.15
End Bearing (kips)	167.88	-
Weight of Concrete (kips)	100.53	75.40
Total Capacity (kips)	448.03	355.55
Axial (kips)	369.53	231.00
Rating	*82.5%*	*65.0%*
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	23.82	22.16
Critical Moment (kip-ft)	499.17	433.50
Critical Moment Capacity	2063.50	1568.17
Rating	*24.2%*	*27.6%*

Soil Interaction Rating	**82.5%**
Structural Foundation Rating	**27.6%**

Soil Profile

Groundwater Depth	4	ft	# of Layers: 2

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	120	150	0	0	0.000	0.000	0.00	0.00		0	Cohesionless
2	4	45	41	120	87.6	0	30	0.000	0.000	0.58	0.58	11.4	0	Cohesionless

CONNECTICUT DESIGN CRITERIA - STATE

Revison:

CT is NOT a Home Rule State; Tab added only for Design Criteria

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS

				Wind Design Parameters					
Municipality	Ground Snow Load	MCE Spectral Accelerations (%g)		Ultimate Design Wind Speeds, V_{ult} (mph)			Nominal Design Wind Speeds, V_{asd} (mph)		
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV
Andover	30	0.176	0.063	120	130	140	93	101	108
Ansonia	30	0.195	0.064	115	125	135	89	97	105
Ashford	35	0.173	0.063	120	130	140	93	101	108
Avon	35	0.181	0.064	110	120	130	85	93	101
Barkhamsted	40	0.177	0.065	110	120	125	85	93	97
Beacon Falls	30	0.192	0.064	115	125	135	89	97	105
Berlin	30	0.183	0.063	115	125	135	89	97	105
Bethany	30	0.189	0.063	115	125	135	89	97	105
Bethel	30	0.215	0.066	110	120	125	85	93	97
Bethlehem	35	0.190	0.065	110	120	125	85	93	97
Bloomfield	35	0.180	0.064	115	125	130	89	97	101
Bolton	30	0.177	0.063	115	125	135	89	97	105
Bozrah	30	0.170	0.061	120	135	145	93	105	112
Branford	30	0.180	0.061	120	130	140	93	101	108
Bridgeport	30	0.209	0.064	115	125	135	89	97	105
Bridgewater	35	0.201	0.066	110	120	125	85	93	97
Bristol	35	0.185	0.064	110	120	130	85	93	101
Brookfield	35	0.208	0.066	110	120	125	85	93	97
Brooklyn	35	0.171	0.062	120	130	140	93	101	108
Burlington	35	0.182	0.064	110	120	130	85	93	101
Canaan	40	0.173	0.065	105	115	120	81	89	93
Canterbury	35	0.171	0.061	120	130	140	93	101	108
Canton	35	0.180	0.064	110	120	130	85	93	101
Chaplin	35	0.173	0.062	120	130	140	93	101	108
Cheshire	30	0.186	0.063	115	125	135	89	97	105
Chester	30	0.172	0.060	120	130	140	93	101	108
Clinton	30	0.169	0.059	120	135	140	93	105	108
Colchester	30	0.174	0.061	120	130	140	93	101	108
Colebrook	40	0.174	0.065	105	115	125	81	89	97
Columbia	30	0.175	0.062	120	130	140	93	101	108
Cornwall	40	0.180	0.065	105	115	120	81	89	93
Coventry	30	0.176	0.063	120	130	140	93	101	108
Cromwell	30	0.181	0.063	115	125	135	89	97	105
Danbury	30	0.217	0.067	110	120	125	85	93	97
Darien	30	0.242	0.068	110	120	130	85	93	101
Deep River	30	0.170	0.060	120	130	140	93	101	108
Derby	30	0.195	0.064	115	125	135	89	97	105
Durham	30	0.179	0.062	115	130	140	89	101	108
Eastford	40	0.172	0.063	120	130	140	93	101	108
East Granby	35	0.177	0.065	110	120	130	85	93	101
East Haddam	30	0.172	0.061	120	130	140	93	101	108
East Hampton	30	0.177	0.062	120	130	140	93	101	108

