Greg Milano
SAI Group, LLC
12 Industrial Way
Salem, NH 03079
860-707-9001
gmilano@saigrp.com

November 15, 2019

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) CT2149
29 Mahoney Road, Colchester, CT 06415
N 41.564531
W -72.251696

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 160-foot level of the existing 180-foot monopole at 29 Mahoney Road, Colchester, CT. The tower and property are owned by SBA. AT&T now intends to remove three (3) CCI antennas and replace them with three (3) DMP65R-BU8DA CCI antennas. These antennas would be installed at the 160-foot level of the tower. AT&T also intends to remove three (3) Ericsson RRUS-11 remote radio units and install three (3) Ericsson 4449 B5/B12 RRUS.

This facility was approved by the Colchester Planning and Zoning Commission on November 3, 1999. This approval included no conditions which could feasibly be violated by this modification, including total facility height or mounting restrictions. This modification complies with all conditions of approval.

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 Art Shilosky, First Selectman for the Town of Colchester, Colchester Planning and Zoning, 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).

Sincerely,

Greg Milano

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Attachments

cc: Art Shilosky- First Selectman
Matthew Bordeaux– Town Planner
SBA - Property Owner &Tower Owner (via e-mail)

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*							3.01%
AT&T UMTS			160		880		0.89%
AT&T GSM			160		880		2.49%
AT&T LTE			160		700		0.76%
AT&T LTE			160		1900		1.61%
Site Total							8.76%

*Existing loading Per CSC Records (power density table)

** 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*							3.01%
AT&T UMTS			160		850		0.89%
AT&T LTE	1	2951	160	0.0447	700	0.4667	0.96%
AT&T LTE	1	1476	160	0.0224	700	0.4667	0.48%
AT&T LTE	1	1000	160	0.0152	850	0.5667	0.27%
AT&T LTE	2	3664	160	0.1111	1900	1.0000	1.11%
AT&T 5G	1	1000	160	0.0152	850	0.5667	0.27%
Site Total							6.98%

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

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

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- NEW AT&T ANTENNAS: DMP65R-BU8DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: B5/B12 4449 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T DC ONLY SURGE ARRESTOR DC6-48-60-0-8C-EV (TOTAL OF 1) WITH (2) DC POWER.
- PROPOSED MOUNT MODS (SEE S-1 SHEET).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- NEW AT&T RRUS: 4478 B14 (700) (TYP. OF 2).
- SWAP BB FOR RBS 6630, ADD 5G RBS 6630 & ADD IDLE IN EXISTING LTE RACK
- NEW AT&T NETSURE 7100 POWER PLANT WITH BATTERIES TO REPLACE EXISTING TYCO POWER PLANT.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: 11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).

SITE ADDRESS:	29 MAHONEY ROAD COLCHESTER, CT 06415
LATITUDE:	41.564531° N, 41° 33' 52.31" N
LONGITUDE:	72.251696° W, 72° 15' 05.10" W
TYPE OF SITE:	MONOPOLE / INDOOR
STRUCTURE HEIGHT:	180'-0"±
RAD CENTER:	160'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT2149

SITE NAME: COLCHESTER MAHONEY RD

FA CODE: 10042314

PACE ID: MRCTB040479, MRCTB040672, MRCTB040698

PROJECT: LTE 3C_4C 2020 UPGRADE

DRAWING INDEX

SBA SITE NAME: COLCHESTER MAHONEY RD
SBA SITE #: CT02652

VICINITY MAP

DIRECTIONS TO SITE:

COLCHESTER MAHONEY RD FROM ROCKY HILL FOLLOW I 91 NORTH TO EXIT 25 ROUTE FROM THE HARTFORD AREA TAKE ROUTE 3 NORTH TO ROUTE 2 EAST, FOLLOW ROUTE 2 EAST TO EXIT 21 CHESTNUT HILL ROAD. AT THE END OF THE EXIT TAKE A LEFT ONTO CHESTNUT HILL ROAD FOLLOW 2.3 MILES TO STOP SIGN, AT STOP SIGN GO STRAIGHT THIS TURNS INTO MAHONEY ROAD FOLLOW MAHONEY FOR 2 /10 OF A MILE TO THE DIRT ACCESS ROAD AND GATE ON THE LEFT SITE IS LOCATED UP DIRT ROAD JUST BEYOND THE COLCHESTER GUN CLUB

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

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

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

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

AT&T

TITLE SHEET
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2149	T-1	1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SAI
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

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

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

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

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

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

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

ABBREVIATIONS

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

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

12 INDUSTRIAL WAY
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SITE NUMBER: CT2149
SITE NAME: COLCHESTER MAHONEY RD
SBA SITE # CT02652

29 MAHONEY ROAD
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NEW LONDON COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

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

AT&T

GENERAL NOTES
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2149	GN-1	1

NOTE:

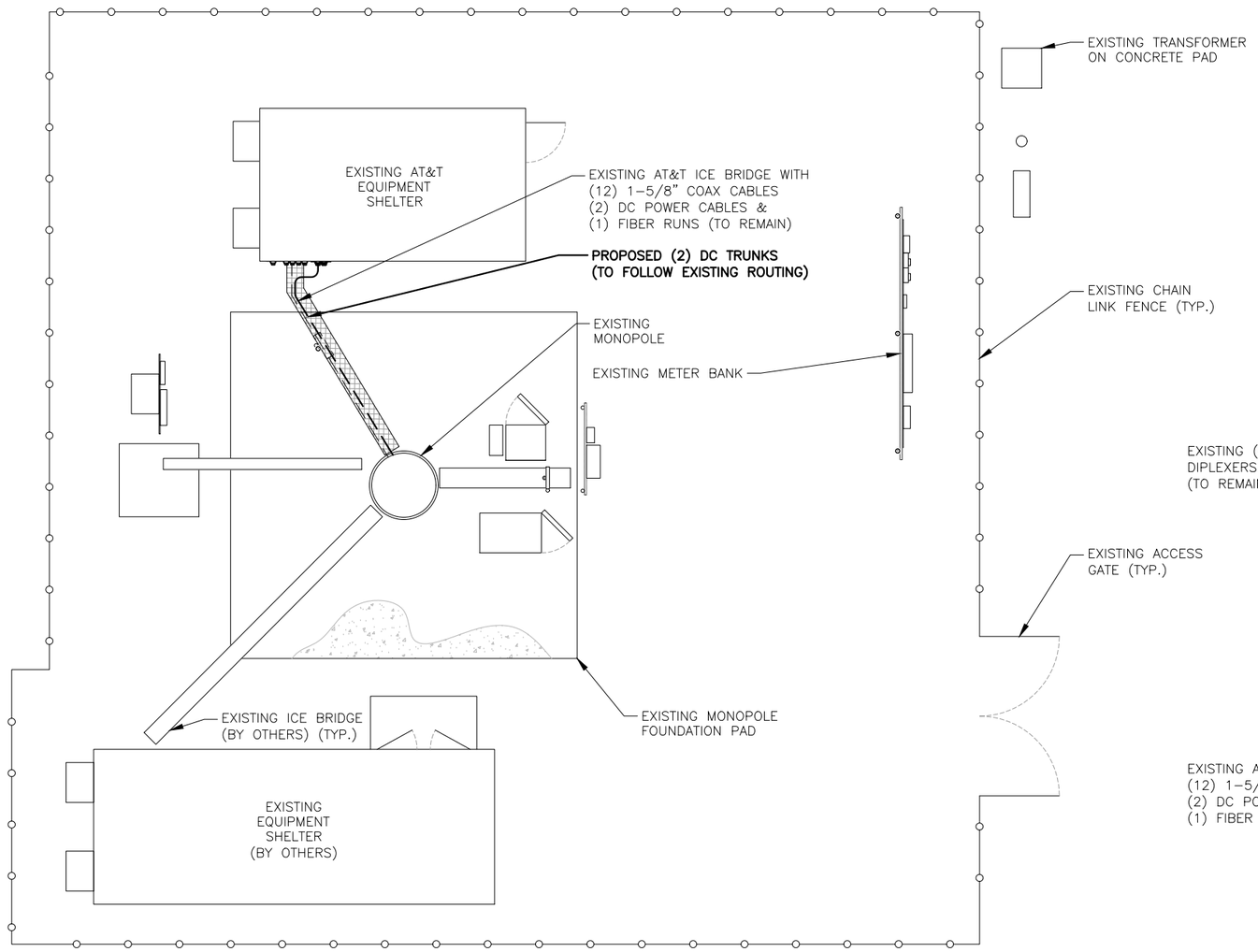
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: SEPTEMBER 3, 2019

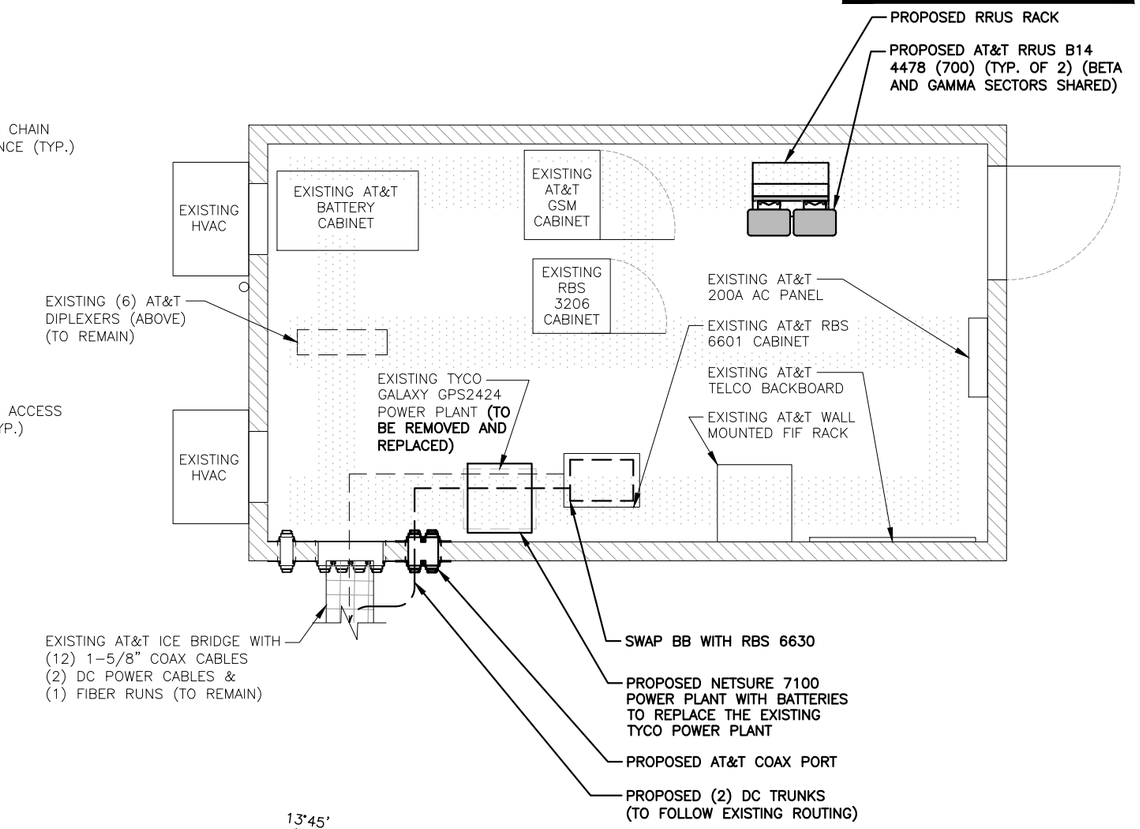
NOTE:

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



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"



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

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

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Daniel P. Hamm

AT&T

COMPOUND & EQUIPMENT PLANS
LTE 3C_4C 2020 UPGRADE

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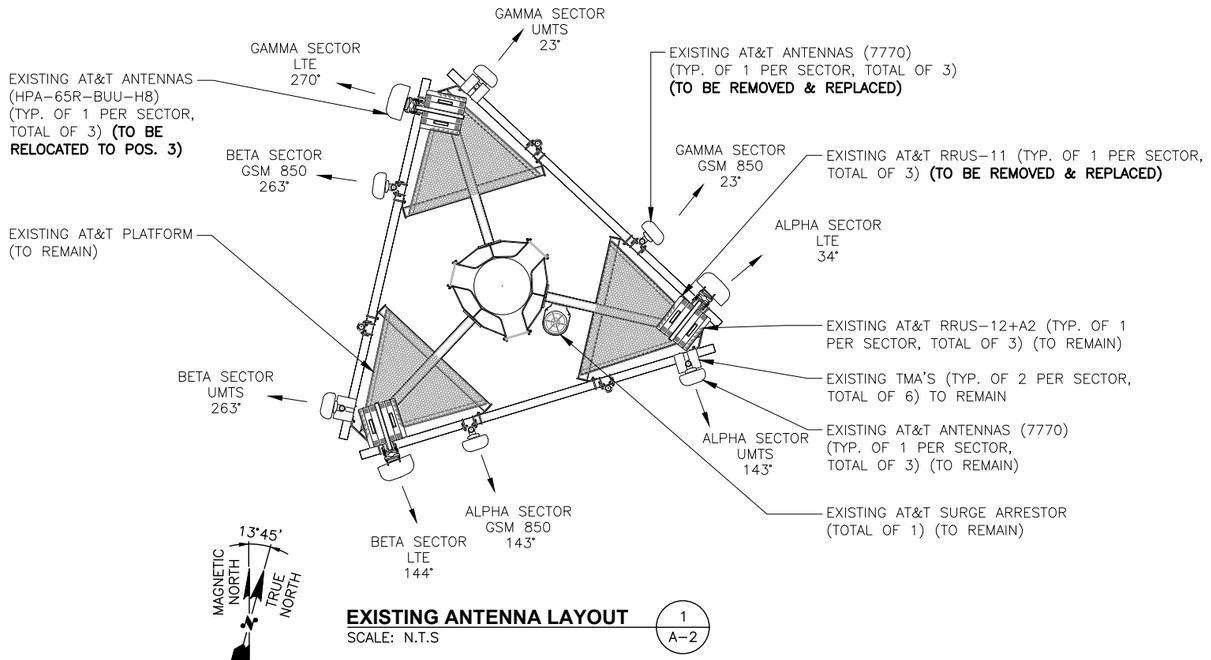
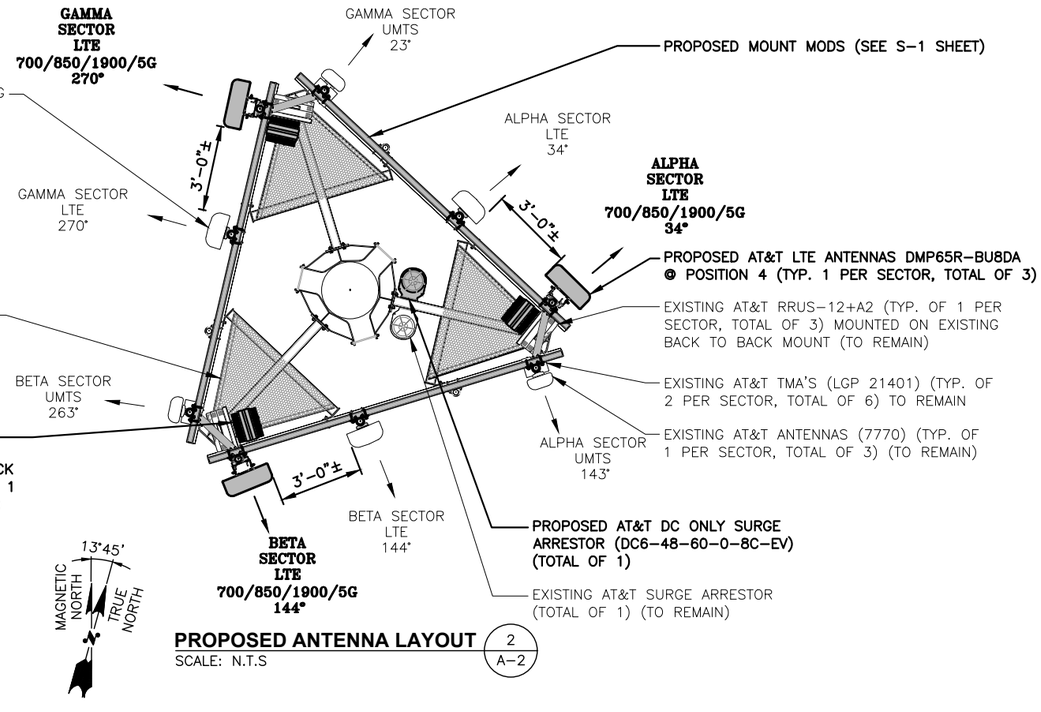
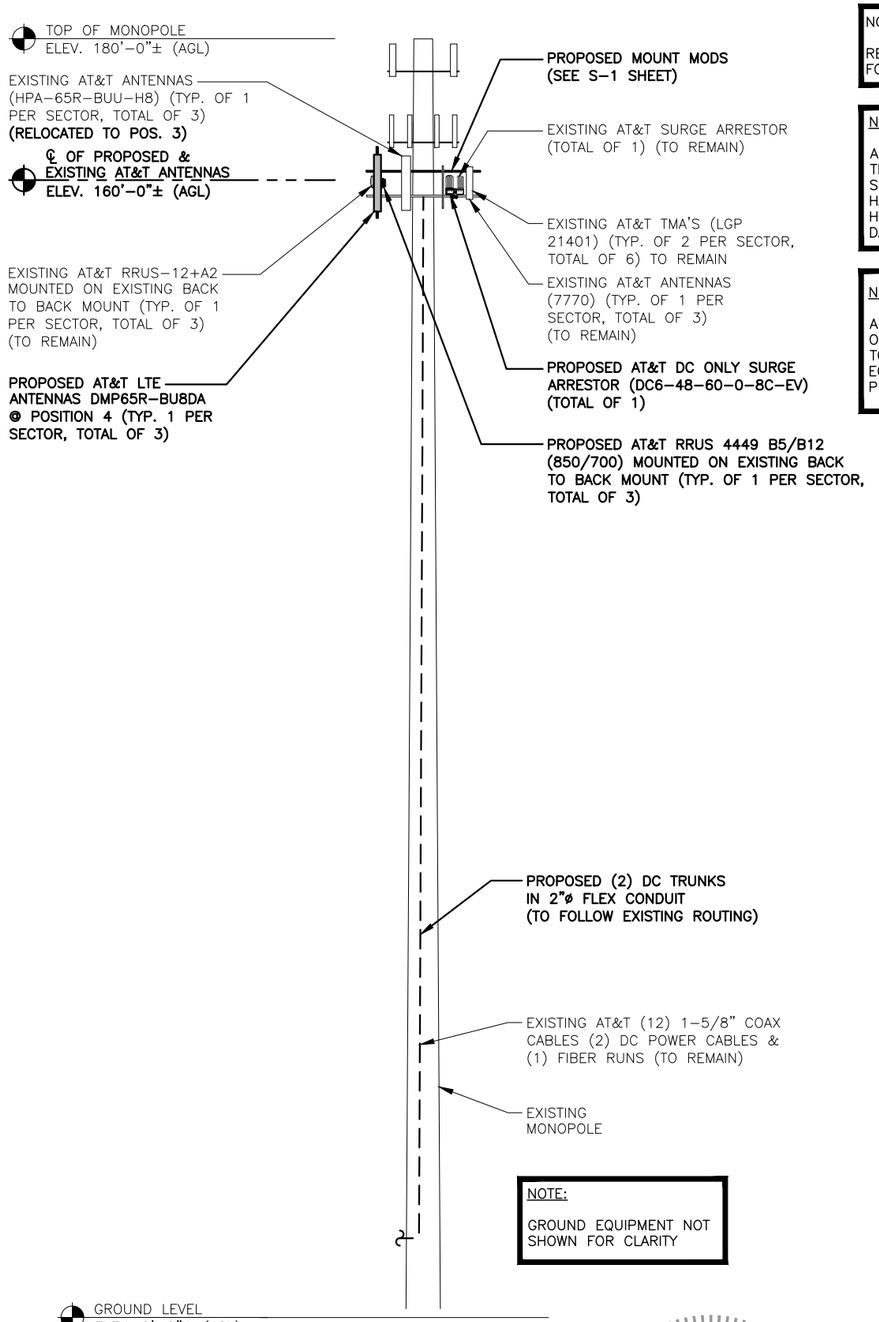


EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



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



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

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

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

NOTE:
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HUDSON DESIGN GROUP, LLC.
DATED: SEPTEMBER 3, 2019

NOTE:
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ANTENNA LAYOUTS & ELEVATION
LTE 3C_4C 2020 UPGRADE

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CT2149	A-2	1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55X11X5	160'-0"±	143°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8C-EV
A2	–	–	–	–	–	–	–	–	–	–	
A3	EXISTING	LTE 700	HPA-65R-BUU-H8	92.4X14.8X7.4	160'-0"±	34°	–	**(1)(G)(P) 4478 B14 (700)**	**18.1"x13.4"x8.3"**	(2)1-5/8 COAX	
A4	**PROPOSED**	**LTE 700/850/1900/5G**	**DMP65R-BU8DA**	**96x20.7x7.7**	**160'-0"±**	**34°**	(2)(E) LGP21901 (GROUND MOUNTED)	**(1)(P) 4449 B5 B12** (1)(E) RRUS-12 B2+RRUS-A2 B25 (1900)	**14.9"x13.2"x10.4"**	–	
B1	EXISTING	UMTS 850	7770	55X11X5	160'-0"±	263°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	
B2	–	–	–	–	–	–	–	–	–	–	
B3	LTE 700	LTE 700	HPA-65R-BUU-H8	92.4X14.8X7.4	160'-0"±	144°	–	**(1)(G)(P) 4478 B14 (700) SHARED**	**18.1"x13.4"x8.3"**	(2)1-5/8 COAX	
B4	**PROPOSED**	**LTE 700/850/1900/5G**	**DMP65R-BU8DA**	**96x20.7x7.7**	**160'-0"±**	**144°**	(2)(E) LGP21901 (GROUND MOUNTED)	**(1)(P) 4449 B5 B12** (1)(E) RRUS-12 B2+RRUS-A2 B25 (1900)	**14.9"x13.2"x10.4"**	–	
C1	EXISTING	UMTS 850	7770	55X11X5	160'-0"±	23°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	
C2	–	–	–	–	–	–	–	–	–	–	
C3	LTE 700	LTE 700	HPA-65R-BUU-H8	92.4X14.8X7.4	160'-0"±	270°	–	**(1)(G)(P) 4478 B14 (700) SHARED**	**18.1"x13.4"x8.3"**	(2)1-5/8 COAX	
C4	**PROPOSED**	**LTE 700/850/1900/5G**	**DMP65R-BU8DA**	**96x20.7x7.7**	**160'-0"±**	**270°**	(2)(E) LGP21901 (GROUND MOUNTED)	**(1)(P) 4449 B5 B12** (1)(E) RRUS-12 B2 WITH A2 B25 (1900)	**14.9"x13.2"x10.4"**	–	**(P) (1) RAYCAP DC6-48-60-0-8C-EV**

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

NOTE:

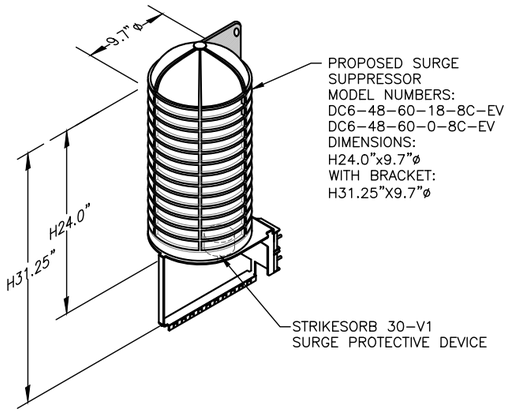
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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: SEPTEMBER 3, 2019

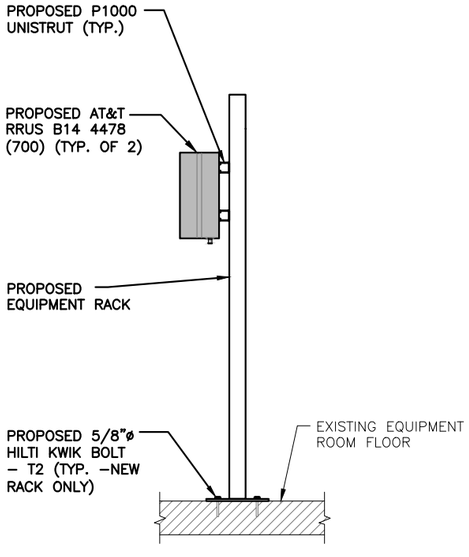
NOTE:

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



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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



PROPOSED EQUIPMENT RACK DETAIL (3 / A-3)
SCALE: N.T.S

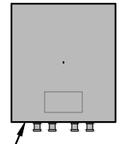
RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
P(3)	4449 (850/700)	14.9"x13.2"x10.4"
P(G)(2)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	RRUS-12 WITH A2 B25	20.4"x18.5"x7.5"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

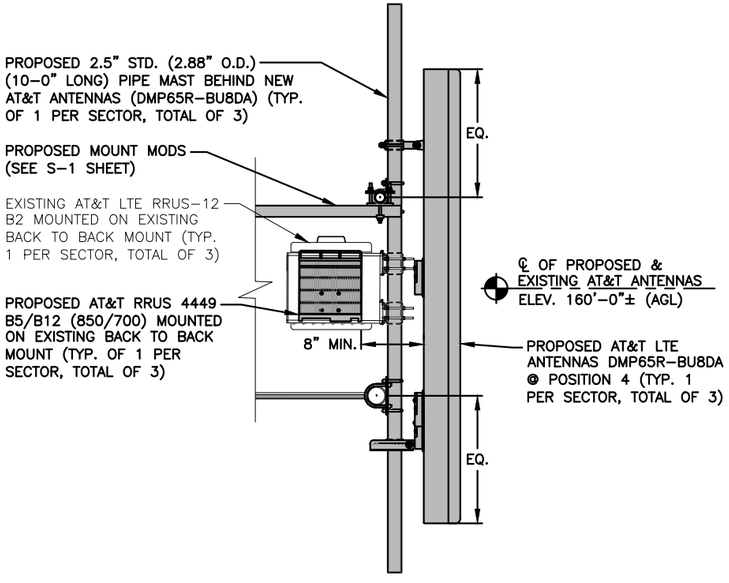
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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



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

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

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SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2149
SITE NAME: COLCHESTER MAHONEY RD
SBA SITE # CT02652

29 MAHONEY ROAD
COLCHESTER, CT 06415
NEW LONDON COUNTY

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

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A	09/26/19	ISSUED FOR REVIEW	TR	AT	DPH

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

Daniel P. Hamm No.24178 LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2149	A-3	1

STRUCTURAL NOTES:

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

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

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

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SBA SITE # CT02652

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A	09/26/19	ISSUED FOR REVIEW	TR	AT	DPH

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

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

AT&T

STRUCTURAL NOTES
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2149	SN-1	1

NOTE:

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

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
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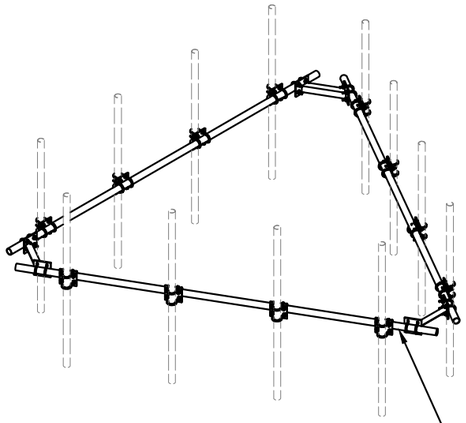
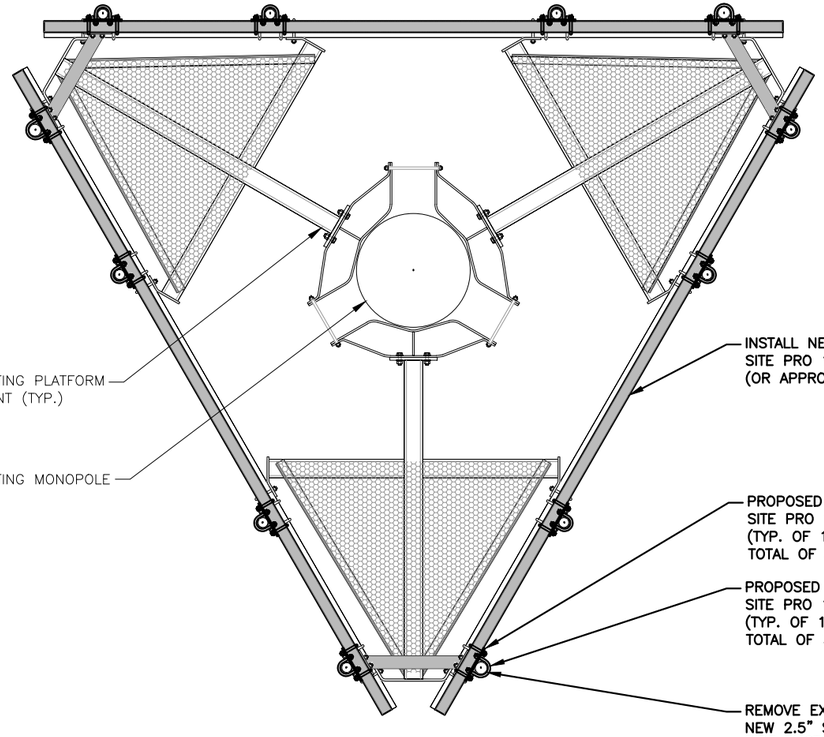
DATED: SEPTEMBER 3, 2019

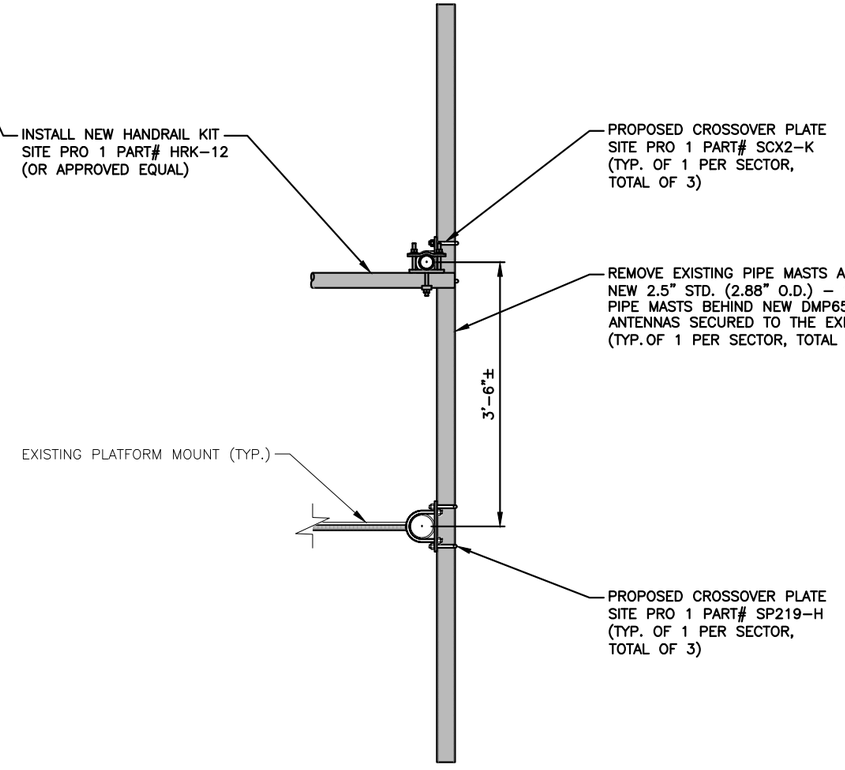


HANDRAIL KIT DETAIL (2 / S-1)
SCALE: N.T.S



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

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



PROPOSED MOUNT MODIFICATIONS DETAIL (3 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

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NEW LONDON COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
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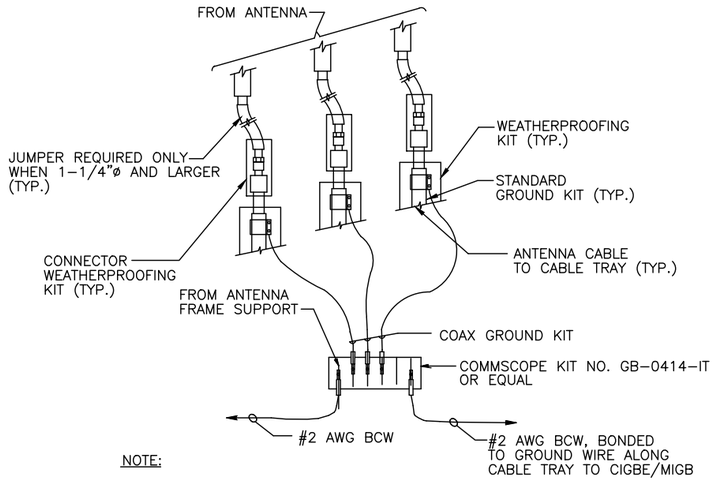
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

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

AT&T

MOUNT MODIFICATION DESIGN
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2149	S-1	1

