



QC Development

PO Box 916

Storrs, CT 06268

860-670-9068

Mark.Roberts@QCDevelopment.net

July 12, 2018

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT5817

35 South Road, Stafford, CT 06076

N 41.96853889

W 72.23816389

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 150-foot level of the existing 180-foot Guyed Tower at 35 South Road (aka 33 South Road), Stafford, CT. The tower is owned by Cordless Data Transfer and the property is owned by James Tummel. AT&T now intends to remove (3) antennas and replace them with (2) CCI HPA-65R-BUU-H8 antennas and (1) Andrew SBNHH-1D65A antenna. AT&T also intends to install (3) Ericsson RRUS-32 B2. The new antennas and RRUs will also be installed at the 150-foot level of the tower.

The earliest CT Siting Council action relating to AT&T's installation on this tower was EM-AT&T-134-020813, for which an acknowledgement was issued on September 5th, 2002.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Honorable Mary Mitta, First Selectman of the Town of Stafford, and the Stafford Zoning & Land Use Office, as well as the property and tower owner.

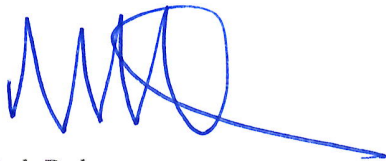
The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, 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).

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: The Honorable Mary Mitta - as Elected Official
David Perkins – ZEO
Cordless Data Transfer – as Tower Owner (via e-mail)
James Tummel – as Property Owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm ²)	Freq. Band (MHz ^{**})	Limit S (mW/cm ²)	%MPE
Other Carriers*							2.42%
AT&T GSM	1	283	150	0.0049	880	0.5867	0.08%
AT&T UMTS	2	565	150	0.0196	880	0.5867	0.33%
AT&T UMTS	4	646	150	0.0448	1900	1.0000	0.45%
AT&T LTE	1	1615	150	0.0280	734	0.4893	0.57%
AT&T LTE	2	1077	150	0.0374	1900	1.0000	0.37%
Site Total							4.24%

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

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

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm ²)	Freq. Band (MHz ^{**})	Limit S (mW/cm ²)	%MPE
Other Carriers*							2.42%
AT&T UMTS	1	565	150	0.0098	880	0.5867	0.17%
AT&T LTE	1	1476	150	0.0256	734	0.4893	0.52%
AT&T LTE	2	4842	150	0.1679	1900	1.0000	1.68%
Site Total							4.79%

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

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

PROJECT INFORMATION

SCOPE OF WORK: ITEMS TO BE MOUNTED ON GUYED TOWER:

- NEW AT&T RRUS: (3) RRUS-32 B2.
- NEW JUMPER CABLES: COAX JUMPER (1) PER SECTOR FROM EACH RRU (TOTAL OF 3)
- NEW ANTENNA: (1) HPA-65R-BUU-H8 PER SECTOR (TOTAL OF 3)
- NEW JUMPER CABLES: COAX JUMPER (2) PER SECTOR FROM EACH RRU (TOTAL OF 6)
- NEW FIBER JUMPERS: FIBER JUMPERS (1) FROM THE SQUID TO EACH RRU (TOTAL OF 3)

ITEMS TO BE MOUNTED WITHIN GROUND EQUIPMENT AREA:

- INSTALL (1) XMU

ITEMS TO REMAIN:

- ANTENNAS, (3) RRU'S, (1) SURGE ARRESTOR, (2) DC POWER CABLES, (1) FIBER RUN & (6) 1-5/8" COAX CABLES

SITE ADDRESS: 33 SOUTH ROAD
STAFFORD SPRINGS, CT 06076

LATITUDE: 41.968564° N 41° 58' 6.83" N
LONGITUDE: 72.238194° W 72° 14' 17.5" W

TYPE OF SITE: GUYED / OUTDOOR EQUIPMENT

TOWER HEIGHT: 180'-0"±
RAD CENTER: 150'-0"±

JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES

CURRENT USE: TELECOMMUNICATIONS FACILITY
PROPOSED USE: TELECOMMUNICATIONS FACILITY



SITE NUMBER: CT5817

SITE NAME: STAFFORD EAST

PROJECT: LTE 2C 2018 UPGRADE

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
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GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLAN	1
A-2	ANTENNA LAYOUTS & ELEVATION	1
A-3	DETAILS	1
SN-1	STRUCTURAL NOTES	1
S-1	STRUCTURAL DETAILS	1
RF-1	RF-PLUMBING DIAGRAM	1
G-1	GROUNDING DETAILS	1

VICINITY MAP

DIRECTIONS TO SITE:
I-84 EAST TO EXIT 70.TAKE A LEFT AT THE BOTTOM OF THE EXIT RAMP ONTO ROUTE 32 NORTH STAY ON ROUTE 32 NORTH FOR ABOUT TWO MILES AND BEAR RIGHT ONTO ROUTE 190 EAST,STAY ON ROUTE 190 EAST FOR ABOUT 3 MILES,TAKE A LEFT ONTO SOUTH ROAD,THIS IS A SMALL DIRT/GRAVEL ROAD (NEXT TO CAMPGROUD), FOLLOW 3/10 OF A MILE AND THERE WILL BE A DIRT/MILLED ASPHALT ROAD ON YOUR RIGHT (SECOND RIGHT), TAKE THIS RIGHT. FOLLOW UP ROAD, AND OUR ACCESS ROAD WILL BE ON YOUR LEFT.



GENERAL NOTES

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

72 HOURS



CALL BEFORE YOU DIG

CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT5817
SITE NAME: STAFFORD EAST
33 SOUTH ROAD
STAFFORD SPRINGS, CT 06076
TOLLAND COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	02/13/18	ISSUED FOR REVIEW	TB	AT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: LL

Daniel P. Hamm
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T		
TITLE SHEET LTE 2C 2018 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CT5817	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) 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 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 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

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

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH LTE 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 2012 WITH 2016 CT BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
 LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

 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-G,
 STRUCTURAL STANDARDS FOR STEEL

 EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

 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		

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

SAI
 12 INDUSTRIAL WAY SALEM, NH 03079

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 33 SOUTH ROAD STAFFORD SPRINGS, CT 06076 TOLLAND COUNTY

at&t
 550 COCHITUATE ROAD FRAMINGHAM, MA 01701

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Daniel P. Hamm
 No. 24178
 LICENSED PROFESSIONAL ENGINEER

AT&T

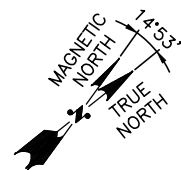
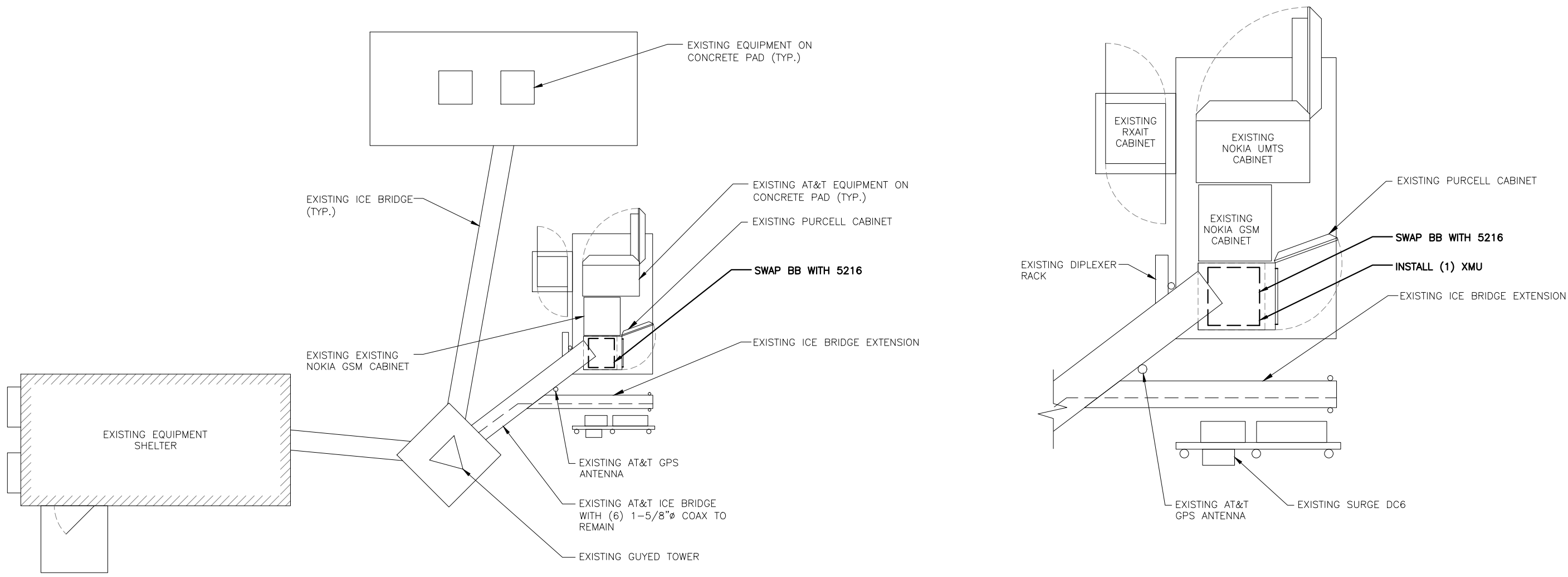
GENERAL NOTES
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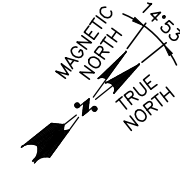
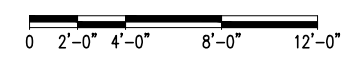
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: APRIL 05, 2018 (REV. 2)

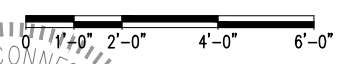
NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



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



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



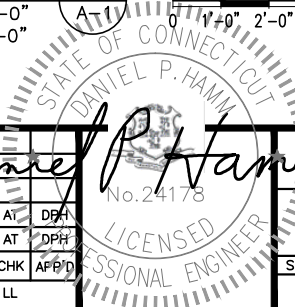
HG HUDSON
Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

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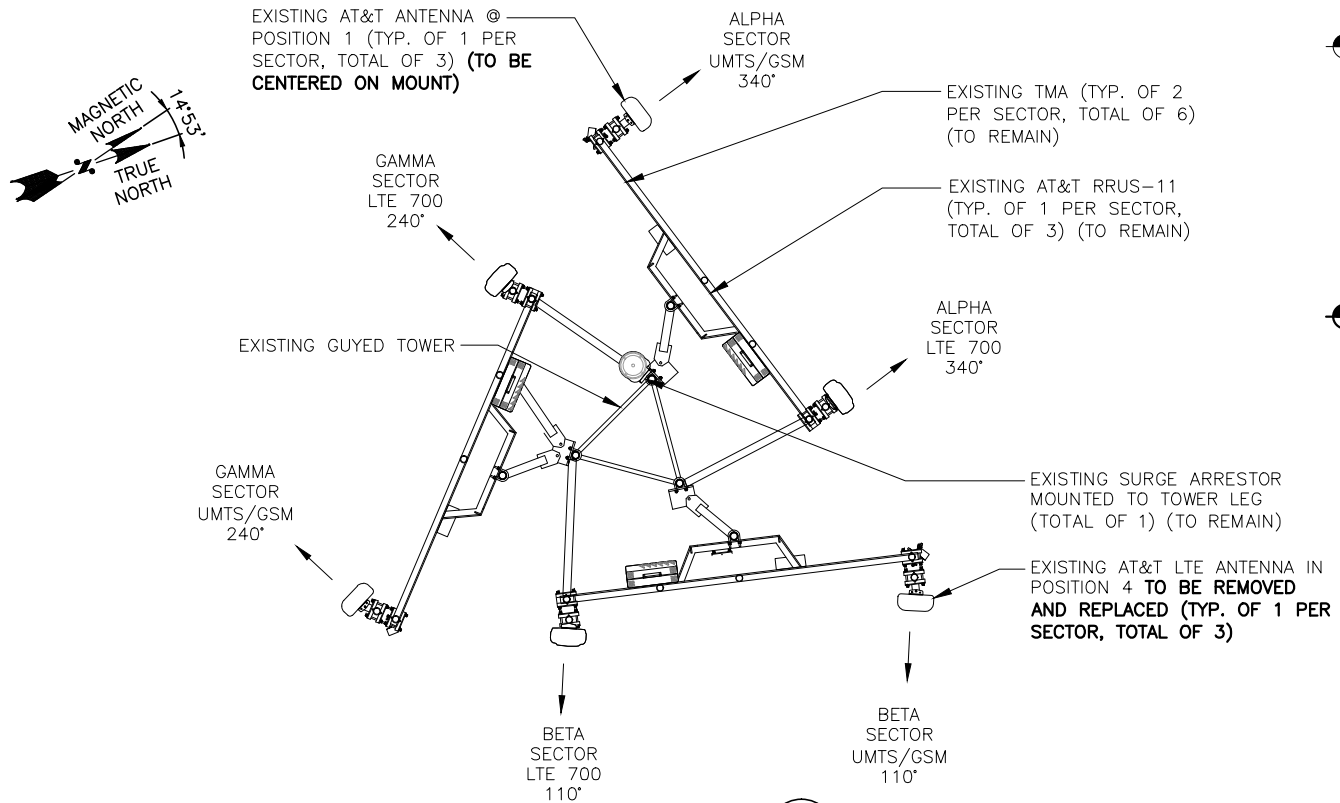
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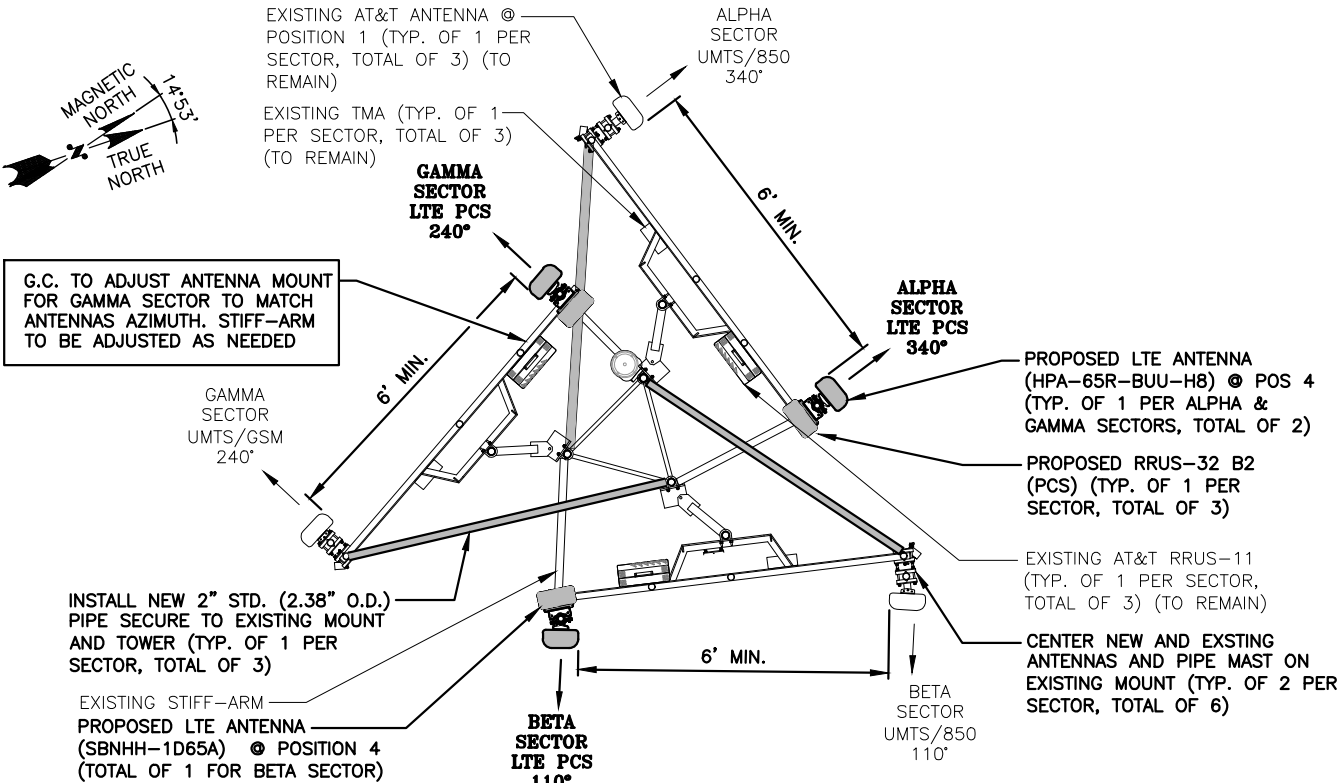
AT&T

COMPOUND & EQUIPMENT PLAN
LTE 2C 2018 UPGRADE

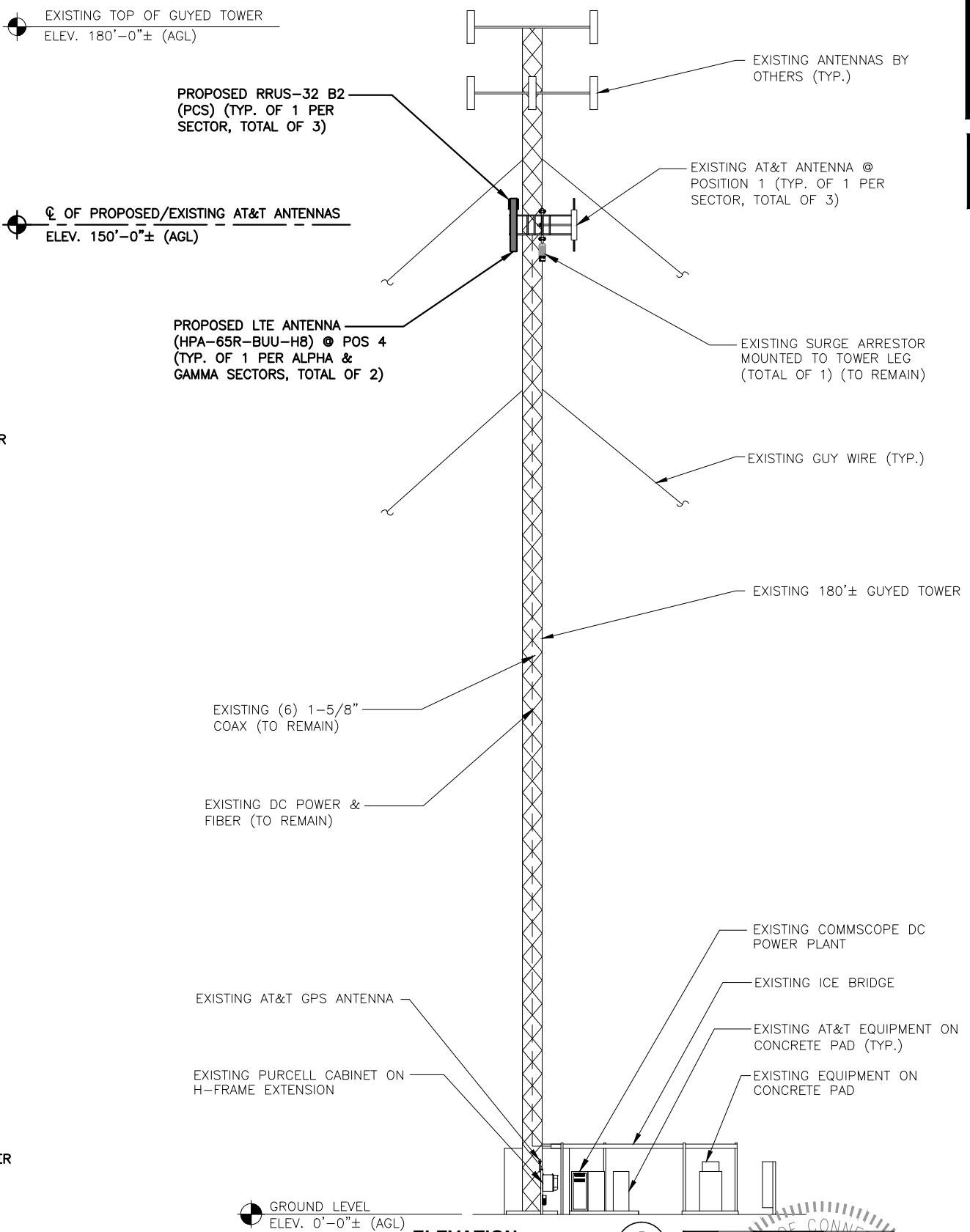
SITE NUMBER	DRAWING NUMBER	REV
CT5817	A-1	1



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



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



ELEVATION (3)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0" A-2

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: APRIL 05, 2018 (REV. 2)

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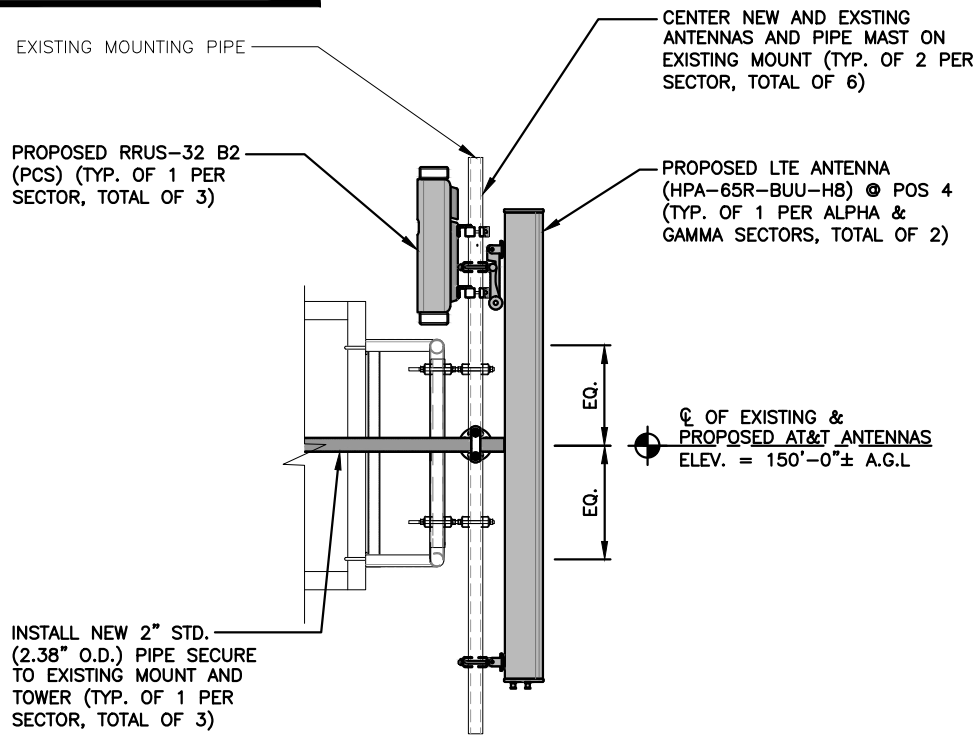
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DATED: APRIL 05, 2018 (REV. 2)

***DC JUMPER NOTE:**
DC JUMPERS (2) PER SECTOR, FROM EACH RRU (TOTAL OF 6).

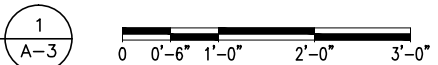
****FIBER JUMPER NOTE:**
FIBER JUMPERS (1) PER SECTOR, FROM THE SQUID TO EACH RRU (TOTAL OF 3).

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

FINAL ANTENNA SCHEDULE													
SECTOR	BAND	ANTENNA	SIZE (INCHES) (L X W X D)	RAD CENTER	AZIMUTH	TMA'S	RRU'S	SIZE (INCHES) (L X W X D)	DC JUMPERS	FIBER JUMPERS	COAX		
ALPHA	UMTS 800	EXISTING	800-10121	54.5X10.3X5.9	150'-0"±	340'	EXISTING (2) LGP21401	-	-	-	-	(2) 1-5/8"	
	-	-	-	-	-	-	-	-	-	-	-	-	
	LTE 700 BC/PCS	EXISTING	HPA-65R-BUU-H8	92.4X14.8X7.4	150'-0"±	340'	-	EXISTING PROPOSED	RRUS-11 (700) RRUS-32 B2/PCS	27.2X12.1X7.0	1*	2*	-
BETA	UMTS 800	EXISTING	800-10121	54.5X10.3X5.9	150'-0"±	110'	EXISTING (2) LGP21401	-	-	-	-	(2) 1-5/8"	
	-	-	-	-	-	-	-	-	-	-	-	-	
	LTE 700 BC/PCS	EXISTING	SBNHH-1D65A	55X11.9X7.1	150'-0"±	110'	-	EXISTING PROPOSED	RRUS-11 (700) RRUS-32 B2/PCS	27.2X12.1X7.0	1*	2*	-
GAMMA	UMTS 800	EXISTING	800-10121	54.5X10.3X5.9	150'-0"±	240'	EXISTING (2) LGP21401	-	-	-	-	(2) 1-5/8"	
	-	-	-	-	-	-	-	-	-	-	-	-	
	LTE 700 BC/PCS	EXISTING	HPA-65R-BUU-H8	92.4X14.8X7.4	150'-0"±	240'	-	EXISTING PROPOSED	RRUS-11 (700) RRUS-32 B2/PCS	27.2X12.1X7.0	1*	2*	-



PROPOSED ANTENNA & RRU MOUNTING DETAIL
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

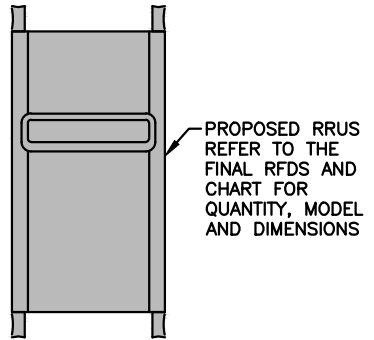


FINAL ANTENNA CONFIGURATION
SCALE: N.T.S.