East Hartford	30	0.180	0.064	115	125	135	89	97	105
East Haven	30	0.182	0.062	120	130	140	93	101	108
East Lyme	30	0.164	0.059	125	135	145	97	105	112
Easton	30	0.215	0.066	110	120	130	85	93	101
East Windsor	35	0.177	0.064	115	125	135	89	97	105
Ellington	35	0.176	0.064	115	125	135	89	97	105
Enfield	35	0.176	0.065	110	125	130	85	97	101
Essex	30	0.168	0.059	120	135	145	93	105	112
Fairfield	30	0.215	0.065	115	125	135	89	97	105
Farmington	35	0.183	0.064	115	125	135	89	97	105
Franklin	30	0.171	0.061	120	130	140	93	101	108
Glastonbury	30	0.180	0.063	115	125	135	89	97	105
Goshen	40	0.181	0.065	105	115	125	81	89	97
Granby	35	0.176	0.065	110	120	130	85	93	101
Greenwich	30	0.259	0.070	110	120	130	85	93	101
Griswold	30	0.168	0.060	125	135	145	97	105	112
Groton	30	0.160	0.058	125	135	145	97	105	112
Guilford	30	0.176	0.061	120	130	140	93	101	108
Haddam	30	0.175	0.061	120	130	140	93	101	108
Hamden	30	0.185	0.063	115	125	135	89	97	105
Hampton	35	0.172	0.062	120	130	140	93	101	108
Hartford	30	0.181	0.064	115	125	135	89	97	105
Hartland	40	0.175	0.065	110	120	125	85	93	97
Harwinton	35	0.183	0.065	110	120	130	85	93	101
Hebron	30	0.177	0.063	120	130	140	93	101	108
Kent	40	0.188	0.065	105	115	120	81	89	93
Killingly	40	0.171	0.062	120	130	140	93	101	108
Killingworth	30	0.173	0.061	120	130	140	93	101	108
Lebanon	30	0.173	0.062	120	130	140	93	101	108
Ledyard	30	0.163	0.059	125	135	145	97	105	112
Lisbon	30	0.169	0.061	125	135	145	97	105	112
Litchfield	40	0.184	0.065	110	120	125	85	93	97
Lyme	30	0.164	0.059	125	135	145	97	105	112
Madison	30	0.173	0.060	120	130	140	93	101	108
Manchester	30	0.178	0.064	115	125	135	89	97	105
Mansfield	35	0.173	0.062	120	130	140	93	101	108
Marlborough	30	0.177	0.062	120	130	140	93	101	108
Meriden	30	0.183	0.063	115	125	135	89	97	105
Middlebury	35	0.191	0.064	110	120	130	85	93	101
Middlefield	30	0.181	0.063	115	125	135	89	97	105
Middletown	30	0.180	0.063	115	130	135	89	101	105
Milford	30	0.194	0.063	115	125	135	89	97	105
Monroe	30	0.205	0.065	110	120	130	85	93	101
Montville	30	0.165	0.059	125	135	145	97	105	112
Morris	35	0.187	0.065	110	120	125	85	93	97
Naugatuck	30	0.190	0.064	110	125	135	85	97	105
New Britain	30	0.183	0.064	115	125	135	89	97	105
New Canaan	30	0.240	0.068	110	120	130	85	93	101
New Fairfield	35	0.212	0.067	105	115	125	81	89	97
New Hartford	40	0.180	0.065	110	120	130	85	93	101
New Haven	30	0.186	0.062	115	125	135	89	97	105
Newington	30	0.182	0.064	115	125	135	89	97	105
Southbury	35	0.198	0.065	110	120	130	85	93	101

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Jun 30 2020

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

APPENDIX D

MODIFICATION DRAWINGS

MODIFICATION INSPECTION (MI) CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING
X	EOR APPROVED SHOP DRAWINGS
X	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
NA	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	GENERAL CONSTRUCTION INSPECTION
X	SPECIAL INSPECTION OF STRUCTURAL STEEL ERECTION & BOLTING
NA	SPECIAL INSPECTION OF FIELD WELDING
NA	CONTINUOUS FOUNDATION INSPECTIONS
NA	CONCRETE COMPRESSIVE STRENGTH AND SLUMP TESTS
NA	GROUT COMPRESSIVE STRENGTH TESTS (ASTM C842)
NA	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE GROUT VERIFICATION
NA	CONTRACTOR'S CERTIFIED WELD INSPECTION AND NDE REPORTS
NA	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
NA	NON-TENSION CONTROLLED BOLT INSPECTION (AS REQUIRED)
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
NA	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT REQUIRED FOR THE MI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT

MODIFICATION INSPECTION NOTES

GENERAL

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY AN OWNER APPROVED ENGINEERING VENDOR THAT IS APPROVED TO PERFORM ELEVATED WORK FOR THE OWNER.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, REFER TO THE PROJECT CONTACTS LISTED IN THE PROJECT DIRECTORY ON SHEET T-1.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GC INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO THE OWNER.

GENERAL CONTRACTOR

THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MI INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF FIVE (5) BUSINESS DAYS NOTICE, PREFERABLY TEN (10), TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW THE FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, THE OWNER SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF THE OWNER CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH THE OWNER TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH THE OWNER'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

MI VERIFICATION INSPECTIONS

THE OWNER RESERVES THE RIGHT TO CONDUCT AN MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT INSPECTION FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

1. PRE-CONSTRUCTION GENERAL SITE CONDITION
2. PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION:
   - RAW MATERIALS
   - PHOTOS OF ALL CRITICAL DETAILS
   - FOUNDATION MODIFICATIONS
   - WELD PREPARATION
   - BOLT INSTALLATION AND TORQUE
   - FINAL INSTALLED CONDITION
   - SURFACE COATING REPAIR
3. POST CONSTRUCTION PHOTOGRAPHS:
   - FINAL IN FIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

PLANS ARE NOT TO BE SCALED.

