QC Development
PO Box 916
Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

October 4, 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) – CT2203
500 Moose Hill Road, Monroe, CT 06468
N 41.31833333
W 73.20083333

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 138-foot level of the existing 149-foot Monopole at 500 Moose Hill Road, Monroe, CT. The tower is owned by SBA and the property is owned by the Saint John The Baptist Greek Catholic Cemetery Association, Inc. AT&T now intends to remove three (3) Andrew antennas and replace them with three (3) CCI DMP65R-BU6DA antennas. AT&T will also swap three (3) Ericsson RRUS-11 Remote Radio units (RRU) for three (3) Ericsson 4449-B5/B12 RRUs and install (3) new Ericsson 4415-B30 RRUs. The new antennas and RRUs will also be installed at the 138-foot level of the tower.

This facility was approved by the Siting Council on March 21, 2002 in Docket # 207. The approval included a tower height limitation of 130 feet. Subsequently, in Petition # 628T a 20-foot height extension was approved by the Council on June 19, 2003. Since no changes are proposed to the overall tower height, this modification complies with the aforementioned approvals.

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 Kenneth Kellogg, First Selectman of the Town of Monroe, and the Monroe Planning & Zoning Office, as

well as the property owner and the tower owner.

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

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

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

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

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

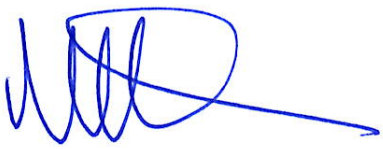
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

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

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

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Ken Kellogg - Elected Official
Rick Schultz – Town Planner
Saint John The Baptist Greek Catholic Cemetery Association, Inc - Property Owner
SBA - 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*							12.68%
AT&T GSM	2	414	139	0.0168	850	0.5667	0.30%
AT&T UMTS	2	414	139	0.0168	850	0.5667	0.30%
AT&T UMTS	2	656	139	0.0267	1900	1.0000	0.27%
AT&T LTE	2	940	139	0.0382	700	0.4667	0.82%
AT&T LTE	2	1791	139	0.0728	1900	1.0000	0.73%
Site Total							15.10%

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

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

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							12.68%
AT&T UMTS	1	257	138	0.0053	850	0.5667	0.05%
AT&T LTE	1	1476	138	0.0305	700	0.4667	0.54%
AT&T LTE	1	1000	138	0.0206	850	0.5667	0.36%
AT&T LTE	1	1000	138	0.0206	850	1.0000	0.36%
AT&T LTE	2	4842	138	0.1999	1900	1.0000	3.51%
AT&T LTE	1	1285	138	0.0265	2300	1.0000	0.47%
Site Total							17.97%

*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-BU6DA @ POS. 4 (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 RRUS: B30 4415 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TOTAL OF 1) WITH (2) DC POWER & (1) FIBER RUN. ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • REMOVE EXISTING POWER PLANT/ BATTERIES AND STANDALONE CONVERTER SHELVES. • RE-CABLE EXISTING AND PROPOSED EQUIPMENT TO PROPOSED POWER PLANT. • PROPOSE NEW NETSURE 7100 WITH BATTERIES. • PROPOSED AT&T OUTDOOR & INDOOR FIBER MANAGEMENT BOX (TOTAL OF 2). • PROPOSED AT&T COAX PORT (TOTAL OF 1). • SWAP BASEBAND WITH 6630. • ADD 2ND XMU. • ADD RBS 6630 WITH IDLE. ITEMS TO REMOVED: • AT&T ANTENNAS: (7770) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • AT&T RRUS: RRUS-11 B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
SITE ADDRESS:	500 MOOSE HILL ROAD MONROE, CT 06468
LATITUDE:	41.320956° N, 41° 19' 15.44" N
LONGITUDE:	73.201423° W, 73° 12' 05.12" W
TYPE OF SITE:	MONOPOLE/ EQUIPMENT SHELTER
STRUCTURE HEIGHT:	149'-0"±
RAD CENTER:	138'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLANS	1
A-2	ANTENNA PLANS & ELEVATION	1
A-3	DETAILS	1
G-1	GROUNDING DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1

SBA SITE NAME: MOOSEHILL
SBA SITE #: CT13056

SITE NUMBER: CT2203

SITE NAME: MONROE CENTER

FA CODE: 10035397

PACE ID: MRCTB040406, MRCTB040503

PROJECT: LTE 3C_4C 2020 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

HEAD SOUTH TOWARD ENTERPRISE DR, TURN LEFT ONTO ENTERPRISE DR, TURN LEFT ONTO CAPITAL BLVD, USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411, TURN LEFT TO MERGE ONTO I-91 S, MERGE ONTO I-91 S, TAKE EXIT 17 TO MERGE ONTO CT-15 S/WILBUR CROSS PKWY, TAKE EXIT 58 TO MERGE ONTO CT-34 W/DERBY AVE/DERBY TURNPIKE TOWARD DERBY, MERGE ONTO CT-34 W/DERBY AVE/DERBY TURNPIKE, CONTINUE TO FOLLOW CT-34 W/DERBY AVE, USE THE LEFT 2 LANES TO TURN LEFT ONTO MAIN ST, TURN LEFT ONTO BRIDGE ST, TURN RIGHT ONTO HOWE AVE, CONTINUE ONTO CT-110 N/LEAVENWORTH RD, CONTINUE TO FOLLOW CT-110 N, TURN LEFT ONTO MOOSE HILL RD, TURN LEFT.

GENERAL NOTES

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

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2203
SITE NAME: MONROE CENTER
SBA SITE # ID: CT13056

500 MOOSE HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/23/19	ISSUED FOR CONSTRUCTION	KC	AT	DPH
0	09/05/19	ISSUED FOR REVIEW	AM	AT	DPH
A	08/30/19	ISSUED FOR REVIEW	SF	AT	DPH

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

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

AT&T

TITLE SHEET
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2203	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
SALEM, NH 03079

SITE NUMBER: CT2203
SITE NAME: MONROE CENTER
SBA SITE # ID: CT13056

500 MOOSE HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/23/19	ISSUED FOR CONSTRUCTION	KC	AT	DPH
0	09/05/19	ISSUED FOR REVIEW	AM	AT	DPH
A	08/30/19	ISSUED FOR REVIEW	SF	AT	DPH

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

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

AT&T

GENERAL NOTES
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2203	GN-1	1

NOTE:

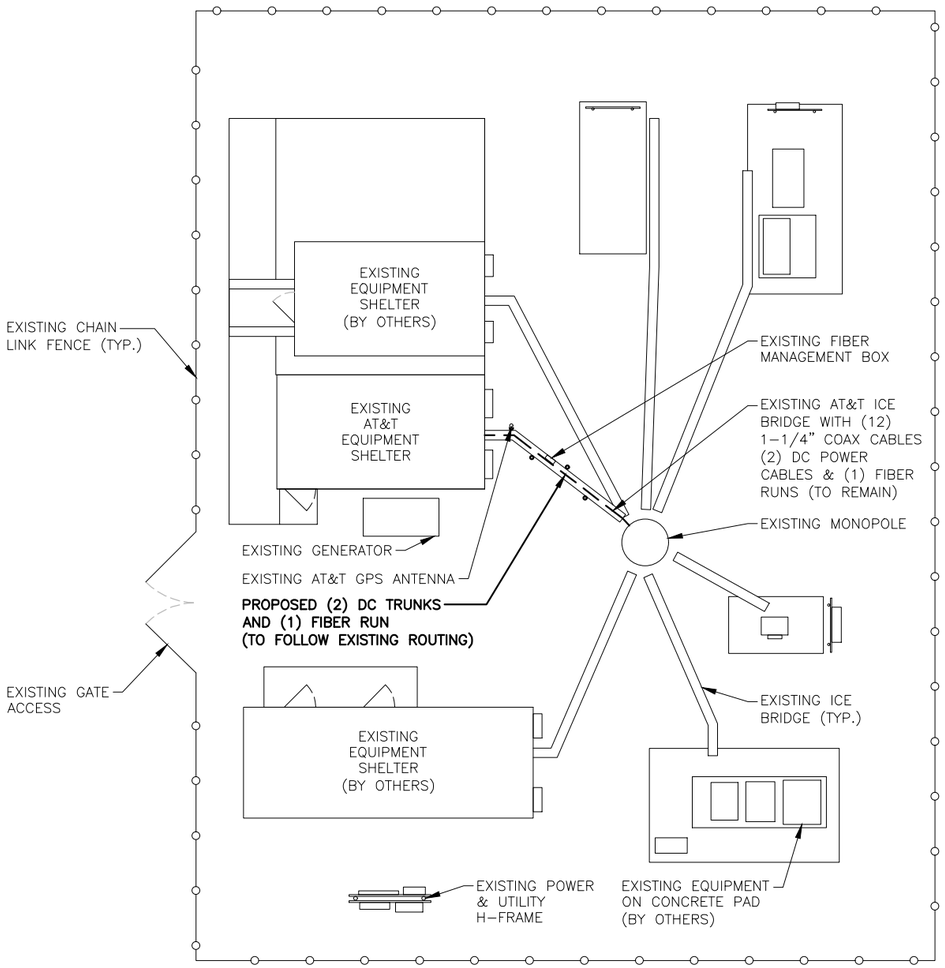
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

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

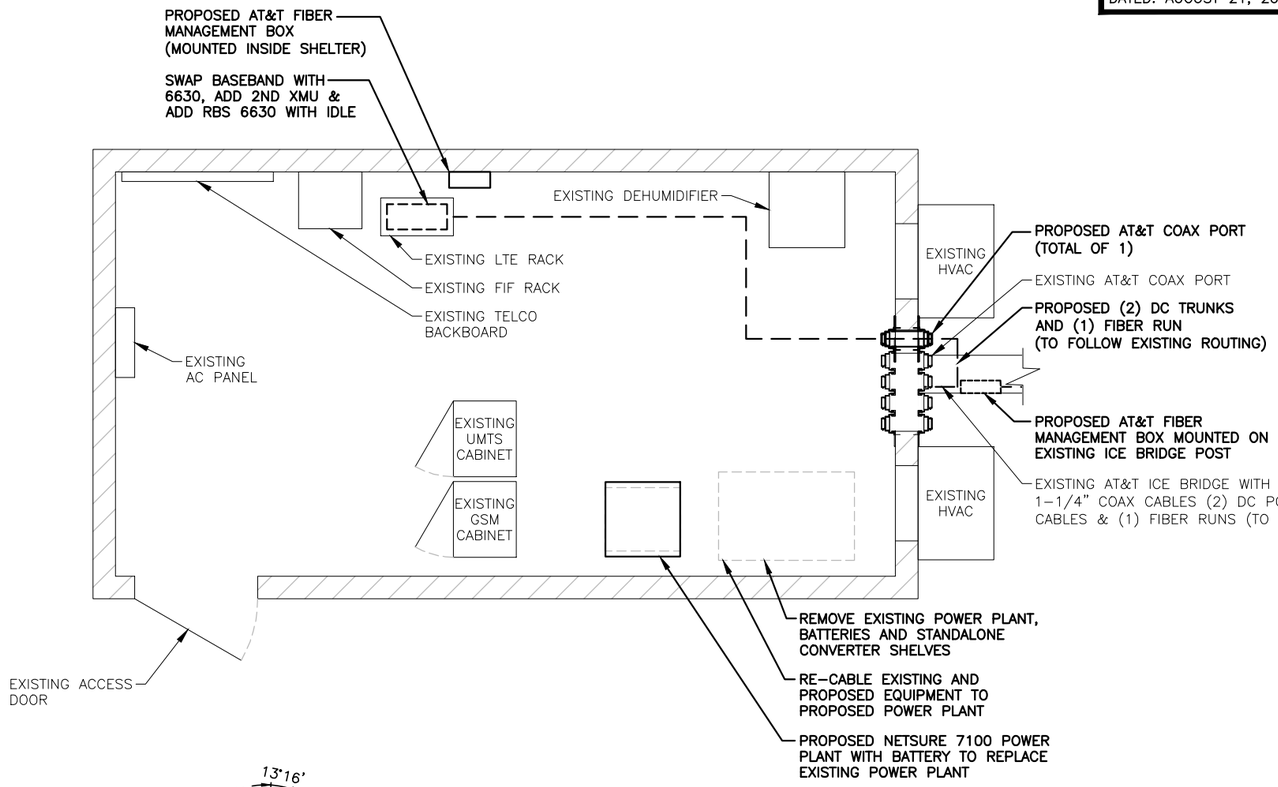
NOTE:

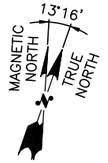
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: AUGUST 21, 2019



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

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





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"

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

12 INDUSTRIAL WAY
SALEM, NH 03079

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

SITE NUMBER: CT2203
SITE NAME: MONROE CENTER
SBA SITE # ID: CT13056

500 MOOSE HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/23/19	ISSUED FOR CONSTRUCTION	RC	AT	DPH
0	09/05/19	ISSUED FOR REVIEW	AM	AT	DPH
A	08/30/19	ISSUED FOR REVIEW	SF	AT	DPH

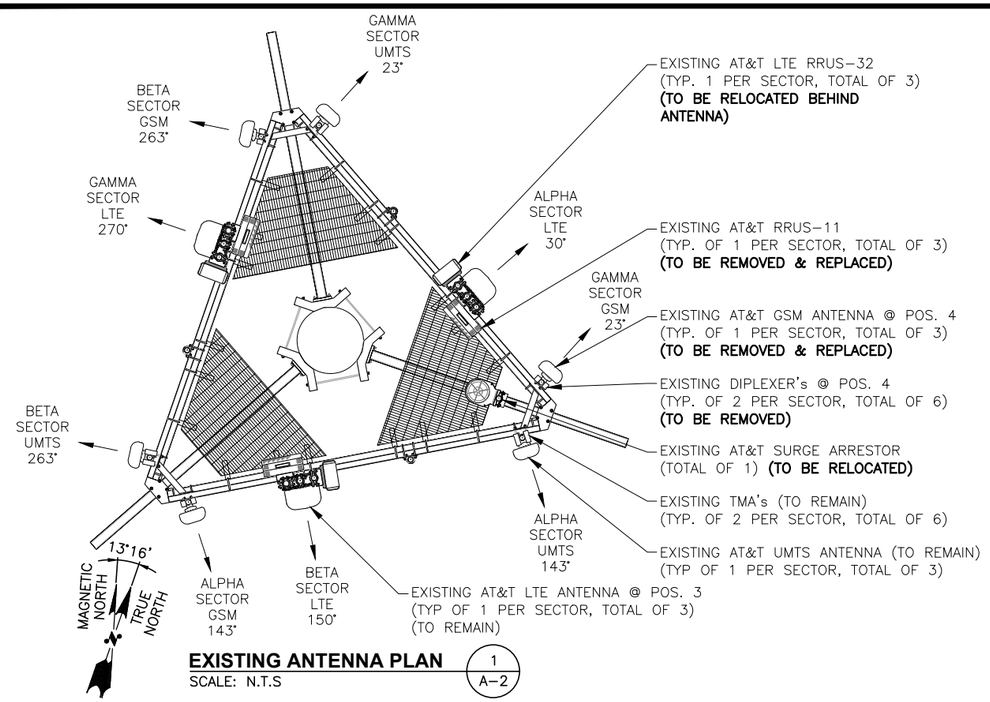
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SF