RRU CHART				
QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
3(P)	RRUS-32	27.2"	12.1"	7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

RRUS DETAIL
SCALE: N.T.S.

Professional Engineer Seal for Daniel P. Hamm, No. 24178, State of Connecticut.

1	04/09/18	ISSUED FOR CONSTRUCTION	MR	AT	DPH
A	02/13/18	ISSUED FOR REVIEW	TB	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: LL

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-70 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

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

NOTES:

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

NOTES:

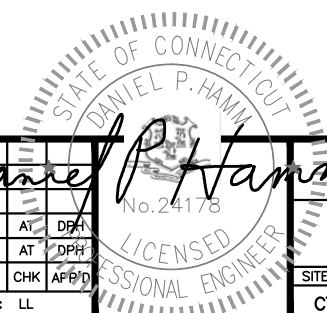
- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- VERIFICATION OF EXISTING ROOF CONSTRUCTION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



SITE NUMBER: CT5817
 SITE NAME: STAFFORD EAST
 33 SOUTH ROAD
 STAFFORD SPRINGS, CT 06076
 TOLLAND COUNTY



1	04/09/18	ISSUED FOR CONSTRUCTION	MR	AT	DPH
A	02/13/18	ISSUED FOR REVIEW	TB	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: LL		

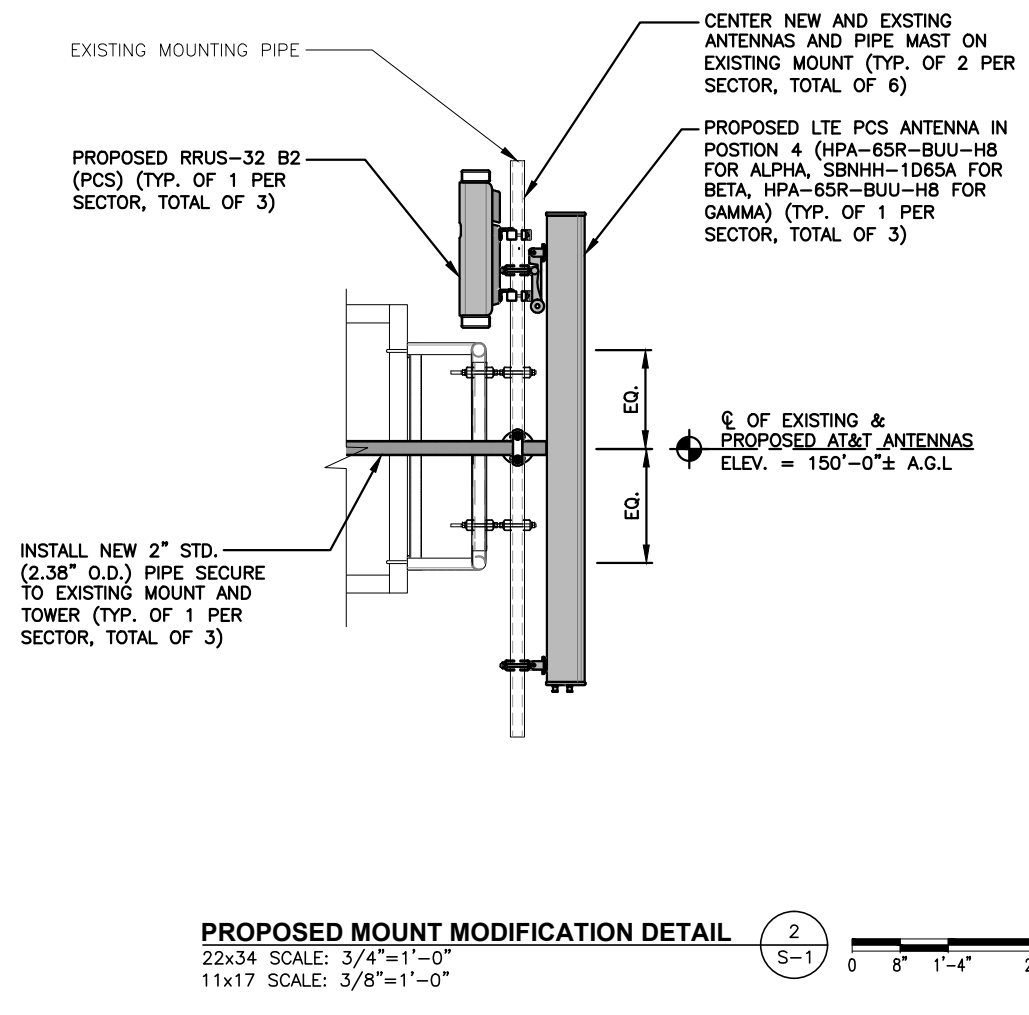
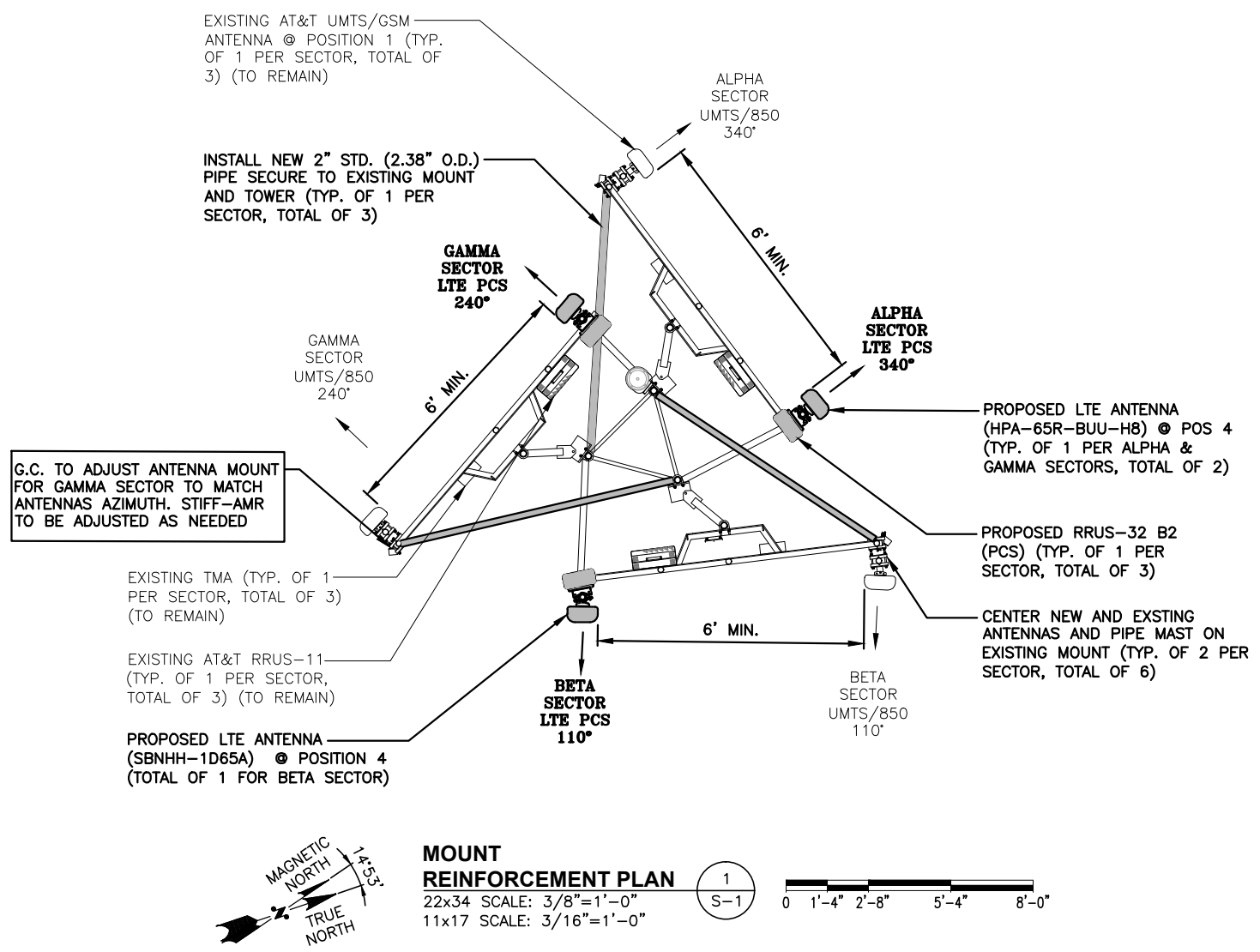


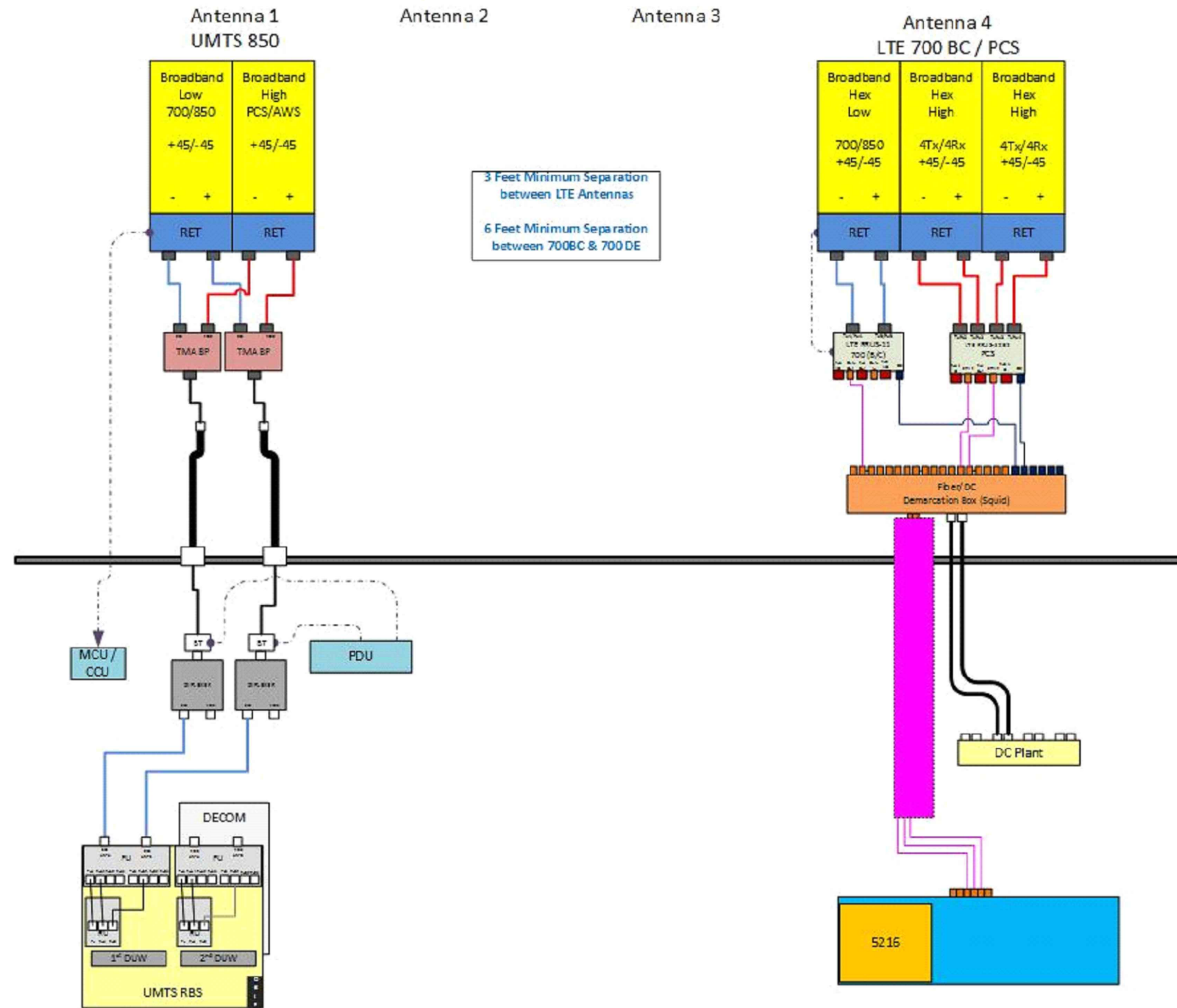
AT&T		
STRUCTURAL NOTES LTE 2C 2018 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CT5817	SN-1	1

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: APRIL 05, 2018 (REV. 2)

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

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





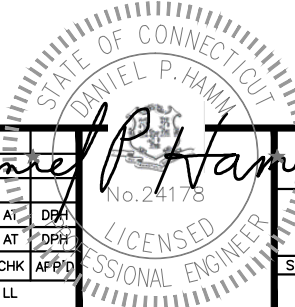
RF PLUMBING DIAGRAM
SCALE: N.T.S.

1
RF-1

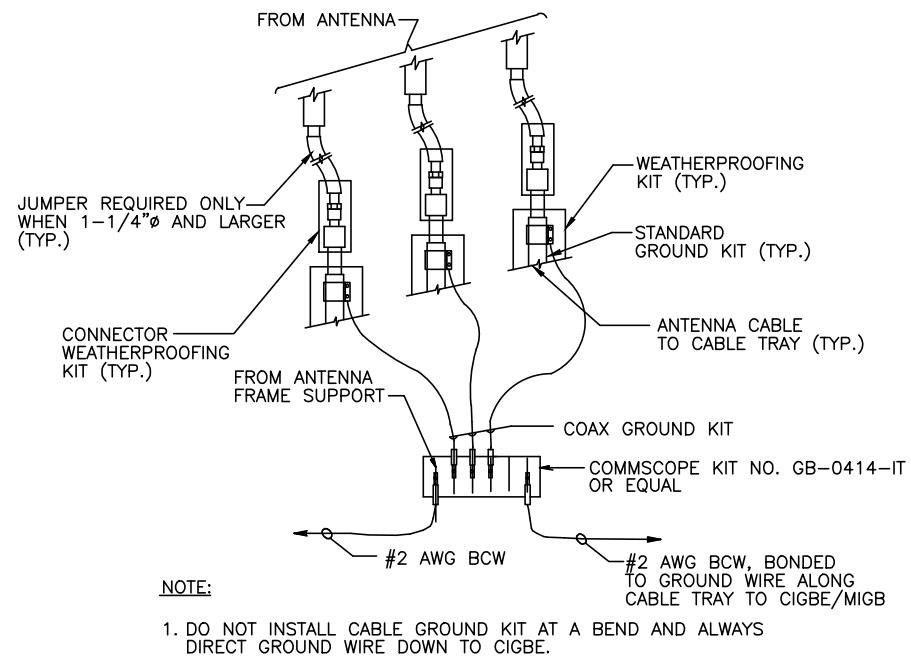
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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

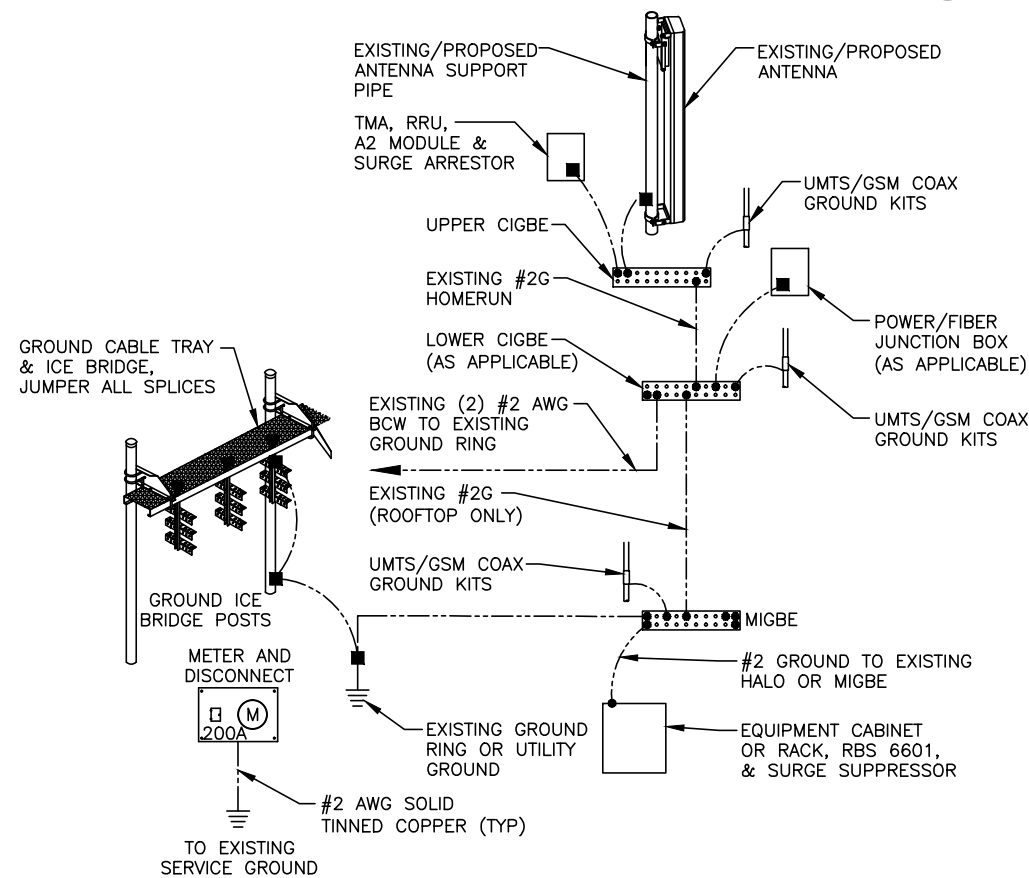
1	04/09/18	ISSUED FOR CONSTRUCTION	MR	AT	DPH
A	02/13/18	ISSUED FOR REVIEW	TB	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: LL		



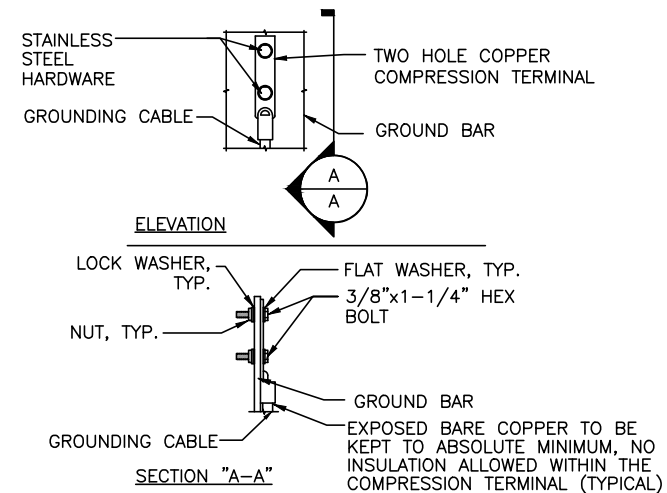
AT&T		
RF PLUMBING DIAGRAM LTE 2C 2018 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CT5817	RF-1	1



GROUND WIRE TO GROUND BAR CONNECTION DETAIL 1
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM 2
SCALE: N.T.S. G-1



TYPICAL GROUND BAR CONNECTION DETAIL 3
SCALE: N.T.S. G-1

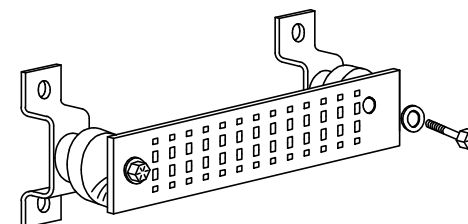
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

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

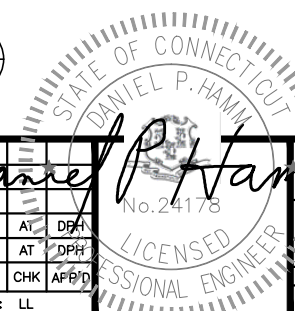
SECTION "A" - SURGE ABSORBERS

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



GROUND BAR - DETAIL 4
SCALE: N.T.S. G-1

1	04/09/18	ISSUED FOR CONSTRUCTION	MR	AT	DPH
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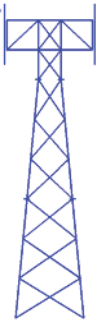
AT&T		
GROUNDING DETAILS LTE 2C 2018 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CT5817	G-1	1



FRED A. NUDD CORPORATION

1743 ROUTE 104, BOX 577
ONTARIO, NY 14519
(315) 524-2531 FAX (315) 524-4249

www.nuddtowers.com



Mark LeGault
Cordless Data Transfer, Inc.
600 Old Hartford Road
Colchester, CT 06415
April 21, 2018

Fred A. Nudd Job Number: 118-23036

Location: 33 South Road, Stafford, CT 06076, Tolland County

Subject: Structural Analysis of a 180 ft Guyed Tower

Fred A. Nudd Corporation has completed a structural analysis of an existing 180 ft guyed tower. The tower was originally designed by Fred A. Nudd Corporation. The design loading criteria and strength design are per the ANSI/TIA-222-G standard, which is the recommended design standard per the 2012 International Building Code (Sec. 1609 & 3108), , and the 2016 Connecticut State Building Code. Tower and foundation dimensions have been taken from drawings by Fred A. Nudd, project number 7063, dated September 3, 1999. Design criteria per each analysis are noted on the following page. The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of this analysis is to determine the structure's ability to support new AT&T equipment installed at a rad center of 150 ft above ground level (AGL). The new equipment to be installed, which included antennas, coax, mounts and associated hardware are listed on the following page in the appurtenance loading table.

Results of the analysis indicate the tower will be able to the support the design loads noted in the appurtenance loading table on the following pages when considering the existing and proposed loading. Specific section design loads, capacities and stress ratios are provided on the following pages. Maximum member usage was found to be 88%.

The tower base foundation and anchors were analyzed using assumed soil properties. Detailed calculation of the applied forces and member capacities are provided in the following pages.

In conclusion, the tower superstructure and substructure can support the existing and proposed equipment, including after tower upgrades noted above.

We trust this report satisfies your needs. Please contact us with any questions or concerns regarding this report.

Best Regards,
Fred. A. Nudd Corporation



David Tan, P.E. (CT PE License # 22092)

Code Design Criteria

ANSI/TIA-222-G

Windspeed = 98 mph, 3-second gust, V_{asd} / 124 mph, 3-second gust, V_{ult}

Exposure = B

Radial Ice = 0.875 inch

Ice Windspeed = 50 mph, 3-second gust

Structure Class = II

Topographic Category = 1

$S_s < 1.0$, thus seismic loading does not need to be considered

Appurtenance Loading – Existing and To Remain on Tower

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
180.5	Sprint	(3) RFS APXV9ERR18-C-A20 (3) Alcatel Lucent 4x45W, 1900 MHz (3) Alcatel Lucent TD-RRH8x200-25 (6) Alcatel Lucent RRH 2x50, 800 Mhz (3) Commscope DT465B-2XR	(3) 12 ft Boom / Frame	(4) 1-1/4 Hybrid
170	--	--	(3) Boom / Frame	--
140	Verizon	(6) Antel BXA-171063-12CF (6) Antel BXA-70063-6CF (3) Alcatel Lucent RRH2x40-AWS (3) Alcatel Lucent RRH2x40-700 (1) RFS DBT1-6Z-8AB-OZ	(3) 12 ft Pipe Boom / Frame	(9) 1-5/8 Foam Helix (3) 1-5/8 Fiber Cable

- Height measurement taken as distance from top of base foundation to center of appurtenance.

Appurtenance Loading – Final Equipment Configuration For AT&T

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
150	AT&T	(3) Kathrein Scala 800-10121 (2) CCI HPA-65R-BUU-H8 (1) Andrew SBNHH-1D65A (3) Ericsson RRU-11 (3) Ericsson RRUS-32 B2 (1) Raycap DC6-48-60-18-8C (6) Powerwave LGP21401	(3) Boom / Frame (existing) & (3) Side Arms (new installation)	(6) 1-1/4 (1) 0.39 Fiber (2) 0.77 DC

- Height measurement taken as distance from top of base foundation to center of appurtenance.
- The proposed coax can be installed on any tower face.