0 1 2 3

ORIGINAL SIZE IN INCHES

at&t
ONE AT&T WAY
BEDMINSTER, NJ 07921

CENTERLINE

Rev	Date	Revision	Approved
A	6/10/20	ISSUED FOR COMMENT	AG

DRAWING CONTROL

Designed by	JFJ	Drawn by	MB	Checked by	BM
Purpose		Released by		Date	
For Comment		VR		6/10/20	
For Approval					
For Bid					
For Construction					

Tectonic
PROJECT MILESTONES, EXCEPTIONAL RESULTS.
Tectonic Engineering & Surveying Consultants P.C.
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Newburgh, NY 12550
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TOWER REINF MOD INSPECTION CHECKLIST & NOTES

GLASTONBURY PD
SITE NO. CTL01083
FA LOCATION NO. 10035111
2108 MAIN STREET
GLASTONBURY, CT 06033

Date	Work Order	Drawing No.	Rev
6/10/20	10178.CTL01083	SN-1	A

TOWER REINFORCEMENT DESIGN CRITERIA

TOWER REINFORCEMENT IS DESIGNED IN CONFORMANCE TO THE REQUIREMENTS OF THE CODES AND STANDARDS LISTED BELOW. ALL TOWER REINFORCEMENT WORK, INCLUDING FABRICATION, ERECTION, ALTERATION, AND MAINTENANCE, SHALL COMPLY WITH THE REQUIREMENTS OF FOLLOWING, UNLESS SPECIFICALLY NOTED OTHERWISE.

- 2018 CONNECTICUT STATE BUILDING CODE (IBC 2015)
- ANSI/TIA-222-G "STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS"
- ANSI/TIA-322 "LOADING, ANALYSIS, AND DESIGN CRITERIA RELATED TO THE INSTALLATION, ALTERATION AND MAINTENANCE OF COMMUNICATION STRUCTURES"
- ANSI/ASSE A10.48 "CRITERIA FOR SAFETY PRACTICES WITH THE CONSTRUCTION, DEMOLITION, MODIFICATION AND MAINTENANCE OF COMMUNICATION STRUCTURES"

TOWER REINFORCEMENT NOTES

GENERAL

1. ALL REFERENCES TO THE OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED CENTERLINE COMMUNICATIONS OR ITS DESIGNATED REPRESENTATIVE.
2. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR, UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED, THAT HE IS PROPERLY LICENSED, AND THAT HE IS PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PERFORMED.
3. NOTES AND TYPICAL DETAILS ARE APPLICABLE TO ALL PARTS OF THE STRUCTURE, ALL MATERIALS LISTED HEREIN, ANY PROCEDURES TO BE USED ON THIS PROJECT, AND SHALL BE READ IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS AND PROJECT SPECIFICATIONS.
4. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING, AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
5. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND APPROVALS FROM ALL AUTHORITIES HAVING JURISDICTION FOR THIS PROJECT AND SHALL NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY, OR CITY) ENGINEER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
8. ERECT GUARDS AND BARRIERS PER APPLICABLE LABOR AND CONSTRUCTION SAFETY REGULATIONS.
9. THE CONTRACTOR SHALL INSPECT THE EXISTING STRUCTURE AND FIELD VERIFY ALL EXISTING CONDITIONS, POSSIBLE INTERFERENCES, AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY AND ALL DISCREPANCIES TO THE ENGINEER OF RECORD (EOR) AND FIELD PERSONNEL IMMEDIATELY. ANY AND ALL FIELD CHANGES SHALL BE APPROVED AND DOCUMENTED BY THE EOR PRIOR TO FIELD IMPLEMENTATION.
10. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR TWO (2) YEARS FROM THE ACCEPTANCE DATE UPON COMPLETION OF CONSTRUCTION.
11. USE ONLY THE LATEST ISSUES OF ANY APPLICABLE CODES, STANDARDS, OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES AND SPECIFICATIONS, UNLESS SPECIFICALLY NOTED OTHERWISE.
12. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH ANSI, ASTM, ACI, TIA, AND AISC STANDARDS AS REFERENCED IN THE APPLICABLE CODE.
13. STRUCTURAL ELEMENTS SHOWN ON THESE DRAWINGS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE BUILDING CODES/STANDARDS. ALL CONSTRUCTION, EXCEPT WHERE NOTED OTHERWISE, SHALL COMPLY WITH THOSE CODES/STANDARDS.
14. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS, AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
15. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK WITHIN THE WORK AREA AND ANY ADJACENT AREAS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION PROCEDURES COMPLY WITH THE REQUIREMENTS OF OSHA, THE OWNER, AND ALL OTHER APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
17. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE AND OBTAIN APPROVAL FOR INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIAL ACCESS, WITH THE RESIDENT LEASING AGENT.
18. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES OR BURIED SERVICES AFFECTED BY THIS CONSTRUCTION. CONTRACTOR IS ALSO RESPONSIBLE FOR TEMPORARILY RELOCATING ANY LINES OR STRUTS AS NECESSARY TO COMPLETE THE REQUIRED WORK.
19. STRUCTURAL DESIGN IS FOR THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT OF AN EXISTING TOWER HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.
20. PLANS ARE NOT TO BE SCALED. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
21. FOR THIS ANALYSIS AND MODIFICATION, THE TOWER HAS BEEN ASSUMED TO BE IN GOOD CONDITION WITHOUT ANY DEFECTS. IF THE CONTRACTOR DISCOVERS ANY INDICATION OF AN EXISTING STRUCTURAL DEFECT, CONTACT THE ENGINEER OF RECORD IMMEDIATELY.
22. ALL WORK SHALL BE PERFORMED IN CALM WEATHER, WITH WIND GUSTS LESS THAN 10 MPH.
23. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE ENGINEER OF RECORD.
24. ALL TOWER REINFORCEMENT SHALL BE COMPLETED PRIOR TO INSTALLATION OF PROPOSED ANTENNAS, MOUNTS, AND CABLES.
25. PROTECT EXISTING ANTENNAS, MOUNTS, CABLES, AND EQUIPMENT FROM DAMAGE DURING INSTALLATION OF ANTENNAS AND REINFORCING.
26. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENTS AND TO MAINTAIN TOWER ALIGNMENT AND PLUMBNESS DURING REINFORCEMENT OF MEMBERS. THIS INCLUDES, BUT IS NOT LIMITED TO, PROVIDING TEMPORARY GUYS, TIE-DOWNS, OR BRACING/SUPPORT SYSTEMS AS NECESSARY. NO STRUCTURAL MEMBERS SHALL BE REMOVED UNTIL SUCH SYSTEMS ARE ADEQUATELY INSTALLED ON THE TOWER. TOWER REINFORCEMENT WORK SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA-322 AND ANSI/ASSE A10.48.
27. CONTRACTOR SHALL SUBMIT A DETAILED, SITE SPECIFIC RIGGING PLAN TO THE OWNER PRIOR TO THE START OF ANY WORK.
28. REMOVE FROM THE SITE AND PROPERLY DISPOSE OF ALL TEMPORARY BRACING, REMOVED TOWER MEMBERS/BOLTS, EXCESS MATERIALS, AND DEBRIS, AS DIRECTED BY THE OWNER'S REPRESENTATIVE UPON COMPLETION OF WORK.
29. GROUNDING SYSTEM SHALL BE CHECKED AND UPGRADED AS NECESSARY, AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
30. CONTRACTOR SHALL ACCURATELY FIELD VERIFY LENGTHS OF ALL MATERIAL PRIOR TO FABRICATION OR ORDERING OF ANY PRODUCTS.
31. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.
32. CONTRACTOR SHALL FIELD VERIFY SAFETY CLIMB LOCATION AND CONTACT THE ENGINEER OF RECORD IF THE DESIGN SHOWN IMPACTS THE SAFETY CLIMB SYSTEM. THE CLIMBING FACILITIES, SAFETY CLIMB, AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED, OR ALTERED WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE TOWER OWNER OR ENGINEER OF RECORD.