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

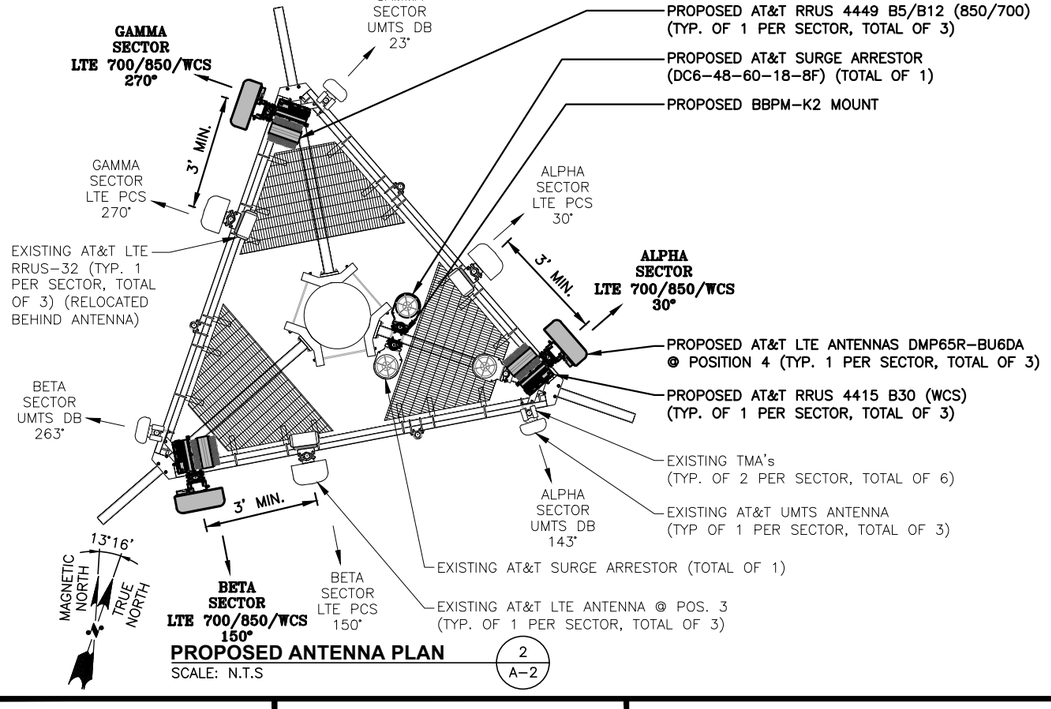
AT&T

COMPOUND & EQUIPMENT PLANS
LTE 3C_4C 2020 UPGRADE

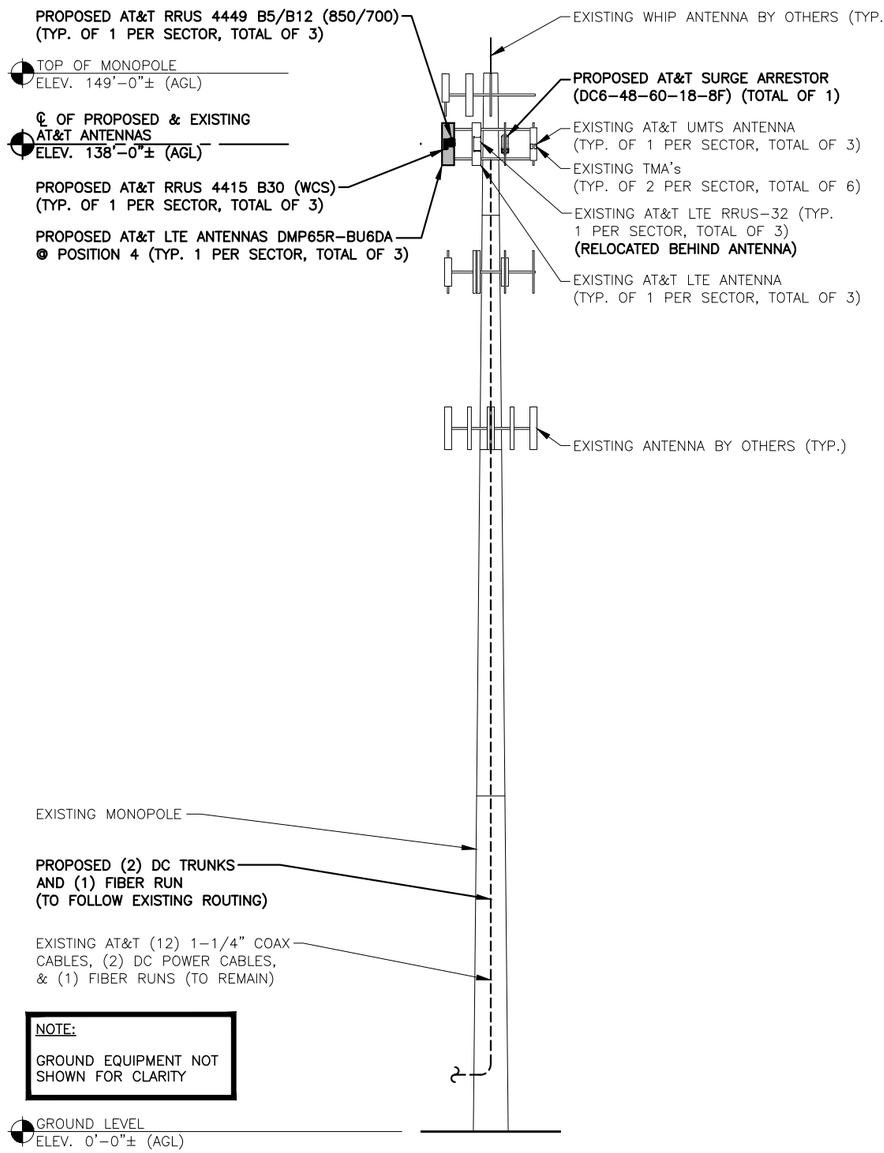
SITE NUMBER	DRAWING NUMBER	REV
CT2203	A-1	1



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



PROPOSED ANTENNA PLAN (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:

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

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: AUGUST 21, 2019

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

12 INDUSTRIAL WAY
SALEM, NH 03079

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

SITE NUMBER: CT2203
SITE NAME: MONROE CENTER
SBA SITE # ID: CT13056

500 MOOSE HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/23/19	ISSUED FOR CONSTRUCTION	KC	AT	DPH
0	09/05/19	ISSUED FOR REVIEW	AM	AT	DPH
A	08/30/19	ISSUED FOR REVIEW	SF	AT	DPH

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

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

AT&T

ANTENNA PLANS & ELEVATION
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2203	A-2	1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (LxWxD)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS DB	7770	55x11x5	138'-0"±	143°	(2)(E) LGP 13519	–	–	(2) 1-1/4" COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	–	–	–	–	–	–	–	–	–	–	
A3	EXISTING	LTE PCS	HPS-65R-BUU-H6	72x14.8x9	138'-0"±	30°	–	(E)(1) RRUS 32 B2 (1900)	–	(2) 1-1/4" COAX CAPPED	
A4	**PROPOSED**	**LTE 700/850/WCS**	**DMP65R-BU6DA**	**71.2x20.7x7.7**	**138'-0"±**	**30°**	–	**(P)(1) 4449 B5/B12 (850/700) (P)(1) 4415 B30 (WCS)**	**14.9"x13.2"x10.4" 16.5"x13.4"x5.9"**	–	
B1	EXISTING	UMTS DB	7770	55x11x5	138'-0"±	263°	(2)(E) LGP 13519	–	–	(2) 1-1/4" COAX	(P) (1) RAYCAP DC6-48-60-18-8F
B2	–	–	–	–	–	–	–	–	–	–	
B3	EXISTING	LTE PCS	HPS-65R-BUU-H6	72x14.8x9	138'-0"±	150°	–	(E)(1) RRUS 32 B2 (1900)	–	(2) 1-1/4" COAX CAPPED	
B4	**PROPOSED**	**LTE 700/850/WCS**	**DMP65R-BU6DA**	**71.2x20.7x7.7**	**138'-0"±**	**150°**	–	**(P)(1) 4449 B5/B12 (850/700) (P)(1) 4415 B30 (WCS)**	**14.9"x13.2"x10.4" 16.5"x13.4"x5.9"**	–	
C1	EXISTING	UMTS DB	7770	55x11x5	138'-0"±	23°	(2)(E) LGP 13519	–	–	(2) 1-1/4" COAX	SHARED
C2	–	–	–	–	–	–	–	–	–	–	
C3	EXISTING	LTE PCS	HPS-65R-BUU-H6	72x14.8x9	138'-0"±	270°	–	(E)(1) RRUS 32 B2 (1900)	–	(2) 1-1/4" COAX CAPPED	
C4	**PROPOSED**	**LTE 700/850/WCS**	**DMP65R-BU6DA**	**71.2x20.7x7.7**	**138'-0"±**	**270°**	–	**(P)(1) 4449 B5/B12 (850/700) (P)(1) 4415 B30 (WCS)**	**14.9"x13.2"x10.4" 16.5"x13.4"x5.9"**	–	

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

RRU CHART		
QUANTITY	**MODEL**	**SIZE (LxWxD)**
3(P)	**4449 B5/B12 (850/700)**	**14.9"x13.2"x10.4"**
3(P)	**4415 B30 (WCS)**	**16.5"x13.4"x5.9"**
3(P)	RRUS-32 B2 (1900)	27.2"x12.1"x7.0"
NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS		

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

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

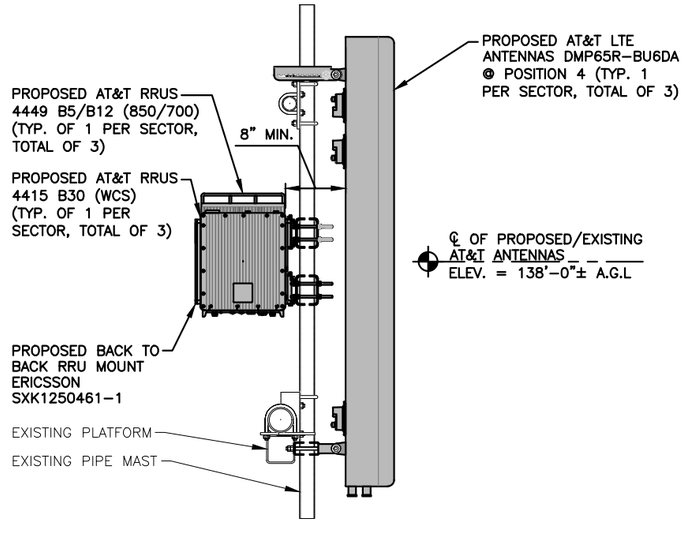
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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

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

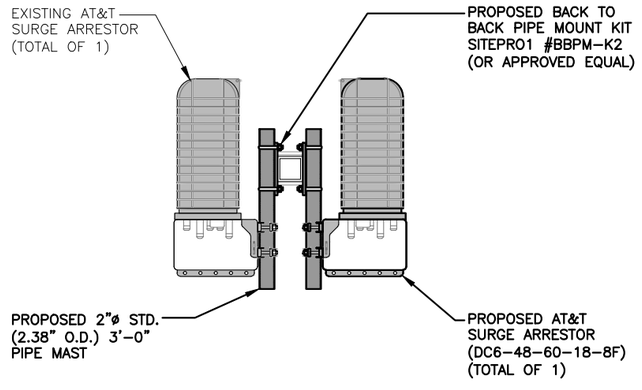
NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

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: AUGUST 21, 2019



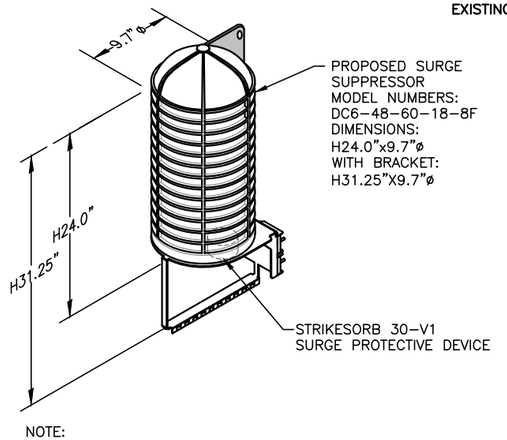
PROPOSED LTE ANTENNA & RRU MOUNTING DETAIL (3 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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



PROPOSED SURGE ARRESTOR MOUNTING DETAIL (4 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (5 / A-3)
SCALE: N.T.S

PROPOSED NETSURE 7100 POWER PLANT DETAIL (6 / A-3)
SCALE: N.T.S

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

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2203
SITE NAME: MONROE CENTER
SBA SITE # ID: CT13056

500 MOOSE HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/23/19	ISSUED FOR CONSTRUCTION	KC	AT	DPH
0	09/05/19	ISSUED FOR REVIEW	AM	AT	DPH
A	08/30/19	ISSUED FOR REVIEW	SF	AT	DPH

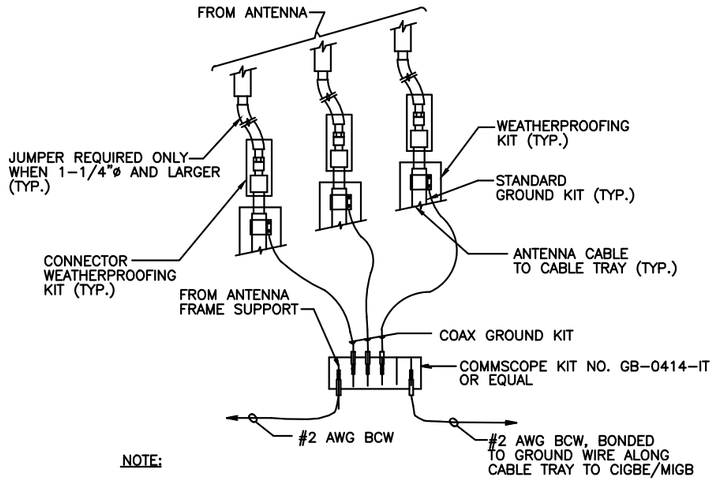
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SF

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

AT&T

DETAILS
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2203	A-3	1

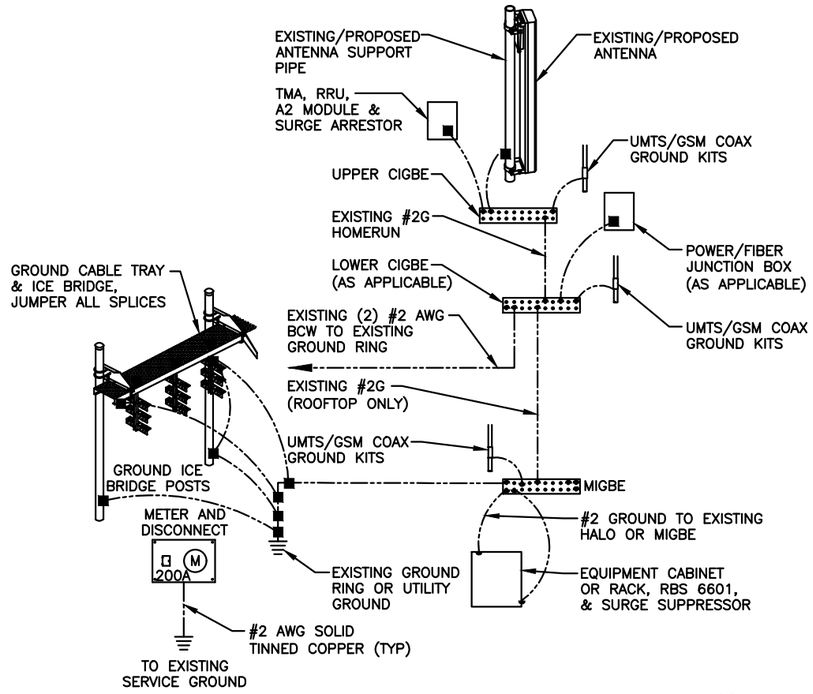


NOTE:

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

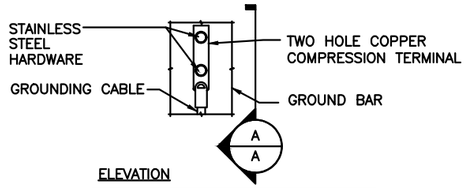
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

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

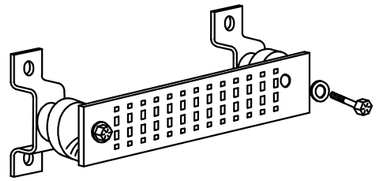
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

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

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2203
SITE NAME: MONROE CENTER
SBA SITE # ID: CT13056

500 MOOSE HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/23/19	ISSUED FOR CONSTRUCTION	KC	AT	DPH
0	09/05/19	ISSUED FOR REVIEW	AM	AT	DPH
A	08/30/19	ISSUED FOR REVIEW	SF	AT	DPH