Maximum Member Usage

Member	Percentage
Leg	88
Diagonal	73
Horizontal	55
Guys	48
Anchor Rod	57
Splice/Connection Bolts	34

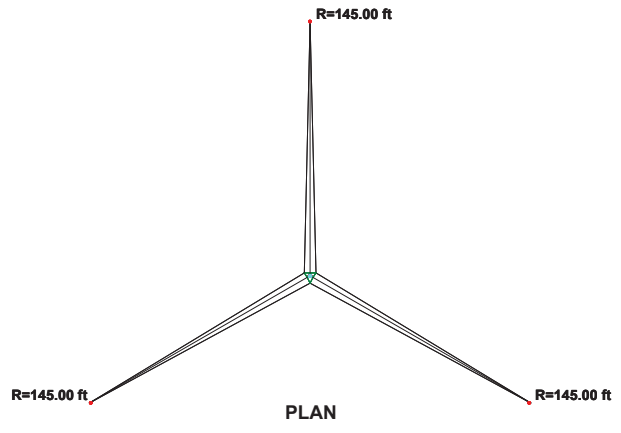
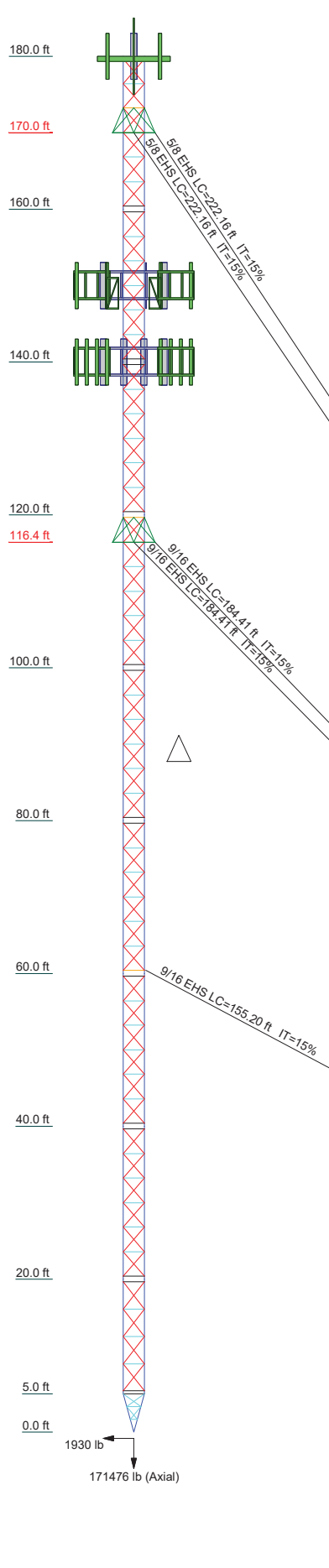
- Percentage equal to or less than 100% denote member stress levels are satisfactory for loading.
- Percentage greater than 100% indicates member strengthening is required.

Foundation Usage

Design Load	Capacity (kips)	Analysis (kips)	Percentage
Base Axial	217.8	174.4	80
Anchor Uplift	83.8	34.2	41
Anchor Shear	83.4	40.2	48

- Percentage less than 100% denote foundation is satisfactory for loading
- Percentage greater than 100% indicates foundation analysis is required

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs						P2.5x.203				
Leg Grade						A500M-54				
Diagonals						SR 5/8				
Diagonal Grade						A36				
Top Girts						L1 1/2x1 1/2x3/16				
Bottom Girts						L1 1/2x1 1/2x3/16				
Horizontals						L1 1/2x1 1/2x3/16				
Top Guy Pull-Offs						N.A.				
Bot Guy Pull-Offs						L1 3/4x1 3/4x3/16				L1 3/4x1 3/4x3/16
Face Width (ft)						N.A.				N.A.
# Panels @ (ft)						N.A.				N.A.
Weight (lb)	63550.7	480.3	698.2	698.2	698.2	698.2	698.2	698.2	698.2	879.3
	A	4 @ 3.5625	48 @ 3.20833							
		167.9	480.3	698.2	698.2	698.2	698.2	698.2	698.2	879.3



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	180	Ericsson RRUS11	150
Low Profile Platform (Sprint)	180	Ericsson RRUS-32	150
Commscope DT465B-2XR (Sprint)	180	Ericsson RRUS-32	150
Commscope DT465B-2XR (Sprint)	180	Ericsson RRUS-32	150
Commscope DT465B-2XR (Sprint)	180	Raycap DC6-48-60-18	150
Alcatel Lucent 4x45W (Sprint)	180	(2) Powerwave LGP21401	150
Alcatel Lucent 4x45W (Sprint)	180	(2) Powerwave LGP21401	150
Alcatel Lucent 4x45W (Sprint)	180	(2) Powerwave LGP21401	150
Alcatel Lucent 8x200-25 (Sprint)	180	Side Arm	150
Alcatel Lucent 8x200-25 (Sprint)	180	Side Arm	150
Alcatel Lucent 8x200-25 (Sprint)	180	Side Arm	150
RFS APXV9ERR18-C-A20 (Sprint)	180	Sector Frame Mount	140
RFS APXV9ERR18-C-A20 (Sprint)	180	(2) Antel BXA-70063-6CF (Verizon)	140
RFS APXV9ERR18-C-A20 (Sprint)	180	(2) Antel BXA-70063-6CF (Verizon)	140
(2) Alcatel Lucent 2x50 (Sprint)	180	(2) Antel BXA-70063-6CF (Verizon)	140
(2) Alcatel Lucent 2x50 (Sprint)	180	(2) Antel BXA-171085-12CF (Verizon)	140
(2) Alcatel Lucent 2x50 (Sprint)	180	(2) Antel BXA-171085-12CF (Verizon)	140
Sector Frame Mount	170	(2) Antel BXA-171085-12CF (Verizon)	140
Sector Frame Mount	170	Alcatel Lucent RRH2x40 AWS (Verizon)	140
Sector Frame Mount	170	(Verizon)	
Sector Frame Mount	150	Alcatel Lucent RRH2x40 AWS (Verizon)	140
Sector Frame Mount	150	(Verizon)	
Sector Frame Mount	150	Alcatel Lucent RRH2x40 AWS (Verizon)	140
Kathrein Scala 800 10121	150	RFS DB-T1-6Z-8B-0Z (Verizon)	140
Kathrein Scala 800 10121	150	Alcatel Lucent RRH2x40 700 (Verizon)	140
Kathrein Scala 800 10121	150	Alcatel Lucent RRH2x40 700 (Verizon)	140
CCI HPA-65R-BUU-H8	150	Alcatel Lucent RRH2x40 700 (Verizon)	140
CCI HPA-65R-BUU-H8	150	Sector Frame Mount	140
Commscope SBNHH-1D65A	150	Sector Frame Mount	140
Ericsson RRUS11	150		
Ericsson RRUS11	150		

SYMBOL LIST

MARK SIZE MARK SIZE

Job:	118-23036		
Project:	Stafford Tumei, CT		
Client:	CDT	Drawn by:	FAN
Code:	TIA-222-G	Date:	04/21/18
Phone:		App'd:	
FAX:		Scale:	NTS
		Dwg No.:	E-1

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	Project	Stafford Tumel, CT	Date	22:40:55 04/21/18
	Client	CDT	Designed by	FAN

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 180.00 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 3.50 ft at the top and tapered at the base.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Tolland County, Connecticut.

Basic wind speed of 98 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.8750 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Weld together tower sections have flange connections..

Tension only take-up is 0.0313 in.

Pressures are calculated at each section.

Safety factor used in guy design is 1.

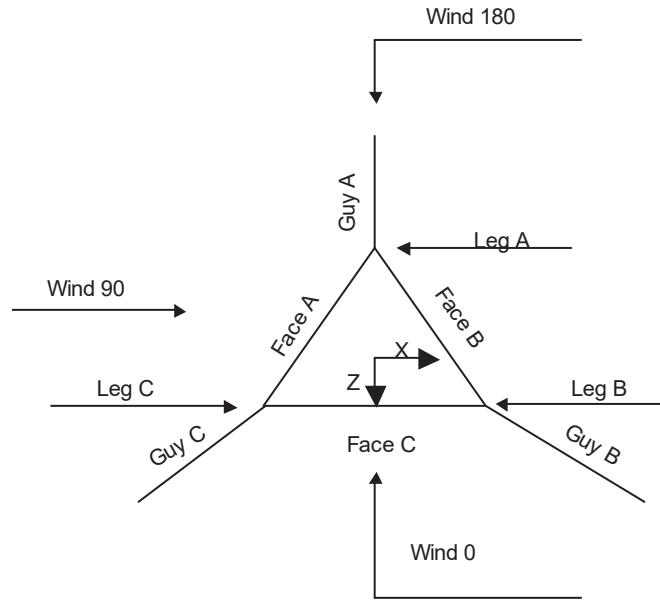
Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

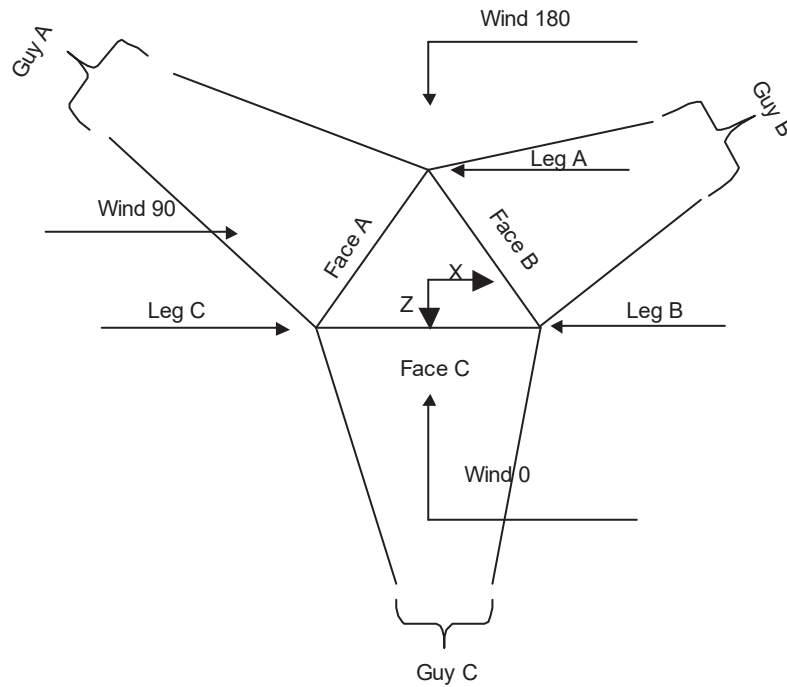
<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity √ Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r √ Retension Guys To Initial Tension Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. √ Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component √ Triangulate Diamond Inner Bracing 	<ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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Corner & Starmount Guyed Tower

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Face Guyed

Tower Section Geometry

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Assembly Database</i>	<i>Description</i>	<i>Section Width</i>	<i>Number of Sections</i>	<i>Section Length</i>
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	180.00-160.00			3.50	1	20.00
T2	160.00-140.00			3.50	1	20.00
T3	140.00-120.00			3.50	1	20.00
T4	120.00-100.00			3.50	1	20.00
T5	100.00-80.00			3.50	1	20.00
T6	80.00-60.00			3.50	1	20.00
T7	60.00-40.00			3.50	1	20.00
T8	40.00-20.00			3.50	1	20.00
T9	20.00-5.00			3.50	1	15.00
T10	5.00-0.00			3.50	1	5.00

Tower Section Geometry (cont'd)

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Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-160.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T2	160.00-140.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T3	140.00-120.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T4	120.00-100.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T5	100.00-80.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T6	80.00-60.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T7	60.00-40.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T8	40.00-20.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T9	20.00-5.00	3.56	TX Brace	No	Yes	4.5000	4.5000
T10	5.00-0.00	1.67	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 180.00-160.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 160.00-140.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 140.00-120.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T5 100.00-80.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T6 80.00-60.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T7 60.00-40.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T8 40.00-20.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T9 20.00-5.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T10 5.00-0.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-160.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 160.00-140.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 140.00-120.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 120.00-100.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	Equal Angle	L1 1/2x1 1/2x3/16	A36	Equal Angle	L1 1/2x1 1/2x3/16	A36

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<i>Tower Elevation</i> <i>ft</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
T6 80.00-60.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T7 60.00-40.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T8 40.00-20.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T9 20.00-5.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T10 5.00-0.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
T1 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 20.00-5.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 5.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>Gusset Area</i> <i>(per face)</i> <i>ft²</i>	<i>Gusset Thickness</i> <i>in</i>	<i>Gusset Grade</i>	<i>Adjust. Factor</i> <i>A_f</i>	<i>Adjust. Factor</i> <i>A_r</i>	<i>Weight Mult.</i>	<i>Double Angle</i> <i>Stitch Bolt</i> <i>Spacing</i> <i>Diagonals</i> <i>in</i>	<i>Double Angle</i> <i>Stitch Bolt</i> <i>Spacing</i> <i>Horizontals</i> <i>in</i>
T1 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft ²	in						
140.00-120.00			(36 ksi)					
T4	0.00	0.0000	A36	1	1	1	36.0000	36.0000
120.00-100.00			(36 ksi)					
T5	0.00	0.0000	A36	1	1	1	36.0000	36.0000
100.00-80.00			(36 ksi)					
T6 80.00-60.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					
T7 60.00-40.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					
T8 40.00-20.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					
T9 20.00-5.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					
T10 5.00-0.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹							
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace	
											X
ft				Y	Y	Y	Y	Y	Y	Y	Y
T1	No	Yes	1	1	1	1	0.65	0.65	1	1	1
180.00-160.00				1	1	1	0.65	0.65	1	1	1
T2	No	Yes	1	1	1	1	0.65	0.65	1	1	1
160.00-140.00				1	1	1	0.65	0.65	1	1	1
T3	No	Yes	1	1	1	1	0.65	0.65	1	1	1
140.00-120.00				1	1	1	0.65	0.65	1	1	1
T4	No	Yes	1	1	1	1	0.65	0.65	1	1	1
120.00-100.00				1	1	1	0.65	0.65	1	1	1
T5	No	Yes	1	1	1	1	0.65	0.65	1	1	1
100.00-80.00				1	1	1	0.65	0.65	1	1	1
T6	No	Yes	1	1	1	1	0.65	0.65	1	1	1
80.00-60.00				1	1	1	0.65	0.65	1	1	1
T7	No	Yes	1	1	1	1	0.65	0.65	1	1	1
60.00-40.00				1	1	1	0.65	0.65	1	1	1
T8	No	Yes	1	1	1	1	0.65	0.65	1	1	1
40.00-20.00				1	1	1	0.65	0.65	1	1	1
T9 20.00-5.00	No	Yes	1	1	1	1	0.65	0.65	1	1	1
				1	1	1	0.65	0.65	1	1	1
T10 5.00-0.00	No	Yes	1	1	1	1	0.65	0.65	1	1	1
				1	1	1	0.65	0.65	1	1	1

¹Note: 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)

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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 180.00-160.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T2 160.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T3 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T4 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T5 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T6 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T7 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T8 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T9 20.00-5.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T10 5.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	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 180.00-160.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T2 160.00-140.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T3 140.00-120.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T4 120.00-100.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T5 100.00-80.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T6 80.00-60.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T7 60.00-40.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T8 40.00-20.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T9 20.00-5.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T10 5.00-0.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0

Guy Data

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Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L_u	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency	
ft			lb		ksi	plf	ft	ft	°	ft	%	
170	EHS	A	5/8	6360.00	15%	21000	0.813	221.88	145.00	0.0000	0.00	100%
		B	5/8	6360.00	15%	21000	0.813	221.88	145.00	0.0000	0.00	100%
		C	5/8	6360.00	15%	21000	0.813	221.88	145.00	0.0000	0.00	100%
116.417	EHS	A	9/16	5250.00	15%	21000	0.671	184.18	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	184.18	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	184.18	145.00	0.0000	0.00	100%
60.375	EHS	A	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%

Guy Data (cont'd)

Guy Elevation	Mount Type	Torque-Arm Spread	Torque-Arm Leg Angle	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
ft		ft	°				
170	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L2x2x5/16 L3x3x1/4
116.417	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L2x2x5/16 L3x3x1/4
60.375	Corner						

Guy Data (cont'd)

Guy Elevation	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
ft								
170.00	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x3/16
116.42	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x3/16
60.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x3/16

Guy Data (cont'd)

Guy Elevation	Cable Weight A	Cable Weight B	Cable Weight C	Cable Weight D	Tower Intercept A	Tower Intercept B	Tower Intercept C	Tower Intercept D
ft	lb	lb	lb	lb	ft	ft	ft	ft
170	180.38	180.38	180.38		3.12	3.12	3.12	
116.417	123.58	123.58	123.58		3.0 sec/pulse	3.0 sec/pulse	3.0 sec/pulse	
					2.15	2.15	2.15	
60.375	104.01	104.01	104.01		2.5 sec/pulse	2.5 sec/pulse	2.5 sec/pulse	
					1.53	1.53	1.53	
					2.1 sec/pulse	2.1 sec/pulse	2.1 sec/pulse	

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Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
170	No	No	1	1	0.65	0.65	1	1
116.417	No	No	1	1	0.65	0.65	1	1
60.375	No	No			0.65	0.65	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
170	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
116.417	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
60.375	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
170	A	85.00	20	5	1.9237
	B	85.00	20	5	1.9237
	C	85.00	20	5	1.9237
116.417	A	58.21	18	5	1.8522
	B	58.21	18	5	1.8522
	C	58.21	18	5	1.8522
60.375	A	30.19	15	4	1.7345
	B	30.19	15	4	1.7345
	C	30.19	15	4	1.7345

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F _x lb	F _y lb	F _z lb	M _x lb-ft	M _y lb-ft	M _z lb-ft
170	A	49.9259	6498.03 6360.00	-101.28	5009.66	-4137.32	-10123.16	14685.27	-17533.82
	A	49.9259	6498.03	101.28	5009.66	-4137.32	-10123.16	-14685.27	17533.82

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Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
116.417	B	49.9259	6360.00 6498.03	3633.66	5009.66	1980.95	20246.31	14685.27	0.00
	B	49.9259	6360.00 6498.03	3532.39	5009.66	2156.37	-10123.16	-14685.27	-17533.82
	C	49.9259	6360.00 6498.03	-3532.39	5009.66	2156.37	-10123.16	14685.27	17533.82
	C	49.9259	6360.00 6498.03	-3633.66	5009.66	1980.95	20246.31	-14685.27	0.00
	A	39.1448	Sum: 5328.01	0.00	30057.98	0.00	-0.00	0.00	0.00
	A	39.1448	5250.00 5328.01	-100.37	3400.60	-4100.44	-6871.68	14554.35	-11902.11
	B	39.1448	5250.00 5328.01	100.37	3400.60	-4100.44	-6871.68	-14554.35	11902.11
	B	39.1448	5250.00 5328.01	3601.27	3400.60	1963.29	13743.37	14554.35	0.00
	B	39.1448	5250.00 5328.01	3500.89	3400.60	2137.14	-6871.68	-14554.35	-11902.11
	C	39.1448	5250.00 5328.01	-3500.89	3400.60	2137.14	-6871.68	14554.35	11902.11
60.375	C	39.1448	5328.01 5250.00	-3601.27	3400.60	1963.29	13743.37	-14554.35	0.00
	A	22.8926	Sum: 5290.46	0.00	20403.61	0.00	-0.00	0.00	0.00
	B	22.8926	5250.00 5290.46	0.00	2102.12	-4854.90	-4247.81	0.00	0.00
	B	22.8926	5250.00 5290.46	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71
	C	22.8926	5250.00 5290.46	-4204.47	2102.12	2427.45	2123.90	-0.00	3678.71
			Sum:	0.00	6306.36	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
170	A	49.9259	10532.75 9378.21	-156.48	8369.69	-6392.38	-16912.86	22689.54	-29293.93
	A	49.9259	10532.75 9378.21	156.48	8369.69	-6392.38	-16912.86	-22689.54	29293.93
	B	49.9259	10532.75 9378.21	5614.20	8369.69	3060.68	33825.72	22689.54	0.00
	B	49.9259	10532.75 9378.21	5457.73	8369.69	3331.71	-16912.86	-22689.54	-29293.93
	C	49.9259	10532.75 9378.21	-5457.73	8369.69	3331.71	-16912.86	22689.54	29293.93
	C	49.9259	10532.75 9378.21	-5614.20	8369.69	3060.68	33825.72	-22689.54	0.00
	A	39.1448	Sum: 8772.76	0.00	50218.17	0.00	-0.00	0.00	0.00
	A	39.1448	8059.77 8772.76	-159.42	5875.56	-6512.57	-11872.91	23116.15	-20564.48
			159.42	5875.56	-6512.57	-11872.91	-23116.15	20564.48	

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Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z	
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft	
60.375	B	39.1448	8059.77	5719.76	5875.56	3118.22	23745.81	23116.15	0.00	
			8772.76							
	B	39.1448	8059.77	5560.34	5875.56	3394.35	-11872.91	-23116.15	-20564.48	
			8772.76							
	C	39.1448	8059.77	-5560.34	5875.56	3394.35	-11872.91	23116.15	20564.48	
			8772.76							
	C	39.1448	8059.77	-5719.76	5875.56	3118.22	23745.81	-23116.15	0.00	
			8772.76							
	A	22.8926	22.8926	Sum:	0.00	35253.39	0.00	-0.00	0.00	0.00
				8320.60	0.00	3599.82	-7501.58	-7274.24	0.00	0.00
	B	22.8926	22.8926	7986.77	6496.55	3599.82	3750.79	3637.12	0.00	-6299.68
				8320.60						
C	22.8926	22.8926	7986.77	-6496.55	3599.82	3750.79	3637.12	-0.00	6299.68	
			8320.60							
			Sum:	0.00	10799.45	0.00	0.00	0.00	0.00	

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
170	A	49.9259	6498.03	-101.28	5009.66	-4137.32	-10123.16	14685.27	-17533.82
			6360.00						
	A	49.9259	6498.03	101.28	5009.66	-4137.32	-10123.16	-14685.27	17533.82
			6360.00						
	B	49.9259	6498.03	3633.66	5009.66	1980.95	20246.31	14685.27	0.00
			6360.00						
	B	49.9259	6498.03	3532.39	5009.66	2156.37	-10123.16	-14685.27	-17533.82
			6360.00						
	C	49.9259	6498.03	-3532.39	5009.66	2156.37	-10123.16	14685.27	17533.82
			6360.00						
	C	49.9259	6498.03	-3633.66	5009.66	1980.95	20246.31	-14685.27	0.00
			6360.00						
A	39.1448	39.1448	Sum:	0.00	30057.98	0.00	-0.00	0.00	0.00
			5328.01	-100.37	3400.60	-4100.44	-6871.68	14554.35	-11902.11
A	39.1448	39.1448	5328.01	100.37	3400.60	-4100.44	-6871.68	-14554.35	11902.11
			5250.00						
B	39.1448	39.1448	5328.01	3601.27	3400.60	1963.29	13743.37	14554.35	0.00
			5250.00						
B	39.1448	39.1448	5328.01	3500.89	3400.60	2137.14	-6871.68	-14554.35	-11902.11
			5250.00						
C	39.1448	39.1448	5328.01	-3500.89	3400.60	2137.14	-6871.68	14554.35	11902.11
			5250.00						
C	39.1448	39.1448	5328.01	-3601.27	3400.60	1963.29	13743.37	-14554.35	0.00
			5250.00						
A	22.8926	22.8926	Sum:	0.00	20403.61	0.00	-0.00	0.00	0.00
			5290.46	0.00	2102.12	-4854.90	-4247.81	0.00	0.00
B	22.8926	22.8926	5290.46	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71
			5290.46						

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Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
	C	22.8926	5250.00 5290.46 5250.00	-4204.47	2102.12	2427.45	2123.90	-0.00	3678.71
			Sum:	0.00	6306.36	0.00	0.00	0.00	0.00