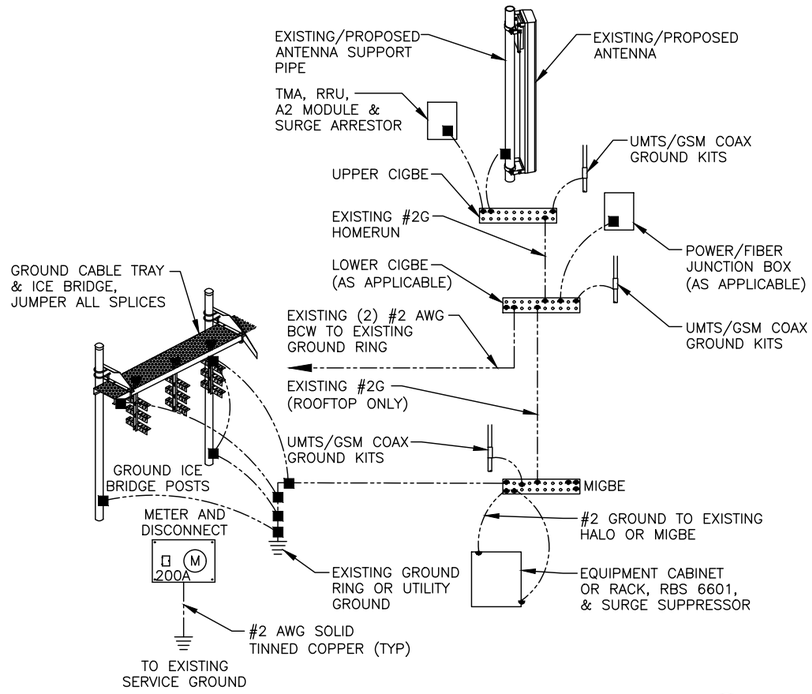


NOTE:

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

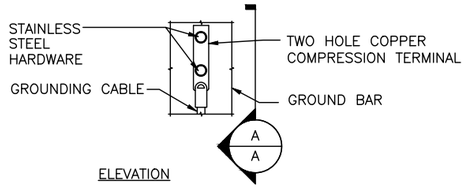
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



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

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S

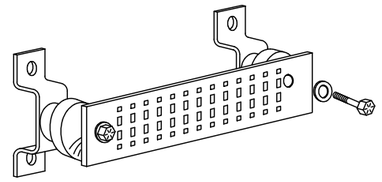
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (4 / G-1)

SCALE: N.T.S

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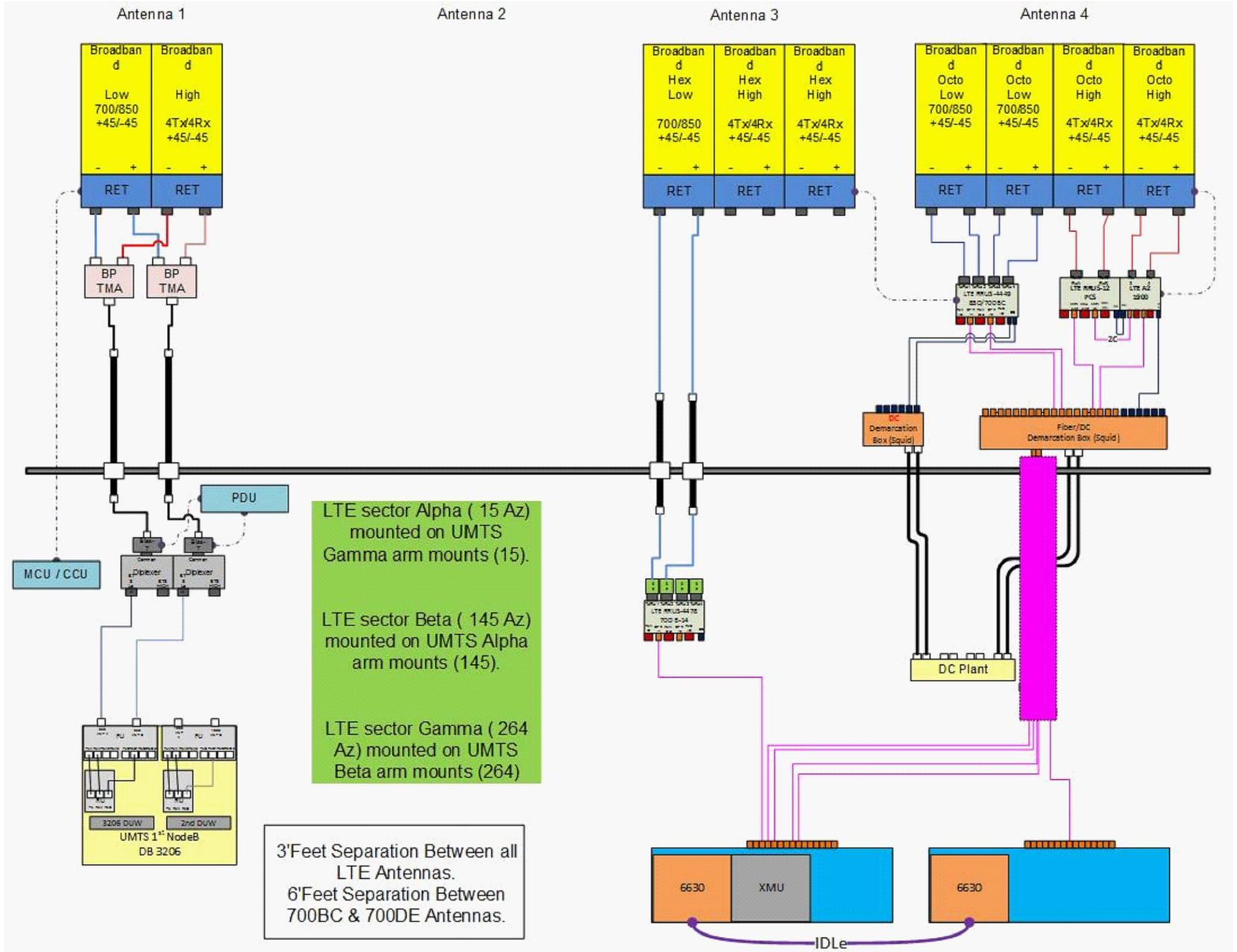
STATE OF CONNECTICUT · DANIEL P. HAMM · No.24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2149	G-1	1



Sector-A B14 Radio will be on its own. Sector B and C will share the B14 Radio. Port 1 & 2 will be used for sector-B. Port 3 & 4 to be used for sector-C.

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

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

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

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12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2149
SITE NAME: COLCHESTER MAHONEY RD
SBA SITE # CT02652

29 MAHONEY ROAD
COLCHESTER, CT 06415
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/31/19	ISSUED FOR CONSTRUCTION	TR	AT	DPH
0	10/28/19	ISSUED FOR REVIEW	JRC	AT	DPH
A	09/26/19	ISSUED FOR REVIEW	TR	AT	DPH

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

AT&T

RF PLUMBING DIAGRAM
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2149	RF–1	1

September 3, 2019

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT2149 (LTE 3C/4C)
	FA Number:	10042314
	PACE Number:	MRCTB040479
	PT Number:	2051A0PQT4
	Site Name:	COLCHESTER MAHONEY RD
	Site Address:	29 Mahoney Road Colchester, CT 06415

To Whom It May Concern:

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

- (3) 7770 Antennas (55.0"x11.0"x5.0" – Wt. = 35 lbs. /each)
- (3) HPA-65R-BUU-H8 Antenna (92.4"x14.8"x7.4" – Wt. = 68 lbs.)
- (3) RRUS-12 RRH's (20.4"x18.5"x7.5" – Wt. = 58 lbs. /each)
- (3) A2 Modules (16.4"x15.2"x3.4" – Wt. = 22 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.)
- **(3) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 96 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (14.9"x13.2"x10.4" – Wt. = 73 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.)**

**Proposed equipment shown in bold.*

Fabrication drawings prepared by SitePro1 P/N RMQP-496 dated January 20, 2012 were available for the existing mount. HDG conducted a ground audit survey of the existing AT&T antenna mount on July 3, 2019.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 130 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.17 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- The mount has been analyzed with load combinations consisting of 250 lbs. live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs. live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with a ring mount. The connections are considered OK by visual inspection.

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

- **Remove existing pipe masts and install new 2-1/2" std. (2.88" O.D.) pipe masts behind new DMP65R-BU8DA antennas secured to the existing mount (typ. of 1 per sector, total of 3).**
- **Install new handrail kit, SitePro1 P/N HRK-12 (or approved equal).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 3C/4C) Mount Rating	59	LC2	125%	**FAIL**
Modified (LTE 3C/4C) Mount Rating	54	LC1	84%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1 dated January 20, 2012.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC

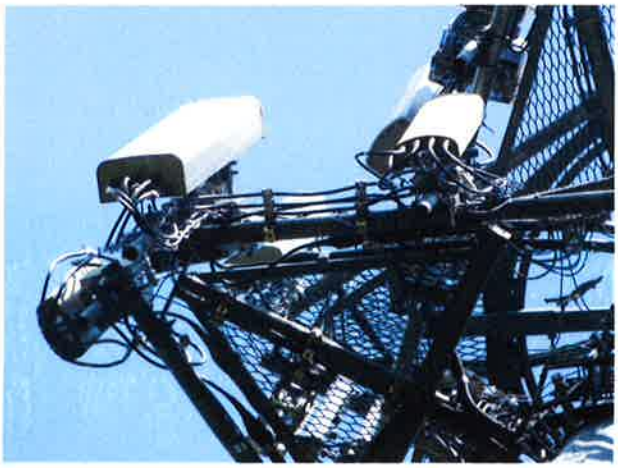
Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:








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






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

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 9/3/2019
Project Name: COLCHESTER MAHONEY RD
Project No.: CT2149
Designed By: BD **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	160 (ft)
	z_g=	1200 (ft)
K_z= 1.130	α=	7.0

$Kzmin \le Kz \le 2.01$

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

$K_{zt} = [1+(K_c K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

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

Category= 1

K_h=	#DIV/0!	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	160	
z_s=	374	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i = 1.00 in
Importance Factor = I= 1.0 (from Table 2-3)
K_{iz} = 1.17 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.17 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	180	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

G_h=	1.35	Gh=	1.00

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.130	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	45.83	K_e=	0.99	(from 2.6.8)
$q_{z\ (Ice)}$=	6.78	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	2.44	V_{max}=	130	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

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Determine Ca:

Table 2-9

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

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

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

Ice Thickness = 1.17 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	252	47	13
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	6.24	1.37	595	104	32
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	819	138	44
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.13	1.20	75	15	4
4449 B5/B12 RRH (Shielded)	14.9	0.0	13.2	0.00	0.00	1.20	0	0	0
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.10	1.20	144	27	8
RRUS-12 RRH (Shielded)	20.4	0.0	18.5	0.00	0.00	1.20	0	0	0
A2 Modules	16.4	15.2	3.4	1.73	1.08	1.20	95	19	5
A2 Modules (Shielded)	16.4	0.0	15.2	0.00	0.00	1.20	0	0	0
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	16	5	1
Squid Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	52	10	3
2" Pipe	2.4	12.0		0.20	0.20	1.20	11	4	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	16	5	1
L 2x2	2.0	12.0		0.17	0.17	2.00	15	6	1
HSS 4x4	4.0	12.0		0.33	0.33	1.25	19	5	1

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HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	252	134	223
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	595	344	532
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	819	372	707
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	75	59	71
4449 B5/B12 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	38	59	43
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	144	59	123
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	72	59	69
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	95	23	77
A2 Modules (Shielded)	16.4	7.6	3.4	0.87	0.39	2.16	4.82	1.20	1.30	48	23	41
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	49	25

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.31	2.92	4.30	7.81	1.28	1.43	46	28	42
HPA-65R-BUU-H8 Antenna	94.7	17.1	9.7	11.28	6.41	5.53	9.73	1.33	1.49	102	65	93
DMP65R-BU8DA Antenna	98.3	23.0	10.0	15.74	6.86	4.27	9.79	1.28	1.49	136	69	120
4449 B5/B12 RRH	17.2	15.5	12.7	1.86	1.53	1.11	1.35	1.20	1.20	15	12	14
4449 B5/B12 RRH (Shielded)	17.2	7.8	12.7	0.93	1.53	2.22	1.35	1.20	1.20	8	12	9
RRUS-12 RRH	22.7	20.8	9.8	3.29	1.55	1.09	2.31	1.20	1.20	27	13	23
RRUS-12 RRH (Shielded)	22.7	10.4	9.8	1.65	1.55	2.18	2.31	1.20	1.20	13	13	13
A2 Modules	18.7	17.5	5.7	2.28	0.75	1.07	3.26	1.20	1.23	19	6	15
A2 Modules (Shielded)	18.7	8.8	5.7	1.14	0.75	2.14	3.26	1.20	1.23	9	6	9
LGP21401 TMA	16.7	5.0	11.3	0.59	1.32	3.32	1.48	1.24	1.20	5	11	6

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	12
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	28
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	38
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	4	3	4
4449 B5/B12 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	2	3	2
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	7
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	4	3	4
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	5	1	4
A2 Modules (Shielded)	16.4	7.6	3.4	0.87	0.39	2.16	4.82	1.20	1.30	3	1	2
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1

Date: 9/3/2019
Project Name: COLCHESTER MAHONEY RD
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Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.17 in.

Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	252	134	164
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	595	344	407
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	819	372	484
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	75	59	63
4449 B5/B12 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	56	59	58
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	144	59	80
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	108	59	71
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	95	23	41
A2 Modules (Shielded)	16.4	11.4	3.4	1.30	0.39	1.44	4.82	1.20	1.30	71	23	35
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	49	41

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.31	2.92	4.30	7.81	1.28	1.43	46	28	33
HPA-65R-BUU-H8 Antenna	94.7	17.1	9.7	11.28	6.41	5.53	9.73	1.33	1.49	102	65	74
DMP65R-BU8DA Antenna	98.3	23.0	10.0	15.74	6.86	4.27	9.79	1.28	1.49	136	69	86
4449 B5/B12 RRH	17.2	15.5	12.7	1.86	1.53	1.11	1.35	1.20	1.20	15	12	13
4449 B5/B12 RRH (Shielded)	17.2	11.7	12.7	1.40	1.53	1.48	1.35	1.20	1.20	11	12	12
RRUS-12 RRH	22.7	20.8	9.8	3.29	1.55	1.09	2.31	1.20	1.20	27	13	16
RRUS-12 RRH (Shielded)	22.7	15.6	9.8	2.47	1.55	1.45	2.31	1.20	1.20	20	13	15
A2 Modules	18.7	17.5	5.7	2.28	0.75	1.07	3.26	1.20	1.23	19	6	9
A2 Modules (Shielded)	18.7	13.2	5.7	1.71	0.75	1.42	3.26	1.20	1.23	14	6	8
LGP21401 TMA	16.7	5.0	11.3	0.59	1.32	3.32	1.48	1.24	1.20	5	11	9

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	9
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	22
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	26
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	4	3	3
4449 B5/B12 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	3	3	3
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	4
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	6	3	4
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	5	1	2
A2 Modules (Shielded)	16.4	11.4	3.4	1.30	0.39	1.44	4.82	1.20	1.30	4	1	2
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2

Date: 9/3/2019
Project Name: COLCHESTER MAHONEY RD
Project No.: CT2149
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	252	134	134
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	595	344	344
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	819	372	372
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	75	59	59
4449 B5/B12 RRH (Shielded)	14.9	0.0	10.4	0.00	1.08	0.00	1.43	1.20	1.20	0	59	59
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	144	59	59
RRUS-12 RRH (Shielded)	20.4	0.0	7.5	0.00	1.06	0.00	2.72	1.20	1.21	0	59	59
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	95	23	23
A2 Modules (Shielded)	16.4	0.0	3.4	0.00	0.39	0.00	4.82	1.20	1.30	0	23	23
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	49	49

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.31	2.92	4.30	7.81	1.28	1.43	46	28	28
HPA-65R-BUU-H8 Antenna	94.7	17.1	9.7	11.28	6.41	5.53	9.73	1.33	1.49	102	65	65
DMP65R-BU8DA Antenna	98.3	23.0	10.0	15.74	6.86	4.27	9.79	1.28	1.49	136	69	69
4449 B5/B12 RRH	17.2	15.5	12.7	1.86	1.53	1.11	1.35	1.20	1.20	15	12	12
4449 B5/B12 RRH (Shielded)	17.2	2.3	15.5	0.28	1.86	7.36	1.11	1.41	1.20	3	15	15
RRUS-12 RRH	22.7	20.8	9.8	3.29	1.55	1.09	2.31	1.20	1.20	27	13	13
RRUS-12 RRH (Shielded)	22.7	2.3	20.8	0.37	3.29	9.71	1.09	1.49	1.20	4	27	27
A2 Modules	18.7	17.5	5.7	2.28	0.75	1.07	3.26	1.20	1.23	19	6	6
A2 Modules (Shielded)	18.7	2.3	17.5	0.30	2.28	8.00	1.07	1.43	1.20	3	19	19
LGP21401 TMA	16.7	5.0	11.3	0.59	1.32	3.32	1.48	1.24	1.20	5	11	11

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	7
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	18
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	20
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	4	3	3
4449 B5/B12 RRH (Shielded)	14.9	0.0	10.4	0.00	1.08	0.00	1.43	1.20	1.20	0	3	3
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	3
RRUS-12 RRH (Shielded)	20.4	0.0	7.5	0.00	1.06	0.00	2.72	1.20	1.21	0	3	3
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	5	1	1
A2 Modules (Shielded)	16.4	0.0	3.4	0.00	0.39	0.00	4.82	1.20	1.30	0	1	1
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	3

Date: 9/3/2019
Project Name: COLCHESTER MAHONEY RD
Project No.: CT2149
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	252	134	164
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	595	344	407
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	819	372	484
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	75	59	63
4449 B5/B12 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	56	59	58
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	144	59	80
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	108	59	71
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	95	23	41
A2 Modules (Shielded)	16.4	11.4	3.4	1.30	0.39	1.44	4.82	1.20	1.30	71	23	35
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	49	41

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.31	2.92	4.30	7.81	1.28	1.43	46	28	33
HPA-65R-BUU-H8 Antenna	94.7	17.1	9.7	11.28	6.41	5.53	9.73	1.33	1.49	102	65	74
DMP65R-BU8DA Antenna	98.3	23.0	10.0	15.74	6.86	4.27	9.79	1.28	1.49	136	69	86
4449 B5/B12 RRH	17.2	15.5	12.7	1.86	1.53	1.11	1.35	1.20	1.20	15	12	13
4449 B5/B12 RRH (Shielded)	17.2	11.7	12.7	1.40	1.53	1.48	1.35	1.20	1.20	11	12	12
RRUS-12 RRH	22.7	20.8	9.8	3.29	1.55	1.09	2.31	1.20	1.20	27	13	16
RRUS-12 RRH (Shielded)	22.7	15.6	9.8	2.47	1.55	1.45	2.31	1.20	1.20	20	13	15
A2 Modules	18.7	17.5	5.7	2.28	0.75	1.07	3.26	1.20	1.23	19	6	9
A2 Modules (Shielded)	18.7	13.2	5.7	1.71	0.75	1.42	3.26	1.20	1.23	14	6	8
LGP21401 TMA	16.7	5.0	11.3	0.59	1.32	3.32	1.48	1.24	1.20	5	11	9

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	9
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	22
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	26
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	4	3	3
4449 B5/B12 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	3	3	3
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	4
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	6	3	4
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	5	1	2
A2 Modules (Shielded)	16.4	11.4	3.4	1.30	0.39	1.44	4.82	1.20	1.30	4	1	2
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2

Date: 9/3/2019
Project Name: COLCHESTER MAHONEY RD
Project No.: CT2149
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	252	134	223
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	595	344	532
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	819	372	707
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	75	59	71
4449 B5/B12 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	38	59	43
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	144	59	123
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	72	59	69
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	95	23	77
A2 Modules (Shielded)	16.4	7.6	3.4	0.87	0.39	2.16	4.82	1.20	1.30	48	23	41
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	49	25

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.31	2.92	4.30	7.81	1.28	1.43	46	28	42
HPA-65R-BUU-H8 Antenna	94.7	17.1	9.7	11.28	6.41	5.53	9.73	1.33	1.49	102	65	93
DMP65R-BU8DA Antenna	98.3	23.0	10.0	15.74	6.86	4.27	9.79	1.28	1.49	136	69	120
4449 B5/B12 RRH	17.2	15.5	12.7	1.86	1.53	1.11	1.35	1.20	1.20	15	12	14
4449 B5/B12 RRH (Shielded)	17.2	7.8	12.7	0.93	1.53	2.22	1.35	1.20	1.20	8	12	9
RRUS-12 RRH	22.7	20.8	9.8	3.29	1.55	1.09	2.31	1.20	1.20	27	13	23
RRUS-12 RRH (Shielded)	22.7	10.4	9.8	1.65	1.55	2.18	2.31	1.20	1.20	13	13	13
A2 Modules	18.7	17.5	5.7	2.28	0.75	1.07	3.26	1.20	1.23	19	6	15
A2 Modules (Shielded)	18.7	8.8	5.7	1.14	0.75	2.14	3.26	1.20	1.23	9	6	9
LGP21401 TMA	16.7	5.0	11.3	0.59	1.32	3.32	1.48	1.24	1.20	5	11	6

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	12
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	32	18	28
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	44	20	38
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	4	3	4
4449 B5/B12 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	2	3	2
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	7
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	4	3	4
A2 Modules	16.4	15.2	3.4	1.73	0.39	1.08	4.82	1.20	1.30	5	1	4
A2 Modules (Shielded)	16.4	7.6	3.4	0.87	0.39	2.16	4.82	1.20	1.30	3	1	2
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1

Date: 9/3/2019
Project Name: COLCHESTER MAHONEY RD
Project No.: CT2149
Designed By: BD **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.17 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		87 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		122 lbs

HPA-65R-BUU-H8 Antenna

Weight of ice based on total radial SF area:

Height (in):	92.4	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:		195 lbs
Weight of object:	68.0 lbs	
Combined weight of ice and object:		263 lbs

DMP65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		266 lbs
Weight of object:	96.0 lbs	
Combined weight of ice and object:		362 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.4	
Total weight of ice on object:		32 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		105 lbs

RRUS-12 RRH

Weight of ice based on total radial SF area:

Height (in):	20.4	
Width (in):	18.5	
Depth (in):	7.5	
Total weight of ice on object:		51 lbs
Weight of object:	58.0 lbs	
Combined weight of ice and object:		109 lbs

A2 Modules

Weight of ice based on total radial SF area:

Height (in):	16.4	
Width (in):	15.2	
Depth (in):	3.4	
Total weight of ice on object:		33 lbs
Weight of object:	22.0 lbs	
Combined weight of ice and object:		55 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	2.7	
Depth (in):	9.0	
Total weight of ice on object:		18 lbs
Weight of object:	19.0 lbs	
Combined weight of ice and object:		37 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		31 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		64 lbs

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		5 plf

PL 6x1/2

Weight of ice based on total radial SF area:

Height (in):	6	
Width (in):	0.5	
Per foot weight of ice on object:		10 plf

3" pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		7 plf

L 2x2 Angles

Weight of ice based on total radial SF area:

Height (in):	2	
Width (in):	2	
Per foot weight of ice on object:		6 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		10 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

Bentley

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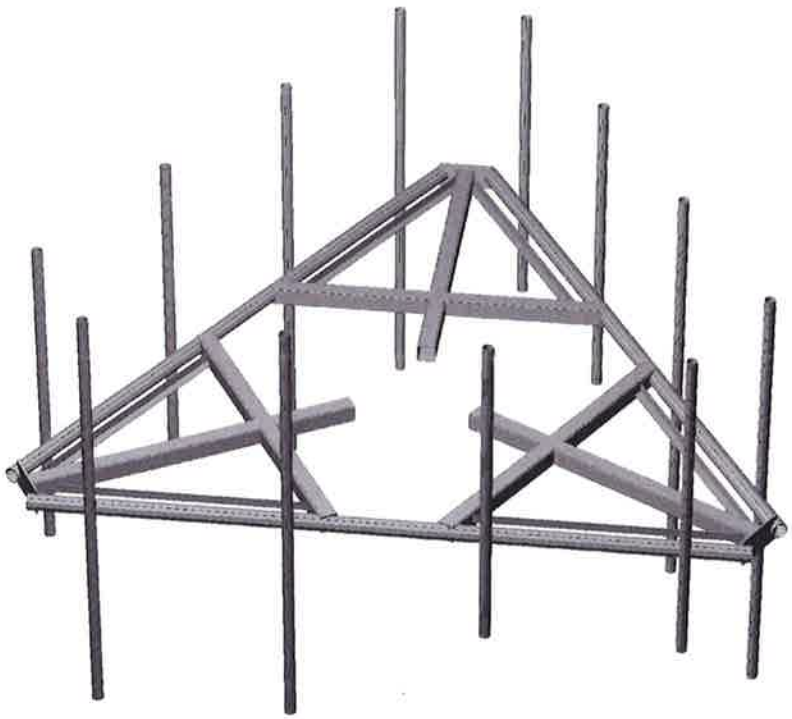

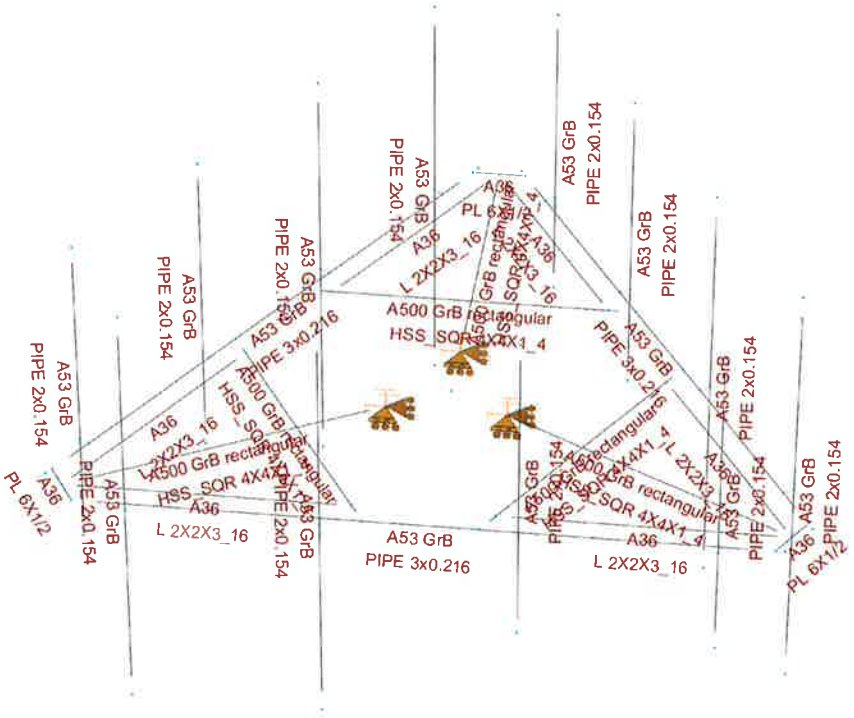
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A36
PL 6X1/2
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L 2X2X3_16

Bentley

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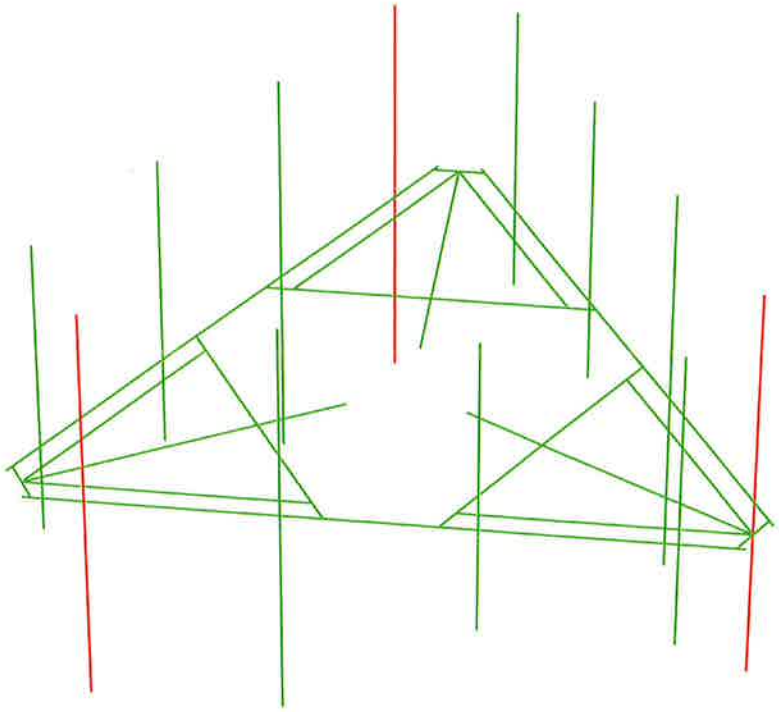

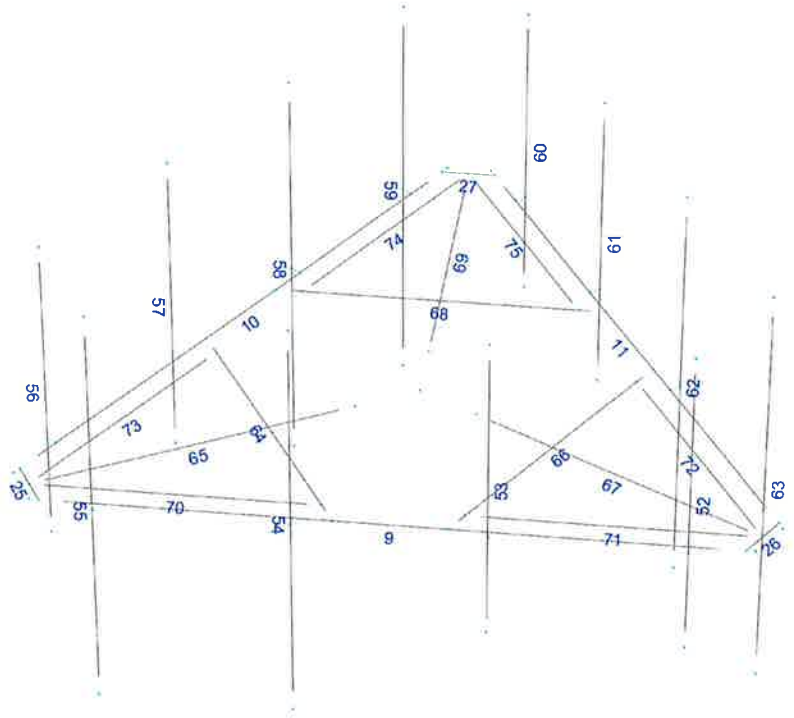
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Bentley

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Load data

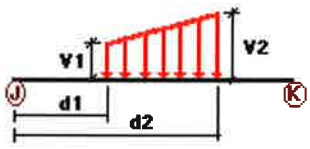
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL

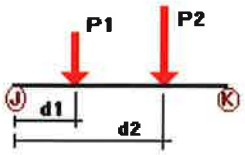
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	64	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	66	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	68	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	70	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	71	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	72	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	73	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	74	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	75	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
W0	9	Z	-0.016	-0.016	0.00	Yes	100.00	Yes
	10	Z	-0.016	-0.016	0.00	Yes	100.00	Yes
	11	Z	-0.016	-0.016	0.00	Yes	100.00	Yes
	53	Z	-0.011	-0.011	0.00	Yes	100.00	Yes
	56	Z	-0.011	-0.011	0.00	Yes	100.00	Yes
	57	Z	-0.011	-0.011	0.00	Yes	100.00	Yes
	58	Z	-0.011	-0.011	0.00	Yes	100.00	Yes