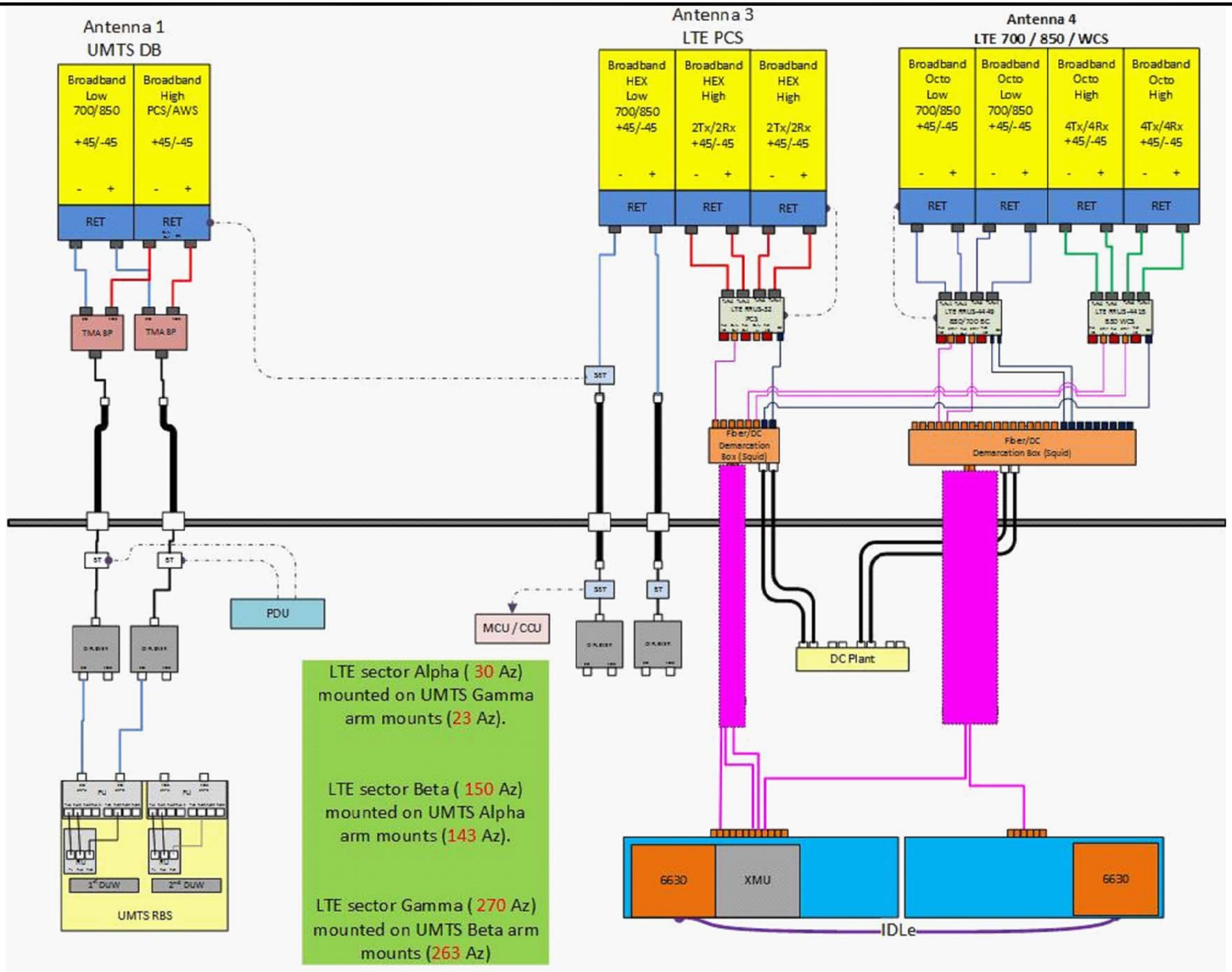
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SF

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
CT2203	G-1	1



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

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

NOTE:

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

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2203
SITE NAME: MONROE CENTER
SBA SITE # ID: CT13056

500 MOOSE HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/23/19	ISSUED FOR CONSTRUCTION	KC	AT	DPH
0	09/05/19	ISSUED FOR REVIEW	AM	AT	DPH
A	08/30/19	ISSUED FOR REVIEW	SF	AT	DPH

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

AT&T

RF PLUMBING DIAGRAM
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2203	RF–1	1

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

Structural Analysis Report

Existing 149 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13056-A

Customer Site Name: Moosehill

Carrier Name: AT&T (App#: 122882, V1)

Carrier Site ID / Name: CT2203 / MONROE CENTER

Site Location: 500 Moosehill Road

Monroe, Connecticut

Fairfield County

Latitude: 41.320966

Longitude: -73.201422

9/17/19

Analysis Result:

Max Structural Usage: 78.7% [Pass]

Max Foundation Usage: 63.0% [Pass]

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

Report Prepared By: Younus Alkarawi

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

Structural Analysis Report

Existing 149 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13056-A

Customer Site Name: Moosehill

Carrier Name: AT&T (App#: 122882, V1)

Carrier Site ID / Name: CT2203 / MONROE CENTER

Site Location: 500 Moosehill Road

Monroe, Connecticut

Fairfield County

Latitude: 41.320966

Longitude: -73.201422

Analysis Result:

Max Structural Usage: 78.7% [Pass]

Max Foundation Usage: 63.0% [Pass]

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

Report Prepared By: Younus Alkarawi

Introduction

The purpose of this report is to summarize the analysis results on the 149 ft SABRE 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	Structural design report prepared by Sabre communication corporation. job #: 02-03107. dated 04/03/2002.
Foundation Drawing	Foundation report prepared by Sabre communication corporation. job #: 02-03107. dated 04/03/2002.
Geotechnical Report	Geotechnical report prepared by ST. Johns Cemetary. dated 03/20/2002.
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} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 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 = 0.205, S_1 = 0.065

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

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	152.5	1	Decibel DB404-B - Whip	Pipe Mount	(1) 7/8”	Town of Monroe
2	147.0	1	Andrew VHLP2-11 - Dish	12.5’ Low Profile Platform	(4) 1 1/4" (2) 1/2" (6) 5/16"	Sprint/ Clearwire
3		1	Andrew VHLP800-11-DW1 - Dish			
4		3	Argus LLPX310R - Panel			
5		4	RFS ACU-A20-N			
6		3	RFS APXVSPP18-C-A20 - Panel			
7		3	RFS APXVTM14-C-120 - Panel			
8		3	ALU 800MHz RRH w/ filter			
9		3	ALU 1900MHz RRH			
10		3	ALU 800MHz RRH			
11		3	ALU TD-RRH8x20-25			
12		3	U-RAS Flexible RRH ODUs			
-	139.0	6	Powerwave - 7770 - Panel	Low Profile Platform	(12) 1-1/4" Hybrid (1) 1/2” Fiber (2) 3/4" DC	AT&T
-		3	CCI - HPA-65R-BUU-H6 - Panel			
-		6	Powerwave LGP13519 TMAs			
-		12	Powerwave 7020.00 RET			
-		3	Ericsson RRUS 11 RRUs			
-		3	Ericsson RRUS 12 RRUs			
-		3	Ericsson RRUS-32 B2s RRUs			
-		6	Powerwave LGP21901 Diplexer			
-		1	Raycap DC6-48-60-18-8F DC Surge Suppression System			
-		3	Commscope ABT-DRDM-ADBH Bias T's			
-	128.0	-	-	12.5’ Low Profile Platform	-	-
24	121.0	3	Commscope LNX-6515DS - Panel	13’ Low Profile Platform SitePro PRK1245	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
25		3	Ericsson Air 21 B2A/B4P - Panel			
26		3	Ericsson AIR21 B4A/B12P - Panel			
27		3	Ericsson KRY 112 144/1			
28		3	Ericsson S11B12			
29	99.0	2	Antel BXA-171063-8BF - Panel	12.5’ Low Profile Platform	(1) 1 5/8" Fiber (12) 1 5/8"	Verizon
30		1	Antel BXA-70063-4CF - Panel			
31		1	Antel BXA-70063-6CF - Panel			
32		2	Antel LPA-80063-6CF - Panel			
33		1	BXA-171063-12BF - Panel			
34		3	Kathrein 7442213_2110_P45_02.0 - Panel			
35		3	ALU RRH2x40-AWS			
36		4	RFS APL866513-42T0 - Panel			
37		1	RFS DB-T1-6Z-8AB-0Z			
38		6	RFS FD9R6004/2C-3L			
39		1	Swedcom SLCP 2x6014F - Panel			
40	65.5	1	Decibel 26OB	3’ Standoff @ 64.0	(1) 1/2"	Sprint

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
13	139.0	6	Powerwave LGP13519 TMAs	Low Profile Platform	(12) 1 1/4" (2) 1/2" Fiber (4) 3/4" DC Power	AT&T
14		12	Powerwave 7020.00 RET			
15		3	Ericsson RRUS 32 B2			
16		6	Powerawve LGP21901 Diplexer			
17		3	CCI DMP65R-BU6DA - Panel			
18		3	Ericsson 4415 B30			
19		3	Ericsson 4449 B5/B12			
20		3	Powerwave - 7770 - Panel			
21		3	CCI - HPA-65R-BUU-H6 - Panel			
22		2	Raycap DC6-48-60-18-8F			
23		3	Commscope ABT-DFDM-ADBH Bias-T			

See the attached coax layout for the line placement considered in the analysis.

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**78.7%**	**75.6%**	**64.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	4184.0	39.0
Analysis Reactions	4109.0	37.7
Factored Reactions*	5648.4	52.7
% of Design Reactions	72.7%	71.7%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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):

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
147.0	Andrew VHLP2-11 - Dish	Sprint/Clearwire	0.000	1.328
147.0	Andrew VHLP800-11-DW1 - Dish	Sprint/Clearwire	0.000	1.328

It is recommended that the carriers review the twist and sway values of the microwave dishes.

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 78.65% at 53.3ft

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill	**Exposure:**	C	
Height:	149.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

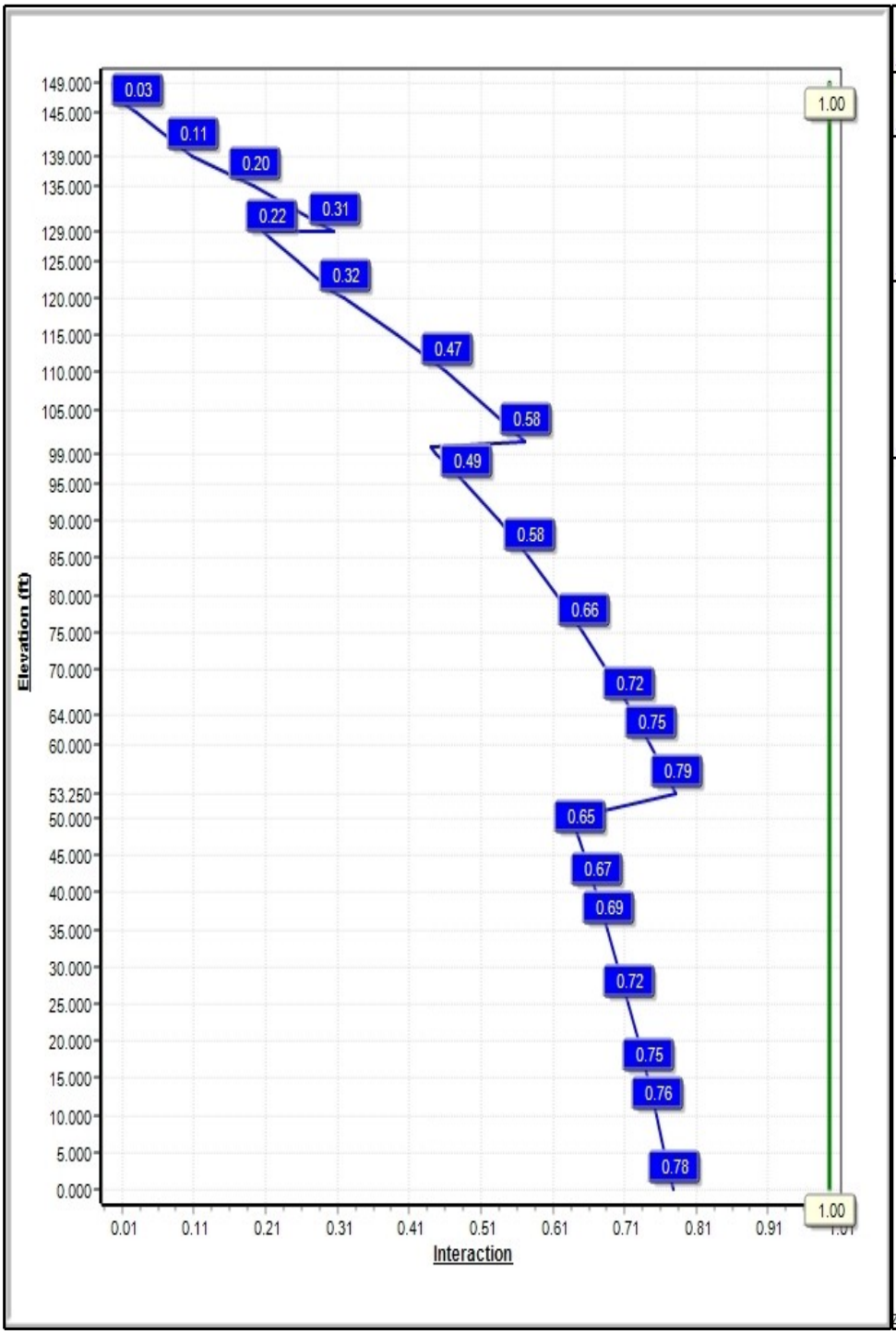
Tower Engineering Solutions

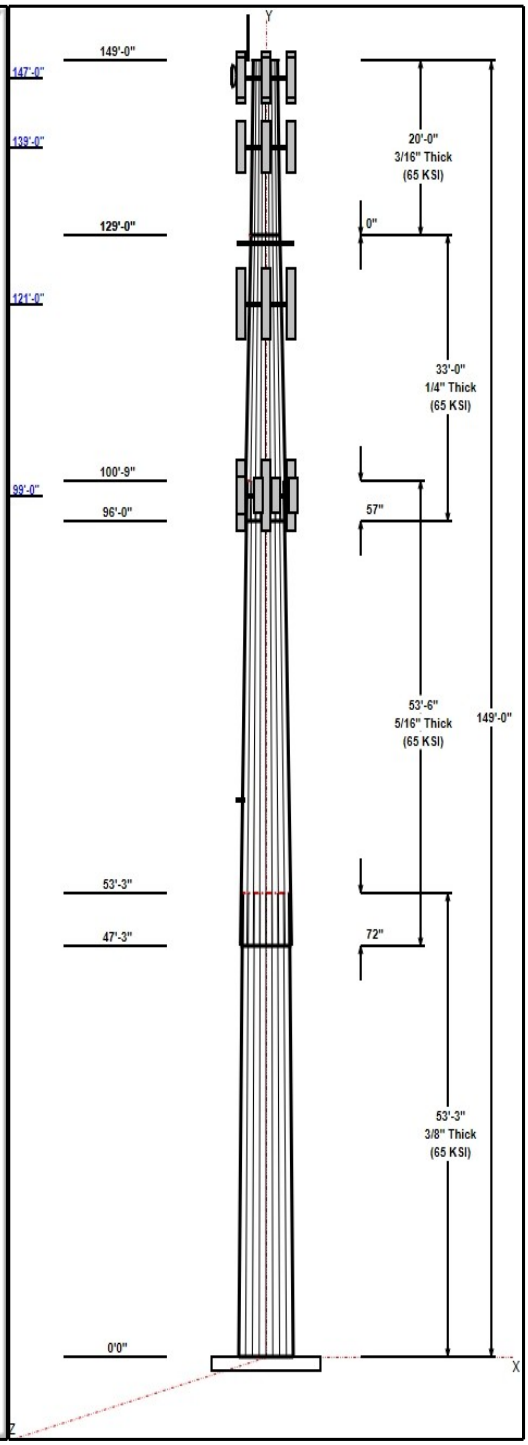
Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 97 mph Wind

Iterations: 24

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.