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 1/4 (Sprint)	A	No	Ar (CaAa)	180.00 - 0.00	0.0000	0	4	4	1.5500	1.5500		0.66
Safety Line 3/8	C	No	Ar (CaAa)	180.00 - 0.00	0.0000	0.25	1	1	0.3750	0.3750		0.22
LDF6-50A (1-1/4 FOAM)	B	No	Ar (CaAa)	150.00 - 0.00	6.0000	0.5	6	2	1.5500	1.5500		0.66
(AT&T) 3" Rigid Conduit with Fiber Cables	B	No	Ar (CaAa)	150.00 - 0.00	1.0000	0.5	1	1	1.0000	3.0000		2.00
(AT&T) LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	140.00 - 0.00	0.0000	0.25	12	6	1.9800	1.9800		0.82
(Verizon) 0.39 Fiber	B	No	Ar (CaAa)	150.00 - 0.00	6.0000	0.5	1	1	0.3900	0.4300		0.08
(AT&T) 0.77 DC	B	No	Ar (CaAa)	150.00 - 0.00	6.0000	0.5	2	2	1.0900	1.0900		0.33
(AT&T)												

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R	A _F	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	180.00-160.00	A	0.000	0.000	12.400	0.000	52.80
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.750	0.000	4.40
T2	160.00-140.00	A	0.000	0.000	12.400	0.000	52.80
		B	0.000	0.000	14.910	0.000	67.00
		C	0.000	0.000	0.750	0.000	4.40
T3	140.00-120.00	A	0.000	0.000	12.400	0.000	52.80
		B	0.000	0.000	29.820	0.000	134.00
		C	0.000	0.000	48.270	0.000	201.20
T4	120.00-100.00	A	0.000	0.000	12.400	0.000	52.80
		B	0.000	0.000	29.820	0.000	134.00
		C	0.000	0.000	48.270	0.000	201.20
T5	100.00-80.00	A	0.000	0.000	12.400	0.000	52.80
		B	0.000	0.000	29.820	0.000	134.00
		C	0.000	0.000	48.270	0.000	201.20
T6	80.00-60.00	A	0.000	0.000	12.400	0.000	52.80

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Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T7	60.00-40.00	B	0.000	0.000	29.820	0.000	134.00
		C	0.000	0.000	48.270	0.000	201.20
		A	0.000	0.000	12.400	0.000	52.80
T8	40.00-20.00	B	0.000	0.000	29.820	0.000	134.00
		C	0.000	0.000	48.270	0.000	201.20
		A	0.000	0.000	12.400	0.000	52.80
T9	20.00-5.00	B	0.000	0.000	29.820	0.000	134.00
		C	0.000	0.000	48.270	0.000	201.20
		A	0.000	0.000	9.300	0.000	39.60
T10	5.00-0.00	B	0.000	0.000	22.365	0.000	100.50
		C	0.000	0.000	36.203	0.000	150.90
		A	0.000	0.000	3.100	0.000	13.20
		B	0.000	0.000	7.455	0.000	33.50
		C	0.000	0.000	12.068	0.000	50.30

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} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T1	180.00-160.00	A	2.062	0.000	0.000	40.031	0.000	601.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.997	0.000	127.16
T2	160.00-140.00	A	2.036	0.000	0.000	39.865	0.000	593.85
		B		0.000	0.000	41.158	0.000	702.11
		C		0.000	0.000	8.894	0.000	124.35
T3	140.00-120.00	A	2.007	0.000	0.000	39.679	0.000	585.71
		B		0.000	0.000	81.680	0.000	1383.34
		C		0.000	0.000	77.900	0.000	1967.73
T4	120.00-100.00	A	1.974	0.000	0.000	39.465	0.000	576.41
		B		0.000	0.000	80.950	0.000	1359.53
		C		0.000	0.000	77.552	0.000	1947.06
T5	100.00-80.00	A	1.935	0.000	0.000	39.213	0.000	565.51
		B		0.000	0.000	80.090	0.000	1331.73
		C		0.000	0.000	77.142	0.000	1922.82
T6	80.00-60.00	A	1.887	0.000	0.000	38.905	0.000	552.26
		B		0.000	0.000	79.036	0.000	1298.10
		C		0.000	0.000	76.640	0.000	1893.34
T7	60.00-40.00	A	1.824	0.000	0.000	38.506	0.000	535.20
		B		0.000	0.000	77.666	0.000	1255.05
		C		0.000	0.000	75.988	0.000	1855.36
T8	40.00-20.00	A	1.733	0.000	0.000	37.926	0.000	510.72
		B		0.000	0.000	75.674	0.000	1193.76
		C		0.000	0.000	75.039	0.000	1800.76
T9	20.00-5.00	A	1.588	0.000	0.000	27.752	0.000	354.30
		B		0.000	0.000	54.367	0.000	824.32
		C		0.000	0.000	55.144	0.000	1286.33
T10	5.00-0.00	A	1.352	0.000	0.000	8.879	0.000	103.09
		B		0.000	0.000	16.831	0.000	238.52
		C		0.000	0.000	17.768	0.000	395.09

Feed Line Center of Pressure

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
T1	180.00-160.00	-1.1324	-0.5472	-0.5092	-0.0563
T2	160.00-140.00	1.4206	0.2757	0.3134	0.1984
T3	140.00-120.00	0.4162	2.0363	0.2758	0.9267
T4	120.00-100.00	0.4155	2.0331	0.2752	0.9356
T5	100.00-80.00	0.4162	2.0363	0.2760	0.9518
T6	80.00-60.00	0.4158	2.0347	0.2754	0.9670
T7	60.00-40.00	0.4162	2.0363	0.2751	0.9894
T8	40.00-20.00	0.4162	2.0363	0.2733	1.0198
T9	20.00-5.00	0.4177	2.0436	0.2751	1.0937
T10	5.00-0.00	0.6341	1.4099	0.1688	0.3579

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	1 1/4	160.00 - 180.00	0.6000	0.3245
T1	2	Safety Line 3/8	160.00 - 180.00	0.6000	0.3245
T2	1	1 1/4	140.00 - 160.00	0.6000	0.3316
T2	2	Safety Line 3/8	140.00 - 160.00	0.6000	0.3316
T2	3	LDF6-50A (1-1/4 FOAM)	140.00 - 150.00	0.6000	0.3316
T2	4	3" Rigid Conduit with Fiber Cables	140.00 - 150.00	0.6000	0.3316
T2	6	0.39 Fiber	140.00 - 150.00	0.6000	0.3316
T2	7	0.77 DC	140.00 - 150.00	0.6000	0.3316
T3	1	1 1/4	120.00 - 140.00	0.6000	0.3376
T3	2	Safety Line 3/8	120.00 - 140.00	0.6000	0.3376
T3	3	LDF6-50A (1-1/4 FOAM)	120.00 - 140.00	0.6000	0.3376
T3	4	3" Rigid Conduit with Fiber Cables	120.00 - 140.00	0.6000	0.3376
T3	5	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.3376
T3	6	0.39 Fiber	120.00 - 140.00	0.6000	0.3376
T3	7	0.77 DC	120.00 - 140.00	0.6000	0.3376
T4	1	1 1/4	100.00 - 120.00	0.6000	0.3429
T4	2	Safety Line 3/8	100.00 - 120.00	0.6000	0.3429
T4	3	LDF6-50A (1-1/4 FOAM)	100.00 - 120.00	0.6000	0.3429
T4	4	3" Rigid Conduit with Fiber Cables	100.00 - 120.00	0.6000	0.3429
T4	5	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.3429

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T4	6	0.39 Fiber	100.00 - 120.00	0.6000	0.3429
T4	7	0.77 DC	100.00 - 120.00	0.6000	0.3429
T5	1	1 1/4	80.00 - 100.00	0.6000	0.3529
T5	2	Safety Line 3/8	80.00 - 100.00	0.6000	0.3529
T5	3	LDF6-50A (1-1/4 FOAM)	80.00 - 100.00	0.6000	0.3529
T5	4	3" Rigid Conduit with Fiber Cables	80.00 - 100.00	0.6000	0.3529
T5	5	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.3529
T5	6	0.39 Fiber	80.00 - 100.00	0.6000	0.3529
T5	7	0.77 DC	80.00 - 100.00	0.6000	0.3529
T6	1	1 1/4	60.00 - 80.00	0.6000	0.3622
T6	2	Safety Line 3/8	60.00 - 80.00	0.6000	0.3622
T6	3	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	0.6000	0.3622
T6	4	3" Rigid Conduit with Fiber Cables	60.00 - 80.00	0.6000	0.3622
T6	5	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.3622
T6	6	0.39 Fiber	60.00 - 80.00	0.6000	0.3622
T6	7	0.77 DC	60.00 - 80.00	0.6000	0.3622
T7	1	1 1/4	40.00 - 60.00	0.6000	0.3763
T7	2	Safety Line 3/8	40.00 - 60.00	0.6000	0.3763
T7	3	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	0.6000	0.3763
T7	4	3" Rigid Conduit with Fiber Cables	40.00 - 60.00	0.6000	0.3763
T7	5	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.3763
T7	6	0.39 Fiber	40.00 - 60.00	0.6000	0.3763
T7	7	0.77 DC	40.00 - 60.00	0.6000	0.3763
T8	1	1 1/4	20.00 - 40.00	0.6000	0.3958
T8	2	Safety Line 3/8	20.00 - 40.00	0.6000	0.3958
T8	3	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	0.6000	0.3958
T8	4	3" Rigid Conduit with Fiber Cables	20.00 - 40.00	0.6000	0.3958
T8	5	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.3958
T8	6	0.39 Fiber	20.00 - 40.00	0.6000	0.3958
T8	7	0.77 DC	20.00 - 40.00	0.6000	0.3958
T9	1	1 1/4	5.00 - 20.00	0.6000	0.4461
T9	2	Safety Line 3/8	5.00 - 20.00	0.6000	0.4461
T9	3	LDF6-50A (1-1/4 FOAM)	5.00 - 20.00	0.6000	0.4461
T9	4	3" Rigid Conduit with Fiber Cables	5.00 - 20.00	0.6000	0.4461
T9	5	LDF7-50A (1-5/8 FOAM)	5.00 - 20.00	0.6000	0.4461
T9	6	0.39 Fiber	5.00 - 20.00	0.6000	0.4461
T9	7	0.77 DC	5.00 - 20.00	0.6000	0.4461
T10	1	1 1/4	0.00 - 5.00	0.6000	0.0986
T10	2	Safety Line 3/8	0.00 - 5.00	0.6000	0.0986
T10	3	LDF6-50A (1-1/4 FOAM)	0.00 - 5.00	0.6000	0.0986
T10	4	3" Rigid Conduit with Fiber Cables	0.00 - 5.00	0.6000	0.0986
T10	5	LDF7-50A (1-5/8 FOAM)	0.00 - 5.00	0.6000	0.0986
T10	6	0.39 Fiber	0.00 - 5.00	0.6000	0.0986
T10	7	0.77 DC	0.00 - 5.00	0.6000	0.0986

Discrete Tower Loads

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	Project		Stafford Tumel, CT		Date		22:40:55 04/21/18	
	Client		CDT		Designed by		FAN	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	lb	
Lightning Rod	C	None			0.0000	180.00	No Ice	1.00	1.00	40.00
							1/2" Ice	2.02	2.02	49.26
							1" Ice	3.05	3.05	64.89
Low Profile Platform (Sprint)	C	None			0.0000	180.00	No Ice	30.00	30.00	1500.00
							1/2" Ice	39.00	39.00	2200.00
							1" Ice	48.00	48.00	2900.00
Sector Frame Mount	A	From Leg	1.50		0.0000	170.00	No Ice	18.00	9.00	465.00
			0.00				1/2" Ice	22.00	11.00	600.00
			0.00				1" Ice	23.20	23.20	735.00
Sector Frame Mount	B	From Leg	1.50		0.0000	170.00	No Ice	18.00	9.00	465.00
			0.00				1/2" Ice	22.00	11.00	600.00
			0.00				1" Ice	23.20	23.20	735.00
Sector Frame Mount	C	From Leg	1.50		0.0000	170.00	No Ice	18.00	9.00	465.00
			0.00				1/2" Ice	22.00	11.00	600.00
			0.00				1" Ice	23.20	23.20	735.00
Sector Frame Mount	A	From Leg	1.50		0.0000	140.00	No Ice	15.00	7.50	465.00
			0.00				1/2" Ice	19.00	9.50	600.00
			0.00				1" Ice	21.00	16.00	735.00
Sector Frame Mount	B	From Leg	1.50		0.0000	140.00	No Ice	15.00	7.50	465.00
			0.00				1/2" Ice	19.00	9.50	600.00
			0.00				1" Ice	21.00	16.00	735.00
Sector Frame Mount	C	From Leg	1.50		0.0000	140.00	No Ice	15.00	7.50	465.00
			0.00				1/2" Ice	19.00	9.50	600.00
			0.00				1" Ice	21.00	16.00	735.00
(2) Antel BXA-70063-6CF (Verizon)	A	From Leg	3.00		0.0000	140.00	No Ice	7.73	5.08	17.00
			0.00				1/2" Ice	8.19	5.54	63.80
			0.00				1" Ice	8.67	6.00	116.60
(2) Antel BXA-70063-6CF (Verizon)	B	From Leg	3.00		0.0000	140.00	No Ice	7.73	5.08	17.00
			0.00				1/2" Ice	8.19	5.54	63.80
			0.00				1" Ice	8.67	6.00	116.60
(2) Antel BXA-70063-6CF (Verizon)	C	From Leg	3.00		0.0000	140.00	No Ice	7.73	5.08	17.00
			0.00				1/2" Ice	8.19	5.54	63.80
			0.00				1" Ice	8.67	6.00	116.60
(2) Antel BXA-171085-12CF (Verizon)	A	From Leg	3.00		0.0000	140.00	No Ice	4.79	3.62	15.00
			0.00				1/2" Ice	5.27	4.14	42.50
			0.00				1" Ice	5.74	4.62	75.50
(2) Antel BXA-171085-12CF (Verizon)	B	From Leg	3.00		0.0000	140.00	No Ice	4.79	3.62	15.00
			0.00				1/2" Ice	5.27	4.14	42.50
			0.00				1" Ice	5.74	4.62	75.50
(2) Antel BXA-171085-12CF (Verizon)	C	From Leg	3.00		0.0000	140.00	No Ice	4.79	3.62	15.00
			0.00				1/2" Ice	5.27	4.14	42.50
			0.00				1" Ice	5.74	4.62	75.50
Alcatel Lucent RRH2x40 AWS (Verizon)	A	From Leg	3.00		0.0000	140.00	No Ice	2.52	1.59	44.00
			0.00				1/2" Ice	2.72	1.77	61.40
			0.00				1" Ice	2.93	1.96	81.70
Alcatel Lucent RRH2x40 AWS (Verizon)	B	From Leg	3.00		0.0000	140.00	No Ice	2.52	1.59	44.00
			0.00				1/2" Ice	2.72	1.77	61.40
			0.00				1" Ice	2.93	1.96	81.70
Alcatel Lucent RRH2x40 AWS (Verizon)	C	From Leg	3.00		0.0000	140.00	No Ice	2.52	1.59	44.00
			0.00				1/2" Ice	2.72	1.77	61.40
			0.00				1" Ice	2.93	1.96	81.70
Alcatel Lucent RRH2x40 700 (Verizon)	A	From Leg	3.00		0.0000	140.00	No Ice	3.31	1.94	62.00
			0.00				1/2" Ice	3.52	2.12	86.60
			0.00				1" Ice	3.74	2.30	114.40
Alcatel Lucent RRH2x40 700 (Verizon)	A	From Leg	3.00		0.0000	140.00	No Ice	3.31	1.94	62.00
			0.00				1/2" Ice	3.52	2.12	86.60
			0.00				1" Ice	3.74	2.30	114.40

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
Alcatel Lucent RRH2x40 700 (Verizon)	A	From Leg	3.00	0.0000	140.00	No Ice	3.31	1.94	62.00
			0.00			1/2" Ice	3.52	2.12	86.60
			0.00			1" Ice	3.74	2.30	114.40
RFS DB-T1-6Z-8B-0Z (Verizon)	A	From Leg	3.00	0.0000	140.00	No Ice	5.60	2.33	62.00
			0.00			1/2" Ice	5.87	2.53	86.60
			0.00			1" Ice	6.16	2.73	114.40
Commscope DT465B-2XR (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	9.68	6.33	108.00
			0.00			1" Ice	10.14	6.79	172.40
Commscope DT465B-2XR (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	9.68	6.33	108.00
			0.00			1" Ice	10.14	6.79	172.40
Commscope DT465B-2XR (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	9.68	6.33	108.00
			0.00			1" Ice	10.14	6.79	172.40
Alcatel Lucent 4x45W (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.72	1.78	71.10
			0.00			1" Ice	2.92	1.96	94.30
Alcatel Lucent 4x45W (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.72	1.78	71.10
			0.00			1" Ice	2.92	1.96	94.30
Alcatel Lucent 4x45W (Sprint)	C	From Leg	3.00	0.0000	180.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.72	1.78	71.10
			0.00			1" Ice	2.92	1.96	94.30
Alcatel Lucent 8x200-25 (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.27	1.70	97.10
			0.00			1" Ice	4.50	1.88	127.80
Alcatel Lucent 8x200-25 (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.27	1.70	97.10
			0.00			1" Ice	4.50	1.88	127.80
Alcatel Lucent 8x200-25 (Sprint)	C	From Leg	3.00	0.0000	180.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.27	1.70	97.10
			0.00			1" Ice	4.50	1.88	127.80
RFS APXV9ERR18-C-A20 (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.48	6.27	114.00
			0.00			1" Ice	8.93	6.73	172.10
RFS APXV9ERR18-C-A20 (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.48	6.27	114.00
			0.00			1" Ice	8.93	6.73	172.10
RFS APXV9ERR18-C-A20 (Sprint)	C	From Leg	3.00	0.0000	180.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.48	6.27	114.00
			0.00			1" Ice	8.93	6.73	172.10
(2) Alcatel Lucent 2x50 (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.45	1.51	59.30
			0.00			1" Ice	2.64	1.68	79.60
(2) Alcatel Lucent 2x50 (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.45	1.51	59.30
			0.00			1" Ice	2.64	1.68	79.60
(2) Alcatel Lucent 2x50 (Sprint)	C	From Leg	3.00	0.0000	180.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.45	1.51	59.30
			0.00			1" Ice	2.64	1.68	79.60
Sector Frame Mount	A	From Leg	1.50	0.0000	150.00	No Ice	18.00	9.00	465.00
			0.00			1/2" Ice	22.00	11.00	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame Mount	B	From Leg	1.50	0.0000	150.00	No Ice	18.00	9.00	465.00
			0.00			1/2" Ice	22.00	11.00	600.00
			0.00			1" Ice	23.20	23.20	735.00

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	Client		CDT		Designed by		FAN	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
Sector Frame Mount	C	From Leg	1.50	0.0000	150.00	No Ice	18.00	9.00	465.00
			0.00			1/2" Ice	22.00	11.00	600.00
			0.00			1" Ice	23.20	23.20	735.00
Kathrein Scala 800 10121	A	From Leg	3.00	0.0000	150.00	No Ice	5.21	3.32	37.50
			0.00			1/2" Ice	5.55	3.68	70.60
			0.00			1" Ice	5.90	4.02	108.60
Kathrein Scala 800 10121	B	From Leg	3.00	0.0000	150.00	No Ice	5.21	3.32	37.50
			0.00			1/2" Ice	5.55	3.68	70.60
			0.00			1" Ice	5.90	4.02	108.60
Kathrein Scala 800 10121	C	From Leg	3.00	0.0000	150.00	No Ice	5.21	3.32	37.50
			0.00			1/2" Ice	5.55	3.68	70.60
			0.00			1" Ice	5.90	4.02	108.60
CCI HPA-65R-BUU-H8	A	From Leg	3.00	0.0000	150.00	No Ice	12.98	7.52	73.00
			0.00			1/2" Ice	13.56	8.14	146.80
			0.00			1" Ice	14.14	8.74	228.20
CCI HPA-65R-BUU-H8	B	From Leg	3.00	0.0000	150.00	No Ice	12.98	7.52	73.00
			0.00			1/2" Ice	13.56	8.14	146.80
			0.00			1" Ice	14.14	8.74	228.20
Commscope SBNHH-1D65A	C	From Leg	3.00	0.0000	150.00	No Ice	5.96	3.91	33.50
			0.00			1/2" Ice	6.31	4.27	72.90
			0.00			1" Ice	6.67	4.62	117.40
Ericsson RRUS11	A	From Leg	3.00	0.0000	150.00	No Ice	2.78	1.19	55.00
			0.00			1/2" Ice	2.97	1.32	75.80
			0.00			1" Ice	3.16	1.70	99.60
Ericsson RRUS11	B	From Leg	3.00	0.0000	150.00	No Ice	2.78	1.19	55.00
			0.00			1/2" Ice	2.97	1.32	75.80
			0.00			1" Ice	3.16	1.70	99.60
Ericsson RRUS11	C	From Leg	3.00	0.0000	150.00	No Ice	2.78	1.19	55.00
			0.00			1/2" Ice	2.97	1.32	75.80
			0.00			1" Ice	3.16	1.70	99.60
Ericsson RRUS-32	A	From Leg	3.00	0.0000	150.00	No Ice	2.69	1.57	60.00
			0.00			1/2" Ice	2.89	1.75	130.10
			0.00			1" Ice	3.09	1.93	174.10
Ericsson RRUS-32	B	From Leg	3.00	0.0000	150.00	No Ice	2.69	1.57	60.00
			0.00			1/2" Ice	2.89	1.75	130.10
			0.00			1" Ice	3.09	1.93	174.10
Ericsson RRUS-32	C	From Leg	3.00	0.0000	150.00	No Ice	2.69	1.57	60.00
			0.00			1/2" Ice	2.89	1.75	130.10
			0.00			1" Ice	3.09	1.93	174.10
Raycap DC6-48-60-18	A	From Leg	3.00	0.0000	150.00	No Ice	2.20	2.20	31.80
			0.00			1/2" Ice	2.38	2.38	54.40
			0.00			1" Ice	2.56	2.56	80.10
(2) Powerwave LGP21401	A	From Leg	3.00	0.0000	150.00	No Ice	1.67	0.47	31.00
			0.00			1/2" Ice	1.80	0.57	42.00
			0.00			1" Ice	1.96	0.67	55.30
(2) Powerwave LGP21401	B	From Leg	3.00	0.0000	150.00	No Ice	1.67	0.47	31.00
			0.00			1/2" Ice	1.80	0.57	42.00
			0.00			1" Ice	1.96	0.67	55.30
(2) Powerwave LGP21401	C	From Leg	3.00	0.0000	150.00	No Ice	1.67	0.47	31.00
			0.00			1/2" Ice	1.80	0.57	42.00
			0.00			1" Ice	1.96	0.67	55.30
Side Arm	A	From Leg	2.00	0.0000	150.00	No Ice	4.97	4.97	70.00
			0.00			1/2" Ice	6.12	6.12	130.00
			0.00			1" Ice	7.27	7.27	190.00
Side Arm	B	From Leg	2.00	0.0000	150.00	No Ice	4.97	4.97	70.00
			0.00			1/2" Ice	6.12	6.12	130.00
			0.00			1" Ice	7.27	7.27	190.00

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	Client CDT	Designed by FAN

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	lb	
Side Arm	C	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.97 6.12 7.27	4.97 6.12 7.27	70.00 130.00 190.00

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation	z	K _Z	q _Z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
T1 180.00-160.00	170.00	1.15	24	74.792	A B C	2.989 2.989 2.989	12.348 12.348 12.348	9.583	62.49	12.400 0.000 0.750	0.000 0.000 0.000
T2 160.00-140.00	150.00	1.11	23	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05	12.400 14.910 0.750	0.000 0.000 0.000
T3 140.00-120.00	130.00	1.065	22	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05	12.400 29.820 48.270	0.000 0.000 0.000
T4 120.00-100.00	110.00	1.016	21	74.792	A B C	2.989 2.989 2.989	12.348 12.348 12.348	9.583	62.49	12.400 29.820 48.270	0.000 0.000 0.000
T5 100.00-80.00	90.00	0.959	20	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05	12.400 29.820 48.270	0.000 0.000 0.000
T6 80.00-60.00	70.00	0.892	19	74.792	A B C	2.921 2.921 2.921	12.348 12.348 12.348	9.583	62.77	12.400 29.820 48.270	0.000 0.000 0.000
T7 60.00-40.00	50.00	0.811	17	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05	12.400 29.820 48.270	0.000 0.000 0.000
T8 40.00-20.00	30.00	0.701	15	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05	12.400 29.820 48.270	0.000 0.000 0.000
T9 20.00-5.00	12.50	0.7	15	56.094	A B C	2.038 2.038 2.038	9.126 9.126 9.126	7.188	64.38	9.300 22.365 36.203	0.000 0.000 0.000
T10 5.00-0.00	2.50	0.7	15	10.019	A B C	0.785 0.785 0.785	3.127 3.127 3.127	2.584	66.05	3.100 7.455 12.068	0.000 0.000 0.000