	59	Z	-0.011	-0.011	0.00	Yes	100.00	Yes
	60	Z	-0.011	-0.011	0.00	Yes	100.00	Yes
	61	Z	-0.011	-0.011	0.00	Yes	100.00	Yes
	62	Z	-0.011	-0.011	0.00	Yes	100.00	Yes
	63	Z	-0.011	-0.011	0.00	Yes	100.00	Yes
	64	Z	-0.019	-0.019	0.00	Yes	100.00	Yes
	65	Z	-0.019	-0.019	0.00	Yes	100.00	Yes
	66	Z	-0.019	-0.019	0.00	Yes	100.00	Yes
	67	Z	-0.019	-0.019	0.00	Yes	100.00	Yes
	68	Z	-0.019	-0.019	0.00	Yes	100.00	Yes
W30	10	X	-0.016	-0.016	0.00	Yes	100.00	Yes
	11	X	-0.016	-0.016	0.00	Yes	100.00	Yes
	52	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	53	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	54	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	55	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	56	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	57	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	58	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	59	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	60	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	61	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	62	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	63	X	-0.011	-0.011	0.00	Yes	100.00	Yes
	64	X	-0.019	-0.019	0.00	Yes	100.00	Yes
	65	X	-0.019	-0.019	0.00	Yes	100.00	Yes
	66	X	-0.019	-0.019	0.00	Yes	100.00	Yes
	67	X	-0.019	-0.019	0.00	Yes	100.00	Yes
	69	X	-0.019	-0.019	0.00	Yes	100.00	Yes
Di	9	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
	10	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
	11	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
	25	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	26	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	27	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	52	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	53	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	54	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	55	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	56	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	57	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	58	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	59	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	60	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	61	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	62	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	63	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	64	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	65	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	66	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	67	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	68	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	69	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	70	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	71	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	72	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	73	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	74	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	75	Y	-0.006	-0.006	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	52	y	-0.018	0.71	No
		y	-0.018	5.29	No
		y	-0.038	3.00	No
	54	y	-0.034	0.50	No
		y	-0.034	7.50	No
	55	y	-0.048	0.50	No
		y	-0.048	7.50	No
		y	-0.073	2.00	No
		y	-0.08	6.00	No
	56	y	-0.018	0.71	No
		y	-0.018	5.29	No
		y	-0.038	3.00	No
	58	y	-0.034	0.50	No
		y	-0.034	7.50	No
	59	y	-0.048	0.50	No
		y	-0.048	7.50	No
		y	-0.073	2.00	No
		y	-0.08	6.00	No
	60	y	-0.018	0.71	No
		y	-0.018	5.29	No
		y	-0.038	3.00	No
	62	y	-0.034	0.50	No
		y	-0.034	7.50	No
	63	y	-0.048	0.50	No
		y	-0.048	7.50	No
		y	-0.073	2.00	No
		y	-0.08	6.00	No
W0	52	z	-0.126	0.71	No
		z	-0.126	5.29	No
	54	z	-0.298	0.50	No
		z	-0.298	7.50	No
	55	z	-0.41	0.50	No
		z	-0.41	7.50	No
	56	z	-0.082	0.71	No
		z	-0.082	5.29	No
	58	z	-0.204	0.50	No
		z	-0.204	7.50	No
	59	z	-0.242	0.50	No
		z	-0.242	7.50	No
	60	z	-0.082	0.71	No
		z	-0.082	5.29	No
	62	z	-0.204	0.50	No
		z	-0.204	7.50	No
	63	z	-0.242	0.50	No
		z	-0.242	7.50	No
W30	52	x	-0.067	0.71	No
		x	-0.067	5.29	No
		x	-0.049	3.00	No
	54	x	-0.172	0.50	No
		x	-0.172	7.50	No
	55	x	-0.186	0.50	No
		x	-0.186	7.50	No

		x	-0.059	2.00	No
		x	-0.082	6.00	No
	56	x	-0.112	0.71	No
		x	-0.112	5.29	No
		x	-0.025	3.00	No
	58	x	-0.266	0.50	No
		x	-0.266	7.50	No
	59	x	-0.354	0.50	No
		x	-0.354	7.50	No
		x	-0.043	2.00	No
		x	-0.11	6.00	No
	60	x	-0.112	0.71	No
		x	-0.112	5.29	No
		x	-0.025	3.00	No
	62	x	-0.266	0.50	No
		x	-0.266	7.50	No
	63	x	-0.354	0.50	No
		x	-0.354	7.50	No
		x	-0.043	2.00	No
		x	-0.11	6.00	No
Di	52	y	-0.044	0.71	No
		y	-0.044	5.29	No
		y	-0.036	3.00	No
	54	y	-0.098	0.50	No
		y	-0.098	7.50	No
	55	y	-0.133	0.50	No
		y	-0.133	7.50	No
		y	-0.032	2.00	No
		y	-0.084	6.00	No
	56	y	-0.044	0.71	No
		y	-0.044	5.29	No
		y	-0.036	3.00	No
	58	y	-0.098	0.50	No
		y	-0.098	7.50	No
	59	y	-0.133	0.50	No
		y	-0.133	7.50	No
		y	-0.032	2.00	No
		y	-0.084	6.00	No
	60	y	-0.044	0.71	No
		y	-0.044	5.29	No
		y	-0.036	3.00	No
	62	y	-0.098	0.50	No
		y	-0.098	7.50	No
	63	y	-0.133	0.50	No
		y	-0.133	7.50	No
		y	-0.032	2.00	No
		y	-0.084	6.00	No
Wi0	52	z	-0.024	0.71	No
		z	-0.024	5.29	No
	54	z	-0.052	0.50	No
		z	-0.052	7.50	No
	55	z	-0.069	0.50	No
		z	-0.069	7.50	No
	56	z	-0.017	0.71	No
		z	-0.017	5.29	No
	58	z	-0.037	0.50	No
		z	-0.037	7.50	No
	59	z	-0.043	0.50	No
		z	-0.043	7.50	No
	60	z	-0.017	0.71	No

		z	-0.017	5.29	No
	62	z	-0.037	0.50	No
		z	-0.037	7.50	No
	63	z	-0.043	0.50	No
		z	-0.043	7.50	No
Wi30	52	x	-0.014	0.71	No
		x	-0.014	5.29	No
		x	-0.011	3.00	No
	54	x	-0.033	0.50	No
		x	-0.033	7.50	No
	55	x	-0.035	0.50	No
		x	-0.035	7.50	No
		x	-0.015	2.00	No
		x	-0.046	6.00	No
	56	x	-0.021	0.71	No
		x	-0.021	5.29	No
		x	-0.006	3.00	No
	58	x	-0.047	0.50	No
		x	-0.047	7.50	No
	59	x	-0.06	0.50	No
		x	-0.06	7.50	No
		x	-0.009	2.00	No
		x	-0.022	6.00	No
	60	x	-0.021	0.71	No
		x	-0.021	5.29	No
		x	-0.006	3.00	No
	62	x	-0.047	0.50	No
		x	-0.047	7.50	No
	63	x	-0.06	0.50	No
		x	-0.06	7.50	No
		x	-0.009	2.00	No
		x	-0.022	6.00	No
WL0	52	z	-0.007	0.71	No
		z	-0.007	5.29	No
	54	z	-0.016	0.50	No
		z	-0.016	7.50	No
	55	z	-0.022	0.50	No
		z	-0.022	7.50	No
	56	z	-0.005	0.71	No
		z	-0.005	5.29	No
	58	z	-0.011	0.50	No
		z	-0.011	7.50	No
	59	z	-0.013	0.50	No
		z	-0.013	7.50	No
	60	z	-0.005	0.71	No
		z	-0.005	5.29	No
	62	z	-0.011	0.50	No
		z	-0.011	7.50	No
	63	z	-0.013	0.50	No
		z	-0.013	7.50	No
WL30	52	x	-0.004	0.71	No
		x	-0.004	5.29	No
		x	-0.003	3.00	No
	54	x	-0.009	0.50	No
		x	-0.009	7.50	No
	55	x	-0.01	0.50	No
		x	-0.01	7.50	No
		x	-0.003	2.00	No
		x	-0.004	6.00	No
	56	x	-0.006	0.71	No

		x	-0.006	5.29	No
		x	-0.001	3.00	No
	58	x	-0.014	0.50	No
		x	-0.014	7.50	No
	59	x	-0.019	0.50	No
		x	-0.019	7.50	No
		x	-0.002	2.00	No
		x	-0.006	6.00	No
	60	x	-0.006	0.71	No
		x	-0.006	5.29	No
		x	-0.001	3.00	No
	62	x	-0.014	0.50	No
		x	-0.014	7.50	No
	63	x	-0.019	0.50	No
		x	-0.019	7.50	No
		x	-0.002	2.00	No
		x	-0.006	6.00	No
LL1	9	y	-0.25	50.00	Yes
LL2	9	y	-0.25	0.00	No
LLa1	52	y	-0.25	50.00	Yes
LLa2	54	y	-0.25	50.00	Yes
LLa3	55	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00

WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC15=1.2DL+1.5LL1
LC16=1.2DL+1.5LL2
LC17=1.2DL+WL0+1.5LLa1
LC18=1.2DL+WL30+1.5LLa1
LC19=1.2DL-WL0+1.5LLa1
LC20=1.2DL-WL30+1.5LLa1
LC21=1.2DL+WL0+1.5LLa2
LC22=1.2DL+WL30+1.5LLa2
LC23=1.2DL-WL0+1.5LLa2
LC24=1.2DL-WL30+1.5LLa2
LC25=1.2DL+WL0+1.5LLa3
LC26=1.2DL+WL30+1.5LLa3
LC27=1.2DL-WL0+1.5LLa3
LC28=1.2DL-WL30+1.5LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**64**	LC12 at 50.00%	0.20	OK	Eq. H1-1b
		65	LC11 at 100.00%	**0.60**	**OK**	Eq. H1-1b
		66	LC10 at 50.00%	0.20	OK	Eq. H1-1b
		67	LC12 at 100.00%	0.59	OK	Eq. H1-1b
		68	LC12 at 50.00%	0.20	OK	Eq. H1-1b
		69	LC12 at 100.00%	0.60	OK	Eq. H1-1b
	L 2X2X3_16	**70**	LC3 at 0.00%	0.43	OK	Eq. H2-1
		71	LC3 at 0.00%	0.35	OK	Eq. H2-1
		72	LC4 at 100.00%	**0.49**	**OK**	Eq. H2-1
		73	LC2 at 100.00%	0.41	OK	Eq. H2-1
		74	LC1 at 100.00%	0.38	OK	Eq. H2-1
		75	LC1 at 100.00%	0.35	OK	Eq. H2-1
	PIPE 2x0.154	**52**	LC1 at 65.63%	0.33	OK	Eq. H1-1b
		53	LC1 at 65.63%	0.07	OK	Eq. H1-1b
		54	LC1 at 50.00%	0.84	OK	Eq. H1-1b
		55	LC1 at 50.00%	1.16	N.G.	Eq. H1-1b
		56	LC2 at 65.63%	0.38	OK	Eq. H1-1b
		57	LC1 at 65.63%	0.07	OK	Eq. H1-1b
		58	LC2 at 50.00%	0.82	OK	Eq. H1-1b
		59	LC2 at 50.00%	1.25	N.G.	Eq. H1-1b

	60	LC2 at 65.63%	0.38	OK	Eq. H1-1b
	61	LC1 at 65.63%	0.07	OK	Eq. H1-1b
	62	LC2 at 50.00%	0.82	OK	Eq. H1-1b
	63	LC2 at 50.00%	1.25	N.G.	Eq. H1-1b
PIPE 3x0.216	**9**	LC12 at 57.64%	0.44	OK	Eq. H1-1b
	10	LC10 at 42.36%	**0.45**	**OK**	Eq. H1-1b
	11	LC10 at 42.36%	0.44	OK	Eq. H1-1b
PL 6X1/2	**25**	LC2 at 46.88%	0.16	OK	Eq. H1-1b
	26	LC2 at 50.00%	**0.20**	**OK**	Eq. H1-1b
	27	LC1 at 50.00%	0.17	OK	Eq. H1-1b

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Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	4.0417	0.00	-1.1788	0
3	-6.0833	0.00	4.0896	0
4	-6.25	0.00	4.0896	0
5	-6.3333	0.00	3.6566	0
6	-6.5833	0.00	3.2236	0
10	-6.6667	0.00	3.3679	0
13	-0.50	0.00	-7.3131	0
14	-0.4167	0.00	-7.4574	0
17	3.0417	0.00	-2.9108	0
18	6.0833	0.00	4.0896	0
19	6.25	0.00	4.0896	0
20	6.3333	0.00	3.6566	0
21	6.5833	0.00	3.2236	0
25	6.6667	0.00	3.3679	0
28	0.50	0.00	-7.3131	0
29	0.4167	0.00	-7.4574	0
32	0.00	0.00	-7.3131	0
51	-6.2717	4.00	2.2838	0
53	-1.1581	4.00	-6.5733	0
63	-6.2717	-2.00	2.2838	0
67	-1.1581	-4.00	-6.5733	0
70	-1.0825	0.00	0.625	0

72	-4.5672	4.00	-0.6686	0
73	-2.8626	4.00	-3.621	0
82	-4.5672	-2.00	-0.6686	0
83	-2.8626	-4.00	-3.621	0
84	-6.0985	0.00	2.3838	0
85	-0.9848	0.00	-6.4733	0
86	-4.3939	0.00	-0.5686	0
87	-2.6894	0.00	-3.521	0
88	-6.2717	0.00	2.2838	0
89	-1.1581	0.00	-6.5733	0
90	-4.5672	0.00	-0.6686	0
91	-2.8626	0.00	-3.621	0
92	1.1581	4.00	-6.5733	0
93	6.2717	4.00	2.2838	0
94	1.1581	-2.00	-6.5733	0
95	6.2717	-4.00	2.2838	0
96	2.8626	4.00	-3.621	0
97	4.5672	4.00	-0.6686	0
98	2.8626	-2.00	-3.621	0
99	4.5672	-4.00	-0.6686	0
100	0.9849	0.00	-6.4733	0
101	6.0985	0.00	2.3838	0
102	2.6894	0.00	-3.521	0
103	4.3939	0.00	-0.5686	0
104	1.1581	0.00	-6.5733	0
105	6.2717	0.00	2.2838	0
106	2.8626	0.00	-3.621	0
107	4.5672	0.00	-0.6686	0
108	5.1136	4.00	4.2896	0
109	-5.1136	4.00	4.2896	0
110	5.1136	-2.00	4.2896	0
111	-5.1136	-4.00	4.2896	0
112	1.7046	4.00	4.2896	0
113	-1.7046	4.00	4.2896	0
114	1.7046	-2.00	4.2896	0
115	-1.7046	-4.00	4.2896	0
116	5.1136	0.00	4.0896	0
117	-5.1136	0.00	4.0896	0
118	1.7046	0.00	4.0896	0
119	-1.7046	0.00	4.0896	0
120	5.1136	0.00	4.2896	0
121	-5.1136	0.00	4.2896	0
122	1.7046	0.00	4.2896	0
123	-1.7046	0.00	4.2896	0
124	0.00	0.00	0.00	0
127	1.0825	0.00	0.625	0
128	0.00	0.00	-1.25	0
133	-3.0417	0.00	-2.9108	0
134	-4.0417	0.00	-1.1788	0
135	-1.00	0.00	4.0896	0
136	1.00	0.00	4.0896	0
225	3.7917	0.00	-0.7458	0
226	2.5417	0.00	-2.9108	0
231	-2.5417	0.00	-2.9108	0
232	-3.7917	0.00	-0.7458	0
233	-1.25	0.00	3.6566	0
234	1.25	0.00	3.6566	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
70	1	1	1	1	1	1
127	1	1	1	1	1	1
128	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
9	4	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
10	10	14		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
11	29	25		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
25	6	3		PL 6X1/2	A36	0.00	0.00	0.00
26	18	21		PL 6X1/2	A36	0.00	0.00	0.00
27	28	13		PL 6X1/2	A36	0.00	0.00	0.00
52	108	110		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
53	112	114		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
54	113	115		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
55	109	111		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
56	51	63		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	72	82		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
58	73	83		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
59	53	67		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
60	92	94		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
61	96	98		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
62	97	99		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	93	95		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
64	135	134		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
65	5	70		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
66	136	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
67	20	127		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
68	17	133		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
69	32	128		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
70	233	5		L 2X2X3_16	A36	0.00	0.00	0.00
71	234	20		L 2X2X3_16	A36	0.00	0.00	0.00
72	20	225		L 2X2X3_16	A36	0.00	0.00	0.00
73	5	232		L 2X2X3_16	A36	0.00	0.00	0.00
74	32	231		L 2X2X3_16	A36	0.00	0.00	0.00
75	32	226		L 2X2X3_16	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
71	270.00	0	0.00	0.00	0.00
72	270.00	0	0.00	0.00	0.00
74	270.00	0	0.00	0.00	0.00

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

Bentley

Current Date: 9/3/2019 7:56 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2149\CT2149 (LTE 3C-4C) (MOD.).retx\

Bentley

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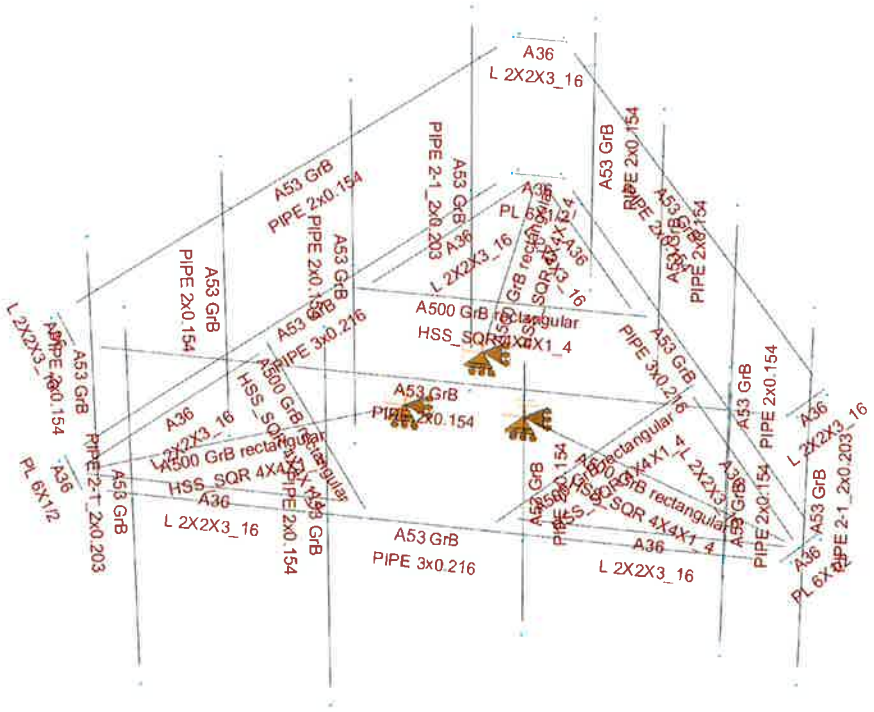

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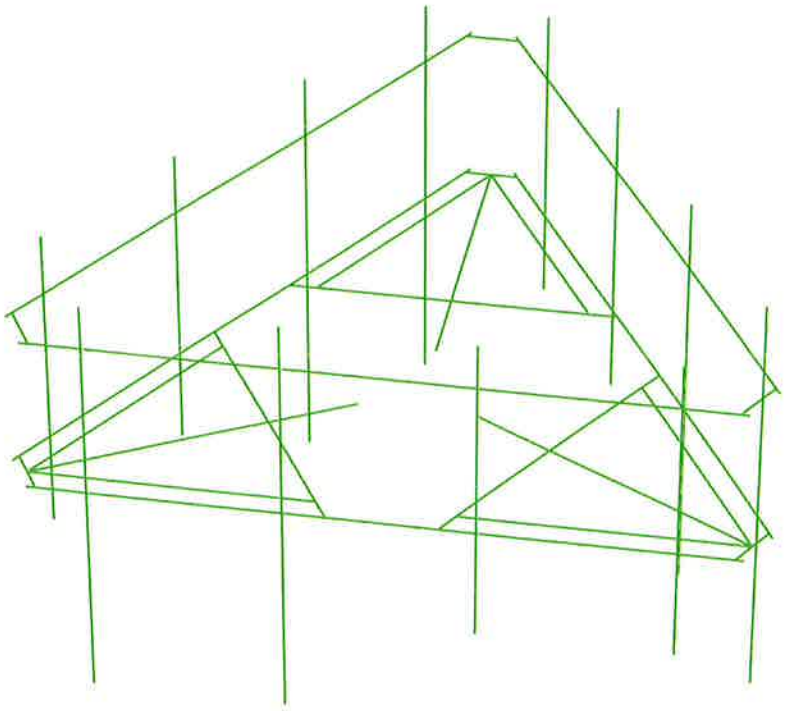
Not designed
Error on design
Design O.K.
With warnings



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Current Date: 9/3/2019 7:58 PM
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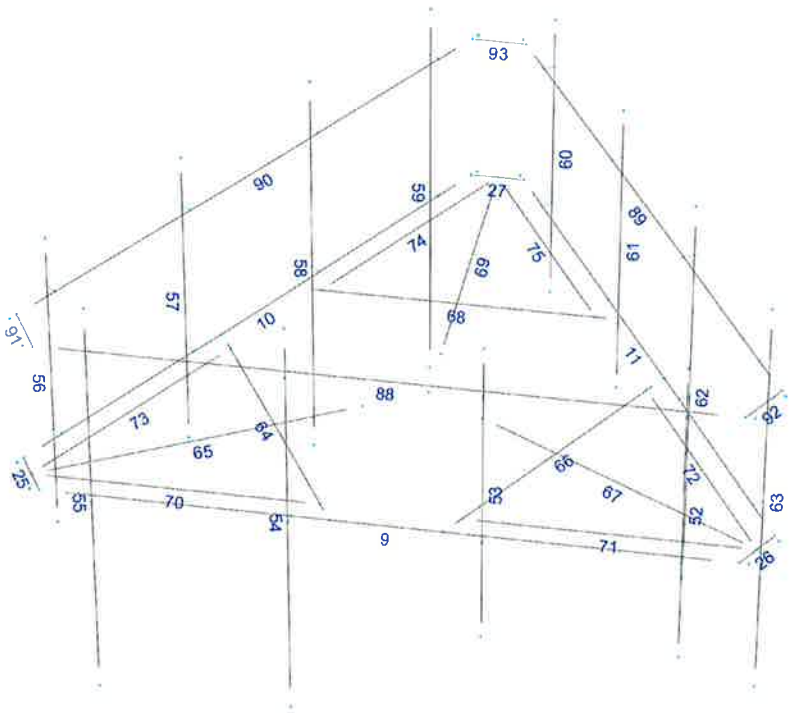

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Current Date: 9/3/2019 7:58 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2149\CT2149 (LTE 3C-4C) (MOD.).re

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC15=1.2DL+1.5LL1
LC16=1.2DL+1.5LL2
LC17=1.2DL+WL0+1.5LLa1
LC18=1.2DL+WL30+1.5LLa1
LC19=1.2DL-WL0+1.5LLa1
LC20=1.2DL-WL30+1.5LLa1
LC21=1.2DL+WL0+1.5LLa2
LC22=1.2DL+WL30+1.5LLa2
LC23=1.2DL-WL0+1.5LLa2
LC24=1.2DL-WL30+1.5LLa2
LC25=1.2DL+WL0+1.5LLa3
LC26=1.2DL+WL30+1.5LLa3
LC27=1.2DL-WL0+1.5LLa3
LC28=1.2DL-WL30+1.5LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**64**	LC12 at 50.00%	0.24	OK	Eq. H1-1b
		65	LC16 at 100.00%	**0.52**	**OK**	Eq. H1-1b
		66	LC10 at 50.00%	0.25	OK	Eq. H1-1b
		67	LC10 at 100.00%	0.48	OK	Eq. H1-1b
		68	LC12 at 50.00%	0.25	OK	Eq. H1-1b
		69	LC12 at 100.00%	0.49	OK	Eq. H1-1b
	L 2X2X3_16	**70**	LC3 at 0.00%	0.38	OK	Eq. H2-1
		71	LC3 at 0.00%	0.31	OK	Eq. H2-1
		72	LC4 at 100.00%	**0.44**	**OK**	Eq. H2-1
		73	LC2 at 100.00%	0.36	OK	Eq. H2-1
		74	LC1 at 100.00%	0.35	OK	Eq. H2-1
		75	LC1 at 100.00%	0.32	OK	Eq. H2-1
		91	LC1 at 100.00%	0.40	OK	Sec. F1
		92	LC4 at 0.00%	0.36	OK	Eq. H2-1
		93	LC4 at 100.00%	0.42	OK	Sec. F1
	PIPE 2-1_2x0.203	**55**	LC1 at 47.92%	0.61	OK	Eq. H1-1b
		59	LC2 at 50.00%	**0.65**	**OK**	Eq. H1-1b
		63	LC2 at 50.00%	0.65	OK	Eq. H1-1b
	PIPE 2x0.154	**52**	LC9 at 64.58%	0.44	OK	Eq. H1-1b

	53	LC1 at 64.58%	0.41	OK	Eq. H1-1b
	54	LC1 at 50.00%	**0.84**	**OK**	Eq. H1-1b
	56	LC9 at 64.58%	0.48	OK	Eq. H1-1b
	57	LC4 at 64.58%	0.36	OK	Eq. H1-1b
	58	LC2 at 50.00%	0.82	OK	Eq. H1-1b
	60	LC4 at 64.58%	0.44	OK	Eq. H1-1b
	61	LC2 at 64.58%	0.41	OK	Eq. H1-1b
	62	LC2 at 50.00%	0.82	OK	Eq. H1-1b
	88	LC12 at 35.71%	0.34	OK	Eq. H1-1b
	89	LC9 at 64.29%	0.34	OK	Eq. H1-1b
	90	LC10 at 64.29%	0.35	OK	Eq. H1-1b
PIPE 3x0.216	**9**	LC3 at 41.67%	0.35	OK	Eq. H1-1b
	10	LC2 at 58.33%	**0.36**	**OK**	Eq. H1-1b
	11	LC4 at 90.28%	0.33	OK	Eq. H1-1b
PL 6X1/2	**25**	LC1 at 50.00%	0.16	OK	Eq. H1-1b
	26	LC2 at 50.00%	**0.21**	**OK**	Eq. H1-1b
	27	LC3 at 50.00%	0.17	OK	Eq. H1-1b

Bentley

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Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2149\CT2149 (LTE 3C-4C) (MOD.).re

Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	4.0417	0.00	-1.1788	0
3	-6.0833	0.00	4.0896	0
4	-6.25	0.00	4.0896	0
5	-6.3333	0.00	3.6566	0
6	-6.5833	0.00	3.2236	0
10	-6.6667	0.00	3.3679	0
13	-0.50	0.00	-7.3131	0
14	-0.4167	0.00	-7.4574	0
17	3.0417	0.00	-2.9108	0
18	6.0833	0.00	4.0896	0
19	6.25	0.00	4.0896	0
20	6.3333	0.00	3.6566	0
21	6.5833	0.00	3.2236	0
25	6.6667	0.00	3.3679	0
28	0.50	0.00	-7.3131	0
29	0.4167	0.00	-7.4574	0
32	0.00	0.00	-7.3131	0
51	-6.2717	4.00	2.2838	0
53	-1.1581	4.00	-6.5733	0
63	-6.2717	-2.00	2.2838	0
67	-1.1581	-4.00	-6.5733	0
70	-1.0825	0.00	0.625	0

72	-4.5672	4.00	-0.6686	0
73	-2.8626	4.00	-3.621	0
82	-4.5672	-2.00	-0.6686	0
83	-2.8626	-4.00	-3.621	0
84	-6.0985	0.00	2.3838	0
85	-0.9848	0.00	-6.4733	0
86	-4.3939	0.00	-0.5686	0
87	-2.6894	0.00	-3.521	0
88	-6.2717	0.00	2.2838	0
89	-1.1581	0.00	-6.5733	0
90	-4.5672	0.00	-0.6686	0
91	-2.8626	0.00	-3.621	0
92	1.1581	4.00	-6.5733	0
93	6.2717	4.00	2.2838	0
94	1.1581	-2.00	-6.5733	0
95	6.2717	-4.00	2.2838	0
96	2.8626	4.00	-3.621	0
97	4.5672	4.00	-0.6686	0
98	2.8626	-2.00	-3.621	0
99	4.5672	-4.00	-0.6686	0
100	0.9849	0.00	-6.4733	0
101	6.0985	0.00	2.3838	0
102	2.6894	0.00	-3.521	0
103	4.3939	0.00	-0.5686	0
104	1.1581	0.00	-6.5733	0
105	6.2717	0.00	2.2838	0
106	2.8626	0.00	-3.621	0
107	4.5672	0.00	-0.6686	0
108	5.1136	4.00	4.2896	0
109	-5.1136	4.00	4.2896	0
110	5.1136	-2.00	4.2896	0
111	-5.1136	-4.00	4.2896	0
112	1.7046	4.00	4.2896	0
113	-1.7046	4.00	4.2896	0
114	1.7046	-2.00	4.2896	0
115	-1.7046	-4.00	4.2896	0
116	5.1136	0.00	4.0896	0
117	-5.1136	0.00	4.0896	0
118	1.7046	0.00	4.0896	0
119	-1.7046	0.00	4.0896	0
120	5.1136	0.00	4.2896	0
121	-5.1136	0.00	4.2896	0
122	1.7046	0.00	4.2896	0
123	-1.7046	0.00	4.2896	0
124	0.00	0.00	0.00	0
127	1.0825	0.00	0.625	0
128	0.00	0.00	-1.25	0
133	-3.0417	0.00	-2.9108	0
134	-4.0417	0.00	-1.1788	0
135	-1.00	0.00	4.0896	0
136	1.00	0.00	4.0896	0
225	3.7917	0.00	-0.7458	0
226	2.5417	0.00	-2.9108	0
231	-2.5417	0.00	-2.9108	0
232	-3.7917	0.00	-0.7458	0
233	-1.25	0.00	3.6566	0
234	1.25	0.00	3.6566	0
235	5.1136	3.00	4.0896	0
236	5.1136	3.00	4.2896	0
237	1.7046	3.00	4.0896	0

238	1.7046	3.00	4.2896	0
239	-1.7046	3.00	4.0896	0
240	-1.7046	3.00	4.2896	0
241	-5.1136	3.00	4.0896	0
242	-5.1136	3.00	4.2896	0
243	-6.0985	3.00	2.3838	0
244	-6.2717	3.00	2.2838	0
245	-4.3939	3.00	-0.5686	0
246	-4.5672	3.00	-0.6686	0
247	-2.6894	3.00	-3.521	0
248	-2.8626	3.00	-3.621	0
249	-0.9848	3.00	-6.4733	0
250	-1.1581	3.00	-6.5733	0
251	0.9849	3.00	-6.4733	0
252	1.1581	3.00	-6.5733	0
253	2.6894	3.00	-3.521	0
254	2.8626	3.00	-3.621	0
255	4.3939	3.00	-0.5686	0
256	4.5672	3.00	-0.6686	0
257	6.0985	3.00	2.3838	0
258	6.2717	3.00	2.2838	0
259	-6.25	3.00	4.0896	0
260	6.25	3.00	4.0896	0
261	0.4167	3.00	-7.4574	0
262	6.6667	3.00	3.3679	0
263	-6.6667	3.00	3.3679	0
264	-0.4167	3.00	-7.4574	0
265	-6.5833	3.00	3.2236	0
266	-6.0833	3.00	4.0896	0
267	6.0833	3.00	4.0896	0
268	6.5833	3.00	3.2236	0
269	0.50	3.00	-7.3131	0
270	-0.50	3.00	-7.3131	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
70	1	1	1	1	1	1
127	1	1	1	1	1	1
128	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
9	4	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
10	10	14		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
11	29	25		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
25	6	3		PL 6X1/2	A36	0.00	0.00	0.00
26	18	21		PL 6X1/2	A36	0.00	0.00	0.00
27	28	13		PL 6X1/2	A36	0.00	0.00	0.00

52	108	110	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
53	112	114	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
54	113	115	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
55	109	111	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
56	51	63	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	72	82	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
58	73	83	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
59	53	67	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
60	92	94	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
61	96	98	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
62	97	99	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	93	95	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
64	135	134	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
65	5	70	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
66	136	2	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
67	20	127	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
68	17	133	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
69	32	128	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
70	233	5	L 2X2X3_16	A36	0.00	0.00	0.00
71	234	20	L 2X2X3_16	A36	0.00	0.00	0.00
72	20	225	L 2X2X3_16	A36	0.00	0.00	0.00
73	5	232	L 2X2X3_16	A36	0.00	0.00	0.00
74	32	231	L 2X2X3_16	A36	0.00	0.00	0.00
75	32	226	L 2X2X3_16	A36	0.00	0.00	0.00
88	259	260	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
89	261	262	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
90	263	264	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	265	266	L 2X2X3_16	A36	0.00	0.00	0.00
92	267	268	L 2X2X3_16	A36	0.00	0.00	0.00
93	269	270	L 2X2X3_16	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
71	270.00	0	0.00	0.00	0.00
72	270.00	0	0.00	0.00	0.00
74	270.00	0	0.00	0.00	0.00
91	90.00	0	0.00	0.00	0.00
92	90.00	0	0.00	0.00	0.00
93	90.00	0	0.00	0.00	0.00

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

Structural Analysis Report

Existing 180 ft. Valmont Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT02652-S

Customer Site Name: Colchester 3 CT

Carrier Name: AT&T (App#: 123938, V2)

Carrier Site ID / Name: CT2149 / Colchester Mahoney Rd

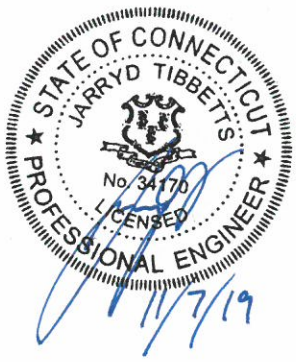
Site Location: 29 Mahoney Road

Colchester, Connecticut

New London County

Latitude: 41.564533

Longitude: -72.251697



Analysis Result:

Max Structural Usage: 77.6% [Pass]

Max Foundation Usage: 71.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: +1.5 %

Report Prepared By : Delu Zhou

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Max Foundation Usage: 71.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: +1.5 %

Report Prepared By : Delu Zhou

Introduction

The purpose of this report is to summarize the analysis results on the 180 ft. Valmont Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Valmont Microflect (Order # 11277-00) original design drawings, dated 11/03/1999
Foundation Drawing	Valmont Microflect (Order # 11277-00) drawing # 3097-F, dated 04/03/2000
Geotechnical Report	FDH Engineering, Inc. (Project # 1465721600) Geotechnical Report, dated 05/22/2014
Modification Drawings	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 130.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft.
Seismic Parameters:	S_S = 0.174, S_1 = 0.061

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	177.0	9	EMS RR90-17-02DP Panel	(1) Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
2		3	RFS APXVAARR18_43-U-NA20 Panel			
3		3	Ericsson KRY 112 489/2 TMA			
4		3	Ericsson KRY 112 144/2 TMA			
5		3	Ericsson Radio 4449 RRU			
6		3	Kathrein 782 10662 Bias-T			
7	167.0	6	BXA-171063-12CF - Panel	(1) Low Profile Platform	(12) 1 5/8"	Verizon
8		6	BXA-70063-6CF - Panel			
9		3	RRH2x40-07-U			
10		3	RRH2x40-AWS			
-	160.0	9	7770.00 - Panel	(1) Low Profile Platform	(12) 1 5/8"	AT&T
-		6	LGP21401 TMA			
-		6	LGP21903 Diplexers			

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
11	160.0	3	CCI HPA-65R-BUU-H8 - Panel	Low Profile Platform w/ (1) Handrail Kit [HRK-12] [3] New 2.5" Pipe	(12) 1 5/8" (4) 3/4" DC (1) 3/8" Fiber	AT&T
12		3	Powerwave - 7770 - Panel			
13		3	CCI - DMP65R-BU8DA - Panel			
14		6	Powerwave LGP21401 TMA			
15		6	Powerwave LGP21901 Diplexers			
16		12	Powerwave 7020.00 RET			
17		3	Ericsson RRUS 4449 B5/B12			
18		3	Ericsson RRUS-12 B2			
19		3	Ericsson RRUS A2 Module			
20		1	Raycap DC6-48-60-18-8F COVP			
21		1	Raycap DC6-48-60-0-8C-EV COVP			

All transmission lines are considered running inside of the pole shafts.