Structure: CT13056-A-SBA

Type: Tapered
Site Name: Moosehill
Height: 149.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.24185

9/17/2019

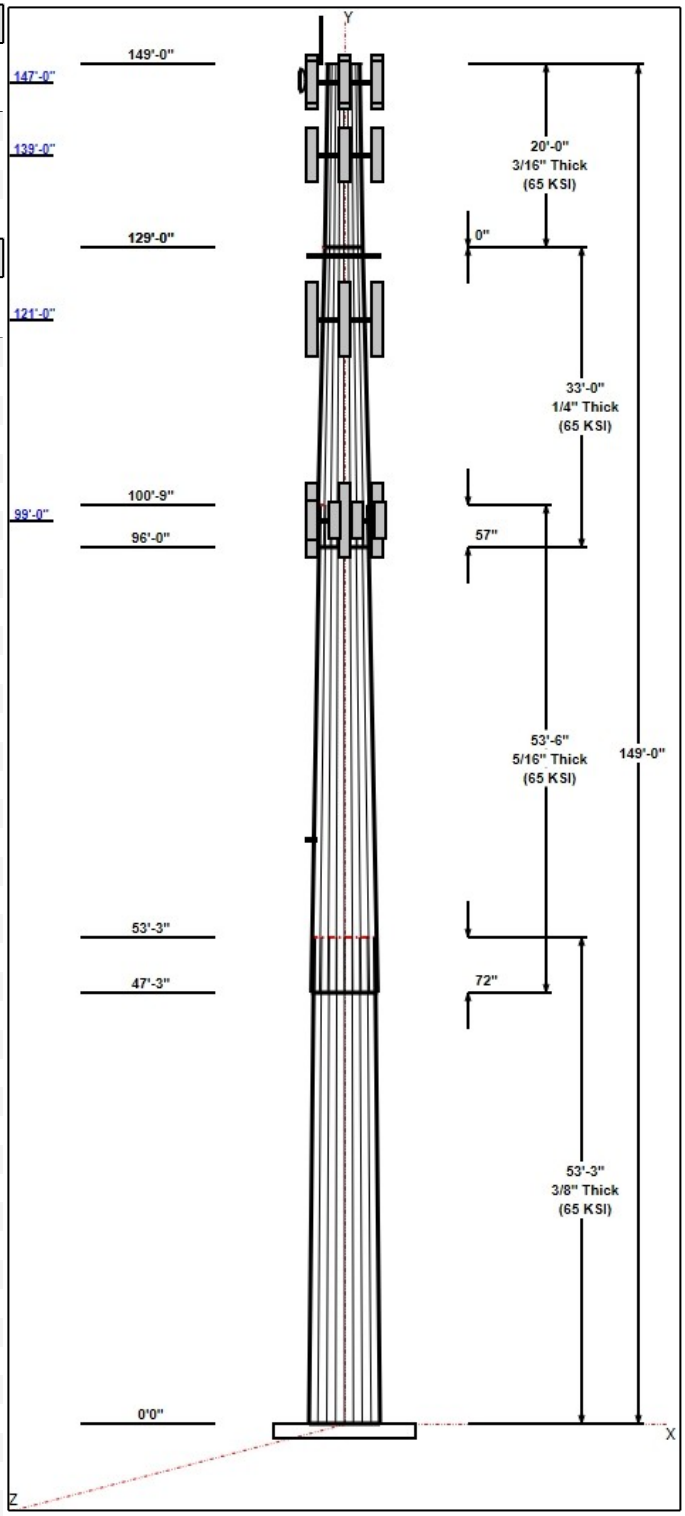
Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	46.03	58.91	0.375		0.24185	65
2	53.50	35.17	48.11	0.313	Slip	0.24185	65
3	33.00	28.84	36.82	0.250	Slip	0.24185	65
4	20.00	24.00	28.84	0.188	Butt	0.24185	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
149.00	151.50	1	Decibel DB404-B	Town of Monroe
149.00	149.00	1	Pipe Mount	Town of Monroe
147.00	147.00	3	RFS APXVTM14-C-120	Sprint/Clearwire
147.00	147.00	3	ALU TD-RRH8x20-25	Sprint/Clearwire
147.00	147.00	3	RFS APXVSPP18-C-A20	Sprint/Clearwire
147.00	147.00	3	ALU 1900MHz RRH	Sprint/Clearwire
147.00	147.00	3	ALU 800MHz RRH	Sprint/Clearwire
147.00	147.00	3	800MHz RRH w/ filter	Sprint/Clearwire
147.00	147.00	4	RFS ACU-A20-N	Sprint/Clearwire
147.00	147.00	3	Argus LLPX310R	Sprint/Clearwire
147.00	147.00	1	Andrew VHLP2-11	Sprint/Clearwire
147.00	147.00	1	Andrew VHLP800-11-DW1	Sprint/Clearwire
147.00	147.00	3	U-RAS Flexible RRH	Sprint/Clearwire
147.00	147.00	1	12.5' Low Profile Platform	Sprint/Clearwire
139.00	139.00	1	Low Profile Platform	AT&T
139.00	139.00	6	Powerwave LGP13519	AT&T
139.00	139.00	12	Powerwave 7020.00 RET	AT&T
139.00	139.00	3	Ericsson RRUS-32 B2s	AT&T
139.00	139.00	6	Powerawve LGP21901	AT&T
139.00	139.00	3	DMP65R-BU6DA	AT&T
139.00	139.00	3	4415 B30	AT&T
139.00	139.00	3	4449 B5/B12	AT&T
139.00	139.00	3	7770	AT&T
139.00	139.00	3	HPA-65R-BUU-H6	AT&T
139.00	139.00	2	Raycap DC6-48-60-18-8F	AT&T
139.00	139.00	3	Commscope	AT&T
128.00	128.00	1	Low Profile Platform	Unknown
121.00	121.00	3	Ericsson AIR21 B4A/B12P	T-Mobile
121.00	121.00	3	Ericsson Air 21 B2A/B4P	T-Mobile
121.00	121.00	3	Commscope LNX-6515DS	T-Mobile
121.00	121.00	3	Ericsson S11B12	T-Mobile
121.00	121.00	3	Ericsson KRY 112 144/1	T-Mobile
121.00	121.00	1	Low Profile Platform	T-Mobile
121.00	121.00	1	SitePro PRK1245	T-Mobile
99.00	99.00	1	Antel BXA-70063-4CF	Verizon
99.00	99.00	2	Antel BXA-171063-8BF	Verizon
99.00	99.00	1	Antel BXA-70063-6CF	Verizon
99.00	99.00	1	BXA-171063-12BF	Verizon
99.00	99.00	4	RFS APL866513-42T0	Verizon
99.00	99.00	2	Antel LPA-80063-6CF	Verizon
99.00	99.00	1	Swedcom SLCP 2x6014F	Verizon
99.00	99.00	3	Kathrein	Verizon
99.00	99.00	3	ALU RRH2x40-AWS	Verizon
99.00	99.00	6	RFS FD9R6004/2C-3L	Verizon
99.00	99.00	1	RFS DB-T1-6Z-8AB-0Z	Verizon



Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

99.00	99.00	1	12.5' Low Profile Platform	Verizon
65.50	65.50	1	Decibel 26OB	Sprint
64.00	64.00	1	3 ft Standoff	Sprint

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	152.50	Inside	7/8" Coax	Town of Monroe
0.00	147.00	Outside	1 1/4" Coax	Sprint/Clearwire
0.00	147.00	Inside	1/2" Coax	Sprint/Clearwire
0.00	147.00	Inside	5/16" Coax	Sprint/Clearwire
0.00	139.00	Inside	1-1/4" Coax	AT&T
0.00	139.00	Inside	1/2" Fiber	AT&T
0.00	139.00	Inside	3/4" DC	AT&T
0.00	121.00	Inside	1 5/8" Coax	T-Mobile
0.00	121.00	Inside	1 5/8" Fiber	T-Mobile
0.00	99.00	Outside	1 5/8" Coax	Verizon
0.00	99.00	Inside	1 5/8" Fiber	Verizon
0.00	64.00	Outside	1/2" Coax	Sprint

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
16	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.0000	64.0	60.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	4109.0	37.7	48.5
0.9D + 1.6W 97 mph Wind	4069.4	37.7	36.4
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1132.8	10.5	80.8
1.2D + 1.0E	267.7	2.2	48.6
0.9D + 1.0E	264.8	2.2	36.4
1.0D + 1.0W 60 mph Wind	977.4	9.0	40.5

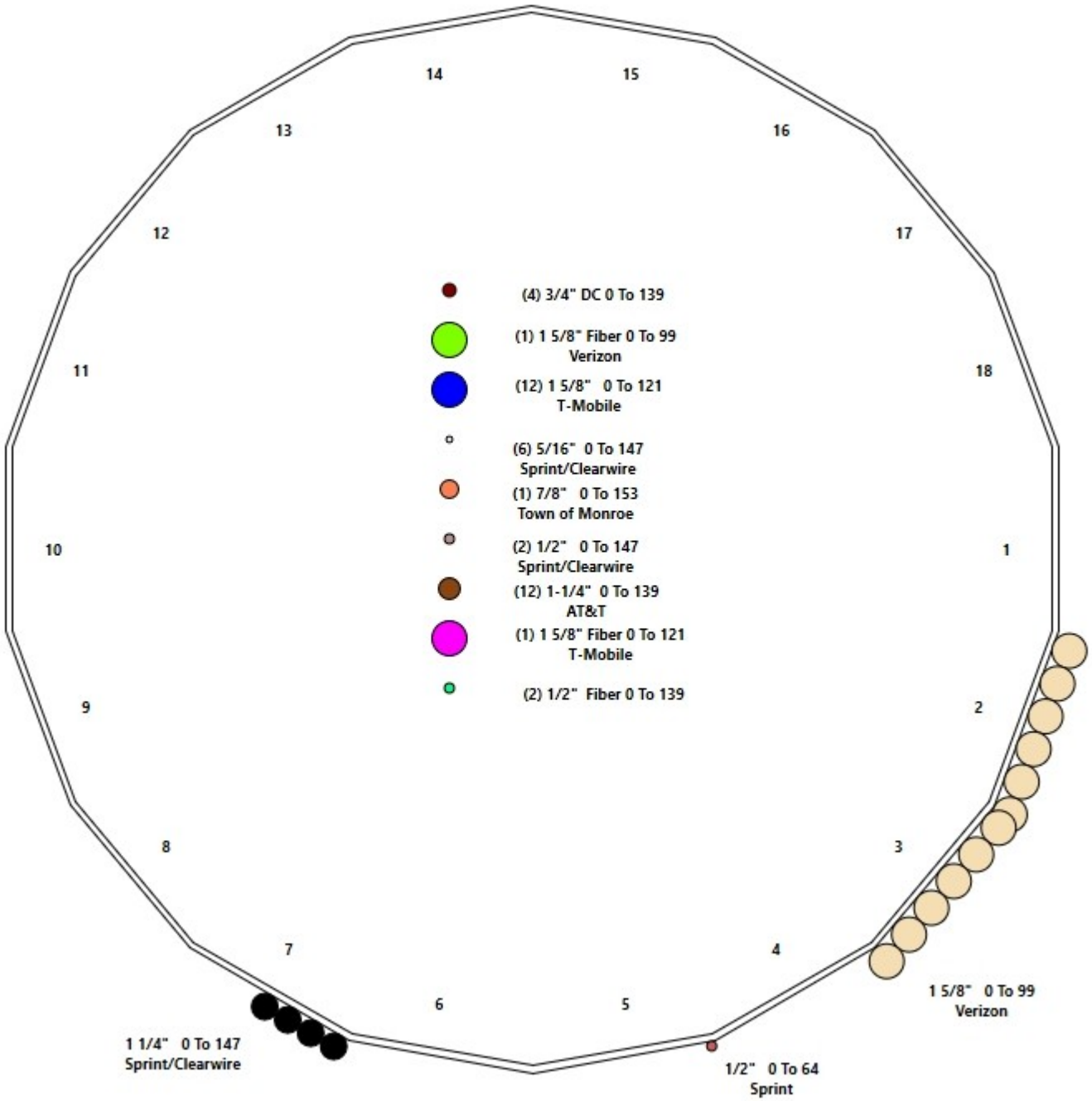
Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Structure: CT13056-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Moosehill
Height: 149.00 (ft)

9/17/2019

TES Tower Engineering Solutions



Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Shaft Properties

Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (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	18	53.250	0.3750	65		0.00	11,235
2	18	53.500	0.3125	65	Slip	72.00	7,462
3	18	33.000	0.2500	65	Slip	57.00	2,903
4	18	20.000	0.1875	65	Flange	0.00	1,062
					Total Shaft Weight:		**22,662**

	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	58.91	0.00	69.67	30159.39	26.29	157.09	46.03	53.25	54.34	14311.6	20.23	122.7	0.241846
2	48.11	47.25	47.41	13682.01	25.73	153.94	35.17	100.75	34.57	5306.98	18.43	112.5	0.241846
3	36.82	96.00	29.02	4902.09	24.56	147.27	28.84	129.00	22.68	2342.00	18.93	115.3	0.241846
4	28.84	129.0	17.05	1768.04	25.71	153.80	24.00	149.00	14.17	1015.22	21.16	128.0	0.241846

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Load Summary

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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	