Tower Pressure - With Ice

$G_H = 0.850$

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Section Elevation <i>ft</i>	<i>z</i> <i>ft</i>	K_Z	q_z <i>psf</i>	t_z <i>in</i>	A_G <i>ft</i> ²	<i>F</i> <i>a</i> <i>c</i> <i>e</i>	A_F <i>ft</i> ²	A_R <i>ft</i> ²	A_{leg} <i>ft</i> ²	<i>Leg</i> <i>%</i>	C_{AA} <i>In</i> <i>Face</i> <i>ft</i> ²	C_{AA} <i>Out</i> <i>Face</i> <i>ft</i> ²
T1 180.00-160.00	170.00	1.15	6	2.0617	81.664	A	2.989	52.173	23.328	42.29	40.031	0.000
						B	2.989	52.173		42.29	0.000	0.000
						C	2.989	52.173		42.29	8.997	0.000
T2 160.00-140.00	150.00	1.11	6	2.0361	81.579	A	2.853	51.678	23.157	42.47	39.865	0.000
						B	2.853	51.678		42.47	41.158	0.000
						C	2.853	51.678		42.47	8.894	0.000
T3 140.00-120.00	130.00	1.065	6	2.0072	81.482	A	2.853	51.119	22.964	42.55	39.679	0.000
						B	2.853	51.119		42.55	81.680	0.000
						C	2.853	51.119		42.55	77.900	0.000
T4 120.00-100.00	110.00	1.016	6	1.9739	81.371	A	2.989	50.476	22.743	42.54	39.465	0.000
						B	2.989	50.476		42.54	80.950	0.000
						C	2.989	50.476		42.54	77.552	0.000
T5 100.00-80.00	90.00	0.959	5	1.9347	81.241	A	2.853	49.719	22.481	42.76	39.213	0.000
						B	2.853	49.719		42.76	80.090	0.000
						C	2.853	49.719		42.76	77.142	0.000
T6 80.00-60.00	70.00	0.892	5	1.8867	81.081	A	2.921	48.791	22.161	42.85	38.905	0.000
						B	2.921	48.791		42.85	79.036	0.000
						C	2.921	48.791		42.85	76.640	0.000
T7 60.00-40.00	50.00	0.811	4	1.8242	80.872	A	2.853	47.586	21.745	43.11	38.506	0.000
						B	2.853	47.586		43.11	77.666	0.000
						C	2.853	47.586		43.11	75.988	0.000
T8 40.00-20.00	30.00	0.701	4	1.7334	80.570	A	2.853	45.831	21.139	43.42	37.926	0.000
						B	2.853	45.831		43.42	75.674	0.000
						C	2.853	45.831		43.42	75.039	0.000
T9 20.00-5.00	12.50	0.7	4	1.5881	60.064	A	2.038	31.232	15.128	45.47	27.752	0.000
						B	2.038	31.232		45.47	54.367	0.000
						C	2.038	31.232		45.47	55.144	0.000
T10 5.00-0.00	2.50	0.7	4	1.3520	11.213	A	0.785	9.322	5.015	49.61	8.879	0.000
						B	0.785	9.322		49.61	16.831	0.000
						C	0.785	9.322		49.61	17.768	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation <i>ft</i>	<i>z</i> <i>ft</i>	K_Z	q_z <i>psf</i>	A_G <i>ft</i> ²	<i>F</i> <i>a</i> <i>c</i> <i>e</i>	A_F <i>ft</i> ²	A_R <i>ft</i> ²	A_{leg} <i>ft</i> ²	<i>Leg</i> <i>%</i>	C_{AA} <i>In</i> <i>Face</i> <i>ft</i> ²	C_{AA} <i>Out</i> <i>Face</i> <i>ft</i> ²
T1 180.00-160.00	170.00	1.15	9	74.792	A	2.989	12.348	9.583	62.49	12.400	0.000
					B	2.989	12.348		62.49	0.000	0.000
					C	2.989	12.348		62.49	0.750	0.000
T2 160.00-140.00	150.00	1.11	9	74.792	A	2.853	12.348	9.583	63.05	12.400	0.000
					B	2.853	12.348		63.05	14.910	0.000
					C	2.853	12.348		63.05	0.750	0.000
T3 140.00-120.00	130.00	1.065	8	74.792	A	2.853	12.348	9.583	63.05	12.400	0.000
					B	2.853	12.348		63.05	29.820	0.000
					C	2.853	12.348		63.05	48.270	0.000
T4 120.00-100.00	110.00	1.016	8	74.792	A	2.989	12.348	9.583	62.49	12.400	0.000
					B	2.989	12.348		62.49	29.820	0.000
					C	2.989	12.348		62.49	48.270	0.000
T5 100.00-80.00	90.00	0.959	8	74.792	A	2.853	12.348	9.583	63.05	12.400	0.000
					B	2.853	12.348		63.05	29.820	0.000
					C	2.853	12.348		63.05	48.270	0.000
T6 80.00-60.00	70.00	0.892	7	74.792	A	2.921	12.348	9.583	62.77	12.400	0.000

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Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F _a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T7 60.00-40.00	50.00	0.811	6	74.792	B	2.921	12.348	9.583	62.77	29.820	0.000
					C	2.921	12.348			48.270	0.000
					A	2.853	12.348			12.400	0.000
					B	2.853	12.348			29.820	0.000
T8 40.00-20.00	30.00	0.701	5	74.792	C	2.853	12.348	9.583	63.05	48.270	0.000
					A	2.853	12.348			12.400	0.000
					B	2.853	12.348			29.820	0.000
					C	2.853	12.348			48.270	0.000
T9 20.00-5.00	12.50	0.7	5	56.094	A	2.038	9.126	7.188	64.38	9.300	0.000
					B	2.038	9.126			22.365	0.000
					C	2.038	9.126			36.203	0.000
T10 5.00-0.00	2.50	0.7	5	10.019	A	0.785	3.127	2.584	66.05	3.100	0.000
					B	0.785	3.127			7.455	0.000
					C	0.785	3.127			12.068	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F _a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 180.00-160.00	57.20	664.94 TA 214.38	A	0.205	2.579	24	1	1	10.093	692.98	34.65	C
			B	0.205	2.579	1	1	10.093				
			C	0.205	2.579	1	1	10.093				
T2 160.00-140.00	124.20	658.24	A	0.203	2.585	23	1	1	9.953	839.04	41.95	C
			B	0.203	2.585	1	1	9.953				
			C	0.203	2.585	1	1	9.953				
T3 140.00-120.00	388.00	658.24	A	0.203	2.585	22	1	1	9.953	1514.17	75.71	C
			B	0.203	2.585	1	1	9.953				
			C	0.203	2.585	1	1	9.953				
T4 120.00-100.00	388.00	664.94 TA 214.38	A	0.205	2.579	21	1	1	10.093	1449.03	72.45	C
			B	0.205	2.579	1	1	10.093				
			C	0.205	2.579	1	1	10.093				
T5 100.00-80.00	388.00	658.24	A	0.203	2.585	20	1	1	9.953	1363.16	68.16	C
			B	0.203	2.585	1	1	9.953				
			C	0.203	2.585	1	1	9.953				
T6 80.00-60.00	388.00	661.59	A	0.204	2.582	19	1	1	10.023	1271.10	63.55	C
			B	0.204	2.582	1	1	10.023				
			C	0.204	2.582	1	1	10.023				
T7 60.00-40.00	388.00	658.24	A	0.203	2.585	17	1	1	9.953	1152.42	57.62	C
			B	0.203	2.585	1	1	9.953				
			C	0.203	2.585	1	1	9.953				
T8 40.00-20.00	388.00	658.24	A	0.203	2.585	15	1	1	9.953	995.92	49.80	C
			B	0.203	2.585	1	1	9.953				
			C	0.203	2.585	1	1	9.953				
T9 20.00-5.00	291.00	480.27	A	0.199	2.599	15	1	1	7.279	741.60	49.44	C
			B	0.199	2.599	1	1	7.279				
			C	0.199	2.599	1	1	7.279				
T10 5.00-0.00	97.00	167.93	A	0.39	2.083	15	1	1	2.762	240.32	48.06	C
			B	0.39	2.083	1	1	2.762				
			C	0.39	2.083	1	1	2.762				
Sum Weight:	2897.40	6359.66								10259.73		

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Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	57.20	664.94 TA 214.38	A	0.205	2.579	24	0.8	1	9.496	661.49	33.07	C
			B	0.205	2.579		0.8	1	9.496			
			C	0.205	2.579		0.8	1	9.496			
T2 160.00-140.00	124.20	658.24	A	0.203	2.585	23	0.8	1	9.383	809.97	40.50	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T3 140.00-120.00	388.00	658.24	A	0.203	2.585	22	0.8	1	9.383	1486.26	74.31	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T4 120.00-100.00	388.00	664.94 TA 214.38	A	0.205	2.579	21	0.8	1	9.496	1421.21	71.06	C
			B	0.205	2.579		0.8	1	9.496			
			C	0.205	2.579		0.8	1	9.496			
T5 100.00-80.00	388.00	658.24	A	0.203	2.585	20	0.8	1	9.383	1338.03	66.90	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T6 80.00-60.00	388.00	661.59	A	0.204	2.582	19	0.8	1	9.439	1247.18	62.36	C
			B	0.204	2.582		0.8	1	9.439			
			C	0.204	2.582		0.8	1	9.439			
T7 60.00-40.00	388.00	658.24	A	0.203	2.585	17	0.8	1	9.383	1131.18	56.56	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T8 40.00-20.00	388.00	658.24	A	0.203	2.585	15	0.8	1	9.383	977.56	48.88	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T9 20.00-5.00	291.00	480.27	A	0.199	2.599	15	0.8	1	6.871	728.42	48.56	C
			B	0.199	2.599		0.8	1	6.871			
			C	0.199	2.599		0.8	1	6.871			
T10 5.00-0.00	97.00	167.93	A	0.39	2.083	15	0.8	1	2.605	236.26	47.25	C
			B	0.39	2.083		0.8	1	2.605			
			C	0.39	2.083		0.8	1	2.605			
Sum Weight:	2897.40	6359.66								10037.56		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	57.20	664.94 TA 214.38	A	0.205	2.579	24	0.85	1	9.645	669.36	33.47	C
			B	0.205	2.579		0.85	1	9.645			
			C	0.205	2.579		0.85	1	9.645			
T2 160.00-140.00	124.20	658.24	A	0.203	2.585	23	0.85	1	9.526	817.23	40.86	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T3 140.00-120.00	388.00	658.24	A	0.203	2.585	22	0.85	1	9.526	1493.24	74.66	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T4 120.00-100.00	388.00	664.94 TA 214.38	A	0.205	2.579	21	0.85	1	9.645	1428.17	71.41	C
			B	0.205	2.579		0.85	1	9.645			
			C	0.205	2.579		0.85	1	9.645			
T5	388.00	658.24	A	0.203	2.585	20	0.85	1	9.526	1344.31	67.22	C

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	Client CDT		Designed by FAN	

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
100.00-80.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T6 80.00-60.00	388.00	661.59	A	0.204	2.582	19	0.85	1	9.585	1253.16	62.66	C
			B	0.204	2.582		0.85	1	9.585			
			C	0.204	2.582		0.85	1	9.585			
T7 60.00-40.00	388.00	658.24	A	0.203	2.585	17	0.85	1	9.526	1136.49	56.82	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T8 40.00-20.00	388.00	658.24	A	0.203	2.585	15	0.85	1	9.526	982.15	49.11	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T9 20.00-5.00	291.00	480.27	A	0.199	2.599	15	0.85	1	6.973	731.72	48.78	C
			B	0.199	2.599		0.85	1	6.973			
			C	0.199	2.599		0.85	1	6.973			
T10 5.00-0.00	97.00	167.93	A	0.39	2.083	15	0.85	1	2.644	237.27	47.45	C
			B	0.39	2.083		0.85	1	2.644			
			C	0.39	2.083		0.85	1	2.644			
Sum Weight:	2897.40	6359.66								10093.11		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 180.00-160.00	728.26	3360.94	A	0.675	1.777	6	1	1	44.406	504.12	25.21	C
		TA 898.76	B	0.675	1.777		1	1	44.406			
			C	0.675	1.777		1	1	44.406			
T2 160.00-140.00	1420.32	3282.82	A	0.668	1.777	6	1	1	43.626	550.84	27.54	C
			B	0.668	1.777		1	1	43.626			
			C	0.668	1.777		1	1	43.626			
T3 140.00-120.00	3936.78	3223.94	A	0.662	1.779	6	1	1	42.973	707.79	35.39	C
			B	0.662	1.779		1	1	42.973			
			C	0.662	1.779		1	1	42.973			
T4 120.00-100.00	3883.00	3181.62	A	0.657	1.78	6	1	1	42.422	673.32	33.67	C
		TA 859.13	B	0.657	1.78		1	1	42.422			
			C	0.657	1.78		1	1	42.422			
T5 100.00-80.00	3820.05	3079.16	A	0.647	1.782	5	1	1	41.360	634.25	31.71	C
			B	0.647	1.782		1	1	41.360			
			C	0.647	1.782		1	1	41.360			
T6 80.00-60.00	3743.70	2997.29	A	0.638	1.785	5	1	1	40.406	588.58	29.43	C
			B	0.638	1.785		1	1	40.406			
			C	0.638	1.785		1	1	40.406			
T7 60.00-40.00	3645.61	2866.03	A	0.624	1.791	4	1	1	38.969	532.74	26.64	C
			B	0.624	1.791		1	1	38.969			
			C	0.624	1.791		1	1	38.969			
T8 40.00-20.00	3505.24	2697.51	A	0.604	1.801	4	1	1	37.063	458.14	22.91	C
			B	0.604	1.801		1	1	37.063			
			C	0.604	1.801		1	1	37.063			
T9 20.00-5.00	2464.96	1762.46	A	0.554	1.84	4	1	1	24.385	343.41	22.89	C
			B	0.554	1.84		1	1	24.385			
			C	0.554	1.84		1	1	24.385			
T10 5.00-0.00	736.69	515.33	A	0.901	1.926	4	1	1	9.798	74.96	14.99	C
			B	0.901	1.926		1	1	9.798			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
Sum Weight:	27884.62	28724.99	C	0.901	1.926		1	1	9.798	5068.14		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	728.26	3360.94 TA 898.76	A	0.675	1.777	6	0.8	1	43.809	498.48	24.92	C
			B	0.675	1.777		0.8	1	43.809			
			C	0.675	1.777		0.8	1	43.809			
T2 160.00-140.00	1420.32	3282.82	A	0.668	1.777	6	0.8	1	43.056	545.64	27.28	C
			B	0.668	1.777		0.8	1	43.056			
			C	0.668	1.777		0.8	1	43.056			
T3 140.00-120.00	3936.78	3223.94	A	0.662	1.779	6	0.8	1	42.402	702.79	35.14	C
			B	0.662	1.779		0.8	1	42.402			
			C	0.662	1.779		0.8	1	42.402			
T4 120.00-100.00	3883.00	3181.62 TA 859.13	A	0.657	1.78	6	0.8	1	41.824	668.32	33.42	C
			B	0.657	1.78		0.8	1	41.824			
			C	0.657	1.78		0.8	1	41.824			
T5 100.00-80.00	3820.05	3079.16	A	0.647	1.782	5	0.8	1	40.790	629.74	31.49	C
			B	0.647	1.782		0.8	1	40.790			
			C	0.647	1.782		0.8	1	40.790			
T6 80.00-60.00	3743.70	2997.29	A	0.638	1.785	5	0.8	1	39.822	584.27	29.21	C
			B	0.638	1.785		0.8	1	39.822			
			C	0.638	1.785		0.8	1	39.822			
T7 60.00-40.00	3645.61	2866.03	A	0.624	1.791	4	0.8	1	38.399	528.91	26.45	C
			B	0.624	1.791		0.8	1	38.399			
			C	0.624	1.791		0.8	1	38.399			
T8 40.00-20.00	3505.24	2697.51	A	0.604	1.801	4	0.8	1	36.493	454.81	22.74	C
			B	0.604	1.801		0.8	1	36.493			
			C	0.604	1.801		0.8	1	36.493			
T9 20.00-5.00	2464.96	1762.46	A	0.554	1.84	4	0.8	1	23.978	340.98	22.73	C
			B	0.554	1.84		0.8	1	23.978			
			C	0.554	1.84		0.8	1	23.978			
T10 5.00-0.00	736.69	515.33	A	0.901	1.926	4	0.8	1	9.641	73.98	14.80	C
			B	0.901	1.926		0.8	1	9.641			
			C	0.901	1.926		0.8	1	9.641			
Sum Weight:	27884.62	28724.99								5027.92		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	728.26	3360.94 TA 898.76	A	0.675	1.777	6	0.85	1	43.958	499.89	24.99	C
			B	0.675	1.777		0.85	1	43.958			

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Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	<i>C_F</i>	<i>q_z</i> <i>psf</i>	<i>D_F</i>	<i>D_R</i>	<i>A_E</i> <i>ft²</i>	<i>F</i> <i>lb</i>	<i>w</i> <i>plf</i>	Ctrl. Face
T2 160.00-140.00	1420.32	3282.82	C	0.675	1.777	6	0.85	1	43.958	546.94	27.35	C
			A	0.668	1.777		0.85	1	43.198			
			B	0.668	1.777		0.85	1	43.198			
T3 140.00-120.00	3936.78	3223.94	C	0.668	1.777	6	0.85	1	43.198	704.04	35.20	C
			A	0.662	1.779		0.85	1	42.545			
			B	0.662	1.779		0.85	1	42.545			
T4 120.00-100.00	3883.00	3181.62 TA 859.13	C	0.662	1.779	6	0.85	1	42.545	669.57	33.48	C
			A	0.657	1.78		0.85	1	41.973			
			B	0.657	1.78		0.85	1	41.973			
T5 100.00-80.00	3820.05	3079.16	C	0.647	1.782	5	0.85	1	40.932	630.87	31.54	C
			A	0.647	1.782		0.85	1	40.932			
			B	0.647	1.782		0.85	1	40.932			
T6 80.00-60.00	3743.70	2997.29	C	0.638	1.785	5	0.85	1	39.968	585.35	29.27	C
			A	0.638	1.785		0.85	1	39.968			
			B	0.638	1.785		0.85	1	39.968			
T7 60.00-40.00	3645.61	2866.03	C	0.624	1.791	4	0.85	1	38.542	529.86	26.49	C
			A	0.624	1.791		0.85	1	38.542			
			B	0.624	1.791		0.85	1	38.542			
T8 40.00-20.00	3505.24	2697.51	C	0.604	1.801	4	0.85	1	36.635	455.65	22.78	C
			A	0.604	1.801		0.85	1	36.635			
			B	0.604	1.801		0.85	1	36.635			
T9 20.00-5.00	2464.96	1762.46	C	0.554	1.84	4	0.85	1	24.080	341.59	22.77	C
			A	0.554	1.84		0.85	1	24.080			
			B	0.554	1.84		0.85	1	24.080			
T10 5.00-0.00	736.69	515.33	C	0.901	1.926	4	0.85	1	9.680	74.22	14.84	C
			A	0.901	1.926		0.85	1	9.680			
			B	0.901	1.926		0.85	1	9.680			
Sum Weight:	27884.62	28724.99								5037.97		

Tower Forces - Service - Wind Normal To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	<i>C_F</i>	<i>q_z</i> <i>psf</i>	<i>D_F</i>	<i>D_R</i>	<i>A_E</i> <i>ft²</i>	<i>F</i> <i>lb</i>	<i>w</i> <i>plf</i>	Ctrl. Face
T1 180.00-160.00	57.20	664.94 TA 214.38	A	0.205	2.579	9	1	1	10.093	259.76	12.99	C
			B	0.205	2.579		1	1	10.093			
			C	0.205	2.579		1	1	10.093			
T2 160.00-140.00	124.20	658.24	A	0.203	2.585	9	1	1	9.953	314.51	15.73	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T3 140.00-120.00	388.00	658.24	A	0.203	2.585	8	1	1	9.953	567.58	28.38	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T4 120.00-100.00	388.00	664.94 TA 214.38	A	0.205	2.579	8	1	1	10.093	543.16	27.16	C
			B	0.205	2.579		1	1	10.093			
			C	0.205	2.579		1	1	10.093			
T5 100.00-80.00	388.00	658.24	A	0.203	2.585	8	1	1	9.953	510.97	25.55	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T6 80.00-60.00	388.00	661.59	A	0.204	2.582	7	1	1	10.023	476.46	23.82	C
			B	0.204	2.582		1	1	10.023			
			C	0.204	2.582		1	1	10.023			

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Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	C_F	q_z <i>psf</i>	D_F	D_R	A_E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
T7 60.00-40.00	388.00	658.24	A	0.203	2.585	6	1	1	9.953	431.98	21.60	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T8 40.00-20.00	388.00	658.24	A	0.203	2.585	5	1	1	9.953	373.32	18.67	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T9 20.00-5.00	291.00	480.27	A	0.199	2.599	5	1	1	7.279	277.98	18.53	C
			B	0.199	2.599		1	1	7.279			
			C	0.199	2.599		1	1	7.279			
T10 5.00-0.00	97.00	167.93	A	0.39	2.083	5	1	1	2.762	90.08	18.02	C
			B	0.39	2.083		1	1	2.762			
			C	0.39	2.083		1	1	2.762			
Sum Weight:	2897.40	6359.66								3845.80		

Tower Forces - Service - Wind 60 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	C_F	q_z <i>psf</i>	D_F	D_R	A_E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
T1 180.00-160.00	57.20	664.94 TA 214.38	A	0.205	2.579	9	0.8	1	9.496	247.96	12.40	C
			B	0.205	2.579		0.8	1	9.496			
			C	0.205	2.579		0.8	1	9.496			
T2 160.00-140.00	124.20	658.24	A	0.203	2.585	9	0.8	1	9.383	303.61	15.18	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T3 140.00-120.00	388.00	658.24	A	0.203	2.585	8	0.8	1	9.383	557.12	27.86	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T4 120.00-100.00	388.00	664.94 TA 214.38	A	0.205	2.579	8	0.8	1	9.496	532.73	26.64	C
			B	0.205	2.579		0.8	1	9.496			
			C	0.205	2.579		0.8	1	9.496			
T5 100.00-80.00	388.00	658.24	A	0.203	2.585	8	0.8	1	9.383	501.55	25.08	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T6 80.00-60.00	388.00	661.59	A	0.204	2.582	7	0.8	1	9.439	467.50	23.37	C
			B	0.204	2.582		0.8	1	9.439			
			C	0.204	2.582		0.8	1	9.439			
T7 60.00-40.00	388.00	658.24	A	0.203	2.585	6	0.8	1	9.383	424.01	21.20	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T8 40.00-20.00	388.00	658.24	A	0.203	2.585	5	0.8	1	9.383	366.43	18.32	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T9 20.00-5.00	291.00	480.27	A	0.199	2.599	5	0.8	1	6.871	273.05	18.20	C
			B	0.199	2.599		0.8	1	6.871			
			C	0.199	2.599		0.8	1	6.871			
T10 5.00-0.00	97.00	167.93	A	0.39	2.083	5	0.8	1	2.605	88.56	17.71	C
			B	0.39	2.083		0.8	1	2.605			
			C	0.39	2.083		0.8	1	2.605			
Sum Weight:	2897.40	6359.66								3762.52		

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Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 180.00-160.00	57.20	664.94 TA 214.38	A	0.205	2.579	9	0.85	1	9.645	250.91	12.55	C
			B	0.205	2.579							
			C	0.205	2.579							
T2 160.00-140.00	124.20	658.24	A	0.203	2.585	9	0.85	1	9.526	306.34	15.32	C
			B	0.203	2.585							
			C	0.203	2.585							
T3 140.00-120.00	388.00	658.24	A	0.203	2.585	8	0.85	1	9.526	559.73	27.99	C
			B	0.203	2.585							
			C	0.203	2.585							
T4 120.00-100.00	388.00	664.94 TA 214.38	A	0.205	2.579	8	0.85	1	9.645	535.34	26.77	C
			B	0.205	2.579							
			C	0.205	2.579							
T5 100.00-80.00	388.00	658.24	A	0.203	2.585	8	0.85	1	9.526	503.91	25.20	C
			B	0.203	2.585							
			C	0.203	2.585							
T6 80.00-60.00	388.00	661.59	A	0.204	2.582	7	0.85	1	9.585	469.74	23.49	C
			B	0.204	2.582							
			C	0.204	2.582							
T7 60.00-40.00	388.00	658.24	A	0.203	2.585	6	0.85	1	9.526	426.01	21.30	C
			B	0.203	2.585							
			C	0.203	2.585							
T8 40.00-20.00	388.00	658.24	A	0.203	2.585	5	0.85	1	9.526	368.15	18.41	C
			B	0.203	2.585							
			C	0.203	2.585							
T9 20.00-5.00	291.00	480.27	A	0.199	2.599	5	0.85	1	6.973	274.28	18.29	C
			B	0.199	2.599							
			C	0.199	2.599							
T10 5.00-0.00	97.00	167.93	A	0.39	2.083	5	0.85	1	2.644	88.94	17.79	C
			B	0.39	2.083							
			C	0.39	2.083							
Sum Weight:	2897.40	6359.66								3783.34		