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**77.6%**	**72.1%**	**58.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	5119.5	41.1	87.1

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.5275 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 77.58% at 53.0ft

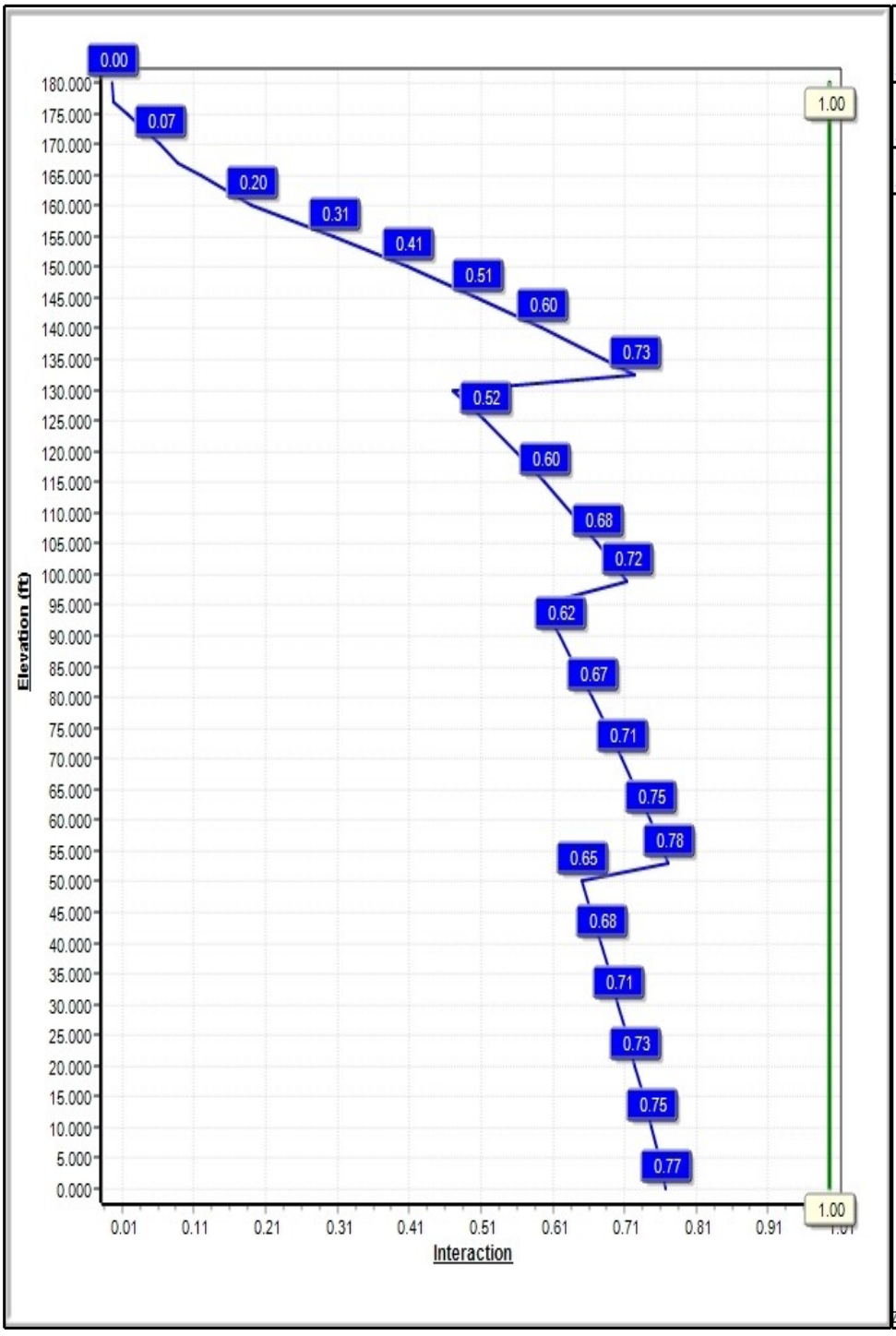
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

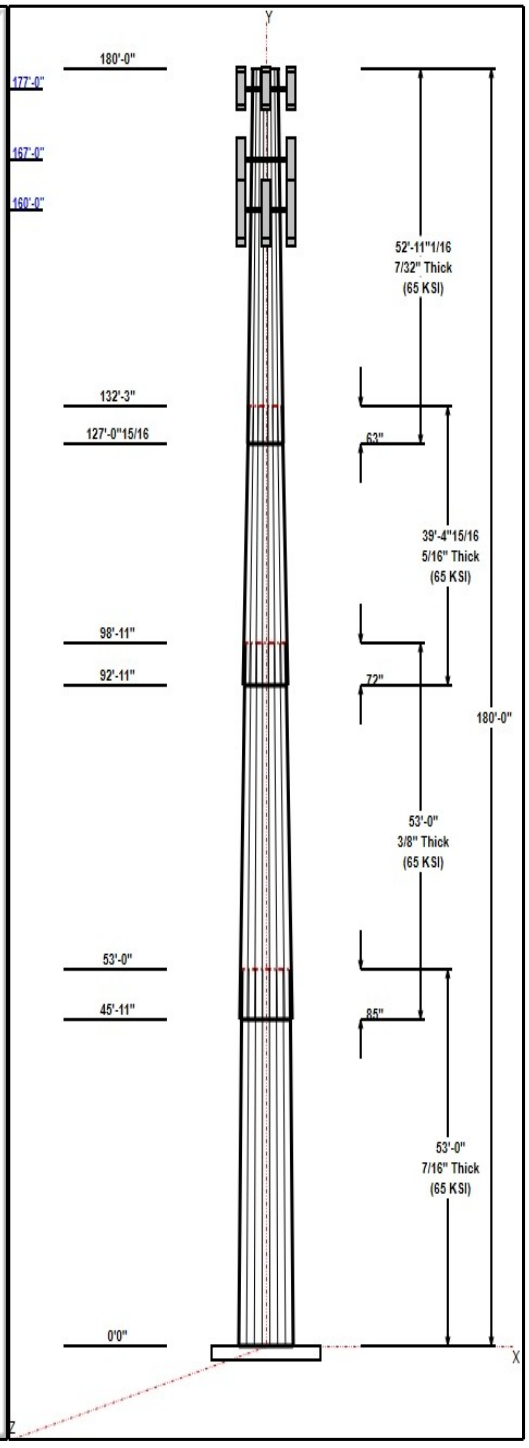
Tower Engineering Solutions

Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 101 mph Wind

Iterations: 25





Structure: CT02652-S-SBA

Type: Tapered
Site Name: Colchester 3 CT
Height: 180.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 16 Sided
Taper: 0.20502

11/7/2019

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.00	49.13	60.00	0.438		0.20502	65
2	53.00	40.47	51.34	0.375	Slip	0.20502	65
3	39.41	34.25	42.33	0.313	Slip	0.20502	65
4	52.92	24.91	35.76	0.219	Slip	0.20502	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
180.00	183.50	1	Lightning Rod	
177.00	177.46	3	KRY 112 489/2	T-Mobile
177.00	177.29	3	KRY 112 144/2	T-Mobile
177.00	177.63	3	Ericsson Radio 4449	T-Mobile
177.00	177.24	3	Kathrein 782 10662 Bias-T	T-Mobile
177.00	177.00	9	EMS RR90-17-02DP	T-Mobile
177.00	177.00	1	Low Profile Platform	T-Mobile
177.00	177.00	3	APXVAARR18_43-U-NA20	T-Mobile
167.00	167.00	6	BXA-70063-6CF	Verizon
167.00	167.00	6	BXA-171063-12CF	Verizon
167.00	167.00	3	RRH2x40-AWS	Verizon
167.00	167.00	3	RRH2x40-07-U	Verizon
167.00	167.00	1	Platform Mount w/ Mods	Verizon
160.00	160.00	1	Raycap	AT&T
160.00	160.00	3	DMP65R-BU8DA	AT&T
160.00	160.00	3	Ericsson RRUS4449	AT&T
160.00	160.00	1	Handrail Kit [SitePro1	AT&T
160.00	160.00	3	CCI HPA-65R-BUU-H8	AT&T
160.00	160.00	3	Ericsson RRUS-12 B2	AT&T
160.00	160.00	3	Ericsson RRUS A2 Module	AT&T
160.00	160.00	6	LGP21401 TMA	AT&T
160.00	160.00	12	Powerwave 7020.00 RET	AT&T
160.00	160.00	6	LGP21901 Diplexers	AT&T
160.00	160.00	1	Raycap DC6-48-60-18-8F	AT&T
160.00	157.00	3	7770	AT&T
160.00	160.00	1	Low Profile Platform	AT&T

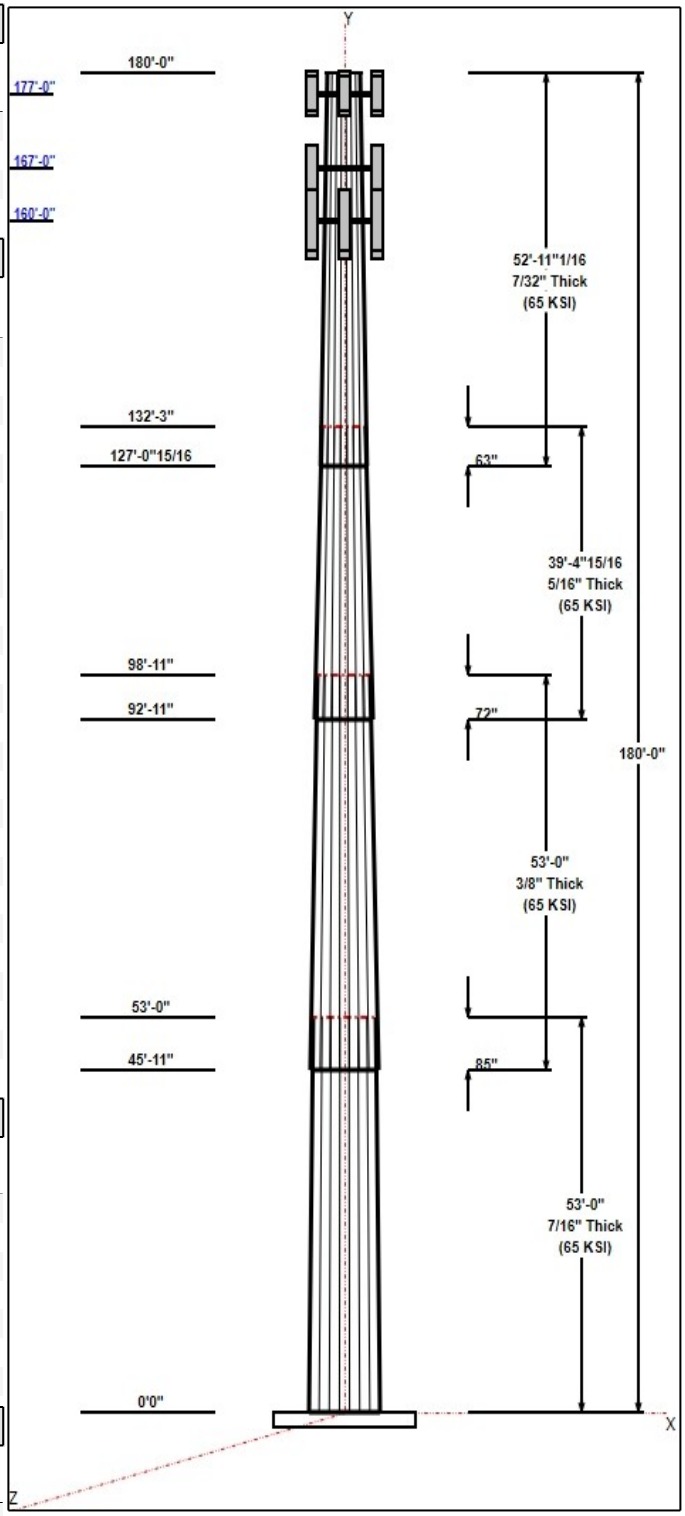
Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	180.00	Outside	Climbing Ladder	
0.00	177.00	Inside	1 5/8" Coax	T-Mobile
0.00	177.00	Inside	1 5/8" Fiber	T-Mobile
0.00	167.00	Inside	1 5/8" Coax	Verizon
0.00	160.00	Inside	1 5/8" Coax	AT&T
0.00	160.00	Inside	3/4" DC	AT&T
0.00	160.00	Inside	3/8" Fiber	AT&T

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
20	2.25" 18J	75.0	Radial

Base Plate



Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	74.6	60.0	Polygon

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	5119.5	41.1	58.9
0.9D + 1.6W 101 mph Wind	5055.2	41.1	44.2
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1303.0	10.3	87.1
1.2D + 1.0E	299.1	2.2	59.0
0.9D + 1.0E	295.0	2.2	44.3
1.0D + 1.0W 60 mph Wind	1121.9	9.1	49.2

Structure: CT02652-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Colchester 3 CT
Height: 180.00 (ft)

11/7/2019

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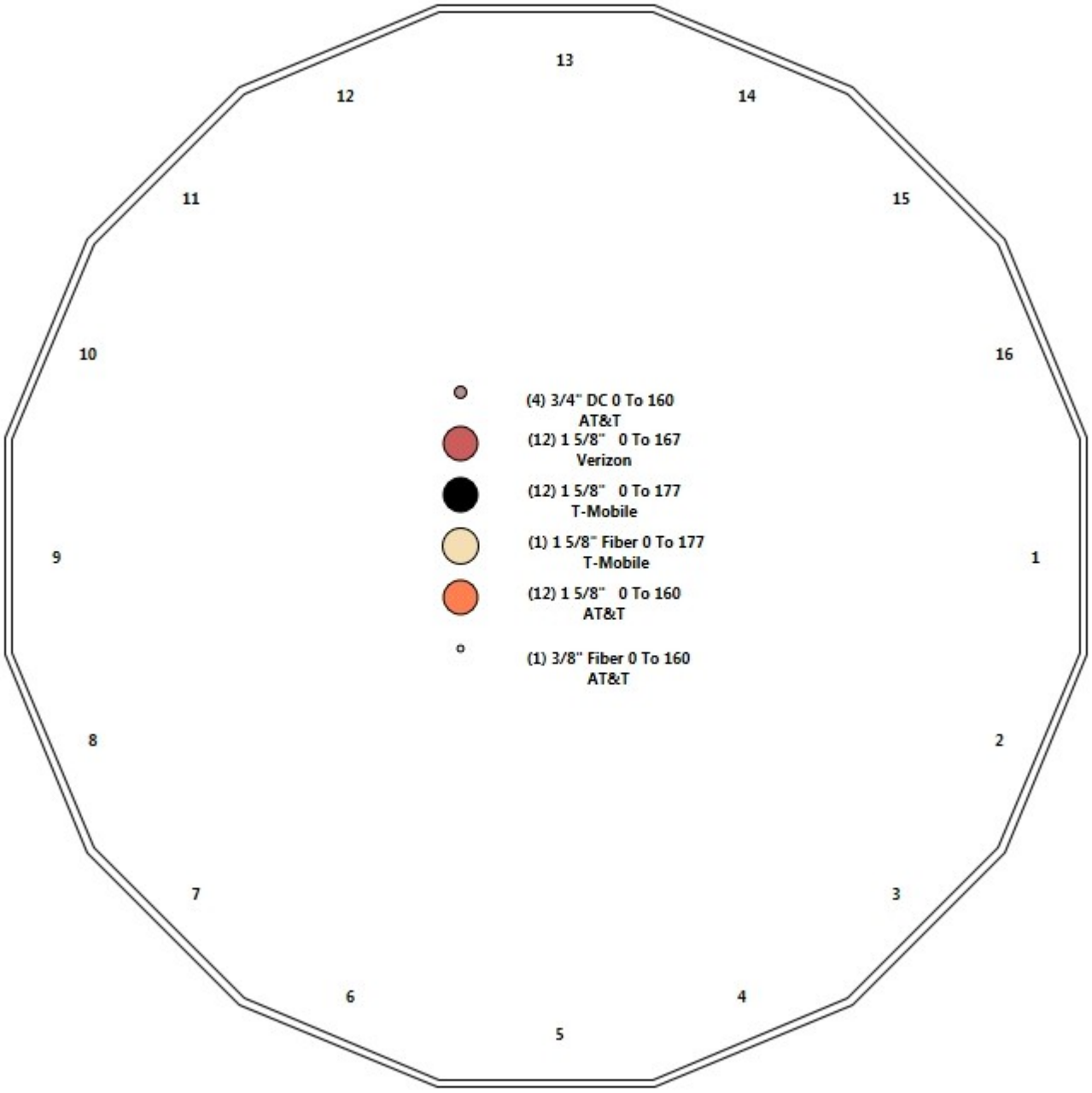

Shaft Properties

Structure:	CT02652-S-SBA		**Code:**	EIA/TIA-222-G	11/7/2019
Site Name:	Colchester 3 CT		**Exposure:**	C	
Height:	180.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	16	53.000	0.4380	65		0.00	13,640
2	16	53.000	0.3750	65	Slip	85.00	9,822
3	16	39.410	0.3130	65	Slip	72.00	5,085
4	16	52.923	0.2190	65	Slip	63.00	3,789
					Total Shaft Weight:		**32,335**

	Bottom						Top						
Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	60.00	0.00	83.22	37298.12	25.66	136.99	49.13	53.00	68.04	20382.3	20.72	112.1	0.205022
2	51.34	45.92	60.96	20001.00	25.64	136.90	40.47	98.92	47.96	9740.99	19.88	107.9	0.205022
3	42.33	92.92	41.95	9354.08	25.31	135.23	34.25	132.33	33.88	4928.56	20.17	109.4	0.205022
4	35.76	127.0	24.83	3962.37	30.89	163.29	24.91	180.00	17.25	1328.51	21.03	113.7	0.205022

Load Summary

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

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Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	180.00	Lightning Rod	1	35.00	1.05	1.00	66.99	3.467	1.00	0.00	3.50
2	177.00	KRY 112 489/2	3	15.40	0.65	0.57	33.31	1.272	0.57	0.00	0.46
3	177.00	KRY 112 144/2	3	9.70	0.41	0.57	19.37	0.893	0.57	0.00	0.29
4	177.00	Ericsson Radio 4449	3	74.00	1.65	0.57	142.70	2.171	0.57	0.00	0.63
5	177.00	Kathrein 782 10662 Bias-T	3	1.80	0.28	0.50	6.40	0.688	0.57	0.00	0.24
6	177.00	EMS RR90-17-02DP	9	18.00	4.36	0.72	118.45	5.364	0.72	0.00	0.00
7	177.00	Low Profile Platform	1	2000.00	24.00	1.00	3774.34	43.589	1.00	0.00	0.00
8	177.00	APXVAARR18_43-U-NA20	3	106.00	15.76	0.70	442.67	16.260	0.70	0.00	0.00
9	167.00	BXA-70063-6CF	6	17.00	7.57	0.68	166.90	10.364	0.68	0.00	0.00
10	167.00	BXA-171063-12CF	6	15.00	4.78	0.78	111.86	7.165	0.78	0.00	0.00
11	167.00	RRH2x40-AWS	3	44.00	2.52	0.57	105.38	3.756	0.57	0.00	0.00
12	167.00	RRH2x40-07-U	3	50.70	2.23	0.57	110.12	3.303	0.57	0.00	0.00
13	167.00	Platform Mount w/ Mods	1	2000.00	24.00	1.00	3764.05	43.475	1.00	0.00	0.00
14	160.00	Raycap DC6-48-60-0-8C-EV COVP	1	26.20	3.78	1.00	230.13	4.484	1.00	0.00	0.00
15	160.00	DMP65R-BU8DA	3	95.70	13.75	0.79	475.40	19.705	0.79	0.00	0.00
16	160.00	Ericsson RRUS4449 B5/B12	3	73.00	1.97	0.57	128.24	2.521	0.57	0.00	0.00
17	160.00	Handrail Kit [SitePro1 HRK-12]+Pipe	1	330.00	8.75	1.00	724.16	17.357	1.00	0.00	0.00
18	160.00	CCI HPA-65R-BUU-H8	3	68.00	12.98	0.79	361.24	14.606	0.79	0.00	0.00
19	160.00	Ericsson RRUS-12 B2	3	58.00	3.15	0.57	130.29	4.414	0.57	0.00	0.00
20	160.00	Ericsson RRUS A2 Module	3	21.20	1.86	0.57	57.54	2.840	0.57	0.00	0.00
21	160.00	LGP21401 TMA	6	17.50	1.29	0.50	48.73	2.131	0.50	0.00	0.00
22	160.00	Powerwave 7020.00 RET	12	2.20	0.40	0.50	12.50	0.887	0.50	0.00	0.00
23	160.00	LGP21901 Diplexers	6	31.00	0.63	0.50	74.63	1.645	0.50	0.00	0.00
24	160.00	Raycap DC6-48-60-18-8F COVP	1	32.80	1.47	1.00	96.98	2.174	1.00	0.00	0.00
25	160.00	7770	3	35.00	5.50	0.73	218.73	6.572	0.73	0.00	-3.00
26	160.00	Low Profile Platform	1	1800.00	22.00	1.00	3380.86	39.776	1.00	0.00	0.00
		Totals:	**91**	**8,852.90**			**22,360.49**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	180.00	(1) Climbing Ladder	0.00	Outside
0.00	177.00	(12) 1 5/8" Coax	0.00	Inside
0.00	177.00	(1) 1 5/8" Fiber	0.00	Inside
0.00	167.00	(12) 1 5/8" Coax	0.00	Inside
0.00	160.00	(12) 1 5/8" Coax	0.00	Inside
0.00	160.00	(4) 3/4" DC	0.00	Inside
0.00	160.00	(1) 3/8" Fiber	0.00	Inside

Shaft Section Properties

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.4380	60.000	83.221	37298.1	25.66	136.99	73.5	1219.	0.0
5.00		0.4380	58.975	81.789	35405.3	25.19	134.65	74.1	1177.	1403.7
10.00		0.4380	57.950	80.357	33577.6	24.73	132.31	74.6	1136.	1379.4
15.00		0.4380	56.925	78.924	31813.9	24.26	129.96	75.1	1096.	1355.0
20.00		0.4380	55.900	77.492	30113.1	23.79	127.62	75.6	1056.	1330.6
25.00		0.4380	54.874	76.060	28474.0	23.33	125.28	76.2	1017.	1306.3
30.00		0.4380	53.849	74.627	26895.5	22.86	122.94	76.7	979.7	1281.9
35.00		0.4380	52.824	73.195	25376.4	22.40	120.60	77.2	942.3	1257.5
40.00		0.4380	51.799	71.763	23915.7	21.93	118.26	77.8	905.7	1233.1
45.00		0.4380	50.774	70.330	22512.1	21.47	115.92	78.3	869.7	1208.8
45.92	Bot - Section 2	0.4380	50.586	70.068	22260.8	21.38	115.49	78.4	863.2	219.0
50.00		0.4380	49.749	68.898	21164.5	21.00	113.58	78.8	834.5	1805.5
53.00	Top - Section 1	0.3750	49.884	59.225	18339.4	24.87	133.02	0.0	0.0	1307.3
55.00		0.3750	49.474	58.734	17887.4	24.65	131.93	74.7	709.2	401.4
60.00		0.3750	48.449	57.508	16790.3	24.11	129.20	75.3	679.8	988.9
65.00		0.3750	47.424	56.282	15738.9	23.56	126.46	75.9	651.0	968.0
70.00		0.3750	46.398	55.056	14732.4	23.02	123.73	76.5	622.8	947.1
75.00		0.3750	45.373	53.829	13769.7	22.48	121.00	77.1	595.3	926.3
80.00		0.3750	44.348	52.603	12849.9	21.93	118.26	77.8	568.4	905.4
85.00		0.3750	43.323	51.377	11972.0	21.39	115.53	78.4	542.1	884.5
90.00		0.3750	42.298	50.150	11135.1	20.84	112.79	79.0	516.4	863.7
92.92	Bot - Section 3	0.3750	41.700	49.435	10665.4	20.53	111.20	79.3	501.7	494.2
95.00		0.3750	41.273	48.924	10338.1	20.30	110.06	79.6	491.3	644.5
98.92	Top - Section 2	0.3130	41.096	40.720	8556.2	24.53	131.30	0.0	0.0	1193.7
100.00		0.3130	40.874	40.499	8417.2	24.38	130.59	75.0	403.9	149.7
105.00		0.3130	39.849	39.475	7795.0	23.73	127.31	75.7	383.7	680.3
110.00		0.3130	38.824	38.452	7204.2	23.08	124.04	76.5	364.0	662.9
115.00		0.3130	37.798	37.428	6644.1	22.43	120.76	77.2	344.8	645.5
120.00		0.3130	36.773	36.405	6113.8	21.78	117.49	77.9	326.1	628.1
125.00		0.3130	35.748	35.381	5612.5	21.13	114.21	78.7	308.0	610.7
127.08	Bot - Section 4	0.3130	35.322	34.956	5412.6	20.86	112.85	79.0	300.6	248.5
130.00		0.3130	34.723	34.357	5139.3	20.48	110.94	79.4	290.3	589.7
132.33	Top - Section 3	0.2190	34.684	24.078	3613.2	29.91	158.37	0.0	0.0	462.1
135.00		0.2190	34.136	23.695	3443.5	29.41	155.87	69.3	197.9	217.3
140.00		0.2190	33.111	22.979	3140.6	28.48	151.19	70.3	186.1	397.0
145.00		0.2190	32.086	22.262	2856.0	27.55	146.51	71.4	174.6	384.9
150.00		0.2190	31.061	21.546	2589.2	26.62	141.83	72.5	163.5	372.7
155.00		0.2190	30.036	20.830	2339.5	25.69	137.15	73.5	152.8	360.5
160.00		0.2190	29.010	20.114	2106.4	24.76	132.47	74.6	142.4	348.3
165.00		0.2190	27.985	19.398	1889.3	23.83	127.79	75.6	132.4	336.1
167.00		0.2190	27.575	19.111	1806.8	23.45	125.91	76.0	128.5	131.0
170.00		0.2190	26.960	18.682	1687.7	22.90	123.11	76.7	122.8	192.9
175.00		0.2190	25.935	17.966	1500.9	21.96	118.43	77.7	113.5	311.8
177.00		0.2190	25.525	17.679	1430.3	21.59	116.55	78.1	109.9	121.3
180.00		0.2190	24.910	17.249	1328.5	21.03	113.74	78.8	104.6	178.3
										32335.3

Wind Loading - Shaft

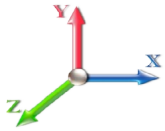
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.20	474.71	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	466.60	0.750	0.000	5.00	25.272	18.95	703.5	0.0	1684.5
10.00		1.00	0.85	21.088	23.20	458.49	0.750	0.000	5.00	24.837	18.63	691.3	0.0	1655.2
15.00		1.00	0.85	21.088	23.20	450.38	0.750	0.000	5.00	24.401	18.30	679.2	0.0	1626.0
20.00		1.00	0.90	22.375	24.61	455.56	0.750	0.000	5.00	23.966	17.97	707.8	0.0	1596.7
25.00		1.00	0.95	23.451	25.80	457.84	0.750	0.000	5.00	23.530	17.65	728.4	0.0	1567.5
30.00		1.00	0.98	24.369	26.81	457.99	0.750	0.000	5.00	23.095	17.32	742.9	0.0	1538.3
35.00		1.00	1.01	25.172	27.69	456.62	0.750	0.000	5.00	22.659	16.99	752.9	0.0	1509.0
40.00		1.00	1.04	25.890	28.48	454.10	0.750	0.000	5.00	22.224	16.67	759.5	0.0	1479.8
45.00		1.00	1.07	26.540	29.19	450.67	0.750	0.000	5.00	21.788	16.34	763.3	0.0	1450.5
45.92	Bot - Section 2	1.00	1.07	26.653	29.32	449.95	0.750	0.000	0.92	3.947	2.96	138.9	0.0	262.8
50.00		1.00	1.09	27.135	29.85	446.49	0.750	0.000	4.08	17.666	13.25	632.8	0.0	2166.6
53.00	Top - Section 1	1.00	1.11	27.470	30.22	443.68	0.750	0.000	3.00	12.794	9.60	463.9	0.0	1568.8
55.00		1.00	1.12	27.685	30.45	448.50	0.750	0.000	2.00	8.442	6.33	308.5	0.0	481.7
60.00		1.00	1.14	28.197	31.02	443.25	0.750	0.000	5.00	20.800	15.60	774.2	0.0	1186.6
65.00		1.00	1.16	28.676	31.54	437.54	0.750	0.000	5.00	20.365	15.27	770.9	0.0	1161.6
70.00		1.00	1.17	29.127	32.04	431.44	0.750	0.000	5.00	19.929	14.95	766.2	0.0	1136.6
75.00		1.00	1.19	29.553	32.51	424.98	0.750	0.000	5.00	19.494	14.62	760.5	0.0	1111.5
80.00		1.00	1.21	29.958	32.95	418.21	0.750	0.000	5.00	19.058	14.29	753.6	0.0	1086.5
85.00		1.00	1.22	30.342	33.38	411.16	0.750	0.000	5.00	18.623	13.97	745.9	0.0	1061.5
90.00		1.00	1.24	30.710	33.78	403.85	0.750	0.000	5.00	18.187	13.64	737.3	0.0	1036.4
92.92	Bot - Section 3	1.00	1.25	30.917	34.01	399.48	0.750	0.000	2.92	10.408	7.81	424.8	0.0	593.0
95.00		1.00	1.25	31.061	34.17	396.31	0.750	0.000	2.08	7.454	5.59	305.6	0.0	773.4
98.92	Top - Section 2	1.00	1.26	31.327	34.46	390.26	0.750	0.000	3.92	13.810	10.36	571.0	0.0	1432.4
100.00		1.00	1.27	31.399	34.54	394.60	0.750	0.000	1.08	3.773	2.83	156.4	0.0	179.6
105.00		1.00	1.28	31.723	34.89	386.69	0.750	0.000	5.00	17.147	12.86	718.0	0.0	816.4
110.00		1.00	1.29	32.035	35.24	378.59	0.750	0.000	5.00	16.711	12.53	706.6	0.0	795.5
115.00		1.00	1.30	32.336	35.57	370.32	0.750	0.000	5.00	16.276	12.21	694.7	0.0	774.6
120.00		1.00	1.32	32.627	35.89	361.90	0.750	0.000	5.00	15.840	11.88	682.2	0.0	753.7
125.00		1.00	1.33	32.909	36.20	353.32	0.750	0.000	5.00	15.405	11.55	669.2	0.0	732.8
127.08	Bot - Section 4	1.00	1.33	33.023	36.33	349.72	0.750	0.000	2.08	6.270	4.70	273.3	0.0	298.2
130.00		1.00	1.34	33.182	36.50	344.61	0.750	0.000	2.92	8.808	6.61	385.8	0.0	707.6
132.33	Top - Section 3	1.00	1.34	33.306	36.64	340.51	0.750	0.000	2.33	6.904	5.18	303.5	0.0	554.5
135.00		1.00	1.35	33.446	36.79	340.13	0.750	0.000	2.67	7.816	5.86	345.1	0.0	260.7
140.00		1.00	1.36	33.703	37.07	331.18	0.750	0.000	5.00	14.284	10.71	635.5	0.0	476.5
145.00		1.00	1.37	33.953	37.35	322.12	0.750	0.000	5.00	13.849	10.39	620.7	0.0	461.8
150.00		1.00	1.38	34.196	37.62	312.94	0.750	0.000	5.00	13.413	10.06	605.5	0.0	447.2
155.00		1.00	1.39	34.433	37.88	303.66	0.750	0.000	5.00	12.978	9.73	589.9	0.0	432.6
160.00	Appurtenance(s)	1.00	1.40	34.664	38.13	294.28	0.750	0.000	5.00	12.542	9.41	573.9	0.0	418.0
165.00		1.00	1.41	34.890	38.38	284.80	0.750	0.000	5.00	12.107	9.08	557.6	0.0	403.3
167.00	Appurtenance(s)	1.00	1.41	34.978	38.48	280.98	0.750	0.000	2.00	4.721	3.54	218.0	0.0	157.2
170.00		1.00	1.42	35.110	38.62	275.23	0.750	0.000	3.00	6.950	5.21	322.1	0.0	231.5
175.00		1.00	1.42	35.324	38.86	265.58	0.750	0.000	5.00	11.236	8.43	523.9	0.0	374.1
177.00	Appurtenance(s)	1.00	1.43	35.409	38.95	261.69	0.750	0.000	2.00	4.372	3.28	204.4	0.0	145.5
180.00	Appurtenance(s)	1.00	1.43	35.535	39.09	255.84	0.750	0.000	3.00	6.428	4.82	301.5	0.0	213.9
								Totals:	**180.00**			**24,770.3**		**38,802.4**