Tower Engineering Solutions

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	149.00	Decibel DB404-B	1	14.00	1.03	1.00	46.44	3.836	1.00	0.00	2.50
2	149.00	Pipe Mount	1	350.00	5.00	1.00	643.00	8.488	1.00	0.00	0.00
3	147.00	RFS APXVTM14-C-120	3	56.00	6.34	0.79	216.02	7.451	0.79	0.00	0.00
4	147.00	ALU TD-RRH8x20-25	3	70.00	4.05	0.69	180.19	4.861	0.69	0.00	0.00
5	147.00	RFS APXVSPP18-C-A20	3	57.00	8.02	0.83	229.50	10.808	0.83	0.00	0.00
6	147.00	ALU 1900MHz RRH	3	44.00	3.80	0.88	152.94	5.187	0.88	0.00	0.00
7	147.00	ALU 800MHz RRH	3	59.50	2.64	0.87	137.35	3.795	0.87	0.00	0.00
8	147.00	800MHz RRH w/ filter	3	68.30	3.46	1.00	158.56	4.771	1.00	0.00	0.00
9	147.00	RFS ACU-A20-N	4	1.00	0.14	0.79	5.29	0.436	0.79	0.00	0.00
10	147.00	Argus LLPX310R	3	28.60	4.30	0.69	118.72	5.957	0.69	0.00	0.00
11	147.00	Andrew VHLP2-11	1	27.00	4.68	1.00	124.66	5.952	1.00	0.00	0.00
12	147.00	Andrew VHLP800-11-DW1	1	49.00	6.70	1.00	186.88	8.222	1.00	0.00	0.00
13	147.00	U-RAS Flexible RRH ODUs	3	50.70	2.23	0.78	109.37	3.289	0.78	0.00	0.00
14	147.00	12.5' Low Profile Platform	1	1500.00	22.00	1.00	2806.27	39.626	1.00	0.00	0.00
15	139.00	Low Profile Platform	1	1500.00	22.00	1.00	2798.98	39.528	1.00	0.00	0.00
16	139.00	Powerwave LGP13519 TMAs	6	5.30	0.34	1.00	14.73	0.791	1.00	0.00	0.00
17	139.00	Powerwave 7020.00 RET	12	2.20	0.40	0.67	12.36	0.880	0.67	0.00	0.00
18	139.00	Ericsson RRUS-32 B2s RRUs	3	60.00	2.74	0.67	147.18	3.463	0.67	0.00	0.00
19	139.00	Powerawve LGP21901 Diplexer	6	5.50	0.23	0.75	13.13	0.595	0.75	0.00	0.00
20	139.00	DMP65R-BU6DA	3	79.40	12.71	0.73	364.36	14.186	0.73	0.00	0.00
21	139.00	4415 B30	3	46.00	1.64	0.67	86.79	2.151	0.67	0.00	0.00
22	139.00	4449 B5/B12	3	71.00	1.97	0.67	123.98	2.513	0.67	0.00	0.00
23	139.00	7770	3	35.00	5.50	0.73	168.92	6.556	0.73	0.00	0.00
24	139.00	HPA-65R-BUU-H6	3	51.00	9.66	0.85	296.92	11.015	0.85	0.00	0.00
25	139.00	Raycap DC6-48-60-18-8F DC Surge	2	32.80	1.47	1.00	94.15	2.164	1.00	0.00	0.00
26	139.00	Commscope ABT-DRDM-ADBH Bias	3	1.60	0.05	0.98	4.82	0.241	0.98	0.00	0.00
27	128.00	Low Profile Platform	1	1500.00	22.00	1.00	2788.32	39.384	1.00	0.00	0.00
28	121.00	Ericsson AIR21 B4A/B12P	3	123.00	11.54	0.89	401.19	13.162	0.89	0.00	0.00
29	121.00	Ericsson Air 21 B2A/B4P	3	91.50	6.09	0.86	256.12	7.162	0.86	0.00	0.00
30	121.00	Commscope LNX-6515DS	3	49.80	11.47	0.80	274.47	14.667	0.80	0.00	0.00
31	121.00	Ericsson S11B12	3	51.00	2.83	0.70	119.12	3.487	0.70	0.00	0.00
32	121.00	Ericsson KRY 112 144/1	3	11.00	0.41	0.70	21.55	0.875	0.70	0.00	0.00
33	121.00	Low Profile Platform	1	1500.00	22.00	1.00	2781.09	39.286	1.00	0.00	0.00
34	121.00	SitePro PRK1245	1	350.00	5.00	1.00	636.96	8.416	1.00	0.00	0.00
35	99.00	Antel BXA-70063-4CF	1	9.90	4.72	0.73	107.60	6.493	0.73	0.00	0.00
36	99.00	Antel BXA-171063-8BF	2	10.50	2.94	0.84	73.38	4.531	0.84	0.00	0.00
37	99.00	Antel BXA-70063-6CF	1	17.00	7.57	0.73	182.64	8.775	0.73	0.00	0.00
38	99.00	BXA-171063-12BF	1	15.00	4.74	0.84	106.07	6.994	0.84	0.00	0.00
39	99.00	RFS APL866513-42T0	4	15.70	4.05	0.93	120.46	5.837	0.93	0.00	0.00
40	99.00	Antel LPA-80063-6CF	2	27.00	9.76	0.93	277.84	12.401	0.93	0.00	0.00
41	99.00	Swedcom SLCP 2x6014F	1	20.00	6.49	0.89	189.07	8.481	0.89	0.00	0.00
42	99.00	Kathrein 7442213_2110_P45_02.0	3	57.30	10.56	0.77	245.94	13.714	0.77	0.00	0.00
43	99.00	ALU RRH2x40-AWS	3	44.00	2.52	0.82	102.25	3.693	0.82	0.00	0.00
44	99.00	RFS FD9R6004/2C-3L	6	3.10	0.36	1.00	10.80	0.785	1.00	0.00	0.00
45	99.00	RFS DB-T1-6Z-8AB-0Z	1	18.90	4.80	0.71	155.78	5.636	0.71	0.00	0.00
46	99.00	12.5' Low Profile Platform	1	1500.00	22.00	1.00	2755.64	38.943	1.00	0.00	0.00
47	65.50	Decibel 26OB	1	50.00	2.00	1.00	210.64	5.213	1.00	0.00	0.00
48	64.00	3 ft Standoff	1	40.00	2.63	1.00	113.73	8.111	1.00	0.00	0.00
		Totals:	**127**	**12,395.10**			**30,156.56**				

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	152.50	(1) 7/8" Coax	0.00	Inside
0.00	147.00	(4) 1 1/4" Coax	0.00	Outside
0.00	147.00	(2) 1/2" Coax	0.00	Inside
0.00	147.00	(6) 5/16" Coax	0.00	Inside
0.00	139.00	(12) 1-1/4" Coax	0.00	Inside
0.00	139.00	(2) 1/2" Fiber	0.00	Inside
0.00	139.00	(4) 3/4" DC	0.00	Inside
0.00	121.00	(12) 1 5/8" Coax	0.00	Inside
0.00	121.00	(1) 1 5/8" Fiber	0.00	Inside
0.00	99.00	(12) 1 5/8" Coax	0.00	Outside
0.00	99.00	(1) 1 5/8" Fiber	0.00	Inside
0.00	64.00	(1) 1/2" Coax	0.00	Outside

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Shaft Section Properties

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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

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		0.3750	58.910	69.669	30159.4	26.29	157.09	70.5	1008.	0.0
5.00		0.3750	57.701	68.230	28328.6	25.72	153.87	71.1	967.0	1173.1
10.00		0.3750	56.492	66.790	26573.5	25.15	150.64	71.8	926.5	1148.6
15.00		0.3750	55.282	65.351	24892.4	24.58	147.42	72.5	886.9	1124.1
20.00		0.3750	54.073	63.912	23283.7	24.01	144.19	73.2	848.1	1099.6
25.00		0.3750	52.864	62.473	21745.9	23.45	140.97	73.8	810.2	1075.1
30.00		0.3750	51.655	61.033	20277.3	22.88	137.75	74.5	773.2	1050.7
35.00		0.3750	50.445	59.594	18876.4	22.31	134.52	75.2	737.0	1026.2
40.00		0.3750	49.236	58.155	17541.5	21.74	131.30	75.8	701.7	1001.7
45.00		0.3750	48.027	56.716	16271.1	21.17	128.07	76.5	667.3	977.2
47.25	Bot - Section 2	0.3750	47.483	56.068	15720.1	20.92	126.62	76.8	652.1	431.8
50.00		0.3750	46.818	55.276	15063.6	20.60	124.85	77.2	633.7	961.5
53.25	Top - Section 1	0.3125	46.657	45.966	12473.3	24.92	149.30	0.0	0.0	1118.8
55.00		0.3125	46.233	45.546	12134.7	24.68	147.95	72.4	517.0	272.5
60.00		0.3125	45.024	44.347	11201.1	23.99	144.08	73.2	490.0	764.7
64.00		0.3125	44.057	43.387	10489.7	23.45	140.98	73.8	469.0	597.1
65.00		0.3125	43.815	43.148	10316.6	23.31	140.21	74.0	463.8	147.2
65.50		0.3125	43.694	43.028	10230.8	23.24	139.82	74.1	461.2	73.3
70.00		0.3125	42.606	41.948	9480.0	22.63	136.34	74.8	438.3	650.6
75.00		0.3125	41.397	40.749	8689.9	21.95	132.47	75.6	413.5	703.5
80.00		0.3125	40.187	39.549	7945.0	21.26	128.60	76.4	389.4	683.1
85.00		0.3125	38.978	38.350	7243.8	20.58	124.73	77.2	366.0	662.7
90.00		0.3125	37.769	37.151	6585.2	19.90	120.86	78.0	343.4	642.3
95.00		0.3125	36.560	35.951	5967.8	19.22	116.99	78.8	321.5	621.9
96.00	Bot - Section 3	0.3125	36.318	35.711	5849.2	19.08	116.22	79.0	317.2	121.9
99.00		0.3125	35.592	34.992	5502.7	18.67	113.90	79.4	304.5	654.1
100.00		0.3125	35.350	34.752	5390.3	18.54	113.12	79.6	300.3	215.1
100.75	Top - Section 2	0.2500	35.669	28.104	4454.5	23.75	142.68	0.0	0.0	160.4
105.00		0.2500	34.641	27.288	4077.8	23.02	138.56	74.3	231.9	400.5
110.00		0.2500	33.432	26.329	3662.6	22.17	133.73	75.3	215.8	456.1
115.00		0.2500	32.223	25.369	3276.6	21.32	128.89	76.3	200.3	439.8
120.00		0.2500	31.014	24.410	2918.7	20.46	124.05	77.3	185.4	423.5
121.00		0.2500	30.772	24.218	2850.4	20.29	123.09	77.5	182.4	82.7
125.00		0.2500	29.804	23.450	2587.9	19.61	119.22	78.3	171.0	324.4
128.00		0.2500	29.079	22.875	2401.9	19.10	116.32	78.9	162.7	236.5
129.00	Top - Section 3	0.2500	28.837	22.683	2342.0	18.93	115.35	79.1	160.0	77.5
129.00	Bot - Section 4	0.1875	28.837	17.049	1768.0	25.24	153.80	71.2	120.8	
130.00		0.1875	28.595	16.905	1723.6	25.48	152.51	71.4	118.7	57.8
135.00		0.1875	27.386	16.186	1512.8	24.34	146.06	72.8	108.8	281.5
139.00		0.1875	26.418	15.610	1357.0	23.43	140.90	73.8	101.2	216.4
140.00		0.1875	26.177	15.466	1319.8	23.21	139.61	74.1	99.3	52.9
145.00		0.1875	24.967	14.747	1144.0	22.07	133.16	75.4	90.3	257.0
147.00		0.1875	24.484	14.459	1078.4	21.61	130.58	76.0	86.7	99.4
149.00		0.1875	24.000	14.171	1015.2	21.16	128.00	76.5	83.3	97.4
										22662.1

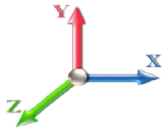
Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Wind Loading - Shaft

Structure: CT13056-A-SBA | **Code:** EIA/TIA-222-G | 9/17/2019
Site Name: Moosehill | **Exposure:** C
Height: 149.00 (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

IES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind
Dead Load Factor 1.20
Wind Load Factor 1.60



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	19.450	21.40	445.80	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	436.65	0.650	0.000	5.00	24.669	16.03	548.9	0.0	1407.7
10.00		1.00	0.85	19.450	21.40	427.50	0.650	0.000	5.00	24.157	15.70	537.5	0.0	1378.3
15.00		1.00	0.85	19.450	21.40	418.35	0.650	0.000	5.00	23.645	15.37	526.1	0.0	1348.9
20.00		1.00	0.90	20.638	22.70	421.50	0.650	0.000	5.00	23.134	15.04	546.2	0.0	1319.6
25.00		1.00	0.95	21.630	23.79	421.87	0.650	0.000	5.00	22.622	14.70	559.8	0.0	1290.2
30.00		1.00	0.98	22.477	24.72	420.20	0.650	0.000	5.00	22.111	14.37	568.5	0.0	1260.8
35.00		1.00	1.01	23.218	25.54	417.08	0.650	0.000	5.00	21.599	14.04	573.7	0.0	1231.4
40.00		1.00	1.04	23.880	26.27	412.84	0.650	0.000	5.00	21.087	13.71	576.1	0.0	1202.0
45.00		1.00	1.07	24.479	26.93	407.73	0.650	0.000	5.00	20.576	13.37	576.2	0.0	1172.6
47.25	Bot - Section 2	1.00	1.08	24.732	27.21	405.18	0.650	0.000	2.25	9.092	5.91	257.3	0.0	518.1
50.00		1.00	1.09	25.029	27.53	401.90	0.650	0.000	2.75	11.117	7.23	318.3	0.0	1153.8
53.25	Top - Section 1	1.00	1.11	25.363	27.90	397.78	0.650	0.000	3.25	12.939	8.41	375.4	0.0	1342.5
55.00		1.00	1.12	25.536	28.09	400.88	0.650	0.000	1.75	6.878	4.47	200.9	0.0	327.0
60.00		1.00	1.14	26.008	28.61	393.99	0.650	0.000	5.00	19.305	12.55	574.4	0.0	917.7
64.00	Appurtenance(s)	1.00	1.15	26.364	29.00	388.15	0.650	0.000	4.00	15.076	9.80	454.7	0.0	716.5
65.00		1.00	1.16	26.450	29.09	386.65	0.650	0.000	1.00	3.718	2.42	112.5	0.0	176.7
65.50	Appurtenance(s)	1.00	1.16	26.493	29.14	385.90	0.650	0.000	0.50	1.851	1.20	56.1	0.0	88.0
70.00		1.00	1.17	26.866	29.55	378.93	0.650	0.000	4.50	16.431	10.68	505.0	0.0	780.7
75.00		1.00	1.19	27.259	29.98	370.85	0.650	0.000	5.00	17.770	11.55	554.2	0.0	844.2
80.00		1.00	1.21	27.632	30.39	362.48	0.650	0.000	5.00	17.259	11.22	545.6	0.0	819.7
85.00		1.00	1.22	27.987	30.79	353.82	0.650	0.000	5.00	16.747	10.89	536.2	0.0	795.2
90.00		1.00	1.24	28.325	31.16	344.91	0.650	0.000	5.00	16.236	10.55	526.1	0.0	770.7
95.00		1.00	1.25	28.650	31.51	335.77	0.650	0.000	5.00	15.724	10.22	515.4	0.0	746.3
96.00	Bot - Section 3	1.00	1.25	28.713	31.58	333.92	0.650	0.000	1.00	3.083	2.00	101.3	0.0	146.3
99.00	Appurtenance(s)	1.00	1.26	28.900	31.79	328.31	0.650	0.000	3.00	9.254	6.02	306.0	0.0	785.0
100.00		1.00	1.27	28.961	31.86	326.43	0.650	0.000	1.00	3.044	1.98	100.8	0.0	258.1
100.75	Top - Section 2	1.00	1.27	29.006	31.91	325.01	0.650	0.000	0.75	2.269	1.48	75.3	0.0	192.4
105.00		1.00	1.28	29.260	32.19	321.52	0.650	0.000	4.25	12.643	8.22	423.2	0.0	480.6
110.00		1.00	1.29	29.548	32.50	311.82	0.650	0.000	5.00	14.401	9.36	486.8	0.0	547.3
115.00		1.00	1.30	29.826	32.81	301.96	0.650	0.000	5.00	13.889	9.03	473.9	0.0	527.8
120.00		1.00	1.32	30.094	33.10	291.93	0.650	0.000	5.00	13.377	8.70	460.6	0.0	508.2
121.00	Appurtenance(s)	1.00	1.32	30.147	33.16	289.91	0.650	0.000	1.00	2.614	1.70	90.2	0.0	99.3
125.00		1.00	1.33	30.354	33.39	281.75	0.650	0.000	4.00	10.252	6.66	356.0	0.0	389.3
128.00	Appurtenance(s)	1.00	1.33	30.506	33.56	275.58	0.650	0.000	3.00	7.474	4.86	260.8	0.0	283.7
129.00	Top - Section 3	1.00	1.34	30.556	33.61	273.51	0.650	0.000	1.00	2.450	1.59	85.7	0.0	93.0
130.00		1.00	1.34	30.605	33.67	271.44	0.650	0.000	1.00	2.430	1.58	85.1	0.0	69.3
135.00		1.00	1.35	30.850	33.93	261.00	0.650	0.000	5.00	11.843	7.70	417.9	0.0	337.8
139.00	Appurtenance(s)	1.00	1.36	31.040	34.14	252.55	0.650	0.000	4.00	9.106	5.92	323.3	0.0	259.7
140.00		1.00	1.36	31.087	34.20	250.43	0.650	0.000	1.00	2.225	1.45	79.1	0.0	63.4
145.00		1.00	1.37	31.317	34.45	239.75	0.650	0.000	5.00	10.819	7.03	387.6	0.0	308.4
147.00	Appurtenance(s)	1.00	1.37	31.408	34.55	235.44	0.650	0.000	2.00	4.184	2.72	150.4	0.0	119.3
149.00	Appurtenance(s)	1.00	1.38	31.497	34.65	231.12	0.650	0.000	2.00	4.103	2.67	147.8	0.0	116.9
								Totals:	**149.00**			**15,356.8**		**27,194.5**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Discrete Appurtenance Forces