Discrete Appurtenance Pressures - No Ice G_H = 0.850

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Torque Arm Face C	180.0000	0.00	0.00	2.53	170.89	1.152	24	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	170.89	1.152	24	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	170.89	1.152	24	3.54	5.32
Torque Arm Face C	180.0000	0.00	0.00	2.53	117.30	1.034	22	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	117.30	1.034	22	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	117.30	1.034	22	3.54	5.32
Lightning Rod	0.0000	40.00	0.00	0.00	180.00	1.169	24	1.00	1.00
Low Profile Platform	0.0000	1500.00	0.00	0.00	180.00	1.169	24	30.00	30.00
Sector Frame Mount	0.0000	465.00	0.00	-3.52	170.00	1.150	24	18.00	9.00
Sector Frame Mount	120.0000	465.00	3.05	1.76	170.00	1.150	24	18.00	9.00
Sector Frame Mount	240.0000	465.00	-3.05	1.76	170.00	1.150	24	18.00	9.00
Sector Frame Mount	0.0000	465.00	0.00	-3.52	140.00	1.088	23	15.00	7.50

<h1 style="color: red; margin: 0;">RISATower</h1> <p style="font-size: small; margin-top: 10px;">Phone: FAX:</p>	Job 118-23036	Page 28 of 49
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	Client CDT	Designed by FAN

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Sector Frame Mount	120.0000	465.00	3.05	1.76	140.00	1.088	23	15.00	7.50
Sector Frame Mount	240.0000	465.00	-3.05	1.76	140.00	1.088	23	15.00	7.50
Antel BXA-70063-6CF	0.0000	34.00	0.00	-5.02	140.00	1.088	23	15.46	10.16
Antel BXA-70063-6CF	120.0000	34.00	4.35	2.51	140.00	1.088	23	15.46	10.16
Antel BXA-70063-6CF	240.0000	34.00	-4.35	2.51	140.00	1.088	23	15.46	10.16
Antel BXA-171085-12CF	0.0000	30.00	0.00	-5.02	140.00	1.088	23	9.58	7.24
Antel BXA-171085-12CF	120.0000	30.00	4.35	2.51	140.00	1.088	23	9.58	7.24
Antel BXA-171085-12CF	240.0000	30.00	-4.35	2.51	140.00	1.088	23	9.58	7.24
Alcatel Lucent RRH2x40 AWS	0.0000	44.00	0.00	-5.02	140.00	1.088	23	2.52	1.59
Alcatel Lucent RRH2x40 AWS	120.0000	44.00	4.35	2.51	140.00	1.088	23	2.52	1.59
Alcatel Lucent RRH2x40 AWS	240.0000	44.00	-4.35	2.51	140.00	1.088	23	2.52	1.59
Alcatel Lucent RRH2x40 700	0.0000	62.00	0.00	-5.02	140.00	1.088	23	3.31	1.94
Alcatel Lucent RRH2x40 700	0.0000	62.00	0.00	-5.02	140.00	1.088	23	3.31	1.94
Alcatel Lucent RRH2x40 700	0.0000	62.00	0.00	-5.02	140.00	1.088	23	3.31	1.94
RFS DB-T1-6Z-8B-0Z Commscope DT465B-2XR	0.0000	62.00	0.00	-5.02	140.00	1.088	23	5.60	2.33
Commscope DT465B-2XR	0.0000	50.00	0.00	-5.02	180.00	1.169	24	9.22	5.87
Commscope DT465B-2XR	0.0000	50.00	0.00	-5.02	180.00	1.169	24	9.22	5.87
Commscope DT465B-2XR	120.0000	50.00	4.35	2.51	180.00	1.169	24	9.22	5.87
Alcatel Lucent 4x45W	0.0000	51.00	0.00	-5.02	180.00	1.169	24	2.54	1.61
Alcatel Lucent 4x45W	120.0000	51.00	4.35	2.51	180.00	1.169	24	2.54	1.61
Alcatel Lucent 4x45W	240.0000	51.00	-4.35	2.51	180.00	1.169	24	2.54	1.61
Alcatel Lucent 8x200-25	0.0000	70.00	0.00	-5.02	180.00	1.169	24	4.05	1.53
Alcatel Lucent 8x200-25	120.0000	70.00	4.35	2.51	180.00	1.169	24	4.05	1.53
Alcatel Lucent 8x200-25	240.0000	70.00	-4.35	2.51	180.00	1.169	24	4.05	1.53
RFS	0.0000	62.00	0.00	-5.02	180.00	1.169	24	8.02	5.81
APXV9ERR18-C-A20 RFS	120.0000	62.00	4.35	2.51	180.00	1.169	24	8.02	5.81
APXV9ERR18-C-A20 RFS	240.0000	62.00	-4.35	2.51	180.00	1.169	24	8.02	5.81
APXV9ERR18-C-A20 RFS	0.0000	84.00	0.00	-5.02	180.00	1.169	24	4.54	2.70
Alcatel Lucent 2x50	120.0000	84.00	4.35	2.51	180.00	1.169	24	4.54	2.70
Alcatel Lucent 2x50	240.0000	84.00	-4.35	2.51	180.00	1.169	24	4.54	2.70
Sector Frame Mount	0.0000	465.00	0.00	-3.52	150.00	1.110	23	18.00	9.00
Sector Frame Mount	120.0000	465.00	3.05	1.76	150.00	1.110	23	18.00	9.00
Sector Frame Mount	240.0000	465.00	-3.05	1.76	150.00	1.110	23	18.00	9.00
Kathrein Scala 800 10121	0.0000	37.50	0.00	-5.02	150.00	1.110	23	5.21	3.32
Kathrein Scala 800 10121	120.0000	37.50	4.35	2.51	150.00	1.110	23	5.21	3.32
Kathrein Scala 800 10121	240.0000	37.50	-4.35	2.51	150.00	1.110	23	5.21	3.32
CCI HPA-65R-BUU-H8	0.0000	73.00	0.00	-5.02	150.00	1.110	23	12.98	7.52
CCI HPA-65R-BUU-H8	120.0000	73.00	4.35	2.51	150.00	1.110	23	12.98	7.52
Commscope SBNHH-1D65A	240.0000	33.50	-4.35	2.51	150.00	1.110	23	5.96	3.91
Ericsson RRUS11	0.0000	55.00	0.00	-5.02	150.00	1.110	23	2.78	1.19
Ericsson RRUS11	120.0000	55.00	4.35	2.51	150.00	1.110	23	2.78	1.19
Ericsson RRUS11	240.0000	55.00	-4.35	2.51	150.00	1.110	23	2.78	1.19

<h1 style="color: red; margin: 0;">RISATower</h1> <p style="font-size: small; margin-top: 10px;">Phone: FAX:</p>	Job 118-23036	Page 29 of 49
	Project Stafford Tumel, CT	Date 22:40:55 04/21/18
	Client CDT	Designed by FAN

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Ericsson RRUS-32	0.0000	60.00	0.00	-5.02	150.00	1.110	23	2.69	1.57
Ericsson RRUS-32	120.0000	60.00	4.35	2.51	150.00	1.110	23	2.69	1.57
Ericsson RRUS-32	240.0000	60.00	-4.35	2.51	150.00	1.110	23	2.69	1.57
Raycap DC6-48-60-18	0.0000	31.80	0.00	-5.02	150.00	1.110	23	2.20	2.20
Powerwave LGP21401	0.0000	62.00	0.00	-5.02	150.00	1.110	23	3.34	0.94
Powerwave LGP21401	120.0000	62.00	4.35	2.51	150.00	1.110	23	3.34	0.94
Powerwave LGP21401	240.0000	62.00	-4.35	2.51	150.00	1.110	23	3.34	0.94
Side Arm	0.0000	70.00	0.00	-4.02	150.00	1.110	23	4.97	4.97
Side Arm	120.0000	70.00	3.48	2.01	150.00	1.110	23	4.97	4.97
Side Arm	240.0000	70.00	-3.48	2.01	150.00	1.110	23	4.97	4.97
Sum Weight:		8312.80							

Discrete Appurtenance Pressures - With Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²	t _z in
Torque Arm Face C	180.0000	0.00	0.00	2.53	170.89	1.152	6	6.36	9.35	2.0617
Torque Arm Face B	60.0000	0.00	2.19	-1.26	170.89	1.152	6	6.36	9.35	2.0617
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	170.89	1.152	6	6.36	9.35	2.0617
Torque Arm Face C	180.0000	0.00	0.00	2.53	117.30	1.034	6	6.24	9.19	1.9739
Torque Arm Face B	60.0000	0.00	2.19	-1.26	117.30	1.034	6	6.24	9.19	1.9739
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	117.30	1.034	6	6.24	9.19	1.9739
Lightning Rod	0.0000	122.65	0.00	0.00	180.00	1.169	6	5.24	5.24	2.0735
Low Profile Platform	0.0000	4402.97	0.00	0.00	180.00	1.169	6	67.32	67.32	2.0735
Sector Frame Mount	0.0000	1021.67	0.00	-3.52	170.00	1.150	6	33.39	33.39	2.0617
Sector Frame Mount	120.0000	1021.67	3.05	1.76	170.00	1.150	6	33.39	33.39	2.0617
Sector Frame Mount	240.0000	1021.67	-3.05	1.76	170.00	1.150	6	33.39	33.39	2.0617
Sector Frame Mount	0.0000	1010.96	0.00	-3.52	140.00	1.088	6	33.01	33.01	2.0221
Sector Frame Mount	120.0000	1010.96	3.05	1.76	140.00	1.088	6	33.01	33.01	2.0221
Sector Frame Mount	240.0000	1010.96	-3.05	1.76	140.00	1.088	6	33.01	33.01	2.0221
Antel BXA-70063-6CF	0.0000	239.74	0.00	-5.02	140.00	1.088	6	10.76	7.40	2.0221
Antel BXA-70063-6CF	120.0000	239.74	4.35	2.51	140.00	1.088	6	10.76	7.40	2.0221
Antel BXA-70063-6CF	240.0000	239.74	-4.35	2.51	140.00	1.088	6	10.76	7.40	2.0221
Antel	0.0000	239.74	0.00	-5.02	140.00	1.088	6	10.76	7.40	2.0221
BXA-171085-12CF										
Antel	120.0000	239.74	4.35	2.51	140.00	1.088	6	10.76	7.40	2.0221
BXA-171085-12CF										
Antel	240.0000	239.74	-4.35	2.51	140.00	1.088	6	10.76	7.40	2.0221
BXA-171085-12CF										
Alcatel Lucent RRH2x40 AWS	0.0000	119.87	0.00	-5.02	140.00	1.088	6	5.38	3.70	2.0221
Alcatel Lucent RRH2x40 AWS	120.0000	119.87	4.35	2.51	140.00	1.088	6	5.38	3.70	2.0221
Alcatel Lucent RRH2x40 AWS	240.0000	119.87	-4.35	2.51	140.00	1.088	6	5.38	3.70	2.0221
Alcatel Lucent RRH2x40 700	0.0000	119.87	0.00	-5.02	140.00	1.088	6	5.38	3.70	2.0221
Alcatel Lucent RRH2x40 700	0.0000	119.87	0.00	-5.02	140.00	1.088	6	5.38	3.70	2.0221
Alcatel Lucent RRH2x40 700	0.0000	119.87	0.00	-5.02	140.00	1.088	6	5.38	3.70	2.0221
RFS DB-T1-6Z-8B-0Z	0.0000	119.87	0.00	-5.02	140.00	1.088	6	5.38	3.70	2.0221
Commscope DT465B-2XR	0.0000	334.70	0.00	-5.02	180.00	1.169	6	11.14	7.77	2.0735
Commscope DT465B-2XR	0.0000	334.70	0.00	-5.02	180.00	1.169	6	11.14	7.77	2.0735

RISATower Phone: FAX:	Job		118-23036		Page		30 of 49	
	Project		Stafford Tumel, CT		Date		22:40:55 04/21/18	
	Client		CDT		Designed by		FAN	

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²	t _z in
Commscope DT465B-2XR	120.0000	334.70	4.35	2.51	180.00	1.169	6	11.14	7.77	2.0735
Alcatel Lucent 4x45W	0.0000	156.74	0.00	-5.02	180.00	1.169	6	3.39	2.36	2.0735
Alcatel Lucent 4x45W	120.0000	156.74	4.35	2.51	180.00	1.169	6	3.39	2.36	2.0735
Alcatel Lucent 4x45W	240.0000	156.74	-4.35	2.51	180.00	1.169	6	3.39	2.36	2.0735
Alcatel Lucent 8x200-25	0.0000	207.71	0.00	-5.02	180.00	1.169	6	5.03	2.29	2.0735
Alcatel Lucent 8x200-25	120.0000	207.71	4.35	2.51	180.00	1.169	6	5.03	2.29	2.0735
Alcatel Lucent 8x200-25	240.0000	207.71	-4.35	2.51	180.00	1.169	6	5.03	2.29	2.0735
RFS	0.0000	320.58	0.00	-5.02	180.00	1.169	6	9.93	7.71	2.0735
APXV9ERR18-C-A20 RFS	120.0000	320.58	4.35	2.51	180.00	1.169	6	9.93	7.71	2.0735
APXV9ERR18-C-A20 RFS	240.0000	320.58	-4.35	2.51	180.00	1.169	6	9.93	7.71	2.0735
APXV9ERR18-C-A20	0.0000	269.75	0.00	-5.02	180.00	1.169	6	6.17	4.14	2.0735
Alcatel Lucent 2x50	120.0000	269.75	4.35	2.51	180.00	1.169	6	6.17	4.14	2.0735
Alcatel Lucent 2x50	240.0000	269.75	-4.35	2.51	180.00	1.169	6	6.17	4.14	2.0735
Sector Frame Mount	0.0000	1014.74	0.00	-3.52	150.00	1.110	6	33.15	33.15	2.0361
Sector Frame Mount	120.0000	1014.74	3.05	1.76	150.00	1.110	6	33.15	33.15	2.0361
Sector Frame Mount	240.0000	1014.74	-3.05	1.76	150.00	1.110	6	33.15	33.15	2.0361
Kathrein Scala 800 10121	0.0000	204.08	0.00	-5.02	150.00	1.110	6	6.65	4.75	2.0361
Kathrein Scala 800 10121	120.0000	204.08	4.35	2.51	150.00	1.110	6	6.65	4.75	2.0361
Kathrein Scala 800 10121	240.0000	204.08	-4.35	2.51	150.00	1.110	6	6.65	4.75	2.0361
CCI HPA-65R-BUU-H8	0.0000	423.13	0.00	-5.02	150.00	1.110	6	15.36	9.96	2.0361
CCI HPA-65R-BUU-H8	120.0000	423.13	4.35	2.51	150.00	1.110	6	15.36	9.96	2.0361
Commscope SBNHH-1D65A	240.0000	227.12	-4.35	2.51	150.00	1.110	6	7.43	5.36	2.0361
Ericsson RRUS11	0.0000	159.99	0.00	-5.02	150.00	1.110	6	3.59	1.80	2.0361
Ericsson RRUS11	120.0000	159.99	4.35	2.51	150.00	1.110	6	3.59	1.80	2.0361
Ericsson RRUS11	240.0000	159.99	-4.35	2.51	150.00	1.110	6	3.59	1.80	2.0361
Ericsson RRUS-32	0.0000	234.30	0.00	-5.02	150.00	1.110	6	3.52	2.31	2.0361
Ericsson RRUS-32	120.0000	234.30	4.35	2.51	150.00	1.110	6	3.52	2.31	2.0361
Ericsson RRUS-32	240.0000	234.30	-4.35	2.51	150.00	1.110	6	3.52	2.31	2.0361
Raycap DC6-48-60-18	0.0000	144.97	0.00	-5.02	150.00	1.110	6	2.98	2.98	2.0361
Powerwave LGP21401	0.0000	182.56	0.00	-5.02	150.00	1.110	6	4.63	1.82	2.0361
Powerwave LGP21401	120.0000	182.56	4.35	2.51	150.00	1.110	6	4.63	1.82	2.0361
Powerwave LGP21401	240.0000	182.56	-4.35	2.51	150.00	1.110	6	4.63	1.82	2.0361
Side Arm	0.0000	314.33	0.00	-4.02	150.00	1.110	6	9.65	9.65	2.0361
Side Arm	120.0000	314.33	3.48	2.01	150.00	1.110	6	9.65	9.65	2.0361
Side Arm	240.0000	314.33	-3.48	2.01	150.00	1.110	6	9.65	9.65	2.0361
Sum Weight:		24317.84								

Discrete Appurtenance Pressures - Service G_H = 0.850

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
Torque Arm Face C	180.0000	0.00	0.00	2.53	170.89	1.152	9	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	170.89	1.152	9	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	170.89	1.152	9	3.54	5.32
Torque Arm Face C	180.0000	0.00	0.00	2.53	117.30	1.034	8	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	117.30	1.034	8	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	117.30	1.034	8	3.54	5.32
Lightning Rod	0.0000	40.00	0.00	0.00	180.00	1.169	9	1.00	1.00

RISATower

Phone:
FAX:

Job	118-23036	Page	31 of 49
Project	Stafford Tumel, CT	Date	22:40:55 04/21/18
Client	CDT	Designed by	FAN

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
Low Profile Platform	0.0000	1500.00	0.00	0.00	180.00	1.169	9	30.00	30.00
Sector Frame Mount	0.0000	465.00	0.00	-3.52	170.00	1.150	9	18.00	9.00
Sector Frame Mount	120.0000	465.00	3.05	1.76	170.00	1.150	9	18.00	9.00
Sector Frame Mount	240.0000	465.00	-3.05	1.76	170.00	1.150	9	18.00	9.00
Sector Frame Mount	0.0000	465.00	0.00	-3.52	140.00	1.088	9	15.00	7.50
Sector Frame Mount	120.0000	465.00	3.05	1.76	140.00	1.088	9	15.00	7.50
Sector Frame Mount	240.0000	465.00	-3.05	1.76	140.00	1.088	9	15.00	7.50
Antel BXA-70063-6CF	0.0000	34.00	0.00	-5.02	140.00	1.088	9	15.46	10.16
Antel BXA-70063-6CF	120.0000	34.00	4.35	2.51	140.00	1.088	9	15.46	10.16
Antel BXA-70063-6CF	240.0000	34.00	-4.35	2.51	140.00	1.088	9	15.46	10.16
Antel	0.0000	30.00	0.00	-5.02	140.00	1.088	9	9.58	7.24
BXA-171085-12CF									
Antel	120.0000	30.00	4.35	2.51	140.00	1.088	9	9.58	7.24
BXA-171085-12CF									
Antel	240.0000	30.00	-4.35	2.51	140.00	1.088	9	9.58	7.24
BXA-171085-12CF									
Alcatel Lucent RRH2x40	0.0000	44.00	0.00	-5.02	140.00	1.088	9	2.52	1.59
AWS									
Alcatel Lucent RRH2x40	120.0000	44.00	4.35	2.51	140.00	1.088	9	2.52	1.59
AWS									
Alcatel Lucent RRH2x40	240.0000	44.00	-4.35	2.51	140.00	1.088	9	2.52	1.59
AWS									
Alcatel Lucent RRH2x40	0.0000	62.00	0.00	-5.02	140.00	1.088	9	3.31	1.94
700									
Alcatel Lucent RRH2x40	0.0000	62.00	0.00	-5.02	140.00	1.088	9	3.31	1.94
700									
Alcatel Lucent RRH2x40	0.0000	62.00	0.00	-5.02	140.00	1.088	9	3.31	1.94
700									
RFS DB-T1-6Z-8B-OZ	0.0000	62.00	0.00	-5.02	140.00	1.088	9	5.60	2.33
Commscope	0.0000	50.00	0.00	-5.02	180.00	1.169	9	9.22	5.87
DT465B-2XR									
Commscope	0.0000	50.00	0.00	-5.02	180.00	1.169	9	9.22	5.87
DT465B-2XR									
Commscope	120.0000	50.00	4.35	2.51	180.00	1.169	9	9.22	5.87
DT465B-2XR									
Alcatel Lucent 4x45W	0.0000	51.00	0.00	-5.02	180.00	1.169	9	2.54	1.61
Alcatel Lucent 4x45W	120.0000	51.00	4.35	2.51	180.00	1.169	9	2.54	1.61
Alcatel Lucent 4x45W	240.0000	51.00	-4.35	2.51	180.00	1.169	9	2.54	1.61
Alcatel Lucent 8x200-25	0.0000	70.00	0.00	-5.02	180.00	1.169	9	4.05	1.53
Alcatel Lucent 8x200-25	120.0000	70.00	4.35	2.51	180.00	1.169	9	4.05	1.53
Alcatel Lucent 8x200-25	240.0000	70.00	-4.35	2.51	180.00	1.169	9	4.05	1.53
RFS	0.0000	62.00	0.00	-5.02	180.00	1.169	9	8.02	5.81
APXV9ERR18-C-A20									
RFS	120.0000	62.00	4.35	2.51	180.00	1.169	9	8.02	5.81
APXV9ERR18-C-A20									
RFS	240.0000	62.00	-4.35	2.51	180.00	1.169	9	8.02	5.81
APXV9ERR18-C-A20									
Alcatel Lucent 2x50	0.0000	84.00	0.00	-5.02	180.00	1.169	9	4.54	2.70
Alcatel Lucent 2x50	120.0000	84.00	4.35	2.51	180.00	1.169	9	4.54	2.70
Alcatel Lucent 2x50	240.0000	84.00	-4.35	2.51	180.00	1.169	9	4.54	2.70
Sector Frame Mount	0.0000	465.00	0.00	-3.52	150.00	1.110	9	18.00	9.00
Sector Frame Mount	120.0000	465.00	3.05	1.76	150.00	1.110	9	18.00	9.00
Sector Frame Mount	240.0000	465.00	-3.05	1.76	150.00	1.110	9	18.00	9.00
Kathrein Scala 800	0.0000	37.50	0.00	-5.02	150.00	1.110	9	5.21	3.32
10121									
Kathrein Scala 800	120.0000	37.50	4.35	2.51	150.00	1.110	9	5.21	3.32
10121									
Kathrein Scala 800	240.0000	37.50	-4.35	2.51	150.00	1.110	9	5.21	3.32
10121									
CCI HPA-65R-BUU-H8	0.0000	73.00	0.00	-5.02	150.00	1.110	9	12.98	7.52
CCI HPA-65R-BUU-H8	120.0000	73.00	4.35	2.51	150.00	1.110	9	12.98	7.52

<h1 style="color: red; margin: 0;">RISATower</h1> <p style="font-size: small; margin-top: 10px;">Phone: FAX:</p>	Job 118-23036	Page 32 of 49
	Project Stafford Tumel, CT	Date 22:40:55 04/21/18
	Client CDT	Designed by FAN

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Commscope SBNHH-1D65A	240.0000	33.50	-4.35	2.51	150.00	1.110	9	5.96	3.91
Ericsson RRUS11	0.0000	55.00	0.00	-5.02	150.00	1.110	9	2.78	1.19
Ericsson RRUS11	120.0000	55.00	4.35	2.51	150.00	1.110	9	2.78	1.19
Ericsson RRUS11	240.0000	55.00	-4.35	2.51	150.00	1.110	9	2.78	1.19
Ericsson RRUS-32	0.0000	60.00	0.00	-5.02	150.00	1.110	9	2.69	1.57
Ericsson RRUS-32	120.0000	60.00	4.35	2.51	150.00	1.110	9	2.69	1.57
Ericsson RRUS-32	240.0000	60.00	-4.35	2.51	150.00	1.110	9	2.69	1.57
Raycap DC6-48-60-18	0.0000	31.80	0.00	-5.02	150.00	1.110	9	2.20	2.20
Powerwave LGP21401	0.0000	62.00	0.00	-5.02	150.00	1.110	9	3.34	0.94
Powerwave LGP21401	120.0000	62.00	4.35	2.51	150.00	1.110	9	3.34	0.94
Powerwave LGP21401	240.0000	62.00	-4.35	2.51	150.00	1.110	9	3.34	0.94
Side Arm	0.0000	70.00	0.00	-4.02	150.00	1.110	9	4.97	4.97
Side Arm	120.0000	70.00	3.48	2.01	150.00	1.110	9	4.97	4.97
Side Arm	240.0000	70.00	-3.48	2.01	150.00	1.110	9	4.97	4.97
Sum Weight:		8312.80							