STRUCTURAL STEEL & BOLTING

1. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", LATEST EDITION.
2. HOLLOW STRUCTURAL SECTION (HSS) SPLIT PIPE SECTIONS FOR LEG REINFORCING SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED AND SEAMLESS CARBON STEEL STRUCTURAL TUBING IN ROUNDS AND SHAPES" (F_y = 50 ksi). IF THE MEMBER SIZES INDICATED ARE NOT AVAILABLE IN THIS GRADE, BENT PLATE LEG REINFORCING CONFORMING TO A572 "HIGH-STRENGTH LOW-ALLOY COLUMBIUM-VANADIUM STRUCTURAL STEEL", GRADE 50, MAY BE SUBSTITUTED. BENT PLATE SHALL BE FORMED TO A RADIUS MATCHING THE EXISTING TOWER LEG. SUBSTITUTION WITH ASTM A53 PIPE IS NOT ACCEPTABLE.
3. ALL OTHER HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM A500, GRADE B (F_y = 42 ksi). SUBSTITUTION WITH ASTM A53 PIPE IS NOT ACCEPTABLE.
4. MISCELLANEOUS STEEL, INCLUDING CHANNELS, ANGLES, PLATES, BARS, AND SOLID RODS SHALL CONFORM TO ASTM A36 "CARBON STRUCTURAL STEEL" (F_y = 36 ksi), UNLESS OTHERWISE INDICATED.
5. 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.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO ASTM A325 "STRUCTURAL BOLTS, STEEL, HEAT TREATED, 120/105 ksi MINIMUM TENSILE STRENGTH" OR ASTM A490 "STRUCTURAL BOLTS, ALLOY STEEL, HEAT TREATED, 150 KSI MINIMUM TENSILE STRENGTH", AS INDICATED ON THE TOWER MODIFICATION SCHEDULE AND TOWER REINFORCEMENT ELEVATION. CONNECTION TYPE X, UNLESS OTHERWISE NOTED. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANE. FULLY THREADED BOLTS (A325T) SHALL NOT BE USED. EXISTING BOLTS THAT HAVE BEEN REMOVED SHALL NOT BE REUSED.
7. U-BOLTS SHALL CONFORM TO ASTM A36 OR A307 "CARBON STEEL BOLTS, STUDS, AND THREADED ROD 60000 PSI TENSILE STRENGTH". ALL U-BOLTS SHALL BE 1/2" DIAMETER IN 9/16" DIAMETER HOLES, UNLESS OTHERWISE NOTED. INSTALL DOUBLE NUTS ON ALL CONNECTIONS.
8. MATCHING NUTS SHALL BE HEAVY HEX TYPE, CONFORMING TO ASTM A563, "CARBON AND ALLOY STEEL NUTS". WASHERS, WHERE REQUIRED, SHALL CONFORM TO ASTM F436 "HARDENED STEEL WASHERS". INSTALL NUT-LOCKING DEVICES OR MECHANISMS SUCH AS, BUT NOT LIMITED TO, LOCK NUTS, LOCK WASHERS, OR PALNUTS, CONFORMING TO SECTION 4.9.2 OF ANSI/TIA-222 ON ALL NEW/REPLACED BOLTS TO PREVENT LOOSENING.
9. ALL A325 BOLTS, U-BOLTS, AND MISCELLANEOUS HARDWARE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
10. ALL ASTM A490 BOLTS SHALL BE COATED WITH ZINC/ALUMINUM CORROSION PROTECTIVE COATINGS PER ASTM F1136 "ZINC/ALUMINUM CORROSION PROTECTIVE COATINGS FOR FASTENERS", GRADE 3, USING GEOMET, MAGNI, OR OTHER ENGINEER APPROVED CORROSION PROTECTIVE COATING.
11. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780 "REPAIR OF DAMAGED AND UNCOATED AREAS OF HOT-DIP GALVANIZED COATINGS", USING Z.R.C. COLD GALVANIZING COMPOUND AS MANUFACTURED BY ZRC WORLDWIDE, OR ENGINEER APPROVED EQUAL WITH A MINIMUM METALLIC ZINC CONTENT OF 95% BY WEIGHT IN DRY FILM. DRY FINISHED COATING THICKNESS SHALL BE 3 MILS MINIMUM.
12. ALL BOLT HOLES SHALL BE STANDARD HOLES AS DEFINED BY AISC, DRILLED OR PUNCHED 1/16" LARGER IN DIAMETER THAN THE CONNECTING BOLT, UNLESS OTHERWISE NOTED. OVERSIZED OR SLOTTED HOLES, OR ANY BURNING OF HOLES, IS NOT PERMITTED.
13. ALL CONNECTIONS TO BE SNUG TIGHT TYPE IN ACCORDANCE WITH THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