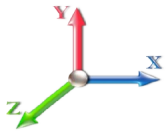
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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	149.00	Decibel DB404-B	1	31.608	34.768	1.00	1.00	1.03	16.80	0.000	2.500	57.30	0.00	143.25
2	149.00	Pipe Mount	1	31.497	34.647	1.00	1.00	5.00	420.00	0.000	0.000	277.17	0.00	0.00
3	147.00	800MHz RRH w/ filter	3	31.408	34.548	0.90	0.90	9.34	245.88	0.000	0.000	516.40	0.00	0.00
4	147.00	RFS APXVTM14-C-120	3	31.408	34.548	0.71	0.90	13.52	201.60	0.000	0.000	747.53	0.00	0.00
5	147.00	ALU TD-RRH8x20-25	3	31.408	34.548	0.62	0.90	7.55	252.00	0.000	0.000	417.08	0.00	0.00
6	147.00	ALU 1900MHz RRH	3	31.408	34.548	0.79	0.90	9.03	158.40	0.000	0.000	499.09	0.00	0.00
7	147.00	ALU 800MHz RRH	3	31.408	34.548	0.78	0.90	6.20	214.20	0.000	0.000	342.79	0.00	0.00
8	147.00	RFS APXVSPP18-C-A20	3	31.408	34.548	0.75	0.90	17.97	205.20	0.000	0.000	993.49	0.00	0.00
9	147.00	Argus LLPX310R	3	31.408	34.548	0.62	0.90	8.01	102.96	0.000	0.000	442.82	0.00	0.00
10	147.00	Andrew VHLP2-11	1	31.408	34.548	0.90	0.90	4.21	32.40	0.000	0.000	232.83	0.00	0.00
11	147.00	Andrew VHLP800-11-DW1	1	31.408	34.548	0.90	0.90	6.03	58.80	0.000	0.000	333.32	0.00	0.00
12	147.00	U-RAS Flexible RRH	3	31.408	34.548	0.78	1.00	5.22	182.52	0.000	0.000	288.45	0.00	0.00
13	147.00	12.5' Low Profile Platform	1	31.408	34.548	1.00	1.00	22.00	1800.00	0.000	0.000	1216.10	0.00	0.00
14	147.00	RFS ACU-A20-N	4	31.408	34.548	0.71	0.90	0.40	4.80	0.000	0.000	22.01	0.00	0.00
15	139.00	Powerawve LGP21901	6	31.040	34.144	0.60	0.80	0.83	39.60	0.000	0.000	45.23	0.00	0.00
16	139.00	DMP65R-BU6DA	3	31.040	34.144	0.58	0.80	22.27	285.84	0.000	0.000	1216.50	0.00	0.00
17	139.00	4415 B30	3	31.040	34.144	0.54	0.80	2.64	165.60	0.000	0.000	144.07	0.00	0.00
18	139.00	Ericsson RRUS-32 B2s	3	31.040	34.144	0.54	0.80	4.41	216.00	0.000	0.000	240.70	0.00	0.00
19	139.00	Powerwave 7020.00 RET	12	31.040	34.144	0.54	0.80	2.57	31.68	0.000	0.000	140.55	0.00	0.00
20	139.00	Raycap DC6-48-60-18-8F	2	31.040	34.144	0.80	0.80	2.35	78.72	0.000	0.000	128.49	0.00	0.00
21	139.00	4449 B5/B12	3	31.040	34.144	0.54	0.80	3.17	255.60	0.000	0.000	173.05	0.00	0.00
22	139.00	7770	3	31.040	34.144	0.58	0.80	9.64	126.00	0.000	0.000	526.41	0.00	0.00
23	139.00	HPA-65R-BUU-H6	3	31.040	34.144	0.68	0.80	19.71	183.60	0.000	0.000	1076.56	0.00	0.00
24	139.00	Commscope	3	31.040	34.144	0.78	0.80	0.12	5.76	0.000	0.000	6.42	0.00	0.00
25	139.00	Powerwave LGP13519	6	31.040	34.144	0.80	0.80	1.63	38.16	0.000	0.000	89.16	0.00	0.00
26	139.00	Low Profile Platform	1	31.040	34.144	1.00	1.00	22.00	1800.00	0.000	0.000	1201.86	0.00	0.00
27	128.00	Low Profile Platform	1	30.506	33.556	1.00	1.00	22.00	1800.00	0.000	0.000	1181.18	0.00	0.00
28	121.00	Ericsson AIR21 B4A/B12P	3	30.147	33.161	0.71	0.80	24.65	442.80	0.000	0.000	1307.85	0.00	0.00
29	121.00	Ericsson Air 21 B2A/B4P	3	30.147	33.161	0.69	0.80	12.57	329.40	0.000	0.000	666.93	0.00	0.00
30	121.00	Commscope LNX-6515DS	3	30.147	33.161	0.64	0.80	22.02	179.28	0.000	0.000	1168.47	0.00	0.00
31	121.00	Ericsson S11B12	3	30.147	33.161	0.56	0.80	4.75	183.60	0.000	0.000	252.26	0.00	0.00
32	121.00	Ericsson KRY 112 144/1	3	30.147	33.161	0.56	0.80	0.69	39.60	0.000	0.000	36.55	0.00	0.00
33	121.00	Low Profile Platform	1	30.147	33.161	1.00	1.00	22.00	1800.00	0.000	0.000	1167.28	0.00	0.00
34	121.00	SitePro PRK1245	1	30.147	33.161	1.00	1.00	5.00	420.00	0.000	0.000	265.29	0.00	0.00
35	99.00	RFS APL866513-42T0	4	28.900	31.790	0.74	0.80	12.05	75.36	0.000	0.000	613.04	0.00	0.00
36	99.00	BXA-171063-12BF	1	28.900	31.790	0.67	0.80	3.19	18.00	0.000	0.000	162.01	0.00	0.00
37	99.00	Antel BXA-70063-6CF	1	28.900	31.790	0.58	0.80	4.42	20.40	0.000	0.000	224.86	0.00	0.00
38	99.00	Antel LPA-80063-6CF	2	28.900	31.790	0.74	0.80	14.52	64.80	0.000	0.000	738.68	0.00	0.00
39	99.00	Antel BXA-171063-8BF	2	28.900	31.790	0.67	0.80	3.95	25.20	0.000	0.000	200.98	0.00	0.00
40	99.00	Antel BXA-70063-4CF	1	28.900	31.790	0.58	0.80	2.76	11.88	0.000	0.000	140.20	0.00	0.00
41	99.00	RFS FD9R6004/2C-3L	6	28.900	31.790	0.80	0.80	1.73	22.32	0.000	0.000	87.89	0.00	0.00
42	99.00	Swedcom SLCP 2x6014F	1	28.900	31.790	0.71	0.80	4.62	24.00	0.000	0.000	235.03	0.00	0.00
43	99.00	Kathrein	3	28.900	31.790	0.62	0.80	19.51	206.28	0.000	0.000	992.59	0.00	0.00
44	99.00	ALU RRH2x40-AWS	3	28.900	31.790	0.66	0.80	4.96	158.40	0.000	0.000	252.25	0.00	0.00
45	99.00	RFS DB-T1-6Z-8AB-0Z	1	28.900	31.790	0.57	0.80	2.73	22.68	0.000	0.000	138.67	0.00	0.00
46	99.00	12.5' Low Profile Platform	1	28.900	31.790	0.80	0.80	17.60	1800.00	0.000	0.000	895.19	0.00	0.00
47	65.50	Decibel 26OB	1	26.493	29.142	0.80	0.80	1.60	60.00	0.000	0.000	74.60	0.00	0.00

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Discrete Appurtenance Forces

Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (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

48	64.00	3 ft Standoff	1	26.364	29.000	1.00	1.00	2.63	48.00	0.000	0.000	122.03	0.00	0.00
							Totals:		**14,874.12**			**22,299.22**		

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Total Applied Force Summary

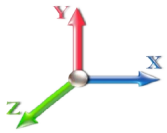
Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 12

IES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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		548.91	1675.60	0.00	0.00
10.00		537.52	1646.22	0.00	0.00
15.00		526.14	1616.83	0.00	0.00
20.00		546.18	1587.45	0.00	0.00
25.00		559.79	1558.06	0.00	0.00
30.00		568.53	1528.68	0.00	0.00
35.00		573.70	1499.29	0.00	0.00
40.00		576.08	1469.91	0.00	0.00
45.00		576.21	1440.53	0.00	0.00
47.25		257.25	638.65	0.00	0.00
50.00		318.32	1301.11	0.00	0.00
53.25		375.43	1516.66	0.00	0.00
55.00		200.92	420.73	0.00	0.00
60.00		574.39	1185.55	0.00	0.00
64.00	(1) attachments	576.72	978.81	0.00	0.00
65.00		112.50	230.06	0.00	0.00
65.50	(1) attachments	130.71	174.66	0.00	0.00
70.00		504.99	1020.95	0.00	0.00
75.00		554.16	1111.13	0.00	0.00
80.00		545.56	1086.64	0.00	0.00
85.00		536.19	1062.15	0.00	0.00
90.00		526.10	1037.67	0.00	0.00
95.00		515.36	1013.18	0.00	0.00
96.00		101.28	199.70	0.00	0.00
99.00	(26) attachments	4987.37	3394.45	0.00	0.00
100.00		100.85	295.22	0.00	0.00
100.75		75.31	220.26	0.00	0.00
105.00		423.20	638.28	0.00	0.00
110.00		486.78	732.79	0.00	0.00
115.00		473.90	713.20	0.00	0.00
120.00		460.55	693.61	0.00	0.00
121.00	(17) attachments	4954.77	3531.05	0.00	0.00
125.00		355.99	472.47	0.00	0.00
128.00	(1) attachments	1442.01	2146.12	0.00	0.00
129.00		85.65	113.81	0.00	0.00
130.00		85.08	90.12	0.00	0.00
135.00		417.95	441.77	0.00	0.00
139.00	(48) attachments	5312.34	3569.40	0.00	0.00
140.00		79.14	68.20	0.00	0.00
145.00		387.62	332.18	0.00	0.00
147.00	(31) attachments	6202.26	3587.52	0.00	0.00
149.00	(2) attachments	482.30	554.95	0.00	143.25
	Totals:	**37,656.00**	**48,595.61**	**0.00**	**143.25**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Linear Appurtenance Segment Forces (Factored)

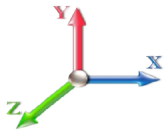
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	15.84
5.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	74.88
5.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	0.96
10.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	15.84
10.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	74.88
10.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	0.96
15.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	15.84
15.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	74.88
15.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	0.96
20.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.638	0.00	15.84
20.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.638	0.00	74.88
20.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.638	0.00	0.96
25.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.630	0.00	15.84
25.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.630	0.00	74.88
25.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.630	0.00	0.96
30.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.477	0.00	15.84
30.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.477	0.00	74.88
30.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.477	0.00	0.96
35.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.218	0.00	15.84
35.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.218	0.00	74.88
35.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.218	0.00	0.96
40.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.880	0.00	15.84
40.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.880	0.00	74.88
40.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.880	0.00	0.96
45.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.479	0.00	15.84
45.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.479	0.00	74.88
45.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.479	0.00	0.96
47.25	1 1/4" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	24.732	0.00	7.13
47.25	1 5/8" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	24.732	0.00	33.70
47.25	1/2" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	24.732	0.00	0.43
50.00	1 1/4" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	25.029	0.00	8.71
50.00	1 5/8" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	25.029	0.00	41.18
50.00	1/2" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	25.029	0.00	0.53
53.25	1 1/4" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	25.363	0.00	10.30
53.25	1 5/8" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	25.363	0.00	48.67
53.25	1/2" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	25.363	0.00	0.62
55.00	1 1/4" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	25.536	0.00	5.54
55.00	1 5/8" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	25.536	0.00	26.21
55.00	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	25.536	0.00	0.34
60.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.008	0.00	15.84
60.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.008	0.00	74.88
60.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.008	0.00	0.96
64.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	26.364	0.00	12.67
64.00	1 5/8" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	26.364	0.00	59.90
64.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	26.364	0.00	0.77
65.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	26.450	0.00	3.17
65.00	1 5/8" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	26.450	0.00	14.98

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Linear Appurtenance Segment Forces (Factored)

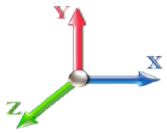
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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)
65.50	1 1/4" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	26.493	0.00	1.58
65.50	1 5/8" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	26.493	0.00	7.49
70.00	1 1/4" Coax	Yes	4.50	0.000	0.00	0.00	0.00	0.000	0.000	26.866	0.00	14.26
70.00	1 5/8" Coax	Yes	4.50	0.000	0.00	0.00	0.00	0.000	0.000	26.866	0.00	67.39
75.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.259	0.00	15.84
75.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.259	0.00	74.88
80.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.632	0.00	15.84
80.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.632	0.00	74.88
85.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.987	0.00	15.84
85.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.987	0.00	74.88
90.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.325	0.00	15.84
90.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.325	0.00	74.88
95.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.650	0.00	15.84
95.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.650	0.00	74.88
96.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	28.713	0.00	3.17
96.00	1 5/8" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	28.713	0.00	14.98
99.00	1 1/4" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	28.900	0.00	9.50
99.00	1 5/8" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	28.900	0.00	44.93
100.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	28.961	0.00	3.17
100.75	1 1/4" Coax	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	29.006	0.00	2.38
105.00	1 1/4" Coax	Yes	4.25	0.000	0.00	0.00	0.00	0.000	0.000	29.260	0.00	13.46
110.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.548	0.00	15.84
115.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.826	0.00	15.84
120.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.094	0.00	15.84
121.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	30.147	0.00	3.17
125.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	30.354	0.00	12.67
128.00	1 1/4" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	30.506	0.00	9.50
129.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	30.556	0.00	3.17
130.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	30.605	0.00	3.17
135.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.850	0.00	15.84
139.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	31.040	0.00	12.67
140.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	31.087	0.00	3.17
145.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.317	0.00	15.84
147.00	1 1/4" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	31.408	0.00	6.34
									Totals:		**0.0**	**1,960.6**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Calculated Forces

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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	

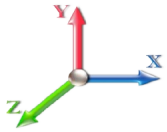
Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60