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	3138.04			
Bracing Weight	3221.62			
Total Member Self-Weight	6359.66			
Guy Weight	2135.83			
Total Weight	19705.69			
Wind 0 deg - No Ice		-47.38	-16873.50	1012.45
Wind 30 deg - No Ice		8200.17	-14444.88	748.88
Wind 60 deg - No Ice		14394.80	-8395.72	308.74
Wind 90 deg - No Ice		16482.41	47.38	-247.86
Wind 120 deg - No Ice		14442.18	8477.78	-703.70
Wind 150 deg - No Ice		8282.24	14492.26	-996.74
Wind 180 deg - No Ice		47.38	16873.50	-1012.45
Wind 210 deg - No Ice		-8200.17	14444.88	-748.88
Wind 240 deg - No Ice		-14394.80	8395.72	-308.74
Wind 270 deg - No Ice		-16482.41	-47.38	247.86
Wind 300 deg - No Ice		-14442.18	-8477.78	703.70
Wind 330 deg - No Ice		-8282.24	-14492.26	996.74
Member Ice	22365.34			
Guy Ice	16275.66			
Total Weight Ice	99338.93			
Wind 0 deg - Ice		-12.23	-8086.27	312.62
Wind 30 deg - Ice		3989.59	-6970.67	102.98
Wind 60 deg - Ice		6948.53	-4032.54	-132.07
Wind 90 deg - Ice		8000.37	12.23	-334.78
Wind 120 deg - Ice		6960.77	4053.73	-444.69
Wind 150 deg - Ice		4010.78	6982.91	-437.77
Wind 180 deg - Ice		12.23	8086.27	-312.62
Wind 210 deg - Ice		-3989.59	6970.67	-102.98
Wind 240 deg - Ice		-6948.53	4032.54	132.07
Wind 270 deg - Ice		-8000.37	-12.23	334.78
Wind 300 deg - Ice		-6960.77	-4053.73	444.69
Wind 330 deg - Ice		-4010.78	-6982.91	437.77
Total Weight	19705.69			
Wind 0 deg - Service		-17.76	-6324.93	379.51

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Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Wind 30 deg - Service		3073.78	-5414.58	280.71
Wind 60 deg - Service		5395.80	-3147.08	115.73
Wind 90 deg - Service		6178.33	17.76	-92.91
Wind 120 deg - Service		5413.56	3177.84	-263.78
Wind 150 deg - Service		3104.55	5432.34	-373.62
Wind 180 deg - Service		17.76	6324.93	-379.51
Wind 210 deg - Service		-3073.78	5414.58	-280.71
Wind 240 deg - Service		-5395.80	3147.08	-115.73
Wind 270 deg - Service		-6178.33	-17.76	92.91
Wind 300 deg - Service		-5413.56	-3177.84	263.78
Wind 330 deg - Service		-3104.55	-5432.34	373.62

Load Combinations

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

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Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	19	171476.33	-314.87	-47.28
	Max. H _x	11	80630.20	1837.46	20.01
	Max. H _z	2	79462.09	3.87	1929.94
	Max. M _x	1	0.00	3.92	17.12
	Max. M _z	1	0.00	3.92	17.12
	Max. Torsion	1	0.00	3.92	17.12
	Min. Vert	1	74333.80	3.92	17.12
	Min. H _x	5	80650.92	-1827.92	20.98
	Min. H _z	8	81258.14	4.62	-1791.15
	Min. M _x	1	0.00	3.92	17.12
	Min. M _z	1	0.00	3.92	17.12
	Min. Torsion	1	0.00	3.92	17.12
	Guy C @ 145 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-3918.16	-3682.81
	Max. H _x	10	-3918.16	-3682.81	2127.67
	Max. H _z	4	-33969.51	-34619.50	19986.30
	Min. Vert	4	-33969.51	-34619.50	19986.30
	Min. H _x	4	-33969.51	-34619.50	19986.30
	Min. H _z	10	-3918.16	-3682.81	2127.67
Guy B @ 145 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-3824.00	3613.94	2084.52
	Max. H _x	12	-34069.01	34695.83	20036.23
	Max. H _z	12	-34069.01	34695.83	20036.23
	Min. Vert	12	-34069.01	34695.83	20036.23
	Min. H _x	6	-3824.00	3613.94	2084.52
	Min. H _z	6	-3824.00	3613.94	2084.52
Guy A @ 145 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-3707.50	2.90	-4073.23
	Max. H _x	24	-22770.11	851.93	-30103.74
	Max. H _z	2	-3707.50	2.90	-4073.23
	Min. Vert	8	-34233.07	-5.09	-40241.79
	Min. H _x	18	-22789.44	-852.02	-30119.28
	Min. H _z	8	-34233.07	-5.09	-40241.79

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	74333.80	-3.92	-17.12	0.00	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	79462.09	-3.87	-1929.94	0.00	0.00	0.00
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	80728.13	912.66	-1602.54	0.00	0.00	0.00
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	81191.14	1570.37	-926.97	0.00	0.00	0.00
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	80650.92	1827.92	-20.98	0.00	0.00	0.00

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<i>Load Combination</i>	<i>Vertical lb</i>	<i>Shear_x lb</i>	<i>Shear_z lb</i>	<i>Overturning Moment, M_x lb-ft</i>	<i>Overturning Moment, M_z lb-ft</i>	<i>Torque lb-ft</i>
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	79405.25	1652.63	933.38	0.00	0.00	0.00
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	80737.52	910.55	1560.76	0.00	0.00	0.00
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	81258.14	-4.62	1791.15	0.00	0.00	0.00
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	80682.90	-920.07	1561.94	0.00	0.00	0.00
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	79360.61	-1662.23	934.46	0.00	0.00	0.00
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	80630.20	-1837.46	-20.01	0.00	0.00	0.00
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	81218.85	-1578.92	-926.54	0.00	0.00	0.00
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	80762.46	-920.35	-1602.42	0.00	0.00	0.00
1.2 Dead+1.0 Ice+1.0 Temp+Guy	170078.86	-34.19	-151.67	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	171455.08	-32.57	-555.21	0.00	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	171001.39	153.25	-500.67	0.00	0.00	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	170588.13	299.47	-345.34	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	171010.86	360.90	-141.18	0.00	0.00	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	171476.33	314.87	47.28	0.00	0.00	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	171023.74	174.92	181.61	0.00	0.00	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	170609.58	-32.50	230.77	0.00	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	171025.83	-240.04	181.66	0.00	0.00	0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	171476.11	-380.07	47.40	0.00	0.00	0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	171008.88	-426.20	-141.11	0.00	0.00	0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	170583.80	-364.70	-345.42	0.00	0.00	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	170997.31	-218.45	-500.76	0.00	0.00	0.00
Dead+Wind 0 deg - Service+Guy	74465.35	-3.76	-462.66	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	74429.83	215.15	-397.36	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	74397.09	374.13	-235.23	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	74430.43	435.33	-16.80	0.00	0.00	0.00
Dead+Wind 120 deg - Service+Guy	74466.15	382.53	204.97	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	74430.33	216.37	361.44	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	74397.31	-3.93	417.77	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	74430.83	-224.20	361.52	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	74466.73	-390.33	205.13	0.00	0.00	0.00
Dead+Wind 270 deg -	74430.81	-443.05	-16.63	0.00	0.00	0.00

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Service+Guy Dead+Wind 300 deg - Service+Guy	74397.12	-381.76	-235.10	0.00	0.00	0.00
Service+Guy Dead+Wind 330 deg - Service+Guy	74429.72	-222.69	-397.30	0.00	0.00	0.00

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-19705.20	0.00	0.01	19705.20	-0.02	0.000%
2	-75.81	-23387.26	-29752.20	75.74	23386.99	29732.86	0.051%
3	14494.35	-23219.17	-25491.78	-14496.89	23218.54	25451.81	0.107%
4	25109.40	-23051.08	-14632.72	-25099.10	23050.93	14626.07	0.033%
5	29120.01	-23219.17	75.81	-29088.38	23218.58	-55.02	0.102%
6	25493.05	-23387.26	14941.75	-25476.91	23387.02	-14932.53	0.049%
7	14625.66	-23219.17	25567.59	-14590.02	23218.54	-25549.74	0.106%
8	75.81	-23051.08	29396.74	-75.55	23050.93	-29384.24	0.033%
9	-14494.35	-23219.17	25491.78	14459.90	23218.60	-25474.82	0.103%
10	-25417.24	-23387.26	14810.45	25401.52	23387.04	-14801.55	0.048%
11	-29120.01	-23219.17	-75.81	29089.05	23218.61	96.19	0.100%
12	-25185.21	-23051.08	-14764.02	25174.98	23050.93	14757.11	0.033%
13	-14625.66	-23219.17	-25567.59	14628.01	23218.50	25526.93	0.109%
14	0.00	-102848.72	0.00	-0.00	102847.80	0.47	0.001%
15	-12.23	-103049.41	-11356.98	12.17	103048.37	11336.84	0.019%
16	5621.10	-102848.72	-9796.54	-5616.34	102847.71	9781.92	0.015%
17	9746.21	-102648.04	-5647.78	-9727.52	102646.92	5638.47	0.020%
18	11263.39	-102848.72	12.23	-11247.31	102847.71	-7.92	0.016%
19	9793.28	-103049.41	5689.09	-9774.65	103048.36	-5678.13	0.021%
20	5642.29	-102848.72	9808.77	-5631.05	102847.70	-9796.75	0.016%
21	12.23	-102648.04	11316.76	-12.34	102646.91	-11295.24	0.021%
22	-5621.10	-102848.72	9796.54	5609.66	102847.70	-9784.47	0.016%
23	-9781.05	-103049.41	5667.89	9762.21	103048.36	-5656.88	0.021%
24	-11263.39	-102848.72	-12.23	11247.13	102847.70	16.59	0.016%
25	-9758.45	-102648.04	-5668.97	9739.57	102646.92	5659.67	0.020%
26	-5642.29	-102848.72	-9808.77	5637.40	102847.71	9794.18	0.015%
27	-17.76	-19744.58	-6970.27	17.76	19744.58	6969.14	0.005%
28	3395.70	-19705.20	-5972.15	-3395.24	19705.20	5971.25	0.005%
29	5882.56	-19665.82	-3428.11	-5881.72	19665.82	3427.64	0.005%
30	6822.16	-19705.20	17.76	-6821.14	19705.20	-17.69	0.005%
31	5972.44	-19744.58	3500.52	-5971.45	19744.58	-3499.94	0.005%
32	3426.46	-19705.20	5989.91	-3425.90	19705.20	-5989.05	0.005%
33	17.76	-19665.82	6886.99	-17.77	19665.82	-6886.02	0.005%
34	-3395.70	-19705.20	5972.15	3395.13	19705.20	-5971.29	0.005%
35	-5954.68	-19744.58	3469.75	5953.68	19744.58	-3469.17	0.006%
36	-6822.16	-19705.20	-17.76	6821.13	19705.20	17.83	0.005%
37	-5900.32	-19665.82	-3458.88	5899.48	19665.82	3458.41	0.005%
38	-3426.46	-19705.20	-5989.91	3426.00	19705.20	5989.02	0.005%

Non-Linear Convergence Results

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<i>Load Combination</i>	<i>Converged?</i>	<i>Number of Cycles</i>	<i>Displacement Tolerance</i>	<i>Force Tolerance</i>
1	Yes	13	0.00000001	0.00000001
2	Yes	13	0.00040959	0.00017199
3	Yes	13	0.00089909	0.00032427
4	Yes	13	0.00023061	0.00011085
5	Yes	13	0.00084437	0.00030338
6	Yes	13	0.00038320	0.00016528
7	Yes	13	0.00088719	0.00032209
8	Yes	13	0.00023270	0.00011337
9	Yes	13	0.00084752	0.00030613
10	Yes	13	0.00036755	0.00016297
11	Yes	13	0.00082174	0.00029536
12	Yes	13	0.00023284	0.00011271
13	Yes	13	0.00091687	0.00033264
14	Yes	15	0.00131572	0.00089680
15	Yes	15	0.00136845	0.00094697
16	Yes	15	0.00124254	0.00092984
17	Yes	14	0.00147213	0.00085266
18	Yes	15	0.00126005	0.00093145
19	Yes	15	0.00138813	0.00094964
20	Yes	15	0.00124550	0.00093190
21	Yes	14	0.00146432	0.00085292
22	Yes	15	0.00125119	0.00093226
23	Yes	15	0.00139740	0.00094998
24	Yes	15	0.00126616	0.00093153
25	Yes	14	0.00147579	0.00085245
26	Yes	15	0.00124347	0.00092962
27	Yes	13	0.00000001	0.00001587
28	Yes	13	0.00000001	0.00001391
29	Yes	13	0.00000001	0.00001263
30	Yes	13	0.00000001	0.00001428
31	Yes	13	0.00000001	0.00001635
32	Yes	13	0.00000001	0.00001481
33	Yes	13	0.00000001	0.00001299
34	Yes	13	0.00000001	0.00001427
35	Yes	13	0.00000001	0.00001663
36	Yes	13	0.00000001	0.00001440
37	Yes	13	0.00000001	0.00001248
38	Yes	13	0.00000001	0.00001439

Maximum Tower Deflections - Service Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
T1	180 - 160	0.958	38	0.0184	0.0325
T2	160 - 140	1.025	33	0.0175	0.0252
T3	140 - 120	1.010	33	0.0348	0.0197
T4	120 - 100	0.791	33	0.0435	0.0146
T5	100 - 80	0.678	33	0.0212	0.0301
T6	80 - 60	0.591	35	0.0254	0.0484
T7	60 - 40	0.483	35	0.0203	0.0615
T8	40 - 20	0.417	35	0.0250	0.0716
T9	20 - 5	0.262	35	0.0508	0.0775
T10	5 - 0	0.071	35	0.0648	0.0793

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Critical Deflections and Radius of Curvature - Service Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
180.00	Lightning Rod	38	0.958	0.0184	0.0325	312285
170.00	Guy	38	0.992	0.0171	0.0281	156142
150.00	Sector Frame Mount	33	1.043	0.0219	0.0241	23312
140.00	Sector Frame Mount	33	1.010	0.0348	0.0197	15150
116.42	Guy	33	0.760	0.0408	0.0165	22338
60.38	Guy	35	0.485	0.0204	0.0613	50957

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
T1	180 - 160	4.638	8	0.0798	0.1558
T2	160 - 140	4.856	8	0.0641	0.1222
T3	140 - 120	4.663	8	0.1680	0.0935
T4	120 - 100	3.621	8	0.2073	0.0858
T5	100 - 80	3.061	8	0.1062	0.1426
T6	80 - 60	2.618	8	0.1195	0.2114
T7	60 - 40	2.107	10	0.0938	0.2672
T8	40 - 20	1.831	10	0.1119	0.3106
T9	20 - 5	1.151	10	0.2231	0.3355
T10	5 - 0	0.312	10	0.2847	0.3435

Critical Deflections and Radius of Curvature - Design Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
180.00	Lightning Rod	8	4.638	0.0798	0.1558	76064
170.00	Guy	8	4.762	0.0779	0.1356	38032
150.00	Sector Frame Mount	8	4.868	0.0917	0.1161	5535
140.00	Sector Frame Mount	8	4.663	0.1680	0.0935	3613
116.42	Guy	8	3.472	0.1930	0.0942	4905
60.38	Guy	10	2.113	0.0944	0.2662	11581

Bolt Design Data

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Bolt Grade</i>	<i>Bolt Size in</i>	<i>Number Of Bolts</i>	<i>Maximum Load per Bolt lb</i>	<i>Allowable Load lb</i>	<i>Ratio Load Allowable</i>	<i>Allowable Ratio</i>	<i>Criteria</i>
T1	180	Leg	A325N	0.7500	4	319.11	29820.60	0.011	✓	1 Bolt Tension
		Torque Arm Top@170	A325N	0.7500	2	6093.05	17892.40	0.341	✓	1 Bolt Shear

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
		Torque Arm Bottom@170	A325N	0.7500	2	4173.75	17892.40	0.233	✓	1 Bolt Shear
T2	160	Leg	A325N	0.7500	4	2089.70	29820.60	0.070	✓	1 Bolt Tension
T3	140	Leg	A325N	0.7500	4	2867.07	29820.60	0.096	✓	1 Bolt Tension
T4	120	Leg	A325N	0.7500	4	2780.69	29820.60	0.093	✓	1 Bolt Tension
		Torque Arm Top@116.417	A325N	0.7500	2	4478.98	17892.40	0.250	✓	1 Bolt Shear
		Torque Arm Bottom@116.417	A325N	0.7500	2	2947.64	17892.40	0.165	✓	1 Bolt Shear
T5	100	Leg	A325N	0.7500	4	3586.31	29820.60	0.120	✓	1 Bolt Tension
T6	80	Leg	A325N	0.7500	4	3820.54	29820.60	0.128	✓	1 Bolt Tension
T7	60	Leg	A325N	0.7500	4	4349.42	29820.60	0.146	✓	1 Bolt Tension
T8	40	Leg	A325N	0.7500	4	4645.55	29820.60	0.156	✓	1 Bolt Tension
T9	20	Leg	A325N	0.7500	4	4861.63	29820.60	0.163	✓	1 Bolt Tension
T10	5	Leg	A325N	0.7500	4	5117.12	29820.60	0.172	✓	1 Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	170.00 (A) (559)	5/8 EHS	6360.00	42399.99	12067.60	25440.00	1.000	2.108 ✓
	170.00 (A) (560)	5/8 EHS	6360.00	42399.99	11941.20	25440.00	1.000	2.130 ✓
	170.00 (B) (553)	5/8 EHS	6360.00	42399.99	11850.90	25440.00	1.000	2.147 ✓
	170.00 (B) (554)	5/8 EHS	6360.00	42399.99	12058.50	25440.00	1.000	2.110 ✓
	170.00 (C) (547)	5/8 EHS	6360.00	42399.99	11945.00	25440.00	1.000	2.130 ✓
	170.00 (C) (548)	5/8 EHS	6360.00	42399.99	11863.50	25440.00	1.000	2.144 ✓
T4	116.42 (A) (577)	9/16 EHS	5250.00	35000.04	10319.00	21000.00	1.000	2.035 ✓
	116.42 (A) (578)	9/16 EHS	5250.00	35000.04	10214.00	21000.00	1.000	2.056 ✓
	116.42 (B) (571)	9/16 EHS	5250.00	35000.04	10207.30	21000.00	1.000	2.057 ✓
	116.42 (B) (572)	9/16 EHS	5250.00	35000.04	10189.30	21000.00	1.000	2.061 ✓
	116.42 (C) (565)	9/16 EHS	5250.00	35000.04	10117.50	21000.00	1.000	2.076 ✓
	116.42 (C) (566)	9/16 EHS	5250.00	35000.04	10240.20	21000.00	1.000	2.051 ✓
T6	60.38 (A) (585)	9/16 EHS	5250.00	35000.04	9507.14	21000.00	1.000	2.209 ✓
	60.38 (B) (584)	9/16 EHS	5250.00	35000.04	9500.89	21000.00	1.000	2.210 ✓

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Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
	60.38 (C) (583)	9/16 EHS	5250.00	35000.04	9505.74	21000.00	1.000	2.209 ✓

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-28131.00	72691.90	0.387 ¹ ✓
T2	160 - 140	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-37694.80	72691.90	0.519 ¹ ✓
T3	140 - 120	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-37136.70	72691.90	0.511 ¹ ✓
T4	120 - 100	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-47141.30	72691.90	0.649 ¹ ✓
T5	100 - 80	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-47726.80	72691.90	0.657 ¹ ✓
T6	80 - 60	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-52173.20	72691.90	0.718 ¹ ✓
T7	60 - 40	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-56723.70	71484.50	0.794 ¹ ✓
T8	40 - 20	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-59500.90	71498.80	0.832 ¹ ✓
T9	20 - 5	P2.5x.203	15.00	3.56	45.1 K=1.00	1.7040	1.00	-58862.10	70516.80	0.835 ¹ ✓
T10	5 - 0	P2.5x.203	5.39	1.80	22.8 K=1.00	1.7040	0.90	-62616.50	71588.70	0.875 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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T10	5 - 0	5/8	2.44	1.46	105.4 K=0.94	0.3068	-4033.31	5538.29	0.728 ¹ ✓

¹ $P_u / \phi P_n$ controls

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Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5808.92	11503.00	0.505 ¹
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5713.23	11503.00	0.497 ¹
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5073.90	11503.00	0.441 ¹
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4144.87	11503.00	0.360 ¹
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3994.90	11503.00	0.347 ¹
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4334.15	11503.00	0.377 ¹
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3853.43	11503.00	0.335 ¹
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4039.79	11503.00	0.351 ¹
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3457.59	11503.00	0.301 ¹
T10	5 - 0	L1 1/2x1 1/2x3/16	2.33	2.09	55.7 K=0.65	0.5273	-1146.60	14513.70	0.079 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3498.10	11503.00	0.304 ¹
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2718.48	11503.00	0.236 ¹
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3365.89	11503.00	0.293 ¹
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2316.06	11503.00	0.201 ¹
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2156.07	11503.00	0.187 ¹
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2111.49	11503.00	0.184 ¹
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1946.48	11503.00	0.169 ¹
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1887.45	11503.00	0.164 ¹

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¹ $P_u / \phi P_n$ controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3164.23	11503.00	0.275 ¹ ✓
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2757.78	11503.00	0.240 ¹ ✓
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3797.36	11503.00	0.330 ¹ ✓
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2239.21	11503.00	0.195 ¹ ✓
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2047.33	11503.00	0.178 ¹ ✓
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2237.49	11503.00	0.195 ¹ ✓
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2009.00	11503.00	0.175 ¹ ✓

¹ $P_u / \phi P_n$ controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 3/4x1 3/4x3/16	3.50	3.26	74.0 K=0.65	0.6211	-7607.72	15078.10	0.505 ¹ ✓
T4	120 - 100	L1 3/4x1 3/4x3/16	3.50	3.26	74.0 K=0.65	0.6211	-4197.04	15078.10	0.278 ¹ ✓
T6	80 - 60	L1 3/4x1 3/4x3/16	3.50	3.26	74.0 K=0.65	0.6211	-822.47	15078.10	0.055 ¹ ✓

¹ $P_u / \phi P_n$ controls

Bottom Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 3/4x1 3/4x3/16	3.50	3.26	74.0 K=0.65	0.6211	-6301.60	15078.10	0.418 ¹ ✓
T4	120 - 100	L1 3/4x1 3/4x3/16	3.50	3.26	74.0 K=0.65	0.6211	-6901.60	15078.10	0.458 ¹ ✓

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¹ $P_u / \phi P_n$ controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160 (551)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8240.26	36439.50	0.226 ¹
T1	180 - 160 (552)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8284.11	36439.50	0.227 ¹
T1	180 - 160 (557)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8244.93	36439.50	0.226 ¹
T1	180 - 160 (558)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8236.67	36439.50	0.226 ¹
T1	180 - 160 (563)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8327.63	36439.50	0.229 ¹
T1	180 - 160 (564)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8347.51	36439.50	0.229 ¹
T4	120 - 100 (569)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-5648.14	36439.50	0.155 ¹
T4	120 - 100 (570)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-5670.97	36439.50	0.156 ¹
T4	120 - 100 (575)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-5895.16	36439.50	0.162 ¹
T4	120 - 100 (576)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-5895.28	36439.50	0.162 ¹
T4	120 - 100 (581)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-5716.80	36439.50	0.157 ¹
T4	120 - 100 (582)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-5739.55	36439.50	0.158 ¹

¹ $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	P2.5x.203	20.00	3.21	40.6	1.7040	0.01	82816.80	0.000 ¹
T2	160 - 140	P2.5x.203	20.00	3.21	40.6	1.7040	4225.34	82816.80	0.051 ¹
T3	140 - 120	P2.5x.203	20.00	3.21	40.6	1.7040	4223.02	82816.80	0.051 ¹

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¹ $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	5/8	4.75	4.42	339.7	0.3068	5834.05	9940.20	0.587 ¹
T2	160 - 140	5/8	4.75	4.42	339.7	0.3068	5149.57	9940.20	0.518 ¹
T3	140 - 120	5/8	4.75	4.42	339.7	0.3068	6628.46	9940.20	0.667 ¹
T4	120 - 100	5/8	4.75	4.42	339.7	0.3068	4462.65	9940.20	0.449 ¹
T5	100 - 80	5/8	4.75	4.42	339.7	0.3068	3853.70	9940.20	0.388 ¹
T6	80 - 60	5/8	4.75	4.42	339.7	0.3068	4122.76	9940.20	0.415 ¹
T7	60 - 40	5/8	4.75	4.42	339.7	0.3068	4274.72	9940.20	0.430 ¹
T8	40 - 20	5/8	4.75	4.42	339.7	0.3068	3289.53	9940.20	0.331 ¹
T9	20 - 5	5/8	4.99	4.65	357.3	0.3068	3275.64	9940.20	0.330 ¹