Discrete Appurtenance Forces

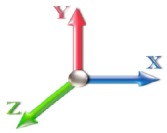
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	180.00	Lightning Rod	1	35.679	39.247	1.00	1.00	1.05	42.00	0.000	3.500	65.93	0.00	230.77
2	177.00	APXVAARR18_43-U-NA2	3	35.409	38.950	0.56	0.80	26.48	381.60	0.000	0.000	1650.03	0.00	0.00
3	177.00	Low Profile Platform	1	35.409	38.950	1.00	1.00	24.00	2400.00	0.000	0.000	1495.68	0.00	0.00
4	177.00	EMS RR90-17-02DP	9	35.409	38.950	0.58	0.80	22.60	194.40	0.000	0.000	1408.57	0.00	0.00
5	177.00	Kathrein 782 10662 Bias-T	3	35.419	38.961	0.40	0.80	0.34	6.48	0.000	0.237	20.95	0.00	4.97
6	177.00	Ericsson Radio 4449	3	35.435	38.979	0.46	0.80	2.26	266.40	0.000	0.625	140.77	0.00	87.98
7	177.00	KRY 112 144/2	3	35.421	38.963	0.46	0.80	0.56	34.92	0.000	0.287	34.97	0.00	10.05
8	177.00	KRY 112 489/2	3	35.428	38.971	0.46	0.80	0.89	55.44	0.000	0.458	55.45	0.00	25.41
9	167.00	RRH2x40-AWS	3	34.978	38.476	0.46	0.80	3.45	158.40	0.000	0.000	212.22	0.00	0.00
10	167.00	BXA-70063-6CF	6	34.978	38.476	0.54	0.80	24.71	122.40	0.000	0.000	1521.09	0.00	0.00
11	167.00	BXA-171063-12CF	6	34.978	38.476	0.62	0.80	17.90	108.00	0.000	0.000	1101.73	0.00	0.00
12	167.00	RRH2x40-07-U	3	34.978	38.476	0.46	0.80	3.05	182.52	0.000	0.000	187.80	0.00	0.00
13	167.00	Platform Mount w/ Mods	1	34.978	38.476	1.00	1.00	24.00	2400.00	0.000	0.000	1477.48	0.00	0.00
14	160.00	Raycap	1	34.664	38.131	1.00	1.00	3.78	31.44	0.000	0.000	230.61	0.00	0.00
15	160.00	Low Profile Platform	1	34.664	38.131	1.00	1.00	22.00	2160.00	0.000	0.000	1342.20	0.00	0.00
16	160.00	Ericsson RRUS-12 B2	3	34.664	38.131	0.46	0.80	4.31	208.80	0.000	0.000	262.90	0.00	0.00
17	160.00	DMP65R-BU8DA	3	34.664	38.131	0.63	0.80	26.07	344.52	0.000	0.000	1590.51	0.00	0.00
18	160.00	Ericsson RRUS4449	3	34.664	38.131	0.46	0.80	2.69	262.80	0.000	0.000	164.42	0.00	0.00
19	160.00	Handrail Kit [SitePro1	1	34.664	38.131	1.00	1.00	8.75	396.00	0.000	0.000	533.83	0.00	0.00
20	160.00	CCI HPA-65R-BUU-H8	3	34.664	38.131	0.63	0.80	24.61	244.80	0.000	0.000	1501.44	0.00	0.00
21	160.00	7770	3	34.526	37.979	0.58	0.80	9.64	126.00	0.000	-3.000	585.55	0.00	-1756.64
22	160.00	Ericsson RRUS A2	3	34.664	38.131	0.46	0.80	2.54	76.32	0.000	0.000	155.24	0.00	0.00
23	160.00	LGP21401 TMA	6	34.664	38.131	0.40	0.80	3.10	126.00	0.000	0.000	188.88	0.00	0.00
24	160.00	Powerwave 7020.00 RET	12	34.664	38.131	0.40	0.80	1.92	31.68	0.000	0.000	117.14	0.00	0.00
25	160.00	LGP21901 Diplexers	6	34.664	38.131	0.40	0.80	1.51	223.20	0.000	0.000	92.25	0.00	0.00
26	160.00	Raycap DC6-48-60-18-8F	1	34.664	38.131	1.00	1.00	1.47	39.36	0.000	0.000	89.68	0.00	0.00
							Totals:		**10,623.48**			**16,227.30**		

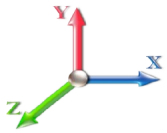
Total Applied Force Summary

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		703.46	1967.08	0.00	0.00
10.00		691.34	1937.84	0.00	0.00
15.00		679.22	1908.59	0.00	0.00
20.00		707.81	1879.35	0.00	0.00
25.00		728.38	1850.11	0.00	0.00
30.00		742.87	1820.86	0.00	0.00
35.00		752.90	1791.62	0.00	0.00
40.00		759.49	1762.38	0.00	0.00
45.00		763.30	1733.14	0.00	0.00
45.92		138.87	314.57	0.00	0.00
50.00		632.75	2397.43	0.00	0.00
53.00		463.91	1738.31	0.00	0.00
55.00		308.51	594.71	0.00	0.00
60.00		774.19	1469.24	0.00	0.00
65.00		770.86	1444.21	0.00	0.00
70.00		766.23	1419.17	0.00	0.00
75.00		760.46	1394.13	0.00	0.00
80.00		753.64	1369.10	0.00	0.00
85.00		745.88	1344.06	0.00	0.00
90.00		737.25	1319.02	0.00	0.00
92.92		424.75	757.87	0.00	0.00
95.00		305.64	891.16	0.00	0.00
98.92		571.04	1653.79	0.00	0.00
100.00		156.36	240.87	0.00	0.00
105.00		718.00	1099.00	0.00	0.00
110.00		706.65	1078.10	0.00	0.00
115.00		694.70	1057.21	0.00	0.00
120.00		682.20	1036.31	0.00	0.00
125.00		669.17	1015.41	0.00	0.00
127.08		273.32	415.59	0.00	0.00
130.00		385.78	872.81	0.00	0.00
132.33		303.51	685.99	0.00	0.00
135.00		345.07	411.84	0.00	0.00
140.00		635.48	759.06	0.00	0.00
145.00		620.68	744.44	0.00	0.00
150.00		605.46	729.81	0.00	0.00
155.00		589.86	715.19	0.00	0.00
160.00	(46) attachments	7428.53	4971.49	0.00	-1756.64
165.00		557.57	601.11	0.00	0.00
167.00	(19) attachments	4718.28	3207.67	0.00	0.00
170.00		322.12	305.21	0.00	0.00
175.00		523.90	496.99	0.00	0.00
177.00	(25) attachments	5010.77	3533.94	0.00	128.42
180.00	(1) attachments	367.44	280.78	0.00	230.77
	Totals:	**40,997.60**	**59,016.55**	**0.00**	**-1,397.44**

Linear Appurtenance Segment Forces (Factored)

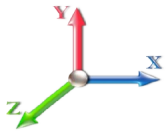
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	41.40
10.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	41.40
15.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	41.40
20.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.375	0.00	41.40
25.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.451	0.00	41.40
30.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.369	0.00	41.40
35.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.172	0.00	41.40
40.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.890	0.00	41.40
45.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.540	0.00	41.40
45.92	Climbing Ladder	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	26.653	0.00	7.59
50.00	Climbing Ladder	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	27.135	0.00	33.81
53.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.470	0.00	24.84
55.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	27.685	0.00	16.56
60.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.197	0.00	41.40
65.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.676	0.00	41.40
70.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.127	0.00	41.40
75.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.553	0.00	41.40
80.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.958	0.00	41.40
85.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.342	0.00	41.40
90.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.710	0.00	41.40
92.92	Climbing Ladder	Yes	2.92	0.000	0.00	0.00	0.00	0.000	0.000	30.917	0.00	24.15
95.00	Climbing Ladder	Yes	2.08	0.000	0.00	0.00	0.00	0.000	0.000	31.061	0.00	17.25
98.92	Climbing Ladder	Yes	3.92	0.000	0.00	0.00	0.00	0.000	0.000	31.327	0.00	32.43
100.00	Climbing Ladder	Yes	1.08	0.000	0.00	0.00	0.00	0.000	0.000	31.399	0.00	8.97
105.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.723	0.00	41.40
110.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.035	0.00	41.40
115.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.336	0.00	41.40
120.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.627	0.00	41.40
125.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.909	0.00	41.40
127.08	Climbing Ladder	Yes	2.08	0.000	0.00	0.00	0.00	0.000	0.000	33.023	0.00	17.19
130.00	Climbing Ladder	Yes	2.92	0.000	0.00	0.00	0.00	0.000	0.000	33.182	0.00	24.21
132.33	Climbing Ladder	Yes	2.33	0.000	0.00	0.00	0.00	0.000	0.000	33.306	0.00	19.26
135.00	Climbing Ladder	Yes	2.67	0.000	0.00	0.00	0.00	0.000	0.000	33.446	0.00	22.14
140.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.703	0.00	41.40
145.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.953	0.00	41.40
150.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.196	0.00	41.40
155.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.433	0.00	41.40
160.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.664	0.00	41.40
165.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.890	0.00	41.40
167.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.978	0.00	16.56
170.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.110	0.00	24.84
175.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.324	0.00	41.40
177.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.409	0.00	16.56
180.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.535	0.00	24.84
										Totals:	**0.0**	**1,490.4**

Calculated Forces

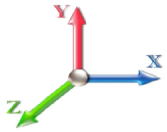
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-58.95	-41.10	0.00	-5119.5	0.00	5119.50	5508.12	2754.06	13547.4	6725.55	0.00	0.000	0.000	0.772
5.00	-56.84	-40.58	0.00	-4914.0	0.00	4914.02	5452.09	2726.05	13177.2	6541.73	0.10	-0.191	0.000	0.762
10.00	-54.77	-40.07	0.00	-4711.1	0.00	4711.12	5394.71	2697.35	12808.5	6358.68	0.41	-0.385	0.000	0.751
15.00	-52.74	-39.55	0.00	-4510.7	0.00	4510.79	5335.97	2667.98	12441.5	6176.49	0.92	-0.580	0.000	0.740
20.00	-50.73	-39.00	0.00	-4313.0	0.00	4313.03	5275.87	2637.93	12076.4	5995.24	1.63	-0.777	0.000	0.729
25.00	-48.76	-38.41	0.00	-4118.0	0.00	4118.05	5214.41	2607.20	11713.3	5815.02	2.55	-0.976	0.000	0.718
30.00	-46.82	-37.80	0.00	-3926.0	0.00	3926.00	5151.59	2575.80	11352.6	5635.92	3.68	-1.177	0.000	0.706
35.00	-44.91	-37.17	0.00	-3737.0	0.00	3737.00	5087.42	2543.71	10994.2	5458.02	5.02	-1.380	0.000	0.694
40.00	-43.04	-36.52	0.00	-3551.1	0.00	3551.18	5021.88	2510.94	10638.5	5281.41	6.58	-1.584	0.000	0.681
45.00	-41.25	-35.79	0.00	-3368.6	0.00	3368.60	4954.99	2477.50	10285.5	5106.18	8.35	-1.790	0.000	0.668
45.92	-40.88	-35.72	0.00	-3335.7	0.00	3335.79	4942.58	2471.29	10221.1	5074.21	8.69	-1.829	0.000	0.666
50.00	-38.41	-35.10	0.00	-3189.9	0.00	3189.96	4886.75	2443.37	9935.52	4932.41	10.33	-1.999	0.000	0.655
53.00	-36.63	-34.64	0.00	-3084.6	0.00	3084.65	3967.43	1983.71	8109.29	4025.79	11.63	-2.126	0.000	0.776
55.00	-35.95	-34.41	0.00	-3015.3	0.00	3015.36	3947.58	1973.79	8001.39	3972.23	12.54	-2.211	0.000	0.769
60.00	-34.38	-33.72	0.00	-2843.3	0.00	2843.30	3897.00	1948.50	7732.70	3838.84	14.98	-2.444	0.000	0.750
65.00	-32.83	-33.02	0.00	-2674.7	0.00	2674.70	3845.06	1922.53	7465.70	3706.29	17.66	-2.678	0.000	0.730
70.00	-31.32	-32.31	0.00	-2509.6	0.00	2509.60	3791.77	1895.89	7200.54	3574.65	20.59	-2.912	0.000	0.711
75.00	-29.84	-31.60	0.00	-2348.0	0.00	2348.03	3737.12	1868.56	6937.41	3444.02	23.77	-3.146	0.000	0.690
80.00	-28.39	-30.89	0.00	-2190.0	0.00	2190.01	3681.11	1840.56	6676.48	3314.49	27.19	-3.381	0.000	0.669
85.00	-26.97	-30.17	0.00	-2035.5	0.00	2035.57	3623.74	1811.87	6417.92	3186.13	30.85	-3.615	0.000	0.647
90.00	-25.61	-29.43	0.00	-1884.7	0.00	1884.71	3565.02	1782.51	6161.91	3059.03	34.76	-3.848	0.000	0.624
92.92	-24.82	-29.01	0.00	-1798.8	0.00	1798.86	3530.13	1765.07	6013.81	2985.51	37.15	-3.985	0.000	0.610
95.00	-23.89	-28.70	0.00	-1738.4	0.00	1738.42	3504.93	1752.47	5908.61	2933.28	38.91	-4.083	0.000	0.600
98.92	-22.22	-28.06	0.00	-1626.0	0.00	1626.01	2742.07	1371.04	4616.42	2291.78	42.33	-4.264	0.000	0.718
100.00	-21.92	-27.94	0.00	-1595.6	0.00	1595.62	2732.96	1366.48	4575.83	2271.63	43.31	-4.315	0.000	0.711
105.00	-20.76	-27.23	0.00	-1455.9	0.00	1455.92	2690.08	1345.04	4389.32	2179.04	47.96	-4.573	0.000	0.676
110.00	-19.62	-26.53	0.00	-1319.7	0.00	1319.75	2645.83	1322.92	4204.31	2087.20	52.88	-4.827	0.000	0.640
115.00	-18.52	-25.82	0.00	-1187.1	0.00	1187.12	2600.23	1300.12	4020.98	1996.19	58.07	-5.074	0.000	0.602
120.00	-17.45	-25.12	0.00	-1058.0	0.00	1058.01	2553.28	1276.64	3839.50	1906.09	63.50	-5.314	0.000	0.562
125.00	-16.43	-24.41	0.00	-932.41	0.00	932.41	2504.96	1252.48	3660.03	1816.99	69.19	-5.546	0.000	0.520
127.08	-16.00	-24.12	0.00	-881.72	0.00	881.72	2484.49	1242.25	3586.13	1780.31	71.62	-5.641	0.000	0.502
130.00	-15.12	-23.68	0.00	-811.20	0.00	811.20	2455.29	1227.64	3482.76	1728.99	75.11	-5.771	0.000	0.476
132.33	-14.42	-23.34	0.00	-756.10	0.00	756.10	1489.30	744.65	2121.68	1053.29	77.94	-5.872	0.000	0.729
135.00	-13.97	-23.00	0.00	-693.70	0.00	693.70	1477.63	738.82	2071.36	1028.31	81.26	-5.984	0.000	0.685
140.00	-13.19	-22.35	0.00	-578.70	0.00	578.70	1454.76	727.38	1977.27	981.60	87.66	-6.247	0.000	0.600
145.00	-12.43	-21.69	0.00	-466.97	0.00	466.97	1430.53	715.26	1883.34	934.97	94.32	-6.484	0.000	0.509
150.00	-11.71	-21.05	0.00	-358.50	0.00	358.50	1404.94	702.47	1789.74	888.50	101.21	-6.689	0.000	0.413
155.00	-11.02	-20.41	0.00	-253.27	0.00	253.27	1377.99	688.99	1696.65	842.29	108.29	-6.858	0.000	0.310
160.00	-6.96	-12.44	0.00	-151.24	0.00	151.24	1349.68	674.84	1604.25	796.42	115.53	-6.981	0.000	0.195
165.00	-6.42	-11.82	0.00	-89.02	0.00	89.02	1320.02	660.01	1512.71	750.97	122.87	-7.062	0.000	0.124
167.00	-3.81	-6.75	0.00	-65.37	0.00	65.37	1307.77	653.89	1476.37	732.93	125.83	-7.085	0.000	0.092
170.00	-3.55	-6.39	0.00	-45.13	0.00	45.13	1289.00	644.50	1422.20	706.04	130.28	-7.111	0.000	0.067
175.00	-3.12	-5.81	0.00	-13.18	0.00	13.18	1256.62	628.31	1332.89	661.70	137.72	-7.136	0.000	0.022
177.00	-0.23	-0.40	0.00	-1.43	0.00	1.43	1243.29	621.64	1297.54	644.16	140.70	-7.138	0.000	0.002
180.00	0.00	-0.37	0.00	-0.23	0.00	0.23	1222.88	611.44	1244.96	618.05	145.18	-7.139	0.000	0.000

Wind Loading - Shaft

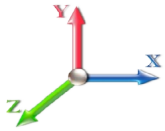
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.20	474.71	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	466.60	0.750	0.000	5.00	25.272	18.95	703.5	0.0	1263.4
10.00		1.00	0.85	21.088	23.20	458.49	0.750	0.000	5.00	24.837	18.63	691.3	0.0	1241.4
15.00		1.00	0.85	21.088	23.20	450.38	0.750	0.000	5.00	24.401	18.30	679.2	0.0	1219.5
20.00		1.00	0.90	22.375	24.61	455.56	0.750	0.000	5.00	23.966	17.97	707.8	0.0	1197.6
25.00		1.00	0.95	23.451	25.80	457.84	0.750	0.000	5.00	23.530	17.65	728.4	0.0	1175.6
30.00		1.00	0.98	24.369	26.81	457.99	0.750	0.000	5.00	23.095	17.32	742.9	0.0	1153.7
35.00		1.00	1.01	25.172	27.69	456.62	0.750	0.000	5.00	22.659	16.99	752.9	0.0	1131.8
40.00		1.00	1.04	25.890	28.48	454.10	0.750	0.000	5.00	22.224	16.67	759.5	0.0	1109.8
45.00		1.00	1.07	26.540	29.19	450.67	0.750	0.000	5.00	21.788	16.34	763.3	0.0	1087.9
45.92	Bot - Section 2	1.00	1.07	26.653	29.32	449.95	0.750	0.000	0.92	3.947	2.96	138.9	0.0	197.1
50.00		1.00	1.09	27.135	29.85	446.49	0.750	0.000	4.08	17.666	13.25	632.8	0.0	1625.0
53.00	Top - Section 1	1.00	1.11	27.470	30.22	443.68	0.750	0.000	3.00	12.794	9.60	463.9	0.0	1176.6
55.00		1.00	1.12	27.685	30.45	448.50	0.750	0.000	2.00	8.442	6.33	308.5	0.0	361.3
60.00		1.00	1.14	28.197	31.02	443.25	0.750	0.000	5.00	20.800	15.60	774.2	0.0	890.0
65.00		1.00	1.16	28.676	31.54	437.54	0.750	0.000	5.00	20.365	15.27	770.9	0.0	871.2
70.00		1.00	1.17	29.127	32.04	431.44	0.750	0.000	5.00	19.929	14.95	766.2	0.0	852.4
75.00		1.00	1.19	29.553	32.51	424.98	0.750	0.000	5.00	19.494	14.62	760.5	0.0	833.6
80.00		1.00	1.21	29.958	32.95	418.21	0.750	0.000	5.00	19.058	14.29	753.6	0.0	814.9
85.00		1.00	1.22	30.342	33.38	411.16	0.750	0.000	5.00	18.623	13.97	745.9	0.0	796.1
90.00		1.00	1.24	30.710	33.78	403.85	0.750	0.000	5.00	18.187	13.64	737.3	0.0	777.3
92.92	Bot - Section 3	1.00	1.25	30.917	34.01	399.48	0.750	0.000	2.92	10.408	7.81	424.8	0.0	444.8
95.00		1.00	1.25	31.061	34.17	396.31	0.750	0.000	2.08	7.454	5.59	305.6	0.0	580.1
98.92	Top - Section 2	1.00	1.26	31.327	34.46	390.26	0.750	0.000	3.92	13.810	10.36	571.0	0.0	1074.3
100.00		1.00	1.27	31.399	34.54	394.60	0.750	0.000	1.08	3.773	2.83	156.4	0.0	134.7
105.00		1.00	1.28	31.723	34.89	386.69	0.750	0.000	5.00	17.147	12.86	718.0	0.0	612.3
110.00		1.00	1.29	32.035	35.24	378.59	0.750	0.000	5.00	16.711	12.53	706.6	0.0	596.6
115.00		1.00	1.30	32.336	35.57	370.32	0.750	0.000	5.00	16.276	12.21	694.7	0.0	581.0
120.00		1.00	1.32	32.627	35.89	361.90	0.750	0.000	5.00	15.840	11.88	682.2	0.0	565.3
125.00		1.00	1.33	32.909	36.20	353.32	0.750	0.000	5.00	15.405	11.55	669.2	0.0	549.6
127.08	Bot - Section 4	1.00	1.33	33.023	36.33	349.72	0.750	0.000	2.08	6.270	4.70	273.3	0.0	223.7
130.00		1.00	1.34	33.182	36.50	344.61	0.750	0.000	2.92	8.808	6.61	385.8	0.0	530.7
132.33	Top - Section 3	1.00	1.34	33.306	36.64	340.51	0.750	0.000	2.33	6.904	5.18	303.5	0.0	415.9
135.00		1.00	1.35	33.446	36.79	340.13	0.750	0.000	2.67	7.816	5.86	345.1	0.0	195.6
140.00		1.00	1.36	33.703	37.07	331.18	0.750	0.000	5.00	14.284	10.71	635.5	0.0	357.3
145.00		1.00	1.37	33.953	37.35	322.12	0.750	0.000	5.00	13.849	10.39	620.7	0.0	346.4
150.00		1.00	1.38	34.196	37.62	312.94	0.750	0.000	5.00	13.413	10.06	605.5	0.0	335.4
155.00		1.00	1.39	34.433	37.88	303.66	0.750	0.000	5.00	12.978	9.73	589.9	0.0	324.4
160.00	Appurtenance(s)	1.00	1.40	34.664	38.13	294.28	0.750	0.000	5.00	12.542	9.41	573.9	0.0	313.5
165.00		1.00	1.41	34.890	38.38	284.80	0.750	0.000	5.00	12.107	9.08	557.6	0.0	302.5
167.00	Appurtenance(s)	1.00	1.41	34.978	38.48	280.98	0.750	0.000	2.00	4.721	3.54	218.0	0.0	117.9
170.00		1.00	1.42	35.110	38.62	275.23	0.750	0.000	3.00	6.950	5.21	322.1	0.0	173.6
175.00		1.00	1.42	35.324	38.86	265.58	0.750	0.000	5.00	11.236	8.43	523.9	0.0	280.6
177.00	Appurtenance(s)	1.00	1.43	35.409	38.95	261.69	0.750	0.000	2.00	4.372	3.28	204.4	0.0	109.2
180.00	Appurtenance(s)	1.00	1.43	35.535	39.09	255.84	0.750	0.000	3.00	6.428	4.82	301.5	0.0	160.5
								Totals:	**180.00**			**24,770.3**		**29,101.8**

Discrete Appurtenance Forces

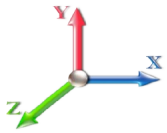
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	180.00	Lightning Rod	1	35.679	39.247	1.00	1.00	1.05	31.50	0.000	3.500	65.93	0.00	230.77
2	177.00	APXVAARR18_43-U-NA2	3	35.409	38.950	0.56	0.80	26.48	286.20	0.000	0.000	1650.03	0.00	0.00
3	177.00	Low Profile Platform	1	35.409	38.950	1.00	1.00	24.00	1800.00	0.000	0.000	1495.68	0.00	0.00
4	177.00	EMS RR90-17-02DP	9	35.409	38.950	0.58	0.80	22.60	145.80	0.000	0.000	1408.57	0.00	0.00
5	177.00	Kathrein 782 10662 Bias-T	3	35.419	38.961	0.40	0.80	0.34	4.86	0.000	0.237	20.95	0.00	4.97
6	177.00	Ericsson Radio 4449	3	35.435	38.979	0.46	0.80	2.26	199.80	0.000	0.625	140.77	0.00	87.98
7	177.00	KRY 112 144/2	3	35.421	38.963	0.46	0.80	0.56	26.19	0.000	0.287	34.97	0.00	10.05
8	177.00	KRY 112 489/2	3	35.428	38.971	0.46	0.80	0.89	41.58	0.000	0.458	55.45	0.00	25.41
9	167.00	RRH2x40-AWS	3	34.978	38.476	0.46	0.80	3.45	118.80	0.000	0.000	212.22	0.00	0.00
10	167.00	BXA-70063-6CF	6	34.978	38.476	0.54	0.80	24.71	91.80	0.000	0.000	1521.09	0.00	0.00
11	167.00	BXA-171063-12CF	6	34.978	38.476	0.62	0.80	17.90	81.00	0.000	0.000	1101.73	0.00	0.00
12	167.00	RRH2x40-07-U	3	34.978	38.476	0.46	0.80	3.05	136.89	0.000	0.000	187.80	0.00	0.00
13	167.00	Platform Mount w/ Mods	1	34.978	38.476	1.00	1.00	24.00	1800.00	0.000	0.000	1477.48	0.00	0.00
14	160.00	Raycap	1	34.664	38.131	1.00	1.00	3.78	23.58	0.000	0.000	230.61	0.00	0.00
15	160.00	Low Profile Platform	1	34.664	38.131	1.00	1.00	22.00	1620.00	0.000	0.000	1342.20	0.00	0.00
16	160.00	Ericsson RRUS-12 B2	3	34.664	38.131	0.46	0.80	4.31	156.60	0.000	0.000	262.90	0.00	0.00
17	160.00	DMP65R-BU8DA	3	34.664	38.131	0.63	0.80	26.07	258.39	0.000	0.000	1590.51	0.00	0.00
18	160.00	Ericsson RRUS4449	3	34.664	38.131	0.46	0.80	2.69	197.10	0.000	0.000	164.42	0.00	0.00
19	160.00	Handrail Kit [SitePro1	1	34.664	38.131	1.00	1.00	8.75	297.00	0.000	0.000	533.83	0.00	0.00
20	160.00	CCI HPA-65R-BUU-H8	3	34.664	38.131	0.63	0.80	24.61	183.60	0.000	0.000	1501.44	0.00	0.00
21	160.00	7770	3	34.526	37.979	0.58	0.80	9.64	94.50	0.000	-3.000	585.55	0.00	-1756.64
22	160.00	Ericsson RRUS A2	3	34.664	38.131	0.46	0.80	2.54	57.24	0.000	0.000	155.24	0.00	0.00
23	160.00	LGP21401 TMA	6	34.664	38.131	0.40	0.80	3.10	94.50	0.000	0.000	188.88	0.00	0.00
24	160.00	Powerwave 7020.00 RET	12	34.664	38.131	0.40	0.80	1.92	23.76	0.000	0.000	117.14	0.00	0.00
25	160.00	LGP21901 Diplexers	6	34.664	38.131	0.40	0.80	1.51	167.40	0.000	0.000	92.25	0.00	0.00
26	160.00	Raycap DC6-48-60-18-8F	1	34.664	38.131	1.00	1.00	1.47	29.52	0.000	0.000	89.68	0.00	0.00
							Totals:		**7,967.61**			**16,227.30**		

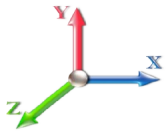
Total Applied Force Summary

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		703.46	1475.31	0.00	0.00
10.00		691.34	1453.38	0.00	0.00
15.00		679.22	1431.44	0.00	0.00
20.00		707.81	1409.51	0.00	0.00
25.00		728.38	1387.58	0.00	0.00
30.00		742.87	1365.65	0.00	0.00
35.00		752.90	1343.72	0.00	0.00
40.00		759.49	1321.78	0.00	0.00
45.00		763.30	1299.85	0.00	0.00
45.92		138.87	235.93	0.00	0.00
50.00		632.75	1798.07	0.00	0.00
53.00		463.91	1303.73	0.00	0.00
55.00		308.51	446.03	0.00	0.00
60.00		774.19	1101.93	0.00	0.00
65.00		770.86	1083.15	0.00	0.00
70.00		766.23	1064.38	0.00	0.00
75.00		760.46	1045.60	0.00	0.00
80.00		753.64	1026.82	0.00	0.00
85.00		745.88	1008.04	0.00	0.00
90.00		737.25	989.27	0.00	0.00
92.92		424.75	568.40	0.00	0.00
95.00		305.64	668.37	0.00	0.00
98.92		571.04	1240.34	0.00	0.00
100.00		156.36	180.65	0.00	0.00
105.00		718.00	824.25	0.00	0.00
110.00		706.65	808.58	0.00	0.00
115.00		694.70	792.90	0.00	0.00
120.00		682.20	777.23	0.00	0.00
125.00		669.17	761.56	0.00	0.00
127.08		273.32	311.69	0.00	0.00
130.00		385.78	654.61	0.00	0.00
132.33		303.51	514.49	0.00	0.00
135.00		345.07	308.88	0.00	0.00
140.00		635.48	569.29	0.00	0.00
145.00		620.68	558.33	0.00	0.00
150.00		605.46	547.36	0.00	0.00
155.00		589.86	536.39	0.00	0.00
160.00	(46) attachments	7428.53	3728.62	0.00	-1756.64
165.00		557.57	450.83	0.00	0.00
167.00	(19) attachments	4718.28	2405.75	0.00	0.00
170.00		322.12	228.91	0.00	0.00
175.00		523.90	372.74	0.00	0.00
177.00	(25) attachments	5010.77	2650.46	0.00	128.42
180.00	(1) attachments	367.44	210.58	0.00	230.77
	Totals:	**40,997.60**	**44,262.41**	**0.00**	**-1,397.44**

Linear Appurtenance Segment Forces (Factored)

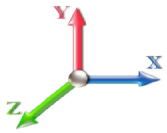
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	31.05
10.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	31.05
15.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	31.05
20.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.375	0.00	31.05
25.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.451	0.00	31.05
30.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.369	0.00	31.05
35.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.172	0.00	31.05
40.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.890	0.00	31.05
45.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.540	0.00	31.05
45.92	Climbing Ladder	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	26.653	0.00	5.69
50.00	Climbing Ladder	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	27.135	0.00	25.36
53.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.470	0.00	18.63
55.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	27.685	0.00	12.42
60.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.197	0.00	31.05
65.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.676	0.00	31.05
70.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.127	0.00	31.05
75.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.553	0.00	31.05
80.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.958	0.00	31.05
85.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.342	0.00	31.05
90.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.710	0.00	31.05
92.92	Climbing Ladder	Yes	2.92	0.000	0.00	0.00	0.00	0.000	0.000	30.917	0.00	18.11
95.00	Climbing Ladder	Yes	2.08	0.000	0.00	0.00	0.00	0.000	0.000	31.061	0.00	12.94
98.92	Climbing Ladder	Yes	3.92	0.000	0.00	0.00	0.00	0.000	0.000	31.327	0.00	24.32
100.00	Climbing Ladder	Yes	1.08	0.000	0.00	0.00	0.00	0.000	0.000	31.399	0.00	6.73
105.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.723	0.00	31.05
110.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.035	0.00	31.05
115.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.336	0.00	31.05
120.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.627	0.00	31.05
125.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.909	0.00	31.05
127.08	Climbing Ladder	Yes	2.08	0.000	0.00	0.00	0.00	0.000	0.000	33.023	0.00	12.90
130.00	Climbing Ladder	Yes	2.92	0.000	0.00	0.00	0.00	0.000	0.000	33.182	0.00	18.15
132.33	Climbing Ladder	Yes	2.33	0.000	0.00	0.00	0.00	0.000	0.000	33.306	0.00	14.45
135.00	Climbing Ladder	Yes	2.67	0.000	0.00	0.00	0.00	0.000	0.000	33.446	0.00	16.60
140.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.703	0.00	31.05
145.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.953	0.00	31.05
150.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.196	0.00	31.05
155.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.433	0.00	31.05
160.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.664	0.00	31.05
165.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.890	0.00	31.05
167.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.978	0.00	12.42
170.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.110	0.00	18.63
175.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.324	0.00	31.05
177.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.409	0.00	12.42
180.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.535	0.00	18.63
										Totals:	**0.0**	**1,117.8**