14. ALL CONNECTIONS THAT ARE NOT FULLY DETAILED ON THESE DRAWINGS SHALL BE DETAILED BY THE STEEL FABRICATOR. STEEL FABRICATOR SHALL MAINTAIN EDGE DISTANCES AND SPACING OF BOLT HOLES IN ACCORDANCE WITH THE TIA REQUIREMENTS AND EXISTING FIELD CONDITIONS. IF REQUIRED, COPING OF REINFORCING ANGLES SHALL BE WITHIN THE LIMITS OF ALLOWABLE COPING AS INDICATED ON THESE DRAWINGS. IN CASE OF DISCREPANCIES, IMMEDIATELY CONTACT THE ENGINEER OF RECORD FOR FURTHER DIRECTION.
15. ALL NEW/REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT IS AT LEAST FLUSH WITH THE FACE OF THE NUT, PROVIDING A MINIMUM STICK-THROUGH OF ZERO. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
16. SUBMIT SHOP DETAIL DRAWINGS OF ALL STRUCTURAL AND MISCELLANEOUS STEEL TO THE ENGINEER FOR APPROVAL, AND INCORPORATE ALL COMMENTS PRIOR TO FABRICATION.
17. AFTER FINAL INSPECTION, ALL GALVANIZED STEEL SURFACES THAT HAVE BEEN DAMAGED AS THE RESULT OF THIS SCOPE OF WORK, INCLUDING AREAS AROUND GRINDING WELDS, FIELD DRILLED HOLES, AND LEG/SHAFT INTERIORS (WHERE ACCESSIBLE), SHALL BE PREPARED BY POWER TOOL CLEANING IN ACCORDANCE WITH SSPC SP-3, AND TOUCH-UP PAINTED WITH BRUSH-APPLIED, COLD-GALVANIZING COMPOUND. PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MI INSPECTOR.

WELDING

1. FIELD WELDING OF EXISTING TOWER MEMBERS IS NOT PERMITTED, UNLESS SPECIFICALLY INDICATED OTHERWISE ON THESE DRAWINGS.
2. CONTRACTOR SHALL COMPLY WITH AWS D1.1 "STRUCTURAL WELDING CODE - STEEL" 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".
3. REMOVE ALL GALVANIZING IN AREAS TO BE WELDED BY GRINDING. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND, AND ENSURE THAT THESE AREAS ARE 100% FREE OF ALL GALVANIZING. AFTER WELDING, CLEAN AND PROTECT ALL EXPOSED STEEL AND WELDS BY COLD GALVANIZING.
4. ALL WELDING TO THE TOWER SHALL BE PERFORMED USING THE SMAW PROCESS WITH E7018X LOW HYDROGEN ELECTRODES, UNLESS OTHERWISE INDICATED. LOW HYDROGEN ELECTRODES SHALL BE PURCHASED IN HERMETICALLY SEALED CONTAINERS AND SHALL BE USED WITHIN 4 HOURS AFTER OPENING THE CONTAINER. ELECTRODES NOT USED WITHIN 4 HOURS SHALL BE REDRIED AT A TEMPERATURE BETWEEN 450° AND 500° FOR AT LEAST 2 HOURS AND THEN STORED AT 250°F. REDRIED ELECTRODES SHALL BE USED WITHIN 4 HOURS AFTER REMOVAL FROM THE STORAGE OVEN. REDRIED ELECTRODES NOT USED WITHIN 4 HOURS SHALL BE DISCARDED.
5. SPACES BETWEEN INTERMITTENT WELDS SHALL BE FILLED USING CHEM-CALK 915 SEALANT AS MANUFACTURED AND MARKETED BY BOSTIK, INC., WAUWATOSA, WI 53226 (800) 726-7845, OR ENGINEER APPROVED EQUAL.
6. ALL FIELD WELDING SHALL BE VISUALLY INSPECTED BY AN AWS CERTIFIED WELDING INSPECTOR (CWI) IN ACCORDANCE WITH THE ACCEPTANCE CRITERIA OF AWS D1.1., PRIOR TO INSTALLATION OF THE PROPOSED ANTENNAS AND/OR APPURTENANCES. THE CWI SHALL WORK WITH THE QC ON THE LEVEL OF INTERACTION NEEDED TO CONDUCT THE REQUIRED WELDING INSPECTION(S). THE CERTIFIED WELDING INSPECTION IS THE RESPONSIBILITY OF THE QC.
7. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0°F. MINIMUM PREHEAT AND INTERPASS TEMPERATURE REQUIREMENTS SHALL COMPLY WITH AWS D1.1.
8. DO NOT WELD ON WET OR FROST-COVERED SURFACES, AND PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.