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	-48.53	-37.74	0.00	-4109.0	0.00	4109.01	4419.23	2209.62	10644.5	5330.19	0.00	0.000	0.000	0.782
5.00	-46.73	-37.34	0.00	-3920.3	0.00	3920.32	4369.00	2184.50	10304.7	5160.05	0.10	-0.189	0.000	0.771
10.00	-44.96	-36.95	0.00	-3733.6	0.00	3733.62	4317.04	2158.52	9966.05	4990.43	0.40	-0.382	0.000	0.759
15.00	-43.23	-36.56	0.00	-3548.8	0.00	3548.88	4263.35	2131.68	9628.61	4821.46	0.91	-0.576	0.000	0.746
20.00	-41.52	-36.14	0.00	-3366.0	0.00	3366.09	4207.92	2103.96	9292.72	4653.26	1.62	-0.774	0.000	0.734
25.00	-39.85	-35.69	0.00	-3185.4	0.00	3185.41	4150.77	2075.38	8958.64	4485.98	2.54	-0.974	0.000	0.720
30.00	-38.20	-35.23	0.00	-3006.9	0.00	3006.95	4091.88	2045.94	8626.63	4319.73	3.67	-1.177	0.000	0.706
35.00	-36.59	-34.76	0.00	-2830.7	0.00	2830.79	4031.25	2015.63	8296.96	4154.65	5.01	-1.381	0.000	0.691
40.00	-35.01	-34.27	0.00	-2657.0	0.00	2657.01	3968.90	1984.45	7969.88	3990.86	6.57	-1.588	0.000	0.675
45.00	-33.50	-33.74	0.00	-2485.6	0.00	2485.67	3904.81	1952.40	7645.65	3828.51	8.34	-1.797	0.000	0.658
47.25	-32.81	-33.52	0.00	-2409.7	0.00	2409.75	3875.40	1937.70	7500.75	3755.95	9.21	-1.893	0.000	0.650
50.00	-31.45	-33.23	0.00	-2317.5	0.00	2317.56	3838.99	1919.49	7324.54	3667.71	10.34	-2.011	0.000	0.640
53.25	-29.88	-32.86	0.00	-2209.5	0.00	2209.56	2982.57	1491.28	5685.98	2847.22	11.76	-2.150	0.000	0.787
55.00	-29.38	-32.72	0.00	-2152.0	0.00	2152.06	2966.84	1483.42	5604.01	2806.17	12.56	-2.226	0.000	0.777
60.00	-28.09	-32.21	0.00	-1988.4	0.00	1988.45	2920.75	1460.37	5370.68	2689.33	15.02	-2.468	0.000	0.749
64.00	-27.08	-31.65	0.00	-1859.6	0.00	1859.62	2882.62	1441.31	5185.10	2596.40	17.17	-2.664	0.000	0.726
65.00	-26.83	-31.54	0.00	-1827.9	0.00	1827.97	2872.92	1436.46	5138.87	2573.25	17.74	-2.714	0.000	0.720
65.50	-26.59	-31.46	0.00	-1812.2	0.00	1812.20	2868.04	1434.02	5115.78	2561.69	18.02	-2.739	0.000	0.717
70.00	-25.48	-31.01	0.00	-1670.6	0.00	1670.64	2823.36	1411.68	4908.84	2458.07	20.71	-2.957	0.000	0.689
75.00	-24.27	-30.49	0.00	-1515.6	0.00	1515.62	2772.06	1386.03	4680.84	2343.90	23.93	-3.196	0.000	0.656
80.00	-23.10	-29.98	0.00	-1363.1	0.00	1363.16	2719.04	1359.52	4455.15	2230.89	27.41	-3.431	0.000	0.620
85.00	-21.95	-29.47	0.00	-1213.2	0.00	1213.26	2664.28	1332.14	4232.01	2119.15	31.13	-3.662	0.000	0.581
90.00	-20.84	-28.95	0.00	-1065.9	0.00	1065.93	2607.79	1303.89	4011.70	2008.83	35.08	-3.886	0.000	0.539
95.00	-19.80	-28.41	0.00	-921.17	0.00	921.17	2549.57	1274.78	3794.46	1900.05	39.26	-4.100	0.000	0.493
96.00	-19.57	-28.33	0.00	-892.76	0.00	892.76	2537.71	1268.86	3751.41	1878.49	40.13	-4.144	0.000	0.483
99.00	-16.52	-23.13	0.00	-807.78	0.00	807.78	2501.74	1250.87	3623.07	1814.23	42.77	-4.268	0.000	0.452
100.00	-16.22	-23.01	0.00	-784.65	0.00	784.65	2489.61	1244.80	3580.57	1792.94	43.67	-4.309	0.000	0.444
100.75	-15.96	-22.95	0.00	-767.39	0.00	767.39	1858.32	929.16	2706.71	1355.36	44.35	-4.340	0.000	0.575
105.00	-15.28	-22.53	0.00	-669.86	0.00	669.86	1825.33	912.67	2580.97	1292.40	48.28	-4.503	0.000	0.527
110.00	-14.51	-22.04	0.00	-557.22	0.00	557.22	1784.92	892.46	2434.45	1219.03	53.11	-4.717	0.000	0.466
115.00	-13.77	-21.55	0.00	-447.03	0.00	447.03	1742.78	871.39	2289.70	1146.55	58.16	-4.912	0.000	0.398
120.00	-13.09	-21.05	0.00	-339.29	0.00	339.29	1698.90	849.45	2146.98	1075.09	63.39	-5.083	0.000	0.324
121.00	-9.99	-15.82	0.00	-318.24	0.00	318.24	1689.92	844.96	2118.70	1060.93	64.46	-5.115	0.000	0.306
125.00	-9.53	-15.43	0.00	-254.97	0.00	254.97	1653.30	826.65	2006.56	1004.77	68.79	-5.230	0.000	0.260
128.00	-7.51	-13.81	0.00	-208.67	0.00	208.67	1625.10	812.55	1923.51	963.18	72.10	-5.306	0.000	0.222
129.00	-7.40	-13.72	0.00	-194.86	0.00	194.86	1615.56	807.78	1896.04	949.43	73.21	-5.330	0.000	0.210
129.00	-7.40	-13.72	0.00	-194.86	0.00	194.86	1091.97	545.98	1287.15	644.53	73.21	-5.330	0.000	0.310
130.00	-7.30	-13.63	0.00	-181.15	0.00	181.15	1086.82	543.41	1270.20	636.04	74.33	-5.353	0.000	0.292
135.00	-6.88	-13.19	0.00	-112.99	0.00	112.99	1060.04	530.02	1185.82	593.79	79.99	-5.474	0.000	0.197
139.00	-3.83	-7.56	0.00	-60.25	0.00	60.25	1037.37	518.68	1118.90	560.28	84.61	-5.539	0.000	0.111
140.00	-3.77	-7.47	0.00	-52.69	0.00	52.69	1031.53	515.76	1102.27	551.95	85.77	-5.551	0.000	0.099
145.00	-3.47	-7.06	0.00	-15.32	0.00	15.32	1001.28	500.64	1019.81	510.66	91.60	-5.588	0.000	0.034
147.00	-0.51	-0.53	0.00	-1.21	0.00	1.21	988.70	494.35	987.19	494.33	93.93	-5.592	0.000	0.003
149.00	0.00	-0.48	0.00	-0.14	0.00	0.14	975.84	487.92	954.81	478.11	96.27	-5.592	0.000	0.000

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Wind Loading - Shaft

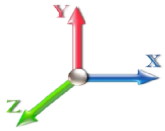
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	19.450	21.40	445.80	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	436.65	0.650	0.000	5.00	24.669	16.03	548.9	0.0	1055.8
10.00		1.00	0.85	19.450	21.40	427.50	0.650	0.000	5.00	24.157	15.70	537.5	0.0	1033.7
15.00		1.00	0.85	19.450	21.40	418.35	0.650	0.000	5.00	23.645	15.37	526.1	0.0	1011.7
20.00		1.00	0.90	20.638	22.70	421.50	0.650	0.000	5.00	23.134	15.04	546.2	0.0	989.7
25.00		1.00	0.95	21.630	23.79	421.87	0.650	0.000	5.00	22.622	14.70	559.8	0.0	967.6
30.00		1.00	0.98	22.477	24.72	420.20	0.650	0.000	5.00	22.111	14.37	568.5	0.0	945.6
35.00		1.00	1.01	23.218	25.54	417.08	0.650	0.000	5.00	21.599	14.04	573.7	0.0	923.6
40.00		1.00	1.04	23.880	26.27	412.84	0.650	0.000	5.00	21.087	13.71	576.1	0.0	901.5
45.00		1.00	1.07	24.479	26.93	407.73	0.650	0.000	5.00	20.576	13.37	576.2	0.0	879.5
47.25	Bot - Section 2	1.00	1.08	24.732	27.21	405.18	0.650	0.000	2.25	9.092	5.91	257.3	0.0	388.6
50.00		1.00	1.09	25.029	27.53	401.90	0.650	0.000	2.75	11.117	7.23	318.3	0.0	865.3
53.25	Top - Section 1	1.00	1.11	25.363	27.90	397.78	0.650	0.000	3.25	12.939	8.41	375.4	0.0	1006.9
55.00		1.00	1.12	25.536	28.09	400.88	0.650	0.000	1.75	6.878	4.47	200.9	0.0	245.2
60.00		1.00	1.14	26.008	28.61	393.99	0.650	0.000	5.00	19.305	12.55	574.4	0.0	688.2
64.00	Appurtenance(s)	1.00	1.15	26.364	29.00	388.15	0.650	0.000	4.00	15.076	9.80	454.7	0.0	537.4
65.00		1.00	1.16	26.450	29.09	386.65	0.650	0.000	1.00	3.718	2.42	112.5	0.0	132.5
65.50	Appurtenance(s)	1.00	1.16	26.493	29.14	385.90	0.650	0.000	0.50	1.851	1.20	56.1	0.0	66.0
70.00		1.00	1.17	26.866	29.55	378.93	0.650	0.000	4.50	16.431	10.68	505.0	0.0	585.5
75.00		1.00	1.19	27.259	29.98	370.85	0.650	0.000	5.00	17.770	11.55	554.2	0.0	633.1
80.00		1.00	1.21	27.632	30.39	362.48	0.650	0.000	5.00	17.259	11.22	545.6	0.0	614.8
85.00		1.00	1.22	27.987	30.79	353.82	0.650	0.000	5.00	16.747	10.89	536.2	0.0	596.4
90.00		1.00	1.24	28.325	31.16	344.91	0.650	0.000	5.00	16.236	10.55	526.1	0.0	578.1
95.00		1.00	1.25	28.650	31.51	335.77	0.650	0.000	5.00	15.724	10.22	515.4	0.0	559.7
96.00	Bot - Section 3	1.00	1.25	28.713	31.58	333.92	0.650	0.000	1.00	3.083	2.00	101.3	0.0	109.7
99.00	Appurtenance(s)	1.00	1.26	28.900	31.79	328.31	0.650	0.000	3.00	9.254	6.02	306.0	0.0	588.7
100.00		1.00	1.27	28.961	31.86	326.43	0.650	0.000	1.00	3.044	1.98	100.8	0.0	193.6
100.75	Top - Section 2	1.00	1.27	29.006	31.91	325.01	0.650	0.000	0.75	2.269	1.48	75.3	0.0	144.3
105.00		1.00	1.28	29.260	32.19	321.52	0.650	0.000	4.25	12.643	8.22	423.2	0.0	360.5
110.00		1.00	1.29	29.548	32.50	311.82	0.650	0.000	5.00	14.401	9.36	486.8	0.0	410.5
115.00		1.00	1.30	29.826	32.81	301.96	0.650	0.000	5.00	13.889	9.03	473.9	0.0	395.8
120.00		1.00	1.32	30.094	33.10	291.93	0.650	0.000	5.00	13.377	8.70	460.6	0.0	381.1
121.00	Appurtenance(s)	1.00	1.32	30.147	33.16	289.91	0.650	0.000	1.00	2.614	1.70	90.2	0.0	74.5
125.00		1.00	1.33	30.354	33.39	281.75	0.650	0.000	4.00	10.252	6.66	356.0	0.0	292.0
128.00	Appurtenance(s)	1.00	1.33	30.506	33.56	275.58	0.650	0.000	3.00	7.474	4.86	260.8	0.0	212.8
129.00	Top - Section 3	1.00	1.34	30.556	33.61	273.51	0.650	0.000	1.00	2.450	1.59	85.7	0.0	69.8
130.00		1.00	1.34	30.605	33.67	271.44	0.650	0.000	1.00	2.430	1.58	85.1	0.0	52.0
135.00		1.00	1.35	30.850	33.93	261.00	0.650	0.000	5.00	11.843	7.70	417.9	0.0	253.4
139.00	Appurtenance(s)	1.00	1.36	31.040	34.14	252.55	0.650	0.000	4.00	9.106	5.92	323.3	0.0	194.8
140.00		1.00	1.36	31.087	34.20	250.43	0.650	0.000	1.00	2.225	1.45	79.1	0.0	47.6
145.00		1.00	1.37	31.317	34.45	239.75	0.650	0.000	5.00	10.819	7.03	387.6	0.0	231.3
147.00	Appurtenance(s)	1.00	1.37	31.408	34.55	235.44	0.650	0.000	2.00	4.184	2.72	150.4	0.0	89.4
149.00	Appurtenance(s)	1.00	1.38	31.497	34.65	231.12	0.650	0.000	2.00	4.103	2.67	147.8	0.0	87.7
								Totals:	**149.00**			**15,356.8**		**20,395.9**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Discrete Appurtenance Forces

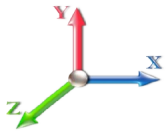
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	149.00	Decibel DB404-B	1	31.608	34.768	1.00	1.00	1.03	12.60	0.000	2.500	57.30	0.00	143.25
2	149.00	Pipe Mount	1	31.497	34.647	1.00	1.00	5.00	315.00	0.000	0.000	277.17	0.00	0.00
3	147.00	800MHz RRH w/ filter	3	31.408	34.548	0.90	0.90	9.34	184.41	0.000	0.000	516.40	0.00	0.00
4	147.00	RFS APXVTM14-C-120	3	31.408	34.548	0.71	0.90	13.52	151.20	0.000	0.000	747.53	0.00	0.00
5	147.00	ALU TD-RRH8x20-25	3	31.408	34.548	0.62	0.90	7.55	189.00	0.000	0.000	417.08	0.00	0.00
6	147.00	ALU 1900MHz RRH	3	31.408	34.548	0.79	0.90	9.03	118.80	0.000	0.000	499.09	0.00	0.00
7	147.00	ALU 800MHz RRH	3	31.408	34.548	0.78	0.90	6.20	160.65	0.000	0.000	342.79	0.00	0.00
8	147.00	RFS APXVSPP18-C-A20	3	31.408	34.548	0.75	0.90	17.97	153.90	0.000	0.000	993.49	0.00	0.00
9	147.00	Argus LLPX310R	3	31.408	34.548	0.62	0.90	8.01	77.22	0.000	0.000	442.82	0.00	0.00
10	147.00	Andrew VHLP2-11	1	31.408	34.548	0.90	0.90	4.21	24.30	0.000	0.000	232.83	0.00	0.00
11	147.00	Andrew VHLP800-11-DW1	1	31.408	34.548	0.90	0.90	6.03	44.10	0.000	0.000	333.32	0.00	0.00
12	147.00	U-RAS Flexible RRH	3	31.408	34.548	0.78	1.00	5.22	136.89	0.000	0.000	288.45	0.00	0.00
13	147.00	12.5' Low Profile Platform	1	31.408	34.548	1.00	1.00	22.00	1350.00	0.000	0.000	1216.10	0.00	0.00
14	147.00	RFS ACU-A20-N	4	31.408	34.548	0.71	0.90	0.40	3.60	0.000	0.000	22.01	0.00	0.00
15	139.00	Powerawve LGP21901	6	31.040	34.144	0.60	0.80	0.83	29.70	0.000	0.000	45.23	0.00	0.00
16	139.00	DMP65R-BU6DA	3	31.040	34.144	0.58	0.80	22.27	214.38	0.000	0.000	1216.50	0.00	0.00
17	139.00	4415 B30	3	31.040	34.144	0.54	0.80	2.64	124.20	0.000	0.000	144.07	0.00	0.00
18	139.00	Ericsson RRUS-32 B2s	3	31.040	34.144	0.54	0.80	4.41	162.00	0.000	0.000	240.70	0.00	0.00
19	139.00	Powerwave 7020.00 RET	12	31.040	34.144	0.54	0.80	2.57	23.76	0.000	0.000	140.55	0.00	0.00
20	139.00	Raycap DC6-48-60-18-8F	2	31.040	34.144	0.80	0.80	2.35	59.04	0.000	0.000	128.49	0.00	0.00
21	139.00	4449 B5/B12	3	31.040	34.144	0.54	0.80	3.17	191.70	0.000	0.000	173.05	0.00	0.00
22	139.00	7770	3	31.040	34.144	0.58	0.80	9.64	94.50	0.000	0.000	526.41	0.00	0.00
23	139.00	HPA-65R-BUU-H6	3	31.040	34.144	0.68	0.80	19.71	137.70	0.000	0.000	1076.56	0.00	0.00
24	139.00	Commscope	3	31.040	34.144	0.78	0.80	0.12	4.32	0.000	0.000	6.42	0.00	0.00
25	139.00	Powerwave LGP13519	6	31.040	34.144	0.80	0.80	1.63	28.62	0.000	0.000	89.16	0.00	0.00
26	139.00	Low Profile Platform	1	31.040	34.144	1.00	1.00	22.00	1350.00	0.000	0.000	1201.86	0.00	0.00
27	128.00	Low Profile Platform	1	30.506	33.556	1.00	1.00	22.00	1350.00	0.000	0.000	1181.18	0.00	0.00
28	121.00	Ericsson AIR21 B4A/B12P	3	30.147	33.161	0.71	0.80	24.65	332.10	0.000	0.000	1307.85	0.00	0.00
29	121.00	Ericsson Air 21 B2A/B4P	3	30.147	33.161	0.69	0.80	12.57	247.05	0.000	0.000	666.93	0.00	0.00
30	121.00	Commscope LNX-6515DS	3	30.147	33.161	0.64	0.80	22.02	134.46	0.000	0.000	1168.47	0.00	0.00
31	121.00	Ericsson S11B12	3	30.147	33.161	0.56	0.80	4.75	137.70	0.000	0.000	252.26	0.00	0.00
32	121.00	Ericsson KRY 112 144/1	3	30.147	33.161	0.56	0.80	0.69	29.70	0.000	0.000	36.55	0.00	0.00
33	121.00	Low Profile Platform	1	30.147	33.161	1.00	1.00	22.00	1350.00	0.000	0.000	1167.28	0.00	0.00
34	121.00	SitePro PRK1245	1	30.147	33.161	1.00	1.00	5.00	315.00	0.000	0.000	265.29	0.00	0.00
35	99.00	RFS APL866513-42T0	4	28.900	31.790	0.74	0.80	12.05	56.52	0.000	0.000	613.04	0.00	0.00
36	99.00	BXA-171063-12BF	1	28.900	31.790	0.67	0.80	3.19	13.50	0.000	0.000	162.01	0.00	0.00
37	99.00	Antel BXA-70063-6CF	1	28.900	31.790	0.58	0.80	4.42	15.30	0.000	0.000	224.86	0.00	0.00
38	99.00	Antel LPA-80063-6CF	2	28.900	31.790	0.74	0.80	14.52	48.60	0.000	0.000	738.68	0.00	0.00
39	99.00	Antel BXA-171063-8BF	2	28.900	31.790	0.67	0.80	3.95	18.90	0.000	0.000	200.98	0.00	0.00
40	99.00	Antel BXA-70063-4CF	1	28.900	31.790	0.58	0.80	2.76	8.91	0.000	0.000	140.20	0.00	0.00
41	99.00	RFS FD9R6004/2C-3L	6	28.900	31.790	0.80	0.80	1.73	16.74	0.000	0.000	87.89	0.00	0.00
42	99.00	Swedcom SLCP 2x6014F	1	28.900	31.790	0.71	0.80	4.62	18.00	0.000	0.000	235.03	0.00	0.00
43	99.00	Kathrein	3	28.900	31.790	0.62	0.80	19.51	154.71	0.000	0.000	992.59	0.00	0.00
44	99.00	ALU RRH2x40-AWS	3	28.900	31.790	0.66	0.80	4.96	118.80	0.000	0.000	252.25	0.00	0.00
45	99.00	RFS DB-T1-6Z-8AB-0Z	1	28.900	31.790	0.57	0.80	2.73	17.01	0.000	0.000	138.67	0.00	0.00
46	99.00	12.5' Low Profile Platform	1	28.900	31.790	0.80	0.80	17.60	1350.00	0.000	0.000	895.19	0.00	0.00
47	65.50	Decibel 26OB	1	26.493	29.142	0.80	0.80	1.60	45.00	0.000	0.000	74.60	0.00	0.00