Calculated Forces

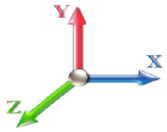
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-44.19	-41.07	0.00	-5055.2	0.00	5055.20	5508.12	2754.06	13547.4	6725.55	0.00	0.000	0.000	0.760
5.00	-42.58	-40.51	0.00	-4849.8	0.00	4849.84	5452.09	2726.05	13177.2	6541.73	0.10	-0.189	0.000	0.749
10.00	-41.00	-39.95	0.00	-4647.3	0.00	4647.32	5394.71	2697.35	12808.5	6358.68	0.40	-0.380	0.000	0.739
15.00	-39.44	-39.39	0.00	-4447.5	0.00	4447.59	5335.97	2667.98	12441.5	6176.49	0.90	-0.572	0.000	0.728
20.00	-37.91	-38.79	0.00	-4250.6	0.00	4250.66	5275.87	2637.93	12076.4	5995.24	1.61	-0.767	0.000	0.716
25.00	-36.40	-38.17	0.00	-4056.7	0.00	4056.70	5214.41	2607.20	11713.3	5815.02	2.52	-0.963	0.000	0.705
30.00	-34.92	-37.52	0.00	-3865.8	0.00	3865.85	5151.59	2575.80	11352.6	5635.92	3.63	-1.161	0.000	0.693
35.00	-33.47	-36.86	0.00	-3678.2	0.00	3678.25	5087.42	2543.71	10994.2	5458.02	4.95	-1.360	0.000	0.681
40.00	-32.04	-36.18	0.00	-3493.9	0.00	3493.96	5021.88	2510.94	10638.5	5281.41	6.49	-1.561	0.000	0.668
45.00	-30.69	-35.44	0.00	-3313.0	0.00	3313.08	4954.99	2477.50	10285.5	5106.18	8.23	-1.764	0.000	0.655
45.92	-30.39	-35.35	0.00	-3280.5	0.00	3280.59	4942.58	2471.29	10221.1	5074.21	8.57	-1.802	0.000	0.653
50.00	-28.53	-34.73	0.00	-3136.2	0.00	3136.25	4886.75	2443.37	9935.52	4932.41	10.19	-1.970	0.000	0.642
53.00	-27.18	-34.27	0.00	-3032.0	0.00	3032.06	3967.43	1983.71	8109.29	4025.79	11.47	-2.094	0.000	0.760
55.00	-26.65	-34.02	0.00	-2963.5	0.00	2963.52	3947.58	1973.79	8001.39	3972.23	12.36	-2.178	0.000	0.753
60.00	-25.45	-33.30	0.00	-2793.4	0.00	2793.44	3897.00	1948.50	7732.70	3838.84	14.76	-2.406	0.000	0.734
65.00	-24.27	-32.58	0.00	-2626.9	0.00	2626.93	3845.06	1922.53	7465.70	3706.29	17.41	-2.636	0.000	0.715
70.00	-23.11	-31.86	0.00	-2464.0	0.00	2464.02	3791.77	1895.89	7200.54	3574.65	20.29	-2.866	0.000	0.696
75.00	-21.98	-31.13	0.00	-2304.7	0.00	2304.72	3737.12	1868.56	6937.41	3444.02	23.41	-3.096	0.000	0.675
80.00	-20.88	-30.41	0.00	-2149.0	0.00	2149.06	3681.11	1840.56	6676.48	3314.49	26.78	-3.326	0.000	0.654
85.00	-19.80	-29.68	0.00	-1997.0	0.00	1997.02	3623.74	1811.87	6417.92	3186.13	30.38	-3.556	0.000	0.633
90.00	-18.77	-28.94	0.00	-1848.6	0.00	1848.61	3565.02	1782.51	6161.91	3059.03	34.23	-3.784	0.000	0.610
92.92	-18.17	-28.52	0.00	-1764.2	0.00	1764.20	3530.13	1765.07	6013.81	2985.51	36.58	-3.919	0.000	0.596
95.00	-17.46	-28.21	0.00	-1704.7	0.00	1704.79	3504.93	1752.47	5908.61	2933.28	38.31	-4.015	0.000	0.586
98.92	-16.21	-27.58	0.00	-1594.3	0.00	1594.31	2742.07	1371.04	4616.42	2291.78	41.68	-4.193	0.000	0.702
100.00	-15.97	-27.46	0.00	-1564.4	0.00	1564.43	2732.96	1366.48	4575.83	2271.63	42.64	-4.243	0.000	0.695
105.00	-15.08	-26.74	0.00	-1427.1	0.00	1427.16	2690.08	1345.04	4389.32	2179.04	47.21	-4.496	0.000	0.661
110.00	-14.22	-26.03	0.00	-1293.4	0.00	1293.45	2645.83	1322.92	4204.31	2087.20	52.05	-4.744	0.000	0.625
115.00	-13.39	-25.33	0.00	-1163.2	0.00	1163.28	2600.23	1300.12	4020.98	1996.19	57.14	-4.987	0.000	0.588
120.00	-12.57	-24.63	0.00	-1036.6	0.00	1036.63	2553.28	1276.64	3839.50	1906.09	62.49	-5.222	0.000	0.549
125.00	-11.81	-23.93	0.00	-913.46	0.00	913.46	2504.96	1252.48	3660.03	1816.99	68.07	-5.449	0.000	0.508
127.08	-11.48	-23.65	0.00	-863.77	0.00	863.77	2484.49	1242.25	3586.13	1780.31	70.46	-5.543	0.000	0.490
130.00	-10.82	-23.22	0.00	-794.64	0.00	794.64	2455.29	1227.64	3482.76	1728.99	73.89	-5.670	0.000	0.464
132.33	-10.30	-22.89	0.00	-740.61	0.00	740.61	1489.30	744.65	2121.68	1053.29	76.67	-5.769	0.000	0.711
135.00	-9.95	-22.55	0.00	-679.42	0.00	679.42	1477.63	738.82	2071.36	1028.31	79.93	-5.879	0.000	0.668
140.00	-9.36	-21.89	0.00	-566.69	0.00	566.69	1454.76	727.38	1977.27	981.60	86.22	-6.136	0.000	0.585
145.00	-8.79	-21.25	0.00	-457.22	0.00	457.22	1430.53	715.26	1883.34	934.97	92.76	-6.368	0.000	0.496
150.00	-8.25	-20.61	0.00	-350.97	0.00	350.97	1404.94	702.47	1789.74	888.50	99.53	-6.569	0.000	0.402
155.00	-7.74	-19.98	0.00	-247.90	0.00	247.90	1377.99	688.99	1696.65	842.29	106.49	-6.734	0.000	0.301
160.00	-4.89	-12.18	0.00	-147.98	0.00	147.98	1349.68	674.84	1604.25	796.42	113.59	-6.854	0.000	0.190
165.00	-4.50	-11.57	0.00	-87.10	0.00	87.10	1320.02	660.01	1512.71	750.97	120.80	-6.933	0.000	0.120
167.00	-2.68	-6.60	0.00	-63.96	0.00	63.96	1307.77	653.89	1476.37	732.93	123.70	-6.956	0.000	0.089
170.00	-2.49	-6.25	0.00	-44.16	0.00	44.16	1289.00	644.50	1422.20	706.04	128.07	-6.982	0.000	0.065
175.00	-2.18	-5.69	0.00	-12.90	0.00	12.90	1256.62	628.31	1332.89	661.70	135.38	-7.006	0.000	0.021
177.00	-0.16	-0.39	0.00	-1.40	0.00	1.40	1243.29	621.64	1297.54	644.16	138.31	-7.008	0.000	0.002
180.00	0.00	-0.37	0.00	-0.23	0.00	0.23	1222.88	611.44	1244.96	618.05	142.70	-7.009	0.000	0.000

Wind Loading - Shaft

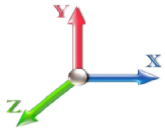
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	26.307	31.57	179.5	472.8	2157.3
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.946	31.14	177.0	498.9	2154.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	25.556	30.67	174.3	511.0	2137.0
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	25.154	30.19	182.1	517.0	2113.8
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.746	29.69	187.7	519.5	2087.0
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	24.333	29.20	191.8	519.7	2057.9
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.916	28.70	194.8	518.2	2027.2
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	23.498	28.20	196.8	515.4	1995.2
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	23.077	27.69	198.1	511.7	1962.2
45.92	Bot - Section 2	1.00	1.07	6.532	7.19	0.00	1.200	1.550	0.92	4.184	5.02	36.1	93.7	356.4
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	4.08	18.730	22.48	164.4	420.2	2586.9
53.00	Top - Section 1	1.00	1.11	6.732	7.41	0.00	1.200	1.573	3.00	13.580	16.30	120.7	306.9	1875.7
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	2.00	8.968	10.76	80.3	203.8	685.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	22.127	26.55	201.8	503.6	1690.3
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	21.702	26.04	201.3	497.4	1659.0
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	21.277	25.53	200.5	490.8	1627.3
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	20.851	25.02	199.3	483.7	1595.2
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	20.424	24.51	197.9	476.3	1562.8
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	19.997	24.00	196.3	468.6	1530.1
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	19.569	23.48	194.4	460.7	1497.1
92.92	Bot - Section 3	1.00	1.25	7.577	8.33	0.00	1.200	1.664	2.92	11.217	13.46	112.2	265.9	859.0
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	2.08	8.033	9.64	80.7	191.3	964.7
98.92	Top - Section 2	1.00	1.26	7.677	8.45	0.00	1.200	1.674	3.92	14.902	17.88	151.0	354.4	1786.9
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	1.08	4.075	4.89	41.4	97.6	277.3
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	18.550	22.26	190.4	442.0	1258.4
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	18.121	21.75	187.8	433.2	1228.7
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	17.692	21.23	185.1	424.2	1198.8
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	17.262	20.71	182.2	415.0	1168.7
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	16.833	20.20	179.2	405.6	1138.5
127.08	Bot - Section 4	1.00	1.33	8.093	8.90	0.00	1.200	1.717	2.08	6.864	8.24	73.3	166.9	465.1
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	2.92	9.646	11.58	103.5	234.4	942.0
132.33	Top - Section 3	1.00	1.34	8.162	8.98	0.00	1.200	1.723	2.33	7.572	9.09	81.6	184.5	739.0
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	2.67	8.585	10.30	92.9	209.2	470.0
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	5.00	15.729	18.87	171.5	381.6	858.0
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	15.298	18.36	168.0	371.7	833.5
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	5.00	14.868	17.84	164.5	361.7	808.9
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	5.00	14.437	17.32	160.8	351.6	784.2
160.00	Appurtenance(s)	1.00	1.40	8.495	9.34	0.00	1.200	1.757	5.00	14.006	16.81	157.1	341.4	759.4
165.00		1.00	1.41	8.551	9.41	0.00	1.200	1.762	5.00	13.575	16.29	153.2	331.1	734.4
167.00	Appurtenance(s)	1.00	1.41	8.572	9.43	0.00	1.200	1.764	2.00	5.309	6.37	60.1	130.8	288.0
170.00		1.00	1.42	8.604	9.46	0.00	1.200	1.767	3.00	7.834	9.40	89.0	192.4	423.9
175.00		1.00	1.42	8.657	9.52	0.00	1.200	1.772	5.00	12.713	15.26	145.3	310.2	684.3
177.00	Appurtenance(s)	1.00	1.43	8.678	9.55	0.00	1.200	1.774	2.00	4.964	5.96	56.9	122.4	267.9
180.00	Appurtenance(s)	1.00	1.43	8.709	9.58	0.00	1.200	1.777	3.00	7.317	8.78	84.1	179.8	393.7
								Totals:	**180.00**			**6,546.9**		**54,691.1**

Discrete Appurtenance Forces

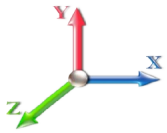
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	180.00	Lightning Rod	1	8.744	9.618	1.00	1.00	3.47	64.99	0.000	3.500	33.35	0.00	116.72
2	177.00	APXVAARR18_43-U-NA2	3	8.678	9.546	0.56	0.80	27.32	1391.60	0.000	0.000	260.75	0.00	0.00
3	177.00	Low Profile Platform	1	8.678	9.546	1.00	1.00	43.59	3674.34	0.000	0.000	416.08	0.00	0.00
4	177.00	EMS RR90-17-02DP	9	8.678	9.546	0.58	0.80	27.81	1098.47	0.000	0.000	265.44	0.00	0.00
5	177.00	Kathrein 782 10662 Bias-T	3	8.680	9.548	0.46	0.80	0.94	12.17	0.000	0.237	8.99	0.00	2.13
6	177.00	Ericsson Radio 4449	3	8.684	9.553	0.46	0.80	2.97	472.51	0.000	0.625	28.37	0.00	17.73
7	177.00	KRY 112 144/2	3	8.681	9.549	0.46	0.80	1.22	50.72	0.000	0.287	11.67	0.00	3.35
8	177.00	KRY 112 489/2	3	8.683	9.551	0.46	0.80	1.74	94.18	0.000	0.458	16.62	0.00	7.62
9	167.00	RRH2x40-AWS	3	8.572	9.429	0.46	0.80	5.14	290.34	0.000	0.000	48.45	0.00	0.00
10	167.00	BXA-70063-6CF	6	8.572	9.429	0.54	0.80	33.83	766.78	0.000	0.000	318.97	0.00	0.00
11	167.00	BXA-171063-12CF	6	8.572	9.429	0.62	0.80	26.82	524.14	0.000	0.000	252.94	0.00	0.00
12	167.00	RRH2x40-07-U	3	8.572	9.429	0.46	0.80	4.52	310.39	0.000	0.000	42.61	0.00	0.00
13	167.00	Platform Mount w/ Mods	1	8.572	9.429	1.00	1.00	43.48	3664.05	0.000	0.000	409.95	0.00	0.00
14	160.00	Raycap	1	8.495	9.345	1.00	1.00	4.48	215.77	0.000	0.000	41.90	0.00	0.00
15	160.00	Low Profile Platform	1	8.495	9.345	1.00	1.00	39.78	3040.86	0.000	0.000	371.70	0.00	0.00
16	160.00	Ericsson RRUS-12 B2	3	8.495	9.345	0.46	0.80	6.04	356.08	0.000	0.000	56.42	0.00	0.00
17	160.00	DMP65R-BU8DA	3	8.495	9.345	0.63	0.80	37.36	1483.62	0.000	0.000	349.13	0.00	0.00
18	160.00	Ericsson RRUS4449	3	8.495	9.345	0.46	0.80	3.45	393.72	0.000	0.000	32.23	0.00	0.00
19	160.00	Handrail Kit [SitePro1	1	8.495	9.345	1.00	1.00	17.36	396.00	0.000	0.000	162.20	0.00	0.00
20	160.00	CCI HPA-65R-BUU-H8	3	8.495	9.345	0.63	0.80	27.69	1124.53	0.000	0.000	258.79	0.00	0.00
21	160.00	7770	3	8.462	9.308	0.58	0.80	11.52	677.20	0.000	-3.000	107.18	0.00	-321.53
22	160.00	Ericsson RRUS A2	3	8.495	9.345	0.46	0.80	3.89	154.75	0.000	0.000	36.31	0.00	0.00
23	160.00	LGP21401 TMA	6	8.495	9.345	0.40	0.80	5.11	291.19	0.000	0.000	47.80	0.00	0.00
24	160.00	Powerwave 7020.00 RET	12	8.495	9.345	0.40	0.80	4.26	120.51	0.000	0.000	39.79	0.00	0.00
25	160.00	LGP21901 Diplexers	6	8.495	9.345	0.40	0.80	3.95	624.76	0.000	0.000	36.88	0.00	0.00
26	160.00	Raycap DC6-48-60-18-8F	1	8.495	9.345	1.00	1.00	2.17	86.84	0.000	0.000	20.32	0.00	0.00
							Totals:		**21,380.51**			**3,674.83**		

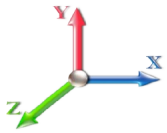
Total Applied Force Summary

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		179.46	2467.57	0.00	0.00
10.00		177.00	2466.81	0.00	0.00
15.00		174.34	2451.25	0.00	0.00
20.00		182.07	2429.20	0.00	0.00
25.00		187.73	2403.40	0.00	0.00
30.00		191.82	2375.12	0.00	0.00
35.00		194.76	2345.08	0.00	0.00
40.00		196.80	2313.69	0.00	0.00
45.00		198.13	2281.25	0.00	0.00
45.92		36.08	414.93	0.00	0.00
50.00		164.41	2847.81	0.00	0.00
53.00		120.68	2067.55	0.00	0.00
55.00		80.32	813.42	0.00	0.00
60.00		201.84	2010.72	0.00	0.00
65.00		201.33	1979.85	0.00	0.00
70.00		200.48	1948.52	0.00	0.00
75.00		199.34	1916.79	0.00	0.00
80.00		197.93	1884.70	0.00	0.00
85.00		196.28	1852.29	0.00	0.00
90.00		194.41	1819.59	0.00	0.00
92.92		112.18	1047.18	0.00	0.00
95.00		80.72	1099.17	0.00	0.00
98.92		151.02	2039.88	0.00	0.00
100.00		41.39	347.27	0.00	0.00
105.00		190.36	1581.73	0.00	0.00
110.00		187.79	1552.26	0.00	0.00
115.00		185.07	1522.60	0.00	0.00
120.00		182.20	1492.76	0.00	0.00
125.00		179.20	1462.75	0.00	0.00
127.08		73.33	599.80	0.00	0.00
130.00		103.54	1131.72	0.00	0.00
132.33		81.58	890.03	0.00	0.00
135.00		92.89	643.59	0.00	0.00
140.00		171.49	1182.96	0.00	0.00
145.00		168.03	1158.67	0.00	0.00
150.00		164.47	1134.25	0.00	0.00
155.00		160.81	1109.72	0.00	0.00
160.00	(46) attachments	1717.71	10050.90	0.00	-321.53
165.00		153.22	975.48	0.00	0.00
167.00	(19) attachments	1132.98	5940.17	0.00	0.00
170.00		88.98	523.69	0.00	0.00
175.00		145.27	850.79	0.00	0.00
177.00	(25) attachments	1064.78	7128.54	0.00	30.84
180.00	(1) attachments	117.45	509.80	0.00	116.72
	Totals:	**10,221.70**	**87,065.23**	**0.00**	**-173.98**

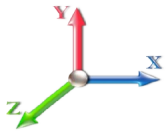
Linear Appurtenance Segment Forces (Factored)

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	69.07
10.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	71.51
15.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	73.07
20.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	74.24
25.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	75.18
30.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	75.97
35.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	76.67
40.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	77.28
45.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	77.83
45.92	Climbing Ladder	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	6.532	0.00	14.29
50.00	Climbing Ladder	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	63.97
53.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	6.732	0.00	47.17
55.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	31.52
60.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	79.22
65.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	79.62
70.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	80.00
75.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	80.35
80.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	80.68
85.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	81.00
90.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	81.30
92.92	Climbing Ladder	Yes	2.92	0.000	0.00	0.00	0.00	0.000	0.000	7.577	0.00	47.52
95.00	Climbing Ladder	Yes	2.08	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	34.00
98.92	Climbing Ladder	Yes	3.92	0.000	0.00	0.00	0.00	0.000	0.000	7.677	0.00	64.08
100.00	Climbing Ladder	Yes	1.08	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	17.74
105.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	82.13
110.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	82.38
115.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	82.63
120.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	82.86
125.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	83.09
127.08	Climbing Ladder	Yes	2.08	0.000	0.00	0.00	0.00	0.000	0.000	8.093	0.00	34.55
130.00	Climbing Ladder	Yes	2.92	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	48.71
132.33	Climbing Ladder	Yes	2.33	0.000	0.00	0.00	0.00	0.000	0.000	8.162	0.00	38.81
135.00	Climbing Ladder	Yes	2.67	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	44.66
140.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.260	0.00	83.73
145.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.321	0.00	83.93
150.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.381	0.00	84.12
155.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.439	0.00	84.31
160.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.495	0.00	84.50
165.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.551	0.00	84.68
167.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.572	0.00	33.90
170.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.604	0.00	50.91
175.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.657	0.00	85.02
177.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.678	0.00	34.04
180.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.709	0.00	51.11
										Totals:	**0.0**	**2,893.3**

Calculated Forces

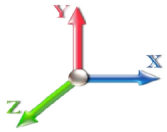
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-87.06	-10.26	0.00	-1302.9	0.00	1302.95	5508.12	2754.06	13547.4	6725.55	0.00	0.000	0.000	0.210
5.00	-84.58	-10.15	0.00	-1251.6	0.00	1251.66	5452.09	2726.05	13177.2	6541.73	0.03	-0.049	0.000	0.207
10.00	-82.11	-10.04	0.00	-1200.9	0.00	1200.90	5394.71	2697.35	12808.5	6358.68	0.10	-0.098	0.000	0.204
15.00	-79.65	-9.93	0.00	-1150.7	0.00	1150.70	5335.97	2667.98	12441.5	6176.49	0.23	-0.148	0.000	0.201
20.00	-77.21	-9.81	0.00	-1101.0	0.00	1101.04	5275.87	2637.93	12076.4	5995.24	0.41	-0.198	0.000	0.198
25.00	-74.80	-9.68	0.00	-1051.9	0.00	1051.99	5214.41	2607.20	11713.3	5815.02	0.65	-0.249	0.000	0.195
30.00	-72.42	-9.54	0.00	-1003.5	0.00	1003.59	5151.59	2575.80	11352.6	5635.92	0.94	-0.300	0.000	0.192
35.00	-70.07	-9.40	0.00	-955.88	0.00	955.88	5087.42	2543.71	10994.2	5458.02	1.28	-0.352	0.000	0.189
40.00	-67.75	-9.25	0.00	-908.89	0.00	908.89	5021.88	2510.94	10638.5	5281.41	1.68	-0.404	0.000	0.186
45.00	-65.46	-9.07	0.00	-862.66	0.00	862.66	4954.99	2477.50	10285.5	5106.18	2.13	-0.457	0.000	0.182
45.92	-65.04	-9.06	0.00	-854.34	0.00	854.34	4942.58	2471.29	10221.1	5074.21	2.22	-0.467	0.000	0.182
50.00	-62.19	-8.91	0.00	-817.35	0.00	817.35	4886.75	2443.37	9935.52	4932.41	2.64	-0.511	0.000	0.178
53.00	-60.12	-8.80	0.00	-790.62	0.00	790.62	3967.43	1983.71	8109.29	4025.79	2.97	-0.543	0.000	0.212
55.00	-59.30	-8.75	0.00	-773.02	0.00	773.02	3947.58	1973.79	8001.39	3972.23	3.20	-0.565	0.000	0.210
60.00	-57.28	-8.59	0.00	-729.25	0.00	729.25	3897.00	1948.50	7732.70	3838.84	3.82	-0.625	0.000	0.205
65.00	-55.30	-8.43	0.00	-686.29	0.00	686.29	3845.06	1922.53	7465.70	3706.29	4.51	-0.685	0.000	0.200
70.00	-53.34	-8.26	0.00	-644.17	0.00	644.17	3791.77	1895.89	7200.54	3574.65	5.26	-0.745	0.000	0.194
75.00	-51.42	-8.09	0.00	-602.88	0.00	602.88	3737.12	1868.56	6937.41	3444.02	6.07	-0.805	0.000	0.189
80.00	-49.53	-7.91	0.00	-562.46	0.00	562.46	3681.11	1840.56	6676.48	3314.49	6.95	-0.865	0.000	0.183
85.00	-47.67	-7.74	0.00	-522.89	0.00	522.89	3623.74	1811.87	6417.92	3186.13	7.89	-0.925	0.000	0.177
90.00	-45.85	-7.55	0.00	-484.21	0.00	484.21	3565.02	1782.51	6161.91	3059.03	8.89	-0.985	0.000	0.171
92.92	-44.80	-7.44	0.00	-462.19	0.00	462.19	3530.13	1765.07	6013.81	2985.51	9.50	-1.020	0.000	0.168
95.00	-43.70	-7.37	0.00	-446.68	0.00	446.68	3504.93	1752.47	5908.61	2933.28	9.95	-1.046	0.000	0.165
98.92	-41.66	-7.20	0.00	-417.82	0.00	417.82	2742.07	1371.04	4616.42	2291.78	10.83	-1.092	0.000	0.198
100.00	-41.31	-7.18	0.00	-410.02	0.00	410.02	2732.96	1366.48	4575.83	2271.63	11.08	-1.105	0.000	0.196
105.00	-39.72	-7.01	0.00	-374.10	0.00	374.10	2690.08	1345.04	4389.32	2179.04	12.27	-1.172	0.000	0.186
110.00	-38.17	-6.83	0.00	-339.06	0.00	339.06	2645.83	1322.92	4204.31	2087.20	13.53	-1.237	0.000	0.177
115.00	-36.64	-6.65	0.00	-304.91	0.00	304.91	2600.23	1300.12	4020.98	1996.19	14.86	-1.300	0.000	0.167
120.00	-35.15	-6.47	0.00	-271.66	0.00	271.66	2553.28	1276.64	3839.50	1906.09	16.26	-1.362	0.000	0.156
125.00	-33.68	-6.28	0.00	-239.30	0.00	239.30	2504.96	1252.48	3660.03	1816.99	17.72	-1.421	0.000	0.145
127.08	-33.08	-6.21	0.00	-226.26	0.00	226.26	2484.49	1242.25	3586.13	1780.31	18.34	-1.446	0.000	0.140
130.00	-31.95	-6.09	0.00	-208.10	0.00	208.10	2455.29	1227.64	3482.76	1728.99	19.24	-1.479	0.000	0.133
132.33	-31.06	-6.00	0.00	-193.93	0.00	193.93	1489.30	744.65	2121.68	1053.29	19.96	-1.505	0.000	0.205
135.00	-30.41	-5.92	0.00	-177.88	0.00	177.88	1477.63	738.82	2071.36	1028.31	20.81	-1.534	0.000	0.194
140.00	-29.23	-5.75	0.00	-148.28	0.00	148.28	1454.76	727.38	1977.27	981.60	22.46	-1.601	0.000	0.171
145.00	-28.07	-5.58	0.00	-119.53	0.00	119.53	1430.53	715.26	1883.34	934.97	24.17	-1.662	0.000	0.148
150.00	-26.94	-5.40	0.00	-91.65	0.00	91.65	1404.94	702.47	1789.74	888.50	25.94	-1.714	0.000	0.122
155.00	-25.83	-5.22	0.00	-64.65	0.00	64.65	1377.99	688.99	1696.65	842.29	27.76	-1.757	0.000	0.096
160.00	-15.84	-3.20	0.00	-38.54	0.00	38.54	1349.68	674.84	1604.25	796.42	29.62	-1.789	0.000	0.060
165.00	-14.86	-3.02	0.00	-22.53	0.00	22.53	1320.02	660.01	1512.71	750.97	31.50	-1.809	0.000	0.041
167.00	-8.96	-1.70	0.00	-16.49	0.00	16.49	1307.77	653.89	1476.37	732.93	32.26	-1.815	0.000	0.029
170.00	-8.44	-1.60	0.00	-11.38	0.00	11.38	1289.00	644.50	1422.20	706.04	33.40	-1.822	0.000	0.023
175.00	-7.60	-1.43	0.00	-3.40	0.00	3.40	1256.62	628.31	1332.89	661.70	35.32	-1.828	0.000	0.011
177.00	-0.51	-0.13	0.00	-0.52	0.00	0.52	1243.29	621.64	1297.54	644.16	36.08	-1.829	0.000	0.001
180.00	0.00	-0.12	0.00	-0.12	0.00	0.12	1222.88	611.44	1244.96	618.05	37.23	-1.829	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT02652-S-SBA		**Code:**	EIA/TIA-222-G	11/7/2019
Site Name:	Colchester 3 CT		**Exposure:**	C	
Height:	180.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 23

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	23
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.31		**SA**	0.03	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1403.7	0.00	0.03	0.02	23.72	
10.00		1379.3	0.01	0.05	0.03	34.60	
15.00		1354.9	0.01	0.06	0.03	39.95	
20.00		1330.6	0.02	0.07	0.04	42.48	
25.00		1306.2	0.04	0.07	0.04	43.56	
30.00		1281.8	0.05	0.07	0.04	43.94	
35.00		1257.5	0.07	0.07	0.04	44.04	
40.00		1233.1	0.09	0.07	0.04	44.06	
45.00		1208.7	0.12	0.07	0.03	44.06	
45.92	Bot - Section 2	218.97	0.12	0.07	0.03	8.01	
50.00		1805.5	0.15	0.07	0.03	67.01	
53.00	Top - Section 1	1307.2	0.16	0.07	0.03	48.92	
55.00		401.39	0.18	0.07	0.03	15.08	
60.00		988.87	0.21	0.06	0.02	37.10	
65.00		968.00	0.25	0.06	0.02	35.46	
70.00		947.14	0.29	0.05	0.01	32.62	
75.00		926.28	0.33	0.04	0.01	28.19	
80.00		905.41	0.37	0.03	0.01	21.86	
85.00		884.55	0.42	0.01	0.01	13.60	
90.00		863.69	0.47	-0.01	0.01	3.86	
92.92	Bot - Section 3	494.18	0.50	-0.02	0.01	-1.24	
95.00		644.51	0.53	-0.03	0.01	-4.87	
98.92	Top - Section 2	1193.6	0.57	-0.04	0.01	-20.02	
100.00		149.70	0.58	-0.05	0.01	-2.87	
105.00		680.33	0.64	-0.07	0.02	-19.65	
110.00		662.92	0.71	-0.09	0.03	-23.61	
115.00		645.50	0.77	-0.11	0.05	-25.10	
120.00		628.09	0.84	-0.12	0.07	-24.23	
125.00		610.68	0.91	-0.12	0.09	-21.20	
127.08	Bot - Section 4	248.52	0.94	-0.12	0.10	-7.98	
130.00		589.65	0.99	-0.11	0.12	-16.17	
132.33	Top - Section 3	462.07	1.02	-0.10	0.14	-10.58	
135.00		217.29	1.06	-0.09	0.17	-3.64	
140.00		397.05	1.14	-0.04	0.21	-1.11	
145.00		384.86	1.23	0.03	0.27	5.58	
150.00		372.68	1.31	0.14	0.35	13.10	
155.00		360.49	1.40	0.29	0.43	21.35	
160.00	Appurtenance(s)	3907.4	1.49	0.48	0.53	338.84	
165.00		336.12	1.59	0.74	0.65	39.58	
167.00	Appurtenance(s)	2607.1	1.63	0.86	0.71	341.93	
170.00		192.90	1.69	1.07	0.79	29.39	
175.00		311.76	1.79	1.48	0.95	59.43	
177.00	Appurtenance(s)	2903.9	1.83	1.67	1.03	601.10	
180.00	Appurtenance(s)	213.28	1.89	1.98	1.14	49.62	
	Totals:	**41,188.2**				**1,989.8**	**Total Wind:** **40,997.6**

Seismic Segment Forces (Factored)

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

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

Calculated Forces

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	23
Gust Response Factor	1.10			**Sds**	0.19			**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.31	**SA**	0.03	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-59.02	-2.18	0.00	-299.09	0.00	299.09	5508.12	2754.06	13547.4	6725.55		0.00	0.00	0.055
5.00	-57.05	-2.16	0.00	-288.20	0.00	288.20	5452.09	2726.05	13177.2	6541.73		0.01	-0.01	0.055
10.00	-55.11	-2.14	0.00	-277.38	0.00	277.38	5394.71	2697.35	12808.5	6358.68		0.02	-0.02	0.054
15.00	-53.20	-2.11	0.00	-266.68	0.00	266.68	5335.97	2667.98	12441.5	6176.49		0.05	-0.03	0.053
20.00	-51.32	-2.08	0.00	-256.13	0.00	256.13	5275.87	2637.93	12076.4	5995.24		0.10	-0.05	0.052
25.00	-49.47	-2.04	0.00	-245.74	0.00	245.74	5214.41	2607.20	11713.3	5815.02		0.15	-0.06	0.052
30.00	-47.65	-2.01	0.00	-235.54	0.00	235.54	5151.59	2575.80	11352.6	5635.92		0.22	-0.07	0.051
35.00	-45.86	-1.97	0.00	-225.51	0.00	225.51	5087.42	2543.71	10994.2	5458.02		0.30	-0.08	0.050
40.00	-44.10	-1.93	0.00	-215.66	0.00	215.66	5021.88	2510.94	10638.5	5281.41		0.39	-0.09	0.050
45.00	-42.36	-1.89	0.00	-206.00	0.00	206.00	4954.99	2477.50	10285.5	5106.18		0.49	-0.11	0.049
45.92	-42.05	-1.89	0.00	-204.27	0.00	204.27	4942.58	2471.29	10221.1	5074.21		0.51	-0.11	0.049
50.00	-39.65	-1.82	0.00	-196.56	0.00	196.56	4886.75	2443.37	9935.52	4932.41		0.61	-0.12	0.048
53.00	-37.91	-1.77	0.00	-191.10	0.00	191.10	3967.43	1983.71	8109.29	4025.79		0.69	-0.13	0.057
55.00	-37.32	-1.76	0.00	-187.55	0.00	187.55	3947.58	1973.79	8001.39	3972.23		0.74	-0.13	0.057
60.00	-35.85	-1.73	0.00	-178.74	0.00	178.74	3897.00	1948.50	7732.70	3838.84		0.89	-0.15	0.056
65.00	-34.40	-1.70	0.00	-170.08	0.00	170.08	3845.06	1922.53	7465.70	3706.29		1.05	-0.16	0.055
70.00	-32.98	-1.67	0.00	-161.58	0.00	161.58	3791.77	1895.89	7200.54	3574.65		1.23	-0.18	0.054
75.00	-31.59	-1.65	0.00	-153.21	0.00	153.21	3737.12	1868.56	6937.41	3444.02		1.42	-0.19	0.053
80.00	-30.22	-1.63	0.00	-144.97	0.00	144.97	3681.11	1840.56	6676.48	3314.49		1.63	-0.21	0.052
85.00	-28.87	-1.62	0.00	-136.82	0.00	136.82	3623.74	1811.87	6417.92	3186.13		1.86	-0.22	0.051
90.00	-27.55	-1.62	0.00	-128.72	0.00	128.72	3565.02	1782.51	6161.91	3059.03		2.10	-0.24	0.050
92.92	-26.80	-1.62	0.00	-124.01	0.00	124.01	3530.13	1765.07	6013.81	2985.51		2.25	-0.25	0.049
95.00	-25.91	-1.62	0.00	-120.64	0.00	120.64	3504.93	1752.47	5908.61	2933.28		2.36	-0.26	0.049
98.92	-24.25	-1.61	0.00	-114.30	0.00	114.30	2742.07	1371.04	4616.42	2291.78		2.58	-0.27	0.059
100.00	-24.01	-1.62	0.00	-112.55	0.00	112.55	2732.96	1366.48	4575.83	2271.63		2.64	-0.27	0.058
105.00	-22.91	-1.62	0.00	-104.47	0.00	104.47	2690.08	1345.04	4389.32	2179.04		2.93	-0.29	0.056
110.00	-21.83	-1.62	0.00	-96.38	0.00	96.38	2645.83	1322.92	4204.31	2087.20		3.24	-0.31	0.054
115.00	-20.77	-1.62	0.00	-88.27	0.00	88.27	2600.23	1300.12	4020.98	1996.19		3.58	-0.33	0.052
120.00	-19.74	-1.62	0.00	-80.17	0.00	80.17	2553.28	1276.64	3839.50	1906.09		3.93	-0.34	0.050
125.00	-18.72	-1.62	0.00	-72.07	0.00	72.07	2504.96	1252.48	3660.03	1816.99		4.30	-0.36	0.047
127.08	-18.31	-1.62	0.00	-68.70	0.00	68.70	2484.49	1242.25	3586.13	1780.31		4.46	-0.37	0.046
130.00	-17.43	-1.62	0.00	-63.97	0.00	63.97	2455.29	1227.64	3482.76	1728.99		4.69	-0.38	0.044
132.33	-16.75	-1.61	0.00	-60.21	0.00	60.21	1489.30	744.65	2121.68	1053.29		4.87	-0.39	0.068
135.00	-16.33	-1.62	0.00	-55.90	0.00	55.90	1477.63	738.82	2071.36	1028.31		5.09	-0.40	0.065
140.00	-15.57	-1.62	0.00	-47.82	0.00	47.82	1454.76	727.38	1977.27	981.60		5.52	-0.42	0.059
145.00	-14.83	-1.61	0.00	-39.74	0.00	39.74	1430.53	715.26	1883.34	934.97		5.97	-0.44	0.053
150.00	-14.10	-1.60	0.00	-31.69	0.00	31.69	1404.94	702.47	1789.74	888.50		6.44	-0.46	0.046
155.00	-13.38	-1.57	0.00	-23.71	0.00	23.71	1377.99	688.99	1696.65	842.29		6.92	-0.47	0.038
160.00	-8.42	-1.19	0.00	-15.86	0.00	15.86	1349.68	674.84	1604.25	796.42		7.42	-0.48	0.026
165.00	-7.81	-1.15	0.00	-9.90	0.00	9.90	1320.02	660.01	1512.71	750.97		7.94	-0.49	0.019
167.00	-4.61	-0.78	0.00	-7.60	0.00	7.60	1307.77	653.89	1476.37	732.93		8.14	-0.49	0.014
170.00	-4.31	-0.75	0.00	-5.26	0.00	5.26	1289.00	644.50	1422.20	706.04		8.45	-0.50	0.011
175.00	-3.81	-0.68	0.00	-1.52	0.00	1.52	1256.62	628.31	1332.89	661.70		8.98	-0.50	0.005
177.00	-0.28	-0.05	0.00	-0.16	0.00	0.16	1243.29	621.64	1297.54	644.16		9.19	-0.50	0.000
180.00	0.00	-0.05	0.00	0.00	0.00	0.00	1222.88	611.44	1244.96	618.05		9.50	-0.50	0.000