PLANS ARE NOT TO BE SCALED.

0 1 2 3

ORIGINAL SIZE IN INCHES

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ONE AT&T WAY
BEDMINSTER, NJ 07921

CENTERLINE

Rev	Date	Revision	Approved
A	6/10/20	ISSUED FOR COMMENT	AG

DRAWING CONTROL

Designed by: JFJ	Drawn by: MB	Checked by: EB

Purpose	Released by	Date
For Comment	VH	6/10/20
For Approval		
For Bid		
For Construction		

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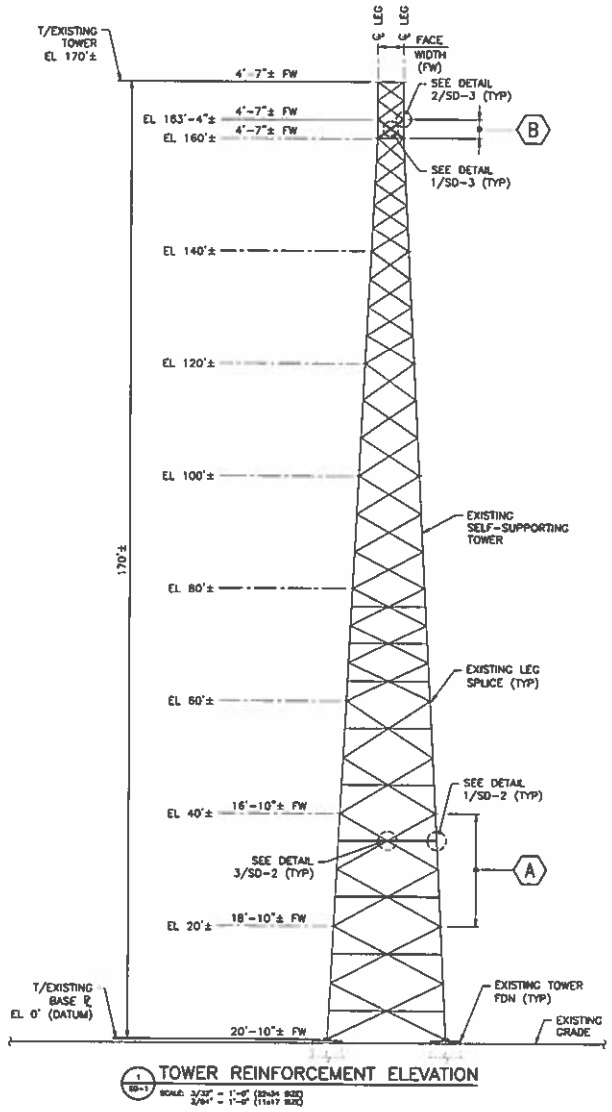
TOWER REINFORCEMENT DESIGN CRITERIA & NOTES

GLASTONBURY PD
SITE NO. CTL01083
FA LOCATION NO. 10035111
2108 MAIN STREET
GLASTONBURY, CT 06033

Date	Work Order	Drawing No.	Rev
6/10/20	10178.CTL01083	SN-2	A

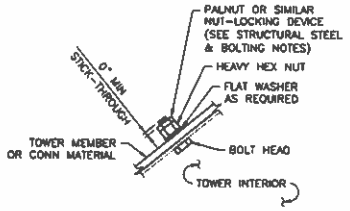


1 SD-1 TOWER REINFORCEMENT ELEVATION
SCALE: 3/32" = 1'-0" (22x34 SIZE) 3/64" = 1'-0" (11x17 SIZE)

TOWER MODIFICATION SCHEDULE

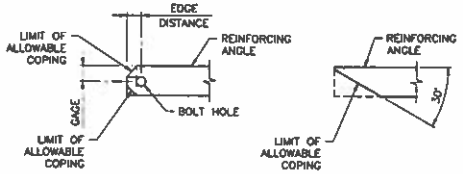
SECTION	ELEVATION	MEMBER TYPE	EXISTING MEMBER	REINFORCING MEMBER	DESCRIPTION
A	20'± TO 40'±	LEG	8.625x0.340 (ROHN 8" EHS PIPE)	SECONDARY HORIZONTAL L3x3x1/4	INSTALL SECONDARY HORIZONTAL MEMBERS WITH 5/8" DIA A325 END BOLTS ON ALL THREE (3) TOWER FACES. SEE DETAIL 1/SD-2, SECTION 2/SD-2, AND DETAIL 3/SD-2.
B	160'± TO 163'-4"±	MAIN DIAGONAL	L1 1/2x1 1/2x1/8	L2x2x1/4	REPLACE EXISTING MAIN DIAGONAL MEMBERS WITH LARGER SIZE MEMBERS ON ALL THREE (3) TOWER FACES. REPLACE EXISTING DIAGONAL END BOLTS AND CENTER BOLTS WITH 1/2" DIA A325 BOLTS. SEE DETAILS 1/SD-3 AND 2/SD-3.