¹ $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	487.24	17085.90	0.029 ¹
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	652.89	17085.90	0.038 ¹
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	643.23	17085.90	0.038 ¹
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	816.51	17085.90	0.048 ¹
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	826.65	17085.90	0.048 ¹
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	903.67	17085.90	0.053 ¹
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	982.48	17085.90	0.058 ¹
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1030.59	17085.90	0.060 ¹
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1019.52	17085.90	0.060 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T10	5 - 0	L1 1/2x1 1/2x3/16	2.33	2.09	55.0	0.5273	3488.78	17085.90	0.204 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T10	5 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	9459.87	17085.90	0.554 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	3206.87	17085.90	0.188 ¹

¹ P_u / φP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T6	80 - 60	L1 3/4x1 3/4x3/16	3.50	3.26	72.9	0.6211	3041.40	20123.40	0.151 ¹

¹ P_u / φP_n controls

Torque-Arm Top Design Data

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160 (549)	L2x2x5/16	4.75	4.59	91.6	1.1500	12179.50	37260.00	0.327 ¹
T1	180 - 160 (550)	L2x2x5/16	4.75	4.59	91.6	1.1500	12112.10	37260.00	0.325 ¹
T1	180 - 160 (555)	L2x2x5/16	4.75	4.59	91.6	1.1500	12160.20	37260.00	0.326 ¹
T1	180 - 160 (556)	L2x2x5/16	4.75	4.59	91.6	1.1500	12186.10	37260.00	0.327 ¹
T1	180 - 160 (561)	L2x2x5/16	4.75	4.59	91.6	1.1500	12121.50	37260.00	0.325 ¹
T1	180 - 160 (562)	L2x2x5/16	4.75	4.59	91.6	1.1500	12079.80	37260.00	0.324 ¹
T4	120 - 100 (567)	L2x2x5/16	4.75	4.59	91.6	1.1500	8952.16	37260.00	0.240 ¹
T4	120 - 100 (568)	L2x2x5/16	4.75	4.59	91.6	1.1500	8924.95	37260.00	0.240 ¹
T4	120 - 100 (573)	L2x2x5/16	4.75	4.59	91.6	1.1500	8879.43	37260.00	0.238 ¹
T4	120 - 100 (574)	L2x2x5/16	4.75	4.59	91.6	1.1500	8836.43	37260.00	0.237 ¹
T4	120 - 100 (579)	L2x2x5/16	4.75	4.59	91.6	1.1500	8942.43	37260.00	0.240 ¹
T4	120 - 100 (580)	L2x2x5/16	4.75	4.59	91.6	1.1500	8957.95	37260.00	0.240 ¹

¹ P_u / φP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160 (551)	L3x3x1/4	3.50	3.38	43.6	1.4400	1429.05	46656.00	0.031 ¹
T1	180 - 160 (552)	L3x3x1/4	3.50	3.38	43.6	1.4400	1569.63	46656.00	0.034 ¹
T1	180 - 160 (557)	L3x3x1/4	3.50	3.38	43.6	1.4400	1508.38	46656.00	0.032 ¹
T1	180 - 160 (558)	L3x3x1/4	3.50	3.38	43.6	1.4400	1458.11	46656.00	0.031 ¹
T1	180 - 160 (563)	L3x3x1/4	3.50	3.38	43.6	1.4400	1497.18	46656.00	0.032 ¹
T1	180 - 160 (564)	L3x3x1/4	3.50	3.38	43.6	1.4400	1586.86	46656.00	0.034 ¹
T4	120 - 100 (569)	L3x3x1/4	3.50	3.38	43.6	1.4400	2628.13	46656.00	0.056 ¹
T4	120 - 100 (570)	L3x3x1/4	3.50	3.38	43.6	1.4400	2697.35	46656.00	0.058 ¹
T4	120 - 100 (575)	L3x3x1/4	3.50	3.38	43.6	1.4400	2854.11	46656.00	0.061 ¹

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	Client CDT	Designed by FAN

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio P _u / φP _n
T4	120 - 100 (576)	L3x3x1/4	3.50	3.38	43.6	1.4400	2847.94	46656.00	0.061 ¹ ✓
T4	120 - 100 (581)	L3x3x1/4	3.50	3.38	43.6	1.4400	2678.04	46656.00	0.057 ¹ ✓
T4	120 - 100 (582)	L3x3x1/4	3.50	3.38	43.6	1.4400	2749.01	46656.00	0.059 ¹ ✓

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP _{allow} lb	% Capacity	Pass Fail	
T1	180 - 160	Leg	P2.5x.203	3	-28131.00	72691.90	38.7	Pass	
		Diagonal	5/8	58	5834.05	9940.20	58.7	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	52	-5808.92	11503.00	50.5	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	4	-3498.10	11503.00	30.4	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	7	-3164.23	11503.00	27.5	Pass	
		Guy A@170	5/8	559	12067.60	25440.00	47.4	Pass	
		Guy B@170	5/8	554	12058.50	25440.00	47.4	Pass	
		Guy C@170	5/8	547	11945.00	25440.00	47.0	Pass	
		Top Guy	L1 3/4x1 3/4x3/16	43	-7607.72	15078.10	50.5	Pass	
		Pull-Off@170							
		Bottom Guy	L1 3/4x1 3/4x3/16	34	-6301.60	15078.10	41.8	Pass	
		Pull-Off@170							
		Torque Arm Top@170	L2x2x5/16	556	12186.10	37260.00	32.7	Pass	
		Torque Arm Bottom@170	L3x3x1/4	564	-8347.51	36439.50	22.9	Pass	
T2	160 - 140	Leg	P2.5x.203	63	-37694.80	72691.90	51.9	Pass	
		Diagonal	5/8	118	5149.57	9940.20	51.8	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	94	-5713.23	11503.00	49.7	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	64	-2718.48	11503.00	23.6	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	67	-2757.78	11503.00	24.0	Pass	
T3	140 - 120	Leg	P2.5x.203	123	-37136.70	72691.90	51.1	Pass	
		Diagonal	5/8	133	6628.46	9940.20	66.7	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	172	-5073.90	11503.00	44.1	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	124	-3365.89	11503.00	29.3	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	127	-3797.36	11503.00	33.0	Pass	
T4	120 - 100	Leg	P2.5x.203	183	-47141.30	72691.90	64.9	Pass	
		Diagonal	5/8	227	4462.65	9940.20	44.9	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	214	-4144.87	11503.00	36.0	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	188	-2239.21	11503.00	19.5	Pass	
		Guy A@116.417	9/16	577	10319.00	21000.00	49.1	Pass	
		Guy B@116.417	9/16	571	10207.30	21000.00	48.6	Pass	
		Guy C@116.417	9/16	566	10240.20	21000.00	48.8	Pass	
		Top Guy	L1 3/4x1 3/4x3/16	184	-4197.04	15078.10	27.8	Pass	
		Pull-Off@116.417							
		Bottom Guy	L1 3/4x1 3/4x3/16	232	-6901.60	15078.10	45.8	Pass	
		Pull-Off@116.417							
Torque Arm Top@116.417	L2x2x5/16	580	8957.95	37260.00	24.0	Pass			
Torque Arm Bottom@116.417	L3x3x1/4	576	-5895.28	36439.50	16.2	Pass			

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T5	100 - 80	Leg	P2.5x.203	242	-47726.80	72691.90	65.7	Pass
		Diagonal	5/8	296	3853.70	9940.20	38.8	Pass
		Horizontal	L1 1/2x1 1/2x3/16	257	-3994.90	11503.00	34.7	Pass
		Top Girt	L1 1/2x1 1/2x3/16	244	-2316.06	11503.00	20.1	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	247	-2047.33	11503.00	17.8	Pass
T6	80 - 60	Leg	P2.5x.203	302	-52173.20	72691.90	71.8	Pass
		Diagonal	5/8	315	4122.76	9940.20	41.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	318	-4334.15	11503.00	37.7	Pass
		Top Girt	L1 1/2x1 1/2x3/16	305	-2156.07	11503.00	18.7	Pass
		Guy A@60.375	9/16	585	9507.14	21000.00	45.3	Pass
		Guy B@60.375	9/16	584	9500.89	21000.00	45.2	Pass
		Guy C@60.375	9/16	583	9505.74	21000.00	45.3	Pass
		Top Guy	L1 3/4x1 3/4x3/16	309	3041.40	20123.40	15.1	Pass
		Pull-Off@60.375						
T7	60 - 40	Leg	P2.5x.203	362	-56723.70	71484.50	79.4	Pass
		Diagonal	5/8	416	4274.72	9940.20	43.0	Pass
		Horizontal	L1 1/2x1 1/2x3/16	377	-3853.43	11503.00	33.5	Pass
		Top Girt	L1 1/2x1 1/2x3/16	366	-2111.49	11503.00	18.4	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	367	-2237.49	11503.00	19.5	Pass
T8	40 - 20	Leg	P2.5x.203	422	-59500.90	71498.80	83.2	Pass
		Diagonal	5/8	475	3289.53	9940.20	33.1	Pass
		Horizontal	L1 1/2x1 1/2x3/16	437	-4039.79	11503.00	35.1	Pass
		Top Girt	L1 1/2x1 1/2x3/16	426	-1946.48	11503.00	16.9	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	427	-2009.00	11503.00	17.5	Pass
T9	20 - 5	Leg	P2.5x.203	482	-58862.10	70516.80	83.5	Pass
		Diagonal	5/8	494	3275.64	9940.20	33.0	Pass
		Horizontal	L1 1/2x1 1/2x3/16	497	-3457.59	11503.00	30.1	Pass
		Top Girt	L1 1/2x1 1/2x3/16	486	-1887.45	11503.00	16.4	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	489	3206.87	17085.90	18.8	Pass
T10	5 - 0	Leg	P2.5x.203	524	-62616.50	71588.70	87.5	Pass
		Diagonal	5/8	535	-4033.31	5538.29	72.8	Pass
		Horizontal	L1 1/2x1 1/2x3/16	538	3488.78	17085.90	20.4	Pass
		Top Girt	L1 1/2x1 1/2x3/16	526	9459.87	17085.90	55.4	Pass
Summary								
						Leg (T10)	87.5	Pass
						Diagonal (T10)	72.8	Pass
						Horizontal (T1)	50.5	Pass
						Top Girt (T10)	55.4	Pass
						Bottom Girt (T3)	33.0	Pass
						Guy A (T4)	49.1	Pass
						Guy B (T4)	48.6	Pass
						Guy C (T4)	48.8	Pass
						Top Guy Pull-Off (T1)	50.5	Pass
						Bottom Guy Pull-Off (T4)	45.8	Pass
						Torque Arm Top (T1)	34.1	Pass
						Torque Arm Bottom (T1)	23.3	Pass
						Bolt Checks	34.1	Pass
						RATING =	87.5	Pass

RISATower

Phone:
FAX:

Job	118-23036	Page	49 of 49
Project	Stafford Tumel, CT	Date	22:40:55 04/21/18
Client	CDT	Designed by	FAN

Site Name: **Stafford Tumel**
 Job Number: **118-23036**
 Date: **4/21/2018**

Design Base Loads (Factored) per TIA-222-G

Moment (M_u):	0.0 k-ft	Concrete Compressive Strength (f'_c):	3000 psi
Shear/Leg (V_u):	1.9 k	Vertical Steel Rebar Size #:	5
Compression/Leg (P_u):	171.5 k	Vertical Steel Rebar Area:	0.31 in ²
Uplift/Leg (T_u):	0.0 k	# of Vertical Steel Rebars:	8
Tower Type (GT / SST):	GT	Vertical Steel Rebar Yield Strength (F_y):	60 ksi
Diameter of Prismatic Portion of Pier (d):	2.0 ft	Tie / Stirrup Size #:	4
Depth to Base of Foundation:	4.5 ft	Tie / Stirrup Area:	0.20 in ²
Pier Height Above Ground (h):	0.50 ft	Tie / Stirrup Spacing:	10.0 in
Length / Width of Pad (w):	5.5 ft	Tie / Stirrup Steel Yield Strength (F_y):	40 ksi
Thickness of Pad (t):	1.5 ft	Rebar Cage Diameter:	16.0 in
Depth Below Ground Surface to Water Table (w):	10.0 ft	Bending/Tension Reduction Factor (ϕ_B):	0.90
Unit Weight of Concrete:	150.0 pcf	Shear Reduction Factor (ϕ_V):	0.75
Unit Weight of Water:	62.4 pcf	Compression Reduction Factor (ϕ_V):	0.65
Unit Weight of Soil Above Water Table:	110.0 pcf	Steel Elastic Modulus:	29000 ksi
Unit Weight of Soil Below Water Table:	55.0 pcf	Pad Steel Rebar Size #:	5
Friction Angle of Uplift from Top of Pad:	30 Degrees	Pad Steel Rebar Area:	0.31 in ²
Friction Angle of Uplift from Base of Pad:	30 Degrees	Pad Steel Rebar Yield Strength (F_y):	60 ksi
Uplift Angle Started at Top or Base of Pad (T/B):	T	# of Rebar in Top of Pad:	0
Ultimate Skin Friction:	0 psf	# of Rebar in Base of Pad:	5
Ultimate Compressive Bearing Pressure:	12000 psf	Pad Clear Cover:	3 in
Capacity Increase (Due to Transient Loads):	1.00		
Bearing Strength Reduction Factor (ϕ_s):	0.60		
Uplift Strength Reduction Factor (ϕ_s):	0.75		

Axial Capacities and Design Moment

Weight of Concrete (Bouyancy Considered):	8.5 k
Weight of Soil (Bouyancy Considered):	16.6 k
Ultimate Skin Friction Resistance:	0.0 k
Controlling Failure Mode (Top / Base):	Top
Nominal Uplift Capacity per Leg ($\phi_s T_n$):	18.8 k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	217.8 k
P_u :	174.4 k
$T_u / \phi_s T_n$:	0.00 Result: OK
$P_u / \phi_s P_n$:	0.80 Result: OK

Depth (ft)		Ultimate Lateral Bearing Pressure (psf)	Increment (psf/ft)	γ_{soil} (pcf)	Cohesion (psf)	ϕ (degree)
Top	Bottom					
0.0	2.0	0.0	110.0	110	0	0
2	3.0	660.0	330.0	110	0	30

Inflection Point (Below Ground Surface): 2.9 ft
 Factored Design Moment At Inflection Point (M_u): 4.1 k-ft

Pad Strength Capacity

β :	0.85 ACI318-05 - 10.2.7.3
Lower Pad Flexural Reinforcement Ratio:	0.0016 OK - Minimum Reinforcement Ratio Met - <i>f</i>
Upper Pad Flexural Reinforcement Ratio:	0.0000 OK - Minimum Reinforcement Ratio Met - <i>f</i>
Lower Pad Flexural Reinforcement Spacing:	15 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Flexural Reinforcement Spacing:	0 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
One Way Design Shear (V_u):	16.6 k
One Way Shear Capacity (ϕV_c):	81.2 k - ACI318-05 - 11.3.1.1
$V_u / \phi V_c$:	0.20 Result: OK
Punching Design Shear (V_u):	124.5 k
Nominal Punching Shear Capacity ($\phi_c V_n$):	293.3 k - ACI318-05 - 11.12.2.1
$V_u / \phi V_c$:	0.42 Result: OK
Flexural Loading Due to Soil Pressure (M_u):	48.4 k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	100.5 k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.48 Result: OK
Flexural Loading Due to Uplift (M_u):	0.0 k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	0.0 k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.00 Result: OK

Pier Strength Capacity

Design Moment (M_u):	4.1 k-ft
Nominal Moment Capacity ($\phi_B M_n$):	88.9 k-ft - ACI318-005 - 10.2
$M_u / \phi_B M_n$:	0.05 Result: OK
Design Shear (V_u):	1.9 k
Nominal Shear Capacity ($\phi_V V_n$):	67.9 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u / \phi_V V_n$:	0.03 Result: OK
Design Tension (T_u):	0.0 k
Nominal Tension Capacity ($\phi_T T_n$):	133.9 k - ACI318-05 - 10.2
$T_u / \phi_T T_n$:	0.00 Result: OK
Design Compression (P_u):	171.5 k
Nominal Compression Capacity ($\phi_P P_n$):	701.9 k - ACI318-05 - 10.3.6.2
$P_u / \phi_P P_n$:	0.24 Result: OK
Pier Reinforcement Ratio:	0.005 Reinforcement Ratio is Satisfactory - ACI318-05 - 10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$:	0.05 Result: OK

Site Name:	Stafford Tunnel
Site Number:	118-23036
Date:	4/21/2018

Design Standard per TIA-222-G

Anchor Radius:	145.0	ft
Uplift (Factored - P_u):	34.2	k
Shear (Factored - V_u):	40.2	k
Anchor Base Depth (d):	8.0	ft
Width of Anchor (W):	5.5	ft
Length of Anchor (L):	11.5	ft
Thickness of Anchor (t):	2.0	ft
Depth Below Ground Surface to Water Table (w):	10.0	ft
Soil Uplift at Base / Top of Anchor (B/T):	T	
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil Above Water Table:	110.0	pcf
Unit Weight of Water:	62.4	pcf
Submerged Soil Unit Weight:	50.0	pcf
Internal Angle of Friction:	0	Degrees
Cohesion:	1800	psf
Ultimate Skin Friction of Pad Sides to Soil:	0	psf
Ultimate Coefficient of Shear Friction:	0.30	
Maximum Top Conical Failure Angle:	30	Degrees
Maximum Base Conical Failure Angle:	30	Degrees
Uplift Strength Reduction Factor (ϕ_u):	0.75	
Shear Strength Reduction Factor (ϕ_v):	0.75	
Concrete Uplift Strength Reduction Factor (ϕ_u):	0.90	

Uplift

Weight of Concrete (Buoyancy Effect Considered):	19.0	k
Weight of Soil (Buoyancy Effect Considered):	88.9	k
Ultimate Uplift Resistance from Skin Friction:	0.0	k
Nominal Factored Uplift Resistance ($\phi_u P_n$):	83.8	k
$P_u / \phi_u P_n$:	0.41	Result: OK

Shear

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	10.5	k
Passive Pressure:	4370	psf
Ultimate Passive Pressure Resistance:	100.5	k
Nominal Shear Resistance ($\phi_v V_n$):	83.3	k
$V_u / \phi_v V_n$:	0.48	Result: OK

Anchor Rod Capacity

# of Anchor Rods:	1	Rod F_y :	48	ksi	
Anchor Rod Gross Area:	2.41	in ²	Rod F_u :	62	ksi
Anchor Rod Net Area:	2.41	in ²	ϕ_y :	0.80	
Resultant Tensile Load (T_u):	52.8	k	ϕ_t :	0.65	
Anchor Rod Tensile Resistance (ϕT_n):	92.4	k			
$T_u / \phi T_n$:	0.57	Result: OK			

Strength Analysis of Reinforced Concrete

Concrete Compressive Strength (f'_c):	3000 psi
Longitudinal Rebar Yield Strength:	60000 psi
# Longitudinal Rebar (Top):	9
# Longitudinal Rebar (1 Side):	3
Rebar Size:	4
Strength Reduction Factor for Shear (ϕ_v):	0.75
Strength Reduction Factor for Flexure (ϕ_b):	0.9
Compression Zone Factor (β_1):	0.85
Area of Single Rebar:	0.20 in ²
One Way Shear due to Shear Load (V_u):	11.1 k
Nominal One Way Shear Capacity for Shear Load ($\phi_c V_n$):	122.3 k
$V_u/\phi_v V_n$:	0.09 Result: OK
One Way Shear due to Uplift (V_u):	14.6 k
Nominal One Way Shear Capacity for Uplift ($\phi_c V_n$):	108.4 k
$V_u/\phi_v V_n$:	0.13 Result: OK
Pad Flexure due to Shear Load (M_u):	57.8 k-ft
Nominal Flexural Capacity for Shear Load ($\phi_b M_n$):	167.4 k-ft
Pad Flexure due to Uplift (M_u):	49.2 k-ft
Nominal Flexural Capacity for Uplift ($\phi_b M_n$):	161.9 k-ft
$M_u/\phi_b M_n$ (Max.):	0.35 Result: OK

35 SOUTH RD

Location 35 SOUTH RD

Mblu 42 / 9 / /

Acct# 00236500

Owner TUMMEL JAMES

Assessment \$282,070

Appraisal \$771,300

PID 2687

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$123,000	\$648,300	\$771,300

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$86,100	\$195,970	\$282,070

Owner of Record

Owner TUMMEL JAMES

Sale Price \$0

Co-Owner

Certificate

Address 25 LEONARD RD

Book & Page 598 / 545

STAFFORD SPRGS, CT 06076

Sale Date 01/10/2013

Instrument 01

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
TUMMEL JAMES	\$0		598 / 545	01	01/10/2013
TUMMEL JAMES+GARY	\$0	1	366 / 139		12/21/1998
EGNATOWICH JENNIE EST	\$0	2	347 / 311	01	05/13/1997
EGNATOWICH JENNIE EST	\$0	3	341 / 302		10/03/1996
EGNATOWICH JENNIE	\$0	4	269 / 638		10/01/1989

Building Information

Building 1 : Section 1

Year Built: 1991
Living Area: 1,326
Replacement Cost: \$144,687
Building Percent 85
Good:
Replacement Cost
Less Depreciation: \$123,000

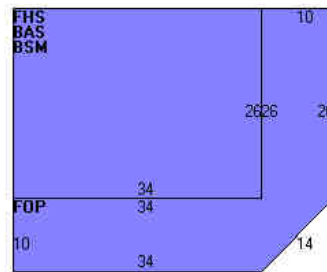
Building Photo

Building Attributes	
Field	Description
Style	Cape
Model	Residential
Grade:	C
Occupancy	1
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt
Interior Wall 1	Minimum
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	1
Full Bthrms:	1
Half Baths:	1
Extra Fixtures	0
Total Rooms:	4
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	1
Fireplaces	1
Extra Openings	
Prefab Fpl(s)	
Attic Type	None
Bsmt Type	Full
Bsmt Garage(s)	0
Fin Bsmnt	0
Fn. Bmt. Qual.	
Unfin Area	0



(<http://images.vgsi.com/photos2/StaffordCTPhotos//default.jpg>)

Building Layout



(<http://images.vgsi.com/photos2/StaffordCTPhotos//Sketches/26>)

Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	884	884
FHS	Finished Half Story	884	442
BSM	Basement	884	0
FOP	Open Porch	650	0
		3,302	1,326

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 101
Description Res Dwelling
Zone
Neighborhood 240
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 173
Frontage
Depth
Assessed Value \$195,970
Appraised Value \$648,300

Outbuildings


Outbuildings	<u>Legend</u>
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$123,000	\$648,300	\$771,300
2016	\$123,000	\$648,300	\$771,300
2014	\$123,600	\$648,300	\$771,900

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$86,100	\$195,970	\$282,070
2016	\$86,100	\$195,970	\$282,070
2014	\$86,520	\$182,870	\$269,390






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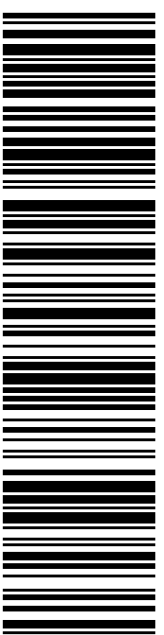
MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

0024

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JAMES TUMMEL
 25 LEONARD RD
 STAFFORD SPGS CT 06076-3307

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Print Date:	07/14/2018	Insurance Fee	\$0.00
Ship Date:	07/14/2018	Total	\$6.70
Expected Delivery Date:	07/16/2018		
Insured Value:	\$50.00		


From: MARK J ROBERTS
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 PO BOX 916
 STORRS CT 06268-0916

To: JAMES TUMMEL
 25 LEONARD RD
 STAFFORD SPGS CT 06076-3307

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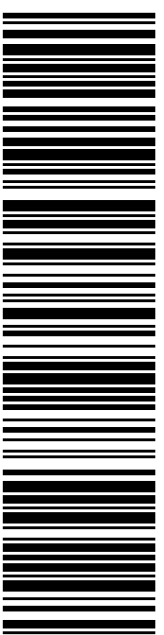
MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

0024

C005

SHIP TO: THE HONORABLE MARY MITTA
 TOWN OF STAFFORD
 1 MAIN ST
 STAFFORD SPGS CT 06076-1412

USPS TRACKING #



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Click-N-Ship® Label Record

**USPS TRACKING # / Insurance Number:
 9405 8036 9930 0664 7798 23**

Trans. #:	439426715	Priority Mail® Postage:	\$6.70
Print Date:	07/14/2018	Insurance Fee	\$0.00
Ship Date:	07/14/2018	Total	\$6.70
Expected Delivery Date:	07/16/2018		
Insured Value:	\$50.00		

From: MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

To: THE HONORABLE MARY MITTA
 TOWN OF STAFFORD
 1 MAIN ST
 STAFFORD SPGS CT 06076-1412

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