Seismic Segment Forces (Factored)

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Load Case:	0.9D + 1.0E							**Iterations**	23
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.31		**SA**	0.03	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1403.7	0.00	0.03	0.02	23.72	
10.00		1379.3	0.01	0.05	0.03	34.60	
15.00		1354.9	0.01	0.06	0.03	39.95	
20.00		1330.6	0.02	0.07	0.04	42.48	
25.00		1306.2	0.04	0.07	0.04	43.56	
30.00		1281.8	0.05	0.07	0.04	43.94	
35.00		1257.5	0.07	0.07	0.04	44.04	
40.00		1233.1	0.09	0.07	0.04	44.06	
45.00		1208.7	0.12	0.07	0.03	44.06	
45.92	Bot - Section 2	218.97	0.12	0.07	0.03	8.01	
50.00		1805.5	0.15	0.07	0.03	67.01	
53.00	Top - Section 1	1307.2	0.16	0.07	0.03	48.92	
55.00		401.39	0.18	0.07	0.03	15.08	
60.00		988.87	0.21	0.06	0.02	37.10	
65.00		968.00	0.25	0.06	0.02	35.46	
70.00		947.14	0.29	0.05	0.01	32.62	
75.00		926.28	0.33	0.04	0.01	28.19	
80.00		905.41	0.37	0.03	0.01	21.86	
85.00		884.55	0.42	0.01	0.01	13.60	
90.00		863.69	0.47	-0.01	0.01	3.86	
92.92	Bot - Section 3	494.18	0.50	-0.02	0.01	-1.24	
95.00		644.51	0.53	-0.03	0.01	-4.87	
98.92	Top - Section 2	1193.6	0.57	-0.04	0.01	-20.02	
100.00		149.70	0.58	-0.05	0.01	-2.87	
105.00		680.33	0.64	-0.07	0.02	-19.65	
110.00		662.92	0.71	-0.09	0.03	-23.61	
115.00		645.50	0.77	-0.11	0.05	-25.10	
120.00		628.09	0.84	-0.12	0.07	-24.23	
125.00		610.68	0.91	-0.12	0.09	-21.20	
127.08	Bot - Section 4	248.52	0.94	-0.12	0.10	-7.98	
130.00		589.65	0.99	-0.11	0.12	-16.17	
132.33	Top - Section 3	462.07	1.02	-0.10	0.14	-10.58	
135.00		217.29	1.06	-0.09	0.17	-3.64	
140.00		397.05	1.14	-0.04	0.21	-1.11	
145.00		384.86	1.23	0.03	0.27	5.58	
150.00		372.68	1.31	0.14	0.35	13.10	
155.00		360.49	1.40	0.29	0.43	21.35	
160.00	Appurtenance(s)	3907.4	1.49	0.48	0.53	338.84	
165.00		336.12	1.59	0.74	0.65	39.58	
167.00	Appurtenance(s)	2607.1	1.63	0.86	0.71	341.93	
170.00		192.90	1.69	1.07	0.79	29.39	
175.00		311.76	1.79	1.48	0.95	59.43	
177.00	Appurtenance(s)	2903.9	1.83	1.67	1.03	601.10	
180.00	Appurtenance(s)	213.28	1.89	1.98	1.14	49.62	
	Totals:	**41,188.2**				**1,989.8**	**Total Wind:** **40,997.6**

Seismic Segment Forces (Factored)

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

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

Calculated Forces

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.19			**Iterations**	23
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**Ss**	0.17
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.31	**SA**	0.03			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-44.26	-2.18	0.00	-294.99	0.00	294.99	5508.12	2754.06	13547.4	6725.55		0.00	0.00	0.052
5.00	-42.79	-2.16	0.00	-284.11	0.00	284.11	5452.09	2726.05	13177.2	6541.73		0.01	-0.01	0.051
10.00	-41.33	-2.13	0.00	-273.31	0.00	273.31	5394.71	2697.35	12808.5	6358.68		0.02	-0.02	0.051
15.00	-39.90	-2.10	0.00	-262.65	0.00	262.65	5335.97	2667.98	12441.5	6176.49		0.05	-0.03	0.050
20.00	-38.49	-2.06	0.00	-252.15	0.00	252.15	5275.87	2637.93	12076.4	5995.24		0.09	-0.05	0.049
25.00	-37.10	-2.03	0.00	-241.82	0.00	241.82	5214.41	2607.20	11713.3	5815.02		0.15	-0.06	0.049
30.00	-35.74	-1.99	0.00	-231.68	0.00	231.68	5151.59	2575.80	11352.6	5635.92		0.21	-0.07	0.048
35.00	-34.39	-1.95	0.00	-221.74	0.00	221.74	5087.42	2543.71	10994.2	5458.02		0.29	-0.08	0.047
40.00	-33.07	-1.91	0.00	-211.98	0.00	211.98	5021.88	2510.94	10638.5	5281.41		0.38	-0.09	0.047
45.00	-31.77	-1.87	0.00	-202.42	0.00	202.42	4954.99	2477.50	10285.5	5106.18		0.49	-0.11	0.046
45.92	-31.53	-1.86	0.00	-200.71	0.00	200.71	4942.58	2471.29	10221.1	5074.21		0.51	-0.11	0.046
50.00	-29.74	-1.80	0.00	-193.09	0.00	193.09	4886.75	2443.37	9935.52	4932.41		0.60	-0.12	0.045
53.00	-28.43	-1.75	0.00	-187.70	0.00	187.70	3967.43	1983.71	8109.29	4025.79		0.68	-0.13	0.054
55.00	-27.99	-1.74	0.00	-184.20	0.00	184.20	3947.58	1973.79	8001.39	3972.23		0.73	-0.13	0.053
60.00	-26.88	-1.71	0.00	-175.50	0.00	175.50	3897.00	1948.50	7732.70	3838.84		0.88	-0.14	0.053
65.00	-25.80	-1.67	0.00	-166.97	0.00	166.97	3845.06	1922.53	7465.70	3706.29		1.04	-0.16	0.052
70.00	-24.74	-1.65	0.00	-158.60	0.00	158.60	3791.77	1895.89	7200.54	3574.65		1.21	-0.17	0.051
75.00	-23.69	-1.62	0.00	-150.37	0.00	150.37	3737.12	1868.56	6937.41	3444.02		1.40	-0.19	0.050
80.00	-22.66	-1.60	0.00	-142.27	0.00	142.27	3681.11	1840.56	6676.48	3314.49		1.61	-0.20	0.049
85.00	-21.65	-1.59	0.00	-134.27	0.00	134.27	3623.74	1811.87	6417.92	3186.13		1.83	-0.22	0.048
90.00	-20.66	-1.59	0.00	-126.33	0.00	126.33	3565.02	1782.51	6161.91	3059.03		2.07	-0.23	0.047
92.92	-20.10	-1.59	0.00	-121.70	0.00	121.70	3530.13	1765.07	6013.81	2985.51		2.21	-0.24	0.046
95.00	-19.43	-1.59	0.00	-118.40	0.00	118.40	3504.93	1752.47	5908.61	2933.28		2.32	-0.25	0.046
98.92	-18.19	-1.58	0.00	-112.19	0.00	112.19	2742.07	1371.04	4616.42	2291.78		2.53	-0.26	0.056
100.00	-18.01	-1.59	0.00	-110.47	0.00	110.47	2732.96	1366.48	4575.83	2271.63		2.59	-0.27	0.055
105.00	-17.18	-1.59	0.00	-102.54	0.00	102.54	2690.08	1345.04	4389.32	2179.04		2.88	-0.28	0.053
110.00	-16.37	-1.59	0.00	-94.60	0.00	94.60	2645.83	1322.92	4204.31	2087.20		3.19	-0.30	0.052
115.00	-15.58	-1.59	0.00	-86.66	0.00	86.66	2600.23	1300.12	4020.98	1996.19		3.52	-0.32	0.049
120.00	-14.80	-1.59	0.00	-78.72	0.00	78.72	2553.28	1276.64	3839.50	1906.09		3.86	-0.34	0.047
125.00	-14.04	-1.59	0.00	-70.77	0.00	70.77	2504.96	1252.48	3660.03	1816.99		4.23	-0.36	0.045
127.08	-13.73	-1.59	0.00	-67.47	0.00	67.47	2484.49	1242.25	3586.13	1780.31		4.38	-0.36	0.043
130.00	-13.07	-1.59	0.00	-62.83	0.00	62.83	2455.29	1227.64	3482.76	1728.99		4.61	-0.37	0.042
132.33	-12.56	-1.58	0.00	-59.14	0.00	59.14	1489.30	744.65	2121.68	1053.29		4.79	-0.38	0.065
135.00	-12.25	-1.59	0.00	-54.91	0.00	54.91	1477.63	738.82	2071.36	1028.31		5.01	-0.39	0.062
140.00	-11.68	-1.59	0.00	-46.98	0.00	46.98	1454.76	727.38	1977.27	981.60		5.43	-0.41	0.056
145.00	-11.12	-1.58	0.00	-39.06	0.00	39.06	1430.53	715.26	1883.34	934.97		5.87	-0.43	0.050
150.00	-10.57	-1.57	0.00	-31.16	0.00	31.16	1404.94	702.47	1789.74	888.50		6.33	-0.45	0.043
155.00	-10.04	-1.54	0.00	-23.34	0.00	23.34	1377.99	688.99	1696.65	842.29		6.81	-0.46	0.035
160.00	-6.31	-1.17	0.00	-15.63	0.00	15.63	1349.68	674.84	1604.25	796.42		7.30	-0.47	0.024
165.00	-5.86	-1.13	0.00	-9.76	0.00	9.76	1320.02	660.01	1512.71	750.97		7.80	-0.48	0.017
167.00	-3.46	-0.77	0.00	-7.50	0.00	7.50	1307.77	653.89	1476.37	732.93		8.00	-0.49	0.013
170.00	-3.23	-0.74	0.00	-5.19	0.00	5.19	1289.00	644.50	1422.20	706.04		8.31	-0.49	0.010
175.00	-2.86	-0.68	0.00	-1.50	0.00	1.50	1256.62	628.31	1332.89	661.70		8.82	-0.49	0.005
177.00	-0.21	-0.05	0.00	-0.15	0.00	0.15	1243.29	621.64	1297.54	644.16		9.03	-0.49	0.000
180.00	0.00	-0.05	0.00	0.00	0.00	0.00	1222.88	611.44	1244.96	618.05		9.34	-0.49	0.000

Wind Loading - Shaft

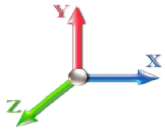
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	282.00	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	277.19	0.750	0.000	5.00	25.272	18.95	155.2	0.0	1403.7
10.00		1.00	0.85	7.442	8.19	272.37	0.750	0.000	5.00	24.837	18.63	152.5	0.0	1379.4
15.00		1.00	0.85	7.442	8.19	267.55	0.750	0.000	5.00	24.401	18.30	149.8	0.0	1355.0
20.00		1.00	0.90	7.896	8.69	270.63	0.750	0.000	5.00	23.966	17.97	156.1	0.0	1330.6
25.00		1.00	0.95	8.276	9.10	271.98	0.750	0.000	5.00	23.530	17.65	160.7	0.0	1306.3
30.00		1.00	0.98	8.600	9.46	272.07	0.750	0.000	5.00	23.095	17.32	163.9	0.0	1281.9
35.00		1.00	1.01	8.883	9.77	271.26	0.750	0.000	5.00	22.659	16.99	166.1	0.0	1257.5
40.00		1.00	1.04	9.137	10.05	269.76	0.750	0.000	5.00	22.224	16.67	167.5	0.0	1233.1
45.00		1.00	1.07	9.366	10.30	267.72	0.750	0.000	5.00	21.788	16.34	168.4	0.0	1208.8
45.92	Bot - Section 2	1.00	1.07	9.406	10.35	267.30	0.750	0.000	0.92	3.947	2.96	30.6	0.0	219.0
50.00		1.00	1.09	9.576	10.53	265.24	0.750	0.000	4.08	17.666	13.25	139.6	0.0	1805.5
53.00	Top - Section 1	1.00	1.11	9.694	10.66	263.58	0.750	0.000	3.00	12.794	9.60	102.3	0.0	1307.3
55.00		1.00	1.12	9.770	10.75	266.44	0.750	0.000	2.00	8.442	6.33	68.0	0.0	401.4
60.00		1.00	1.14	9.951	10.95	263.32	0.750	0.000	5.00	20.800	15.60	170.8	0.0	988.9
65.00		1.00	1.16	10.120	11.13	259.93	0.750	0.000	5.00	20.365	15.27	170.0	0.0	968.0
70.00		1.00	1.17	10.279	11.31	256.30	0.750	0.000	5.00	19.929	14.95	169.0	0.0	947.1
75.00		1.00	1.19	10.430	11.47	252.46	0.750	0.000	5.00	19.494	14.62	167.7	0.0	926.3
80.00		1.00	1.21	10.572	11.63	248.44	0.750	0.000	5.00	19.058	14.29	166.2	0.0	905.4
85.00		1.00	1.22	10.708	11.78	244.25	0.750	0.000	5.00	18.623	13.97	164.5	0.0	884.5
90.00		1.00	1.24	10.838	11.92	239.91	0.750	0.000	5.00	18.187	13.64	162.6	0.0	863.7
92.92	Bot - Section 3	1.00	1.25	10.911	12.00	237.32	0.750	0.000	2.92	10.408	7.81	93.7	0.0	494.2
95.00		1.00	1.25	10.962	12.06	235.43	0.750	0.000	2.08	7.454	5.59	67.4	0.0	644.5
98.92	Top - Section 2	1.00	1.26	11.055	12.16	231.84	0.750	0.000	3.92	13.810	10.36	126.0	0.0	1193.7
100.00		1.00	1.27	11.081	12.19	234.42	0.750	0.000	1.08	3.773	2.83	34.5	0.0	149.7
105.00		1.00	1.28	11.195	12.31	229.72	0.750	0.000	5.00	17.147	12.86	158.4	0.0	680.3
110.00		1.00	1.29	11.305	12.44	224.91	0.750	0.000	5.00	16.711	12.53	155.9	0.0	662.9
115.00		1.00	1.30	11.412	12.55	219.99	0.750	0.000	5.00	16.276	12.21	153.2	0.0	645.5
120.00		1.00	1.32	11.514	12.67	214.99	0.750	0.000	5.00	15.840	11.88	150.5	0.0	628.1
125.00		1.00	1.33	11.614	12.78	209.90	0.750	0.000	5.00	15.405	11.55	147.6	0.0	610.7
127.08	Bot - Section 4	1.00	1.33	11.654	12.82	207.76	0.750	0.000	2.08	6.270	4.70	60.3	0.0	248.5
130.00		1.00	1.34	11.710	12.88	204.72	0.750	0.000	2.92	8.808	6.61	85.1	0.0	589.7
132.33	Top - Section 3	1.00	1.34	11.754	12.93	202.28	0.750	0.000	2.33	6.904	5.18	66.9	0.0	462.1
135.00		1.00	1.35	11.803	12.98	202.06	0.750	0.000	2.67	7.816	5.86	76.1	0.0	217.3
140.00		1.00	1.36	11.894	13.08	196.74	0.750	0.000	5.00	14.284	10.71	140.2	0.0	397.0
145.00		1.00	1.37	11.982	13.18	191.36	0.750	0.000	5.00	13.849	10.39	136.9	0.0	384.9
150.00		1.00	1.38	12.068	13.27	185.91	0.750	0.000	5.00	13.413	10.06	133.5	0.0	372.7
155.00		1.00	1.39	12.152	13.37	180.39	0.750	0.000	5.00	12.978	9.73	130.1	0.0	360.5
160.00	Appurtenance(s)	1.00	1.40	12.233	13.46	174.82	0.750	0.000	5.00	12.542	9.41	126.6	0.0	348.3
165.00		1.00	1.41	12.313	13.54	169.19	0.750	0.000	5.00	12.107	9.08	123.0	0.0	336.1
167.00	Appurtenance(s)	1.00	1.41	12.344	13.58	166.92	0.750	0.000	2.00	4.721	3.54	48.1	0.0	131.0
170.00		1.00	1.42	12.390	13.63	163.50	0.750	0.000	3.00	6.950	5.21	71.0	0.0	192.9
175.00		1.00	1.42	12.466	13.71	157.77	0.750	0.000	5.00	11.236	8.43	115.6	0.0	311.8
177.00	Appurtenance(s)	1.00	1.43	12.496	13.75	155.46	0.750	0.000	2.00	4.372	3.28	45.1	0.0	121.3
180.00	Appurtenance(s)	1.00	1.43	12.540	13.79	151.98	0.750	0.000	3.00	6.428	4.82	66.5	0.0	178.3
								Totals:	**180.00**			**5,463.5**		**32,335.3**

Discrete Appurtenance Forces

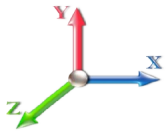
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	180.00	Lightning Rod	1	12.591	13.850	1.00	1.00	1.05	35.00	0.000	3.500	14.54	0.00	50.90
2	177.00	APXVAARR18_43-U-NA2	3	12.496	13.746	0.56	0.80	26.48	318.00	0.000	0.000	363.94	0.00	0.00
3	177.00	Low Profile Platform	1	12.496	13.746	1.00	1.00	24.00	2000.00	0.000	0.000	329.90	0.00	0.00
4	177.00	EMS RR90-17-02DP	9	12.496	13.746	0.58	0.80	22.60	162.00	0.000	0.000	310.68	0.00	0.00
5	177.00	Kathrein 782 10662 Bias-T	3	12.500	13.750	0.40	0.80	0.34	5.40	0.000	0.237	4.62	0.00	1.10
6	177.00	Ericsson Radio 4449	3	12.505	13.756	0.46	0.80	2.26	222.00	0.000	0.625	31.05	0.00	19.41
7	177.00	KRY 112 144/2	3	12.500	13.750	0.46	0.80	0.56	29.10	0.000	0.287	7.71	0.00	2.22
8	177.00	KRY 112 489/2	3	12.503	13.753	0.46	0.80	0.89	46.20	0.000	0.458	12.23	0.00	5.61
9	167.00	RRH2x40-AWS	3	12.344	13.578	0.46	0.80	3.45	132.00	0.000	0.000	46.81	0.00	0.00
10	167.00	BXA-70063-6CF	6	12.344	13.578	0.54	0.80	24.71	102.00	0.000	0.000	335.50	0.00	0.00
11	167.00	BXA-171063-12CF	6	12.344	13.578	0.62	0.80	17.90	90.00	0.000	0.000	243.00	0.00	0.00
12	167.00	RRH2x40-07-U	3	12.344	13.578	0.46	0.80	3.05	152.10	0.000	0.000	41.42	0.00	0.00
13	167.00	Platform Mount w/ Mods	1	12.344	13.578	1.00	1.00	24.00	2000.00	0.000	0.000	325.88	0.00	0.00
14	160.00	Raycap	1	12.233	13.457	1.00	1.00	3.78	26.20	0.000	0.000	50.87	0.00	0.00
15	160.00	Low Profile Platform	1	12.233	13.457	1.00	1.00	22.00	1800.00	0.000	0.000	296.04	0.00	0.00
16	160.00	Ericsson RRUS-12 B2	3	12.233	13.457	0.46	0.80	4.31	174.00	0.000	0.000	57.99	0.00	0.00
17	160.00	DMP65R-BU8DA	3	12.233	13.457	0.63	0.80	26.07	287.10	0.000	0.000	350.81	0.00	0.00
18	160.00	Ericsson RRUS4449	3	12.233	13.457	0.46	0.80	2.69	219.00	0.000	0.000	36.26	0.00	0.00
19	160.00	Handrail Kit [SitePro1	1	12.233	13.457	1.00	1.00	8.75	330.00	0.000	0.000	117.74	0.00	0.00
20	160.00	CCI HPA-65R-BUU-H8	3	12.233	13.457	0.63	0.80	24.61	204.00	0.000	0.000	331.17	0.00	0.00
21	160.00	7770	3	12.185	13.403	0.58	0.80	9.64	105.00	0.000	-3.000	129.15	0.00	-387.46
22	160.00	Ericsson RRUS A2	3	12.233	13.457	0.46	0.80	2.54	63.60	0.000	0.000	34.24	0.00	0.00
23	160.00	LGP21401 TMA	6	12.233	13.457	0.40	0.80	3.10	105.00	0.000	0.000	41.66	0.00	0.00
24	160.00	Powerwave 7020.00 RET	12	12.233	13.457	0.40	0.80	1.92	26.40	0.000	0.000	25.84	0.00	0.00
25	160.00	LGP21901 Diplexers	6	12.233	13.457	0.40	0.80	1.51	186.00	0.000	0.000	20.35	0.00	0.00
26	160.00	Raycap DC6-48-60-18-8F	1	12.233	13.457	1.00	1.00	1.47	32.80	0.000	0.000	19.78	0.00	0.00
							Totals:		**8,852.90**			**3,579.20**		

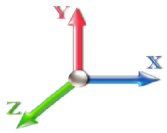
Total Applied Force Summary

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		155.16	1639.23	0.00	0.00
10.00		152.49	1614.86	0.00	0.00
15.00		149.81	1590.49	0.00	0.00
20.00		156.12	1566.12	0.00	0.00
25.00		160.66	1541.76	0.00	0.00
30.00		163.85	1517.39	0.00	0.00
35.00		166.07	1493.02	0.00	0.00
40.00		167.52	1468.65	0.00	0.00
45.00		168.36	1444.28	0.00	0.00
45.92		30.63	262.14	0.00	0.00
50.00		139.56	1997.86	0.00	0.00
53.00		102.32	1448.59	0.00	0.00
55.00		68.05	495.59	0.00	0.00
60.00		170.76	1224.37	0.00	0.00
65.00		170.03	1203.50	0.00	0.00
70.00		169.01	1182.64	0.00	0.00
75.00		167.73	1161.78	0.00	0.00
80.00		166.23	1140.91	0.00	0.00
85.00		164.52	1120.05	0.00	0.00
90.00		162.61	1099.19	0.00	0.00
92.92		93.69	631.56	0.00	0.00
95.00		67.41	742.63	0.00	0.00
98.92		125.95	1378.16	0.00	0.00
100.00		34.49	200.73	0.00	0.00
105.00		158.37	915.83	0.00	0.00
110.00		155.86	898.42	0.00	0.00
115.00		153.23	881.00	0.00	0.00
120.00		150.47	863.59	0.00	0.00
125.00		147.60	846.18	0.00	0.00
127.08		60.28	346.33	0.00	0.00
130.00		85.09	727.34	0.00	0.00
132.33		66.95	571.66	0.00	0.00
135.00		76.11	343.20	0.00	0.00
140.00		140.17	632.55	0.00	0.00
145.00		136.90	620.36	0.00	0.00
150.00		133.55	608.18	0.00	0.00
155.00		130.10	595.99	0.00	0.00
160.00	(46) attachments	1638.49	4142.91	0.00	-387.46
165.00		122.98	500.92	0.00	0.00
167.00	(19) attachments	1040.70	2673.06	0.00	0.00
170.00		71.05	254.34	0.00	0.00
175.00		115.56	414.16	0.00	0.00
177.00	(25) attachments	1105.21	2944.95	0.00	28.33
180.00	(1) attachments	81.04	233.98	0.00	50.90
	Totals:	**9,042.70**	**49,180.46**	**0.00**	**-308.23**

Linear Appurtenance Segment Forces (Factored)

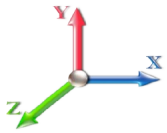
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	34.50
10.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	34.50
15.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	34.50
20.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	34.50
25.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	34.50
30.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	34.50
35.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	34.50
40.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	34.50
45.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	34.50
45.92	Climbing Ladder	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	9.406	0.00	6.33
50.00	Climbing Ladder	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	28.17
53.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	9.694	0.00	20.70
55.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	13.80
60.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	34.50
65.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	34.50
70.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	34.50
75.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	34.50
80.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	34.50
85.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	34.50
90.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	34.50
92.92	Climbing Ladder	Yes	2.92	0.000	0.00	0.00	0.00	0.000	0.000	10.911	0.00	20.13
95.00	Climbing Ladder	Yes	2.08	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	14.37
98.92	Climbing Ladder	Yes	3.92	0.000	0.00	0.00	0.00	0.000	0.000	11.055	0.00	27.03
100.00	Climbing Ladder	Yes	1.08	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	7.47
105.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	34.50
110.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	34.50
115.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	34.50
120.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	34.50
125.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	34.50
127.08	Climbing Ladder	Yes	2.08	0.000	0.00	0.00	0.00	0.000	0.000	11.654	0.00	14.33
130.00	Climbing Ladder	Yes	2.92	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	20.17
132.33	Climbing Ladder	Yes	2.33	0.000	0.00	0.00	0.00	0.000	0.000	11.754	0.00	16.05
135.00	Climbing Ladder	Yes	2.67	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	18.45
140.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.894	0.00	34.50
145.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.982	0.00	34.50
150.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.068	0.00	34.50
155.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.152	0.00	34.50
160.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.233	0.00	34.50
165.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.313	0.00	34.50
167.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.344	0.00	13.80
170.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.390	0.00	20.70
175.00	Climbing Ladder	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.466	0.00	34.50
177.00	Climbing Ladder	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.496	0.00	13.80
180.00	Climbing Ladder	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.540	0.00	20.70
										Totals:	**0.0**	**1,242.0**

Calculated Forces

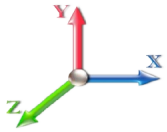
Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-49.18	-9.06	0.00	-1121.9	0.00	1121.93	5508.12	2754.06	13547.4	6725.55	0.00	0.000	0.000	0.176
5.00	-47.53	-8.94	0.00	-1076.6	0.00	1076.63	5452.09	2726.05	13177.2	6541.73	0.02	-0.042	0.000	0.173
10.00	-45.91	-8.82	0.00	-1031.9	0.00	1031.93	5394.71	2697.35	12808.5	6358.68	0.09	-0.084	0.000	0.171
15.00	-44.31	-8.70	0.00	-987.84	0.00	987.84	5335.97	2667.98	12441.5	6176.49	0.20	-0.127	0.000	0.168
20.00	-42.74	-8.57	0.00	-944.34	0.00	944.34	5275.87	2637.93	12076.4	5995.24	0.36	-0.170	0.000	0.166
25.00	-41.19	-8.44	0.00	-901.48	0.00	901.48	5214.41	2607.20	11713.3	5815.02	0.56	-0.214	0.000	0.163
30.00	-39.67	-8.30	0.00	-859.29	0.00	859.29	5151.59	2575.80	11352.6	5635.92	0.81	-0.258	0.000	0.160
35.00	-38.17	-8.15	0.00	-817.80	0.00	817.80	5087.42	2543.71	10994.2	5458.02	1.10	-0.302	0.000	0.157
40.00	-36.70	-8.01	0.00	-777.03	0.00	777.03	5021.88	2510.94	10638.5	5281.41	1.44	-0.347	0.000	0.154
45.00	-35.25	-7.85	0.00	-737.00	0.00	737.00	4954.99	2477.50	10285.5	5106.18	1.83	-0.392	0.000	0.151
45.92	-34.99	-7.83	0.00	-729.80	0.00	729.80	4942.58	2471.29	10221.1	5074.21	1.90	-0.400	0.000	0.151
50.00	-32.98	-7.69	0.00	-697.84	0.00	697.84	4886.75	2443.37	9935.52	4932.41	2.26	-0.438	0.000	0.148
53.00	-31.53	-7.59	0.00	-674.77	0.00	674.77	3967.43	1983.71	8109.29	4025.79	2.55	-0.465	0.000	0.176
55.00	-31.03	-7.54	0.00	-659.58	0.00	659.58	3947.58	1973.79	8001.39	3972.23	2.75	-0.484	0.000	0.174
60.00	-29.81	-7.38	0.00	-621.90	0.00	621.90	3897.00	1948.50	7732.70	3838.84	3.28	-0.535	0.000	0.170
65.00	-28.60	-7.23	0.00	-584.98	0.00	584.98	3845.06	1922.53	7465.70	3706.29	3.87	-0.586	0.000	0.165
70.00	-27.41	-7.07	0.00	-548.85	0.00	548.85	3791.77	1895.89	7200.54	3574.65	4.51	-0.637	0.000	0.161
75.00	-26.24	-6.91	0.00	-513.50	0.00	513.50	3737.12	1868.56	6937.41	3444.02	5.20	-0.689	0.000	0.156
80.00	-25.10	-6.75	0.00	-478.95	0.00	478.95	3681.11	1840.56	6676.48	3314.49	5.95	-0.740	0.000	0.151
85.00	-23.98	-6.60	0.00	-445.18	0.00	445.18	3623.74	1811.87	6417.92	3186.13	6.76	-0.791	0.000	0.146
90.00	-22.87	-6.43	0.00	-412.20	0.00	412.20	3565.02	1782.51	6161.91	3059.03	7.61	-0.842	0.000	0.141
92.92	-22.24	-6.34	0.00	-393.44	0.00	393.44	3530.13	1765.07	6013.81	2985.51	8.14	-0.872	0.000	0.138
95.00	-21.50	-6.27	0.00	-380.23	0.00	380.23	3504.93	1752.47	5908.61	2933.28	8.52	-0.893	0.000	0.136
98.92	-20.12	-6.13	0.00	-355.66	0.00	355.66	2742.07	1371.04	4616.42	2291.78	9.27	-0.933	0.000	0.163
100.00	-19.91	-6.11	0.00	-349.01	0.00	349.01	2732.96	1366.48	4575.83	2271.63	9.48	-0.944	0.000	0.161
105.00	-19.00	-5.95	0.00	-318.47	0.00	318.47	2690.08	1345.04	4389.32	2179.04	10.50	-1.001	0.000	0.153
110.00	-18.09	-5.80	0.00	-288.71	0.00	288.71	2645.83	1322.92	4204.31	2087.20	11.58	-1.056	0.000	0.145
115.00	-17.21	-5.64	0.00	-259.72	0.00	259.72	2600.23	1300.12	4020.98	1996.19	12.72	-1.110	0.000	0.137
120.00	-16.35	-5.49	0.00	-231.50	0.00	231.50	2553.28	1276.64	3839.50	1906.09	13.91	-1.163	0.000	0.128
125.00	-15.50	-5.34	0.00	-204.04	0.00	204.04	2504.96	1252.48	3660.03	1816.99	15.15	-1.213	0.000	0.119
127.08	-15.15	-5.27	0.00	-192.96	0.00	192.96	2484.49	1242.25	3586.13	1780.31	15.69	-1.234	0.000	0.115
130.00	-14.42	-5.18	0.00	-177.54	0.00	177.54	2455.29	1227.64	3482.76	1728.99	16.45	-1.263	0.000	0.109
132.33	-13.85	-5.11	0.00	-165.49	0.00	165.49	1489.30	744.65	2121.68	1053.29	17.07	-1.285	0.000	0.166
135.00	-13.51	-5.03	0.00	-151.84	0.00	151.84	1477.63	738.82	2071.36	1028.31	17.80	-1.309	0.000	0.157
140.00	-12.87	-4.89	0.00	-126.68	0.00	126.68	1454.76	727.38	1977.27	981.60	19.20	-1.367	0.000	0.138
145.00	-12.25	-4.75	0.00	-102.23	0.00	102.23	1430.53	715.26	1883.34	934.97	20.66	-1.419	0.000	0.118
150.00	-11.64	-4.61	0.00	-78.49	0.00	78.49	1404.94	702.47	1789.74	888.50	22.17	-1.464	0.000	0.097
155.00	-11.05	-4.47	0.00	-55.45	0.00	55.45	1377.99	688.99	1696.65	842.29	23.73	-1.501	0.000	0.074
160.00	-6.95	-2.72	0.00	-33.11	0.00	33.11	1349.68	674.84	1604.25	796.42	25.31	-1.527	0.000	0.047
165.00	-6.45	-2.59	0.00	-19.49	0.00	19.49	1320.02	660.01	1512.71	750.97	26.92	-1.545	0.000	0.031
167.00	-3.81	-1.48	0.00	-14.31	0.00	14.31	1307.77	653.89	1476.37	732.93	27.57	-1.550	0.000	0.022
170.00	-3.56	-1.40	0.00	-9.88	0.00	9.88	1289.00	644.50	1422.20	706.04	28.55	-1.556	0.000	0.017
175.00	-3.15	-1.27	0.00	-2.89	0.00	2.89	1256.62	628.31	1332.89	661.70	30.18	-1.561	0.000	0.007
177.00	-0.23	-0.09	0.00	-0.31	0.00	0.31	1243.29	621.64	1297.54	644.16	30.83	-1.562	0.000	0.001
180.00	0.00	-0.08	0.00	-0.05	0.00	0.05	1222.88	611.44	1244.96	618.05	31.82	-1.562	0.000	0.000