NOTE:
ALL TOWER REINFORCEMENT BOLTS SHALL BE CONNECTION TYPE X WITH THREADS EXCLUDED FROM THE SHEAR PLANE.



NOTE:
ALL BOLTS SHALL BE INSTALLED "UP AND OUT" SO THAT:
- THE BOLT HEAD IS BENEATH THE CONNECTED MEMBERS AND/OR TOWARD THE INTERIOR OF THE TOWER.
- THE NUT IS ON TOP OF THE CONNECTED MEMBERS AND/OR TOWARD THE EXTERIOR OF THE TOWER.

2 SD-1 TYPICAL BOLT INSTALLATION DETAIL
SCALE: N.T.S.



3 SD-1 TYPICAL ANGLE COPING LIMITS
SCALE: N.T.S.

NOTES:
1. REINFORCEMENT OF THE EXISTING TOWER HAS BEEN DESIGNED TO SUPPORT THE ANTENNAS AND CABLES LISTED IN THE STRUCTURAL MODIFICATION ANALYSIS REPORT BY TECTONIC, DATED 8/10/20. REINFORCEMENT DETAILS AS SHOWN ARE BASED ON THE RECOMMENDATIONS OUTLINED AND DOCUMENTS REFERENCED IN THE REPORT. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO FABRICATION OF STEEL OR ORDERING OF ANY PRODUCTS.
2. EXISTING ANTENNAS, CABLES, AND OTHER APPURTENANCES ARE NOT SHOWN FOR CLARITY. CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ALL EXISTING WAVEGUIDES, CABLES, CABLE ATTACHMENTS, ANTENNAS, AND ANTENNA SUPPORT FRAMES THAT MUST BE TEMPORARILY REMOVED OR PERMANENTLY REPOSITIONED AS REQUIRED TO ALLOW FOR INSTALLATION OF PROPOSED REINFORCEMENT. CONTRACTOR SHALL PLAN AND COORDINATE ALL TEMPORARY REMOVAL AND/OR PERMANENT RELOCATION DIRECTLY WITH THE OWNER'S REPRESENTATIVE AND OBTAIN WRITTEN PERMISSION FROM THE REPRESENTATIVE PRIOR TO ALTERATION OF ANY EXISTING WAVEGUIDES, CABLES, ANTENNAS, OR OTHER APPURTENANCES. MAINTAIN EXISTING ANTENNA AZIMUTHS.
3. EXISTING SHELTERS, EQUIPMENT, FENCE, AND OTHER SITE FEATURES ARE NOT SHOWN FOR CLARITY.

ANGLE GAGE & BOLT EDGE DISTANCE & SPACING CHART

ANGLE LEG	RECOMMENDED GAGE	BOLT DIAMETER	MIN EDGE DISTANCE	MIN SPACING
1 3/4"	1"	1/2"	3/4"	1 3/8"
2"	1 1/8"	5/8"	15/16"	1 3/4"
2 1/2"	1 3/8"	3/4"	1 1/8"	2"
3"	1 3/4"	7/8"	1 5/16"	2 3/8"
3 1/2"	2"	1"	1 1/2"	2 3/4"
4"	2 1/2"	1 1/8"	1 11/16"	3"

NOTE:
RECOMMENDED GAGES LISTED ABOVE MAY BE ADJUSTED AS REQUIRED FOR NEW ANGLES INSTALLED BACK-TO-BACK WITH EXISTING MAIN DIAGONAL MEMBERS IN ORDER TO MATCH EXISTING BOLT HOLES, PROVIDED THAT ALL TIA MINIMUM EDGE DISTANCE AND SPACING REQUIREMENTS AND AISC BOLT ENTERING/TIGHTENING CLEARANCES ARE SATISFIED. SEE STRUCTURAL STEEL & BOLTING NOTES.

PLANS ARE NOT TO BE SCALED.

ORIGINAL SIZE IN INCHES

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BEDMINSTER, NJ 07921

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Rev	Date	Revision	Approval
A	8/10/20	ISSUED FOR COMMENT	AS

DRAWING CONTROL

Designed by	JFJ	Drawn by	MR	Checked by	BK
Purpose		Released by		Date	
For Comment				8/10/20	
For Approval					
For Bid					
For Construction					

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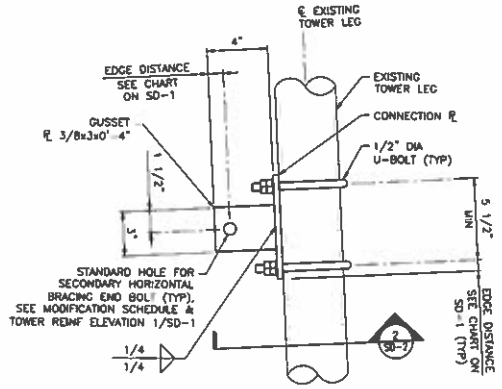
TOWER REINF ELEVATION, MOD SCHED & TYP DETS