Final Analysis Summary

Structure:	CT02652-S-SBA	**Code:**	EIA/TIA-222-G	11/7/2019	
Site Name:	Colchester 3 CT	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 34	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 101 mph Wind	41.1	0.00	58.95	0.00	0.00	5119.50
0.9D + 1.6W 101 mph Wind	41.1	0.00	44.19	0.00	0.00	5055.20
1.2D + 1.0Di + 1.0Wi 50 mph Wind	10.3	0.00	87.06	0.00	0.00	1302.95
1.2D + 1.0E	2.2	0.00	59.02	0.00	0.00	299.09
0.9D + 1.0E	2.2	0.00	44.26	0.00	0.00	294.99
1.0D + 1.0W 60 mph Wind	9.1	0.00	49.18	0.00	0.00	1121.93

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 101 mph Wind	-36.63	-34.64	0.00	-3084.6	0.00	-3084.6	3967.43	1983.7	8109.29	4025.79	53.00	0.776
0.9D + 1.6W 101 mph Wind	-27.18	-34.27	0.00	-3032.0	0.00	-3032.0	3967.43	1983.7	8109.29	4025.79	53.00	0.760
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-60.12	-8.80	0.00	-790.62	0.00	-790.62	3967.43	1983.7	8109.29	4025.79	53.00	0.212
1.2D + 1.0E	-16.75	-1.61	0.00	-60.21	0.00	-60.21	1489.30	744.65	2121.68	1053.29	132.33	0.068
0.9D + 1.0E	-12.56	-1.58	0.00	-59.14	0.00	-59.14	1489.30	744.65	2121.68	1053.29	132.33	0.065
1.0D + 1.0W 60 mph Wind	-49.18	-9.06	0.00	-1121.9	0.00	-1121.9	5508.12	2754.0	13547.4	6725.55	0.00	0.176

Base Plate Summary

Structure:	CT02652-S-SB		**Code:**	EIA/TIA-222-G	11/7/2019
Site Name:	Colchester 3 CT		**Exposure:**	C	
Height:	180.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 35

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	5045.00
Axial (kip):	56.10
Shear (kip):	39.50
Analysis	
Moment (kip-ft):	5119.50
Axial (kip):	87.06
Shear (kip):	41.10
Moment Design %:	101.48

Base Plate	
Yield (ksi):	60.00
Width (in):	74.62
Style:	Polygon
Polygon Sides:	16.00
Clip Length (in):	14.84
Effective Len (in):	13.35
Moment (kip-in):	790.49
Allow Stress (ksi):	81.00
Applied Stress (ksi):	0.00
Stress Ratio:	0.58

Anchor Bolts	
Bolt Circle:	68.62
Number Bolts:	20.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00
Compression	
Force (kip):	183.41
Allowable (kip):	260.00
Ratio:	0.72
Tension	
Force (kip):	174.70
Allowable (kip):	260.00
Ratio:	0.69

Monopole Mat Foundation Design

			Date: 11/7/2019
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	180
Site Number:	CT02652-S-SBA	**Engineer Name:**	D. Zhou
Engr. Number:	88340	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

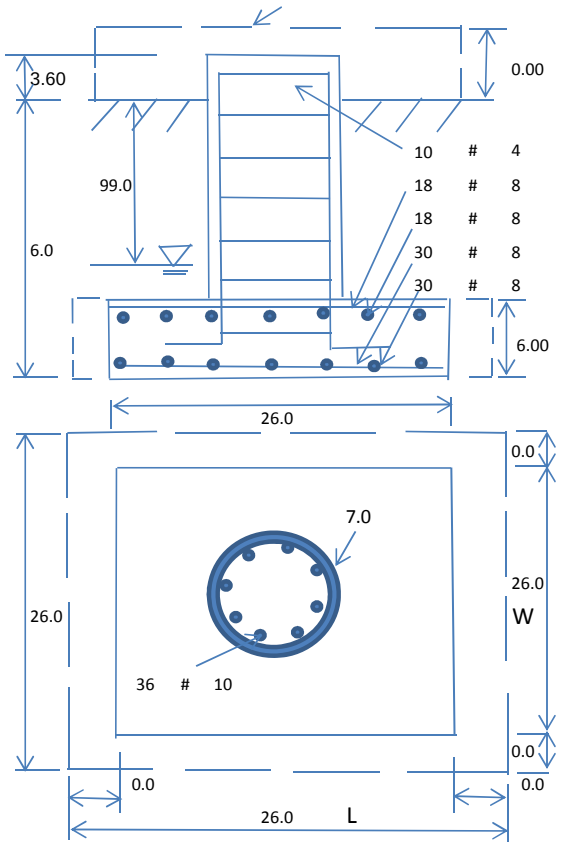
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	87.1	Shear Force (Kips):	41.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5119.5
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	3.60	Thickness of Pad (ft):	6.00
Length of Pad (ft.):	26	Width of Pad (ft.):	26
Final Length of pad (ft)	26.0	Final width of pad (ft):	26.0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	18	Qty. of Rebar in Pad (W):	18	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	130.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	38
Ultimate Bearing Pressure (psf):	15000	Ultimate Skin Friction:	1200	Psf	Angle from Bottm of Pad:	40
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	4194.54	Total Dry Concrete Weight (Kips):	629.18
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	629.18	Total Vertical Load on Base (Kips):	716.28

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	3604	<	Allowable Factored Soil Bearing (psf): 11250	0.32	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8493.7	>	Design Factored Momont (kips-ft): 5514	0.65	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.54	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00			
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.27		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	7405.8	>	Design Factored Moment (Mu, Kips-F	5267.5	0.71	OK!
Calculated Shear Capacity (Kips):	589.7	>	Design Factored Shear (Kips):	41.1	0.07	OK!
Calculated Tension Capacity (Tn, Kips):	2468.9	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7287.8	>	Design Factored Axial Load (Pu Kips):	87.1	0.01	OK!
Moment & Axial Strength Combination:	0.71	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.008		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1755.9	>	One-Way Factored Shear (L-D. Kips):	215.4	0.12	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1755.9	>	One-Way Factored Shear (W-D., Kips)	215.4	0.12	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1239.4	>	One-Way Factored Shear (C-C, Kips):	218.4	0.18	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0011	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0011		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	7210.2	>	Moment at Bottom (L-Dir. K-Ft):	1881.1	0.26	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	7210.2	>	Moment at Bottom (W-Dir. K-Ft):	1881.1	0.26	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	10165.1	>	Moment at Bottom (C-C Dir. K-Ft):	2660.2	0.26	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0007	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0007		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	4349.0	>	Moment at the top (L-Dir K-Ft):	822.6	0.19	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	4349.0	>	Moment at the top (W-Dir K-Ft):	822.6	0.19	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	6139.0	>	Moment at the top (C-C Dir. K-Ft):	770.7	0.13	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	2047.8	k-ft.	Max. factored shear stress v_{u_CD}:		2.6	Psi
Max. factored shear stress v_{u_AB}:	6.3	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	6.3	Psi	Check Usage of Punching Shear Capacity:		0.04	OK!

Town of Colchester, CT

Property Listing Report

Map Block Lot: 03-03/002-000/TWR | Account: 11AT0002 | PID: 105096

Property Information

Property Location	29 MAHONEY RD
Owner	SBA PROPERTIES INC
Co-Owner	ATTN TAX DEPARTMENT CT002652
Mailing Address	8051 CONGRESS AVE BOCA RATON FL 33487-1307
Land Use	4310 Tel Rel Tw
Land Class	I
Zoning Code	
Census Tract	NA
Sub Lot	

Neighborhood	NA
Acreage	0
Utilities	N/A
Lot Setting/Desc	NA NA
Survey Map	
Additional Info	

Photo

Sketch

Primary Construction Details

Year Built		Bedrooms		Exterior Walls	
Stories		Full Bathrooms		Interior Walls	
Building Style		Half Bathrooms		Heating Type	
Building Use		Bath Style		Heating Fuel	
Building Condition		Kitchen Style		AC Type	
Floors		Roof Style		Gross Bldg Area	
Total Rooms		Roof Cover		Total Living Area	

Report Created On 11/15/2019

Town of Colchester, CT

Property Listing Report | Map Block Lot **03-03/002-000/TWR** | Account **11AT0002**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Outbuildings	632500	442800
Land	0	0
Total	632500	442800

Outbuilding and Extra Items

Type	Description
Fence 8' Chain	280.00 L.F.
Cell Tower	3.00 SITES

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		0

Sales History

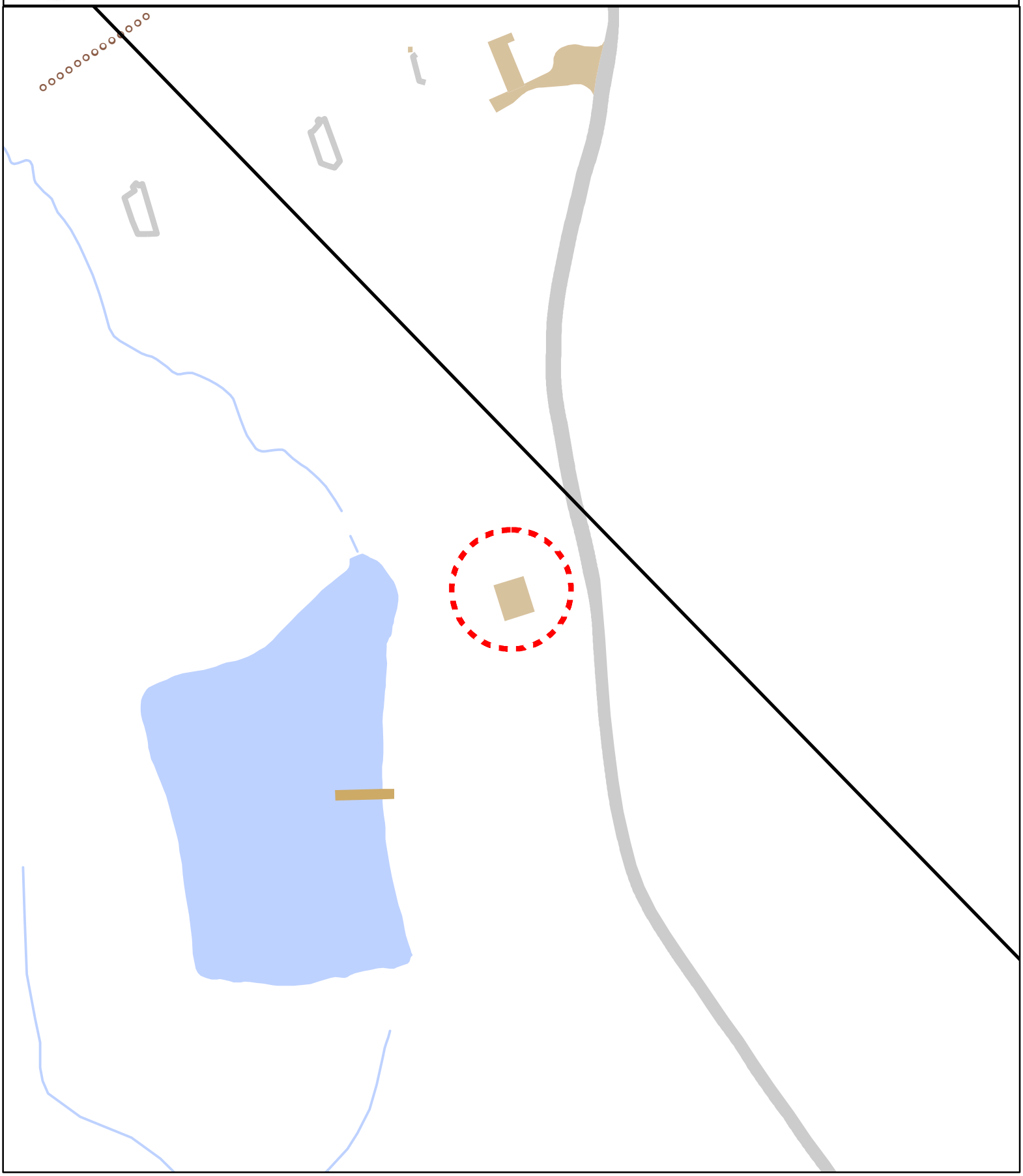
Owner of Record	Book/ Page	Sale Date	Sale Price
SBA PROPERTIES INC	000/ 000	10/1/2011	

Report Created On **11/15/2019**

Town of Colchester, Connecticut - Assessment Parcel Map

Parcel: 03-03-002-000-TWR

Address: 29 MAHONEY RD



Approximate Scale: **1 inch = 100 feet**

0 50 100 150 200 Feet

Map Produced: August 2019 / Grand List: 2018

KAYLA GAGNON
6034210470
SAI COMMUNICATIONS
12 INDUSTRIAL WAY
SALEM NH 03079

1 LBS

1 OF 1

SHIP TO:

SBA PROPERTIES, INC.
6034210470
SBA PROPERTIES, INC.
8051 CONGRESS AVENUE
BOCA RATON FL 33487

FL 332 6-07

UPS GROUND

TRACKING #: 1Z 9V0 F66 03 9271 3360

BILLING: P/P

Reference No.1: CT-103-19008

XOL 19.10.10 NV45 20.0A 10/2019

11/15/2019

Print Label

KAYLA GAGNON
6034210470
SAI COMMUNICATIONS
12 INDUSTRIAL WAY
SALEM NH 03079

1 LBS

1 OF 1

SHIP TO:

HONORABLE ART SHILOSKY
6034210470
CC: MATTHEW BORDEAUX
127 NORWICH AVENUE
COLCHESTER CT 06415

CT 063 0-01

UPS GROUND

TRACKING #: 1Z 9V0 F66 03 9096 0972

BILLING: P/P

Reference No.1: CT-103-19008

XOL 19.10.10 NV45 20.0A 10/2019

MINUTES OF MEETING
COLCHESTER ZONING AND PLANNING COMMISSION
REGULAR MEETING AND PUBLIC HEARINGS
WEDNESDAY, MARCH 15, 2000 – 7:00 P.M.
TOWN HALL, 127 NORWICH AVENUE, COLCHESTER, CT

MEMBERS PRESENT: Robert Weeks Ph.D., James Ford, Mark Noniewicz, John Gagnon, Linda Keift-Robitalle, Joseph Mathieu, Michel Ciccone, Ronald Vasquez,

MEMBERS ABSENT: John Mahoney

STAFF PRESENT: Larry Dunkin, AICP, Planning Director, Liz Rasmussen, CZEO, Zoning Enforcement Officer and Lisa Smith, Clerk

1. CALL MEETING TO ORDER - Chairman Weeks called the meeting to order at 7:05PM

2. ADDITIONS TO AGENDA –

L. Rasmussen advised Chairman Weeks of the following applications:

SUB#2000-309, Jeremy River Drive and River Road, Application of Richard M. Martin for 1 Lot Re-subdivision.

RC#2000-124, Application of the Town of Colchester for zoning regulation change to amend Section 21 - Flood Hazard Overlay District.

MOTION by John W. Ford, **SECOND** by Linda Keift-Robitaille **TO ADD UNDER NEW APPLICATIONS SUB#2000-309 as ITEM F and RC#2000-124 as ITEM G. MOTION CARRIED UNANIMOUSLY**.

3. PUBLIC HEARINGS

L. Rasmussen read the legal warnings.

A. RC#2000-122, Colchester Zoning and Planning Commission, Regulations Changes regarding Wireless Telecommunications Sites

Chairman Weeks received unanimous consent to waive the reading of the Record Items. The following items were entered into the record:

A. Application, dated 1/26/2000
B. Proposed Text Changes, dated 1/26/2000
C. Referral to Southeastern Connecticut Council of Governments (SCCOG), dated 1/27/2000
D. Referral to Midstate Regional Planning Agency, dated 1/27/2000
E. Referral to Capitol Region Council of Goverments (CRCOG), dated 1/27/2000
F. Referral to Windham Region Council of Governments (WINCOG), dated 1/27/2000
G. Letter (response) from Katherine Hold, Chairman, WINCOG RPC, dated 1/27/2000

H. Letter (responses) from CRCOG, dated 2/22/2000
I. Hartford Courant Legal Notice - March 3 and March 10, 2000
J. Rivereast News Bulletin Legal Notice - March 3 and March 10, 2000
K. Comments and revisions from Lisa Gladke, Town Attorney dated 3/2/2000
L. Memo (comments) - Lisa Gladke, Town Attorney, dated 3/2/2000
M. Letter (response) from Gene Lohrs, Chairman, Reference Committee, SCCOG, dated 3/2/2000
N. Letter (response) from Geoffrey Colegrove, Executive Director, Midstate Regional Planning Agency, dated 3/7/2000
O. Staff Report - Larry Dunkin, AICP, Planning Director
P. Letter (response) from Geoffrey Colegrove, Executive Director, Midstate Regional Planning Agency, dated 3/8/2000
Q. Revised Text Changes, dated 3/15/2000

L. Dunkin explained that this application was developed by staff and the Commission to provide specific regulations for Wireless Telecommunication Sites, including tower and monopole locations. Town Counsel has also reviewed the proposed amendment and the majority of the changes recommended by Town Counsel (Record Item "K") have been incorporated into the revised copy that L. Dunkin distributed to the Commission. The current Zoning Regulations provide for Wireless Telecommunication Sites as simple site plan reviews, with the Commission's "permission" necessary to exceed the height requirements. This affords the Commission little in the way of meaningful criteria to judge the propriety of such proposals.

L. Dunkin explained that the proposed amendment addresses Wireless Telecommunication Sites in a comprehensive manner, by establishing both specific development requirements and standards to be met under Special Exception review by the Commission. The criteria were developed being mindful of Federal Regulations that prohibit municipalities from having such strict local requirements that Wireless Telecommunication Sites are precluded altogether. He noted that these regulations do not apply to amateur (ham) radio antennas.

M. Noniewicz inquired about comments from the Regional Planning Agency, which suggested adding 19ft to height requirements to allow additional facilities to be placed on towers. Discussion ensued on whether an additional 19ft is needed so antenna could extend above the 180 foot tower. He also addressed comments concerning limiting size of equipment sheds and trailers on site. L. Dunkin suggested that size limits for equipment sheds would probably be unnecessary because of limited space within fenced enclosures. M. Noniewicz asked if the proposed amendment reflected limiting antenna and receiver size. L. Dunkin stated that the proposal does not include such requirements, noting that Town Council cautioned about overly restrictive regulations. He suggested that the engineering specifications for towers limit what can be placed on them.

J. Mathieu questioned the response from Geoffrey Colegrove recommending including peer review and asked if any consideration was given to the recommendation. Discussion ensued on determining which kind of professionals would be needed for the review. M. Ciccone asked if criteria would need to be in place to determine which application needs a peer review. L. Dunkin stated criteria would have to be established by the Commission that would trigger a review but recommended against adding additional layers to the application process.

Speaking in Favor

Ester McNany of SBA, Inc. spoke in favor of the proposed changes in the amendment and agreed that overall the changes are thorough but suggested the following possible changes:

In Section 11.18.2:

Questioned need for a licensed engineer in Sections .2 & .3 - suggested radio frequency engineer instead.

Questioned requirement for letters from the FAA certifying compliance in Section .3 because if such a document is issued at all it, is after a tower is built.

Requested clarification on item #9 regarding on-site simulations.

Suggest adding a Section .11 requiring applicant to document steps taken to minimize visual impact.

In Section 11.18.3:

Questioned Section .1 and suggested adding an additional 19ft for antennas, which may exceed the 180ft. tower height.

Suggested adding a definition of Fall Zone in Section .1. Submitted Town of Marlborough definitions for the Commission's consideration. Commission received same as Record Item "R".

Suggested increasing minimum height requirements to 150ft from 100ft in Section .9.

Suggested changing the phrase in Section .16 regarding fencing the leased area to allow for maintenance outside the fence but still on the site.

Ms. McNany also observed that other towns have required peer review at the expense of the applicant, but noted that it is difficult find qualified people to make such a review.

Speaking in Opposition

Cele Bogush spoke in opposition of the proposed amendment, commenting on the following:

Questioned why there are no fees established.

Questioned why there are no lot size requirements, suggesting a minimum of 2 acres.

Suggested the phrase be changed to "licensed engineers from the State of Connecticut."

Questioned why there is no Statement of Purpose.

Suggested 500ft setbacks from schools, churches, daycares, elderly housing projects, etc.

Suggested driveway and parking requirements.

Questioned Conservation Commission requirements.

In response to Mrs. Bogush, L. Dunkin relayed the following:

Fees are set by ordinance, not by the Commission.

Two acre lot sizes would be overly restrictive.

A Statement of Purpose is not necessary as the proposed amendments are to be integrated throughout the regulations.

A 500ft setback as suggested would be overly restrictive.

Additional separate driveway and parking requirements for towers are unnecessary.

Conservation Commission approvals, if required, will occur without specific mention in the amendment.

Speaking in Rebuttal of those who spoke in Opposition - None

Speaking in Rebuttal of those who spoke in Favor

Cele Bogush inquired how the town would be protected monetarily if the tower site is abandoned.

Cele stated other neighboring towns do not have as many tower sites as Colchester because of tighter regulations by these towns.

In response to Mrs. Bogush, L. Dunkin relayed the following:

All applicants are required to post a bond of 10% of the construction cost prior to obtaining a building permit with the stipulation that if the site is abandoned, the bond is forfeited.

It is illegal to be overly restrictive regarding telecommunication towers and towns are required to make reasonable accommodations for towers.

R. Weeks added that neighboring towns do not have three state highways running through their towns.

MOTION by Linda Keift-Robitaille, **SECOND** by John Gagnon to **CLOSE THE PUBLIC HEARING. MOTION CARRIED UNANIMOUSLY.**

B. SE#2000-139, 61 Cemetery Road, Application of Robert S. Maltempo for Special Exception for Heliport

Applicant requested that this Public Hearing not be opened until the April 5, 2000 meeting.

C. SE#2000-140, 18 Old Amston Road, Application of John Slattery for Special Exception for Accessory Apartment

The following items were entered into the record:

A. Application, dated 2/3/2000
B. Front Elevations, Floor Plans, Site Plan Package
C. Memo (comments), L. Rasmussen, Zoning Enforcement Officer, dated 2/24/2000
D. Memo (comments), W. Mis, Health Director, dated 2/24/2000
E. Memo (comments), A. Lathrop, Wetlands Enforcement Officer, dated 2/28/2000
F. Hartford Courant Legal Notice - March 3 and March 10, 2000
G. Rivereast News Bulletin Legal Notice - March 3 and March 10, 2000
H. Revised Site Plan showing addition dimensions, received 3/2/2000
I. Revised Site Plan showing fourth parking space, received 3/10/2000
J. Memo (comments), L. Rasmussen, Zoning Enforcement Officer, dated 3/10/2000
K. Staff Report, L. Dunkin, AICP, Planning Director, dated 3/8/2000

L. Rasmussen explained that this application is part of an agreement, dated February 8, 2000, between the property owners, John E. Slattery and Hillery Lassow and the Town of Colchester to correct the current zoning violation and prevent further court proceedings against the owners.

L. Dunkin summarized his staff report, stating that the applicant is requesting Special Exception approval for an accessory apartment on the subject property. In addition to the bulk requirements of the R-60 district, accessory apartments must also comply with the requirements of Section 11.15. The accessory apartment is currently above the detached garage, thus creating the zoning violation. The proposal is to connect the detached garage to the existing house by means of a connecting addition at the second floor level. He explained that the total area of the current residence is 2,866 sq.ft. The maximum allowable size for the accessory apartment is 955 sq.ft. The proposed accessory apartment is to be 835 sq.ft. in floor area. Access to the accessory apartment is proposed to be through the master bedroom of the residence. The second access is via an enclosed stairwell exiting at the side of the garage at ground level.

L. Dunkin advised that consideration should be given to the propriety of allowing the primary access to an accessory apartment through a bedroom of the principal dwelling, as opposed to through a more common area such as an entry foyer. He further advised that consideration should also be given to the propriety of the side entrance meeting the requirement of an entrance in the rear of the structure.

L. Rasmussen explained that a total of four off-street parking spaces are being provided.

The Commission expressed concerns about the second floor connector and the fact that access to the accessory apartment would be through a bedroom. The Commission expressed concerns about the

second entry being a rear entryway. The Commission expressed concerns that the connector is proposed as a second floor bridge to the garage instead of being built on the first floor.

Speaking in Favor

Applicant John Slattery spoke in favor of the application, explaining that he was attempting to correct the zoning violation. He explained that he proposed a second story bridge connector because he might want to drive a horse trailer under the connecting addition in the future. He said he considered the second access to be in the rear of the building. Mr. Slattery further explained that his plan to correct the violation was drawn as proposed after consulting with Tim York, the Building Official.

Speaking in Opposition

None

MOTION by John Gagnon, **SECOND** by Mark Noniewicz to **CLOSE THE PUBLIC HEARING. MOTION CARRIED UNANIMOUSLY**

4. FIVE MINUTE SESSION FOR THE PUBLIC

No one spoke

5. MINUTES OF THE PREVIOUS MEETING – 03/01/2000 Meeting
03/08/2000 Special Meeting

M. Noniewicz questioned page 3 of the 3/1/2000 meeting minutes concerning the deed to the City of Norwich. L. Dunkin explained the subdivision is within the Deep River Reservoir watershed owned by the City of Norwich, and that all of the open space parcels were so deeded.

MOTION by Linda Keift-Robitaille, **SECOND** by John Gagnon to **APPROVE THE MINUTES OF THE 3/1/2000 MEETING. ABSTAINED:** Mark Noniewicz, Michel Ciccone. **MOTION CARRIED.**

MOTION by Linda Keift-Robitaille, **SECOND** by Mark Noniewicz to **APPROVE THE MINUTES OF THE 3/8/2000 SPECIAL MEETING. ABSTAINED**: Michel Ciccone. **MOTION CARRIED.**

6. PENDING APPLICATIONS

A. RC#2000-122, Colchester Zoning and Planning Commission, Regulations Changes regarding Wireless Telecommunications Sites

L. Dunkin reviewed with the Commission the various changes discussed during the Public Hearing. Discussion ensued concerning tower height and antennas.

MOTION by James Ford, **SECOND** by Michel Ciccone to change definition of Height of Tower, by deleting the words "including antennas or other appurtenances." **MOTION CARRIED UNANIMOUSLY**

J. Mathieu discussed using subsection 4 in section 11.18.2 as a new subsection 17, section 11.18.3 to make it another condition.

MOTION by Joseph Mathieu, **SECOND** by John Gagnon to delete subsection 4 in Section 11.18.2. and renumber the subsequent subsections appropriately. **MOTION CARRIED UNANIMOUSLY**

MOTION by Joseph Mathieu, **SECOND** by John Gagnon to add a new subparagraph 17 in Section 11.18.3 to read "Any tower proposed to be adjacent to an airport shall comply with all safety requirements as required by the FAA. The Commission may require documentation from the applicant demonstrating such compliance." **MOTION CARRIED UNANIMOUSLY**

J. Mathieu recommended a change in subparagraph 16, section 11.18.3 to replace "fenced-in area" with "compound." Some discussion ensued as to whether compound should be defined or if the word "leased" should be included. R. Weeks stated the word "leased" should not be included because it may not apply in every situation. L. Dunkin recommended the language "within 3ft of the entire perimeter" instead of "around".

MOTION by Joseph Mathieu, **SECOND** by Mark Noniewicz to replace the word "around" with the words "within 3ft of the" in subparagraph 16 of Section 11.18.3. **MOTION CARRIED UNANIMOUSLY**.

R. Weeks recommended changing the standards for total height for a Wireless Telecommunication Site in Section 11.18.3, subparagraph 1. Discussion ensued on what language should be used to include the additional 19ft as well as any antennas and appurtenances attached to the structure for total height. J. Mathieu proposed the sentence "Wireless Telecommunication Sites shall not exceed 199ft in height. The tower shall not exceed 180ft."

MOTION by Joseph Mathieu, **SECOND** by Mark Noniewicz change subparagraph 1 in Section 11.18.3 to read "No Wireless Telecommunication Sites shall exceed 199 feet in height. No towers shall exceed 180 feet in height." **MOTION CARRIED UNANIMOUSLY**.

J. Ford expressed concerns on language concerning fall zones. Discussion ensured on a generic definition of a fall zone. L. Dunkin read the Town of Marlborough's regulation defining a fall zone. J. Ford suggestion adding the first sentence of the Town of Marlborough Regulation concerning fall zones, placing the definition at the end and suggested keeping the sentence "should be prepared by a licensed engineer."

MOTION by James Ford, **SECOND** by Mark Noniewicz to incorporate the Town of Marlborough's definition of a fall zone into the proposed amendment to read as follows: "**Fall Zone:** The area or location within which a Tower, Antenna or any other material (such as ice) would drop, slide or settle in the event the Tower is blown from its support structure, collapses, or otherwise is dislodged from its foundation or mounting." **MOTION CARRIED UNANIMOUSLY**.

R. Weeks suggested an addition to subparagraph 9, Section 11.18.2 that delineates steps taken to eliminate visual impact.

MOTION by Mark Noniewicz, **SECOND** by James Ford to add sentence to subparagraph 9 of section 11.18.2 as follows: "The applicant shall delineate what steps have or will be taken to minimize the visual impact of the proposal." **MOTION CARRIED UNANIMOUSLY.**

J. Gagnon inquired as to whether the language concerning "licensed engineer" for approval should be changed to read "licensed radio frequency engineer." A discussion ensued and Commission members agreed the language should remain unchanged.

MOTION by James Ford, **SECOND** by Ronald Vasquez to **APPROVE** Regulation Change RC#2000-122 regarding Wireless Telecommunications Sites as amended by Staff in response to Town Counsel's recommendations (Record Item "K"), and as further amended by the preceding motions. **MOTION CARRIED UNANIMOUSLY**.

At this time, M. Noniewicz excused himself from the meeting.

B. SE#2000-139, 61 Cemetery Road, Application of Robert S. Maltempo for Special Exception for Heliport

MOTION by James Ford, **SECOND** by Ronald Vasquez to **TABLE** SE#2000-139. **MOTION CARRIED UNANIMOUSLY**.

C. SE#2000-140, 18 Old Amston Road, Application of John Slattery for Special Exception for Accessory Apartment

MOTION by Michel Ciccone, **SECOND** by Linda Keift Robitaille to **DENY WITHOUT PREDJUDICE** application SE#2000-140 because the proposed plan does not meet Section 11.15.7 of the Zoning Regulations. **MOTION CARRIED UNANIMOUSLY**.

D. SDP#2000-238, 29 Mahoney Road, Application of SBA, Inc., for Communications Tower (Tabled from 03/01/2000 meeting)

James Ford questioned notice to the Lebanon Planning and Zoning Commission. Ester McNany stated several efforts have been made to illicit a response to the application, and none have been forthcoming.

MOTION by James Ford, **SECOND** by John Gagnon to **APPROVE** application SDP#2000-238. **ABSTAINED:** Michel Ciccone, Joseph Mathieu. **MOTION CARRIED**.

A recess was taken at 9:25PM
The meeting resumed at 9:30PM