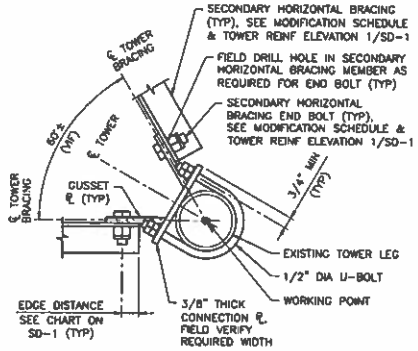
GLASTONBURY PD
SITE NO. CTL01083
FA LOCATION NO. 10035111
2106 MAIN STREET
GLASTONBURY, CT 06033

Date	Work Order	Drawing No.	Rev
8/10/20	10176.CTL01083	SD-1	A
Scale: AS NOTED			

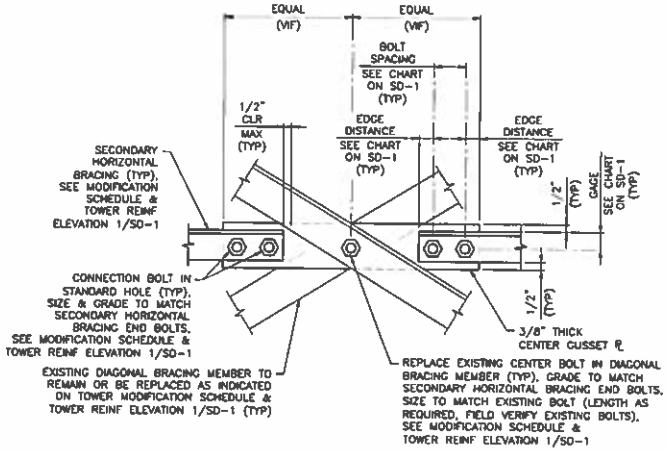


NOTE:
SECONDARY HORIZONTAL BRACING NOT SHOWN IN DETAIL FOR CLARITY.

1 SD-2 TYP SECONDARY HORIZONTAL TOWER LEG CONN DETAIL
SCALE: N.T.S.



2 SD-2 TYP SECONDARY HORIZONTAL TOWER LEG CONN SECTION
SCALE: N.T.S.



3 SD-2 TYP SECONDARY HORIZONTAL CENTER CONN DETAIL
SCALE: N.T.S.

NOTES:
1. GUSSET AND CONNECTION PLATES SHALL BE SHOP FABRICATED, INCLUDING ALL HOLE PUNCHING/DRILLING, SHOP WELDED, AND GALVANIZED AS A COMPLETED ASSEMBLY.
2. EXISTING STEP BOLTS, ANTENNA MOUNTS, CABLES, CABLE ATTACHMENTS, AND OTHER APPURTENANCES NOT SHOWN FOR CLARITY. ADJUST VERTICAL SPACING OF U-BOLTS AS REQUIRED TO AVOID EXISTING APPURTENANCES.

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CENTERLINE

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DRAWING CONTROL

Designed by	JFJ	Drawn by	MB	Checked by	BJ
Personnel		Released by			Date
For Construction		VR			6/10/20
For Approval					
For Bid					
For Construction					

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TOWER REINF SECONDARY HORIZONTAL DETAILS

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FA LOCATION NO. 10035111
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6/10/20	10178.CTL01083	SD-2	A
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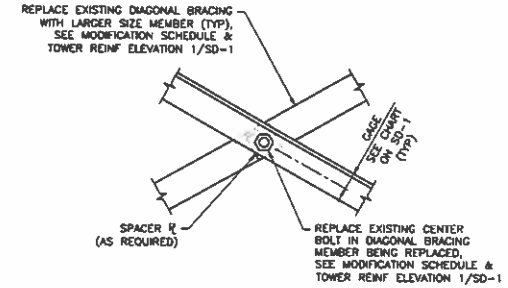
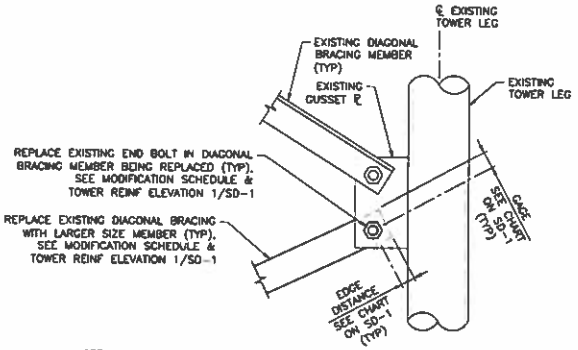


1 SD-3 TYP DIAGONAL REPLACEMENT CENTER CONN DETAIL

SCALE: N.T.S.



NOTE:
EXISTING STEP BOLTS, ANTENNA MOUNTS, CABLES, CABLE ATTACHMENTS, AND OTHER APPURTENANCES NOT SHOWN FOR CLARITY.

2 SD-3 TYP DIAGONAL REPLACEMENT TOWER LEG CONN DETAIL

SCALE: N.T.S.

PLANS ARE NOT TO BE SCALED.

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TOWER REINF DIAGONAL REPLACEMENT DETAILS

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