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Discrete Appurtenance Forces

Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (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

48	64.00	3 ft Standoff	1	26.364	29.000	1.00	1.00	2.63	36.00	0.000	0.000	122.03	0.00	0.00
							Totals:		**11,155.59**			**22,299.22**		

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Total Applied Force Summary

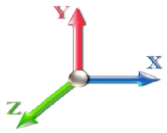
Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 19

IES Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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		548.91	1256.70	0.00	0.00
10.00		537.52	1234.66	0.00	0.00
15.00		526.14	1212.62	0.00	0.00
20.00		546.18	1190.59	0.00	0.00
25.00		559.79	1168.55	0.00	0.00
30.00		568.53	1146.51	0.00	0.00
35.00		573.70	1124.47	0.00	0.00
40.00		576.08	1102.43	0.00	0.00
45.00		576.21	1080.39	0.00	0.00
47.25		257.25	478.99	0.00	0.00
50.00		318.32	975.83	0.00	0.00
53.25		375.43	1137.50	0.00	0.00
55.00		200.92	315.54	0.00	0.00
60.00		574.39	889.16	0.00	0.00
64.00	(1) attachments	576.72	734.11	0.00	0.00
65.00		112.50	172.55	0.00	0.00
65.50	(1) attachments	130.71	131.00	0.00	0.00
70.00		504.99	765.71	0.00	0.00
75.00		554.16	833.34	0.00	0.00
80.00		545.56	814.98	0.00	0.00
85.00		536.19	796.61	0.00	0.00
90.00		526.10	778.25	0.00	0.00
95.00		515.36	759.88	0.00	0.00
96.00		101.28	149.77	0.00	0.00
99.00	(26) attachments	4987.37	2545.84	0.00	0.00
100.00		100.85	221.42	0.00	0.00
100.75		75.31	165.19	0.00	0.00
105.00		423.20	478.71	0.00	0.00
110.00		486.78	549.59	0.00	0.00
115.00		473.90	534.90	0.00	0.00
120.00		460.55	520.21	0.00	0.00
121.00	(17) attachments	4954.77	2648.29	0.00	0.00
125.00		355.99	354.35	0.00	0.00
128.00	(1) attachments	1442.01	1609.59	0.00	0.00
129.00		85.65	85.36	0.00	0.00
130.00		85.08	67.59	0.00	0.00
135.00		417.95	331.33	0.00	0.00
139.00	(48) attachments	5312.34	2677.05	0.00	0.00
140.00		79.14	51.15	0.00	0.00
145.00		387.62	249.14	0.00	0.00
147.00	(31) attachments	6202.26	2690.64	0.00	0.00
149.00	(2) attachments	482.30	416.21	0.00	143.25
	Totals:	**37,656.00**	**36,446.71**	**0.00**	**143.25**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Linear Appurtenance Segment Forces (Factored)

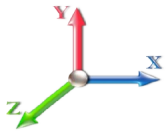
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	11.88
5.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	56.16
5.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	0.72
10.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	11.88
10.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	56.16
10.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	0.72
15.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	11.88
15.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	56.16
15.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	0.72
20.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.638	0.00	11.88
20.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.638	0.00	56.16
20.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.638	0.00	0.72
25.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.630	0.00	11.88
25.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.630	0.00	56.16
25.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.630	0.00	0.72
30.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.477	0.00	11.88
30.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.477	0.00	56.16
30.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.477	0.00	0.72
35.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.218	0.00	11.88
35.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.218	0.00	56.16
35.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.218	0.00	0.72
40.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.880	0.00	11.88
40.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.880	0.00	56.16
40.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.880	0.00	0.72
45.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.479	0.00	11.88
45.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.479	0.00	56.16
45.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.479	0.00	0.72
47.25	1 1/4" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	24.732	0.00	5.35
47.25	1 5/8" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	24.732	0.00	25.27
47.25	1/2" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	24.732	0.00	0.32
50.00	1 1/4" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	25.029	0.00	6.53
50.00	1 5/8" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	25.029	0.00	30.89
50.00	1/2" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	25.029	0.00	0.40
53.25	1 1/4" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	25.363	0.00	7.72
53.25	1 5/8" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	25.363	0.00	36.50
53.25	1/2" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	25.363	0.00	0.47
55.00	1 1/4" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	25.536	0.00	4.16
55.00	1 5/8" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	25.536	0.00	19.66
55.00	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	25.536	0.00	0.25
60.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.008	0.00	11.88
60.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.008	0.00	56.16
60.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.008	0.00	0.72
64.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	26.364	0.00	9.50
64.00	1 5/8" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	26.364	0.00	44.93
64.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	26.364	0.00	0.58
65.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	26.450	0.00	2.38
65.00	1 5/8" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	26.450	0.00	11.23

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Linear Appurtenance Segment Forces (Factored)

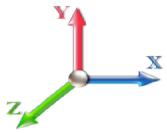
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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)
65.50	1 1/4" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	26.493	0.00	1.19
65.50	1 5/8" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	26.493	0.00	5.62
70.00	1 1/4" Coax	Yes	4.50	0.000	0.00	0.00	0.00	0.000	0.000	26.866	0.00	10.69
70.00	1 5/8" Coax	Yes	4.50	0.000	0.00	0.00	0.00	0.000	0.000	26.866	0.00	50.54
75.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.259	0.00	11.88
75.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.259	0.00	56.16
80.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.632	0.00	11.88
80.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.632	0.00	56.16
85.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.987	0.00	11.88
85.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.987	0.00	56.16
90.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.325	0.00	11.88
90.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.325	0.00	56.16
95.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.650	0.00	11.88
95.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.650	0.00	56.16
96.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	28.713	0.00	2.38
96.00	1 5/8" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	28.713	0.00	11.23
99.00	1 1/4" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	28.900	0.00	7.13
99.00	1 5/8" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	28.900	0.00	33.70
100.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	28.961	0.00	2.38
100.75	1 1/4" Coax	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	29.006	0.00	1.78
105.00	1 1/4" Coax	Yes	4.25	0.000	0.00	0.00	0.00	0.000	0.000	29.260	0.00	10.10
110.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.548	0.00	11.88
115.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.826	0.00	11.88
120.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.094	0.00	11.88
121.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	30.147	0.00	2.38
125.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	30.354	0.00	9.50
128.00	1 1/4" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	30.506	0.00	7.13
129.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	30.556	0.00	2.38
130.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	30.605	0.00	2.38
135.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.850	0.00	11.88
139.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	31.040	0.00	9.50
140.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	31.087	0.00	2.38
145.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.317	0.00	11.88
147.00	1 1/4" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	31.408	0.00	4.75
									Totals:		**0.0**	**1,470.5**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Calculated Forces

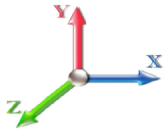
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	-36.38	-37.72	0.00	-4069.4	0.00	4069.41	4419.23	2209.62	10644.5	5330.19	0.00	0.000	0.000	0.772
5.00	-35.00	-37.28	0.00	-3880.8	0.00	3880.83	4369.00	2184.50	10304.7	5160.05	0.10	-0.187	0.000	0.760
10.00	-33.65	-36.85	0.00	-3694.4	0.00	3694.43	4317.04	2158.52	9966.05	4990.43	0.40	-0.378	0.000	0.748
15.00	-32.32	-36.42	0.00	-3510.1	0.00	3510.18	4263.35	2131.68	9628.61	4821.46	0.90	-0.571	0.000	0.736
20.00	-31.01	-35.97	0.00	-3328.0	0.00	3328.06	4207.92	2103.96	9292.72	4653.26	1.60	-0.766	0.000	0.723
25.00	-29.73	-35.50	0.00	-3148.2	0.00	3148.21	4150.77	2075.38	8958.64	4485.98	2.51	-0.964	0.000	0.709
30.00	-28.47	-35.01	0.00	-2970.7	0.00	2970.73	4091.88	2045.94	8626.63	4319.73	3.63	-1.164	0.000	0.695
35.00	-27.24	-34.51	0.00	-2795.6	0.00	2795.69	4031.25	2015.63	8296.96	4154.65	4.96	-1.366	0.000	0.680
40.00	-26.03	-33.99	0.00	-2623.1	0.00	2623.17	3968.90	1984.45	7969.88	3990.86	6.50	-1.570	0.000	0.664
45.00	-24.88	-33.45	0.00	-2453.2	0.00	2453.20	3904.81	1952.40	7645.65	3828.51	8.25	-1.776	0.000	0.647
47.25	-24.34	-33.22	0.00	-2377.9	0.00	2377.93	3875.40	1937.70	7500.75	3755.95	9.11	-1.871	0.000	0.640
50.00	-23.31	-32.93	0.00	-2286.5	0.00	2286.56	3838.99	1919.49	7324.54	3667.71	10.23	-1.987	0.000	0.630
53.25	-22.12	-32.55	0.00	-2179.5	0.00	2179.56	2982.57	1491.28	5685.98	2847.22	11.63	-2.124	0.000	0.773
55.00	-21.73	-32.40	0.00	-2122.5	0.00	2122.59	2966.84	1483.42	5604.01	2806.17	12.42	-2.199	0.000	0.764
60.00	-20.74	-31.87	0.00	-1960.6	0.00	1960.61	2920.75	1460.37	5370.68	2689.33	14.85	-2.439	0.000	0.737
64.00	-19.97	-31.30	0.00	-1833.1	0.00	1833.14	2882.62	1441.31	5185.10	2596.40	16.98	-2.631	0.000	0.713
65.00	-19.78	-31.19	0.00	-1801.8	0.00	1801.84	2872.92	1436.46	5138.87	2573.25	17.54	-2.681	0.000	0.708
65.50	-19.59	-31.10	0.00	-1786.2	0.00	1786.25	2868.04	1434.02	5115.78	2561.69	17.82	-2.705	0.000	0.705
70.00	-18.73	-30.63	0.00	-1646.3	0.00	1646.32	2823.36	1411.68	4908.84	2458.07	20.47	-2.920	0.000	0.677
75.00	-17.80	-30.10	0.00	-1493.1	0.00	1493.17	2772.06	1386.03	4680.84	2343.90	23.66	-3.156	0.000	0.644
80.00	-16.90	-29.58	0.00	-1342.6	0.00	1342.66	2719.04	1359.52	4455.15	2230.89	27.09	-3.388	0.000	0.609
85.00	-16.03	-29.06	0.00	-1194.7	0.00	1194.75	2664.28	1332.14	4232.01	2119.15	30.75	-3.615	0.000	0.570
90.00	-15.18	-28.54	0.00	-1049.4	0.00	1049.46	2607.79	1303.89	4011.70	2008.83	34.66	-3.835	0.000	0.529
95.00	-14.39	-28.01	0.00	-906.75	0.00	906.75	2549.57	1274.78	3794.46	1900.05	38.79	-4.046	0.000	0.483
96.00	-14.21	-27.92	0.00	-878.74	0.00	878.74	2537.71	1268.86	3751.41	1878.49	39.64	-4.089	0.000	0.474
99.00	-12.00	-22.77	0.00	-795.00	0.00	795.00	2501.74	1250.87	3623.07	1814.23	42.25	-4.211	0.000	0.443
100.00	-11.77	-22.66	0.00	-772.23	0.00	772.23	2489.61	1244.80	3580.57	1792.94	43.13	-4.252	0.000	0.436
100.75	-11.58	-22.60	0.00	-755.23	0.00	755.23	1858.32	929.16	2706.71	1355.36	43.80	-4.282	0.000	0.564
105.00	-11.06	-22.17	0.00	-659.19	0.00	659.19	1825.33	912.67	2580.97	1292.40	47.69	-4.443	0.000	0.517
110.00	-10.47	-21.68	0.00	-548.32	0.00	548.32	1784.92	892.46	2434.45	1219.03	52.45	-4.654	0.000	0.456
115.00	-9.91	-21.20	0.00	-439.91	0.00	439.91	1742.78	871.39	2289.70	1146.55	57.43	-4.846	0.000	0.390
120.00	-9.40	-20.71	0.00	-333.93	0.00	333.93	1698.90	849.45	2146.98	1075.09	62.59	-5.014	0.000	0.317
121.00	-7.18	-15.55	0.00	-313.22	0.00	313.22	1689.92	844.96	2118.70	1060.93	63.64	-5.045	0.000	0.300
125.00	-6.83	-15.18	0.00	-251.02	0.00	251.02	1653.30	826.65	2006.56	1004.77	67.91	-5.158	0.000	0.254
128.00	-5.35	-13.60	0.00	-205.49	0.00	205.49	1625.10	812.55	1923.51	963.18	71.18	-5.233	0.000	0.217
129.00	-5.26	-13.51	0.00	-191.89	0.00	191.89	1615.56	807.78	1896.04	949.43	72.27	-5.257	0.000	0.206
129.00	-5.26	-13.51	0.00	-191.89	0.00	191.89	1091.97	545.98	1287.15	644.53	72.27	-5.257	0.000	0.303
130.00	-5.19	-13.42	0.00	-178.39	0.00	178.39	1086.82	543.41	1270.20	636.04	73.38	-5.279	0.000	0.286
135.00	-4.88	-12.98	0.00	-111.27	0.00	111.27	1060.04	530.02	1185.82	593.79	78.97	-5.399	0.000	0.193
139.00	-2.71	-7.44	0.00	-59.34	0.00	59.34	1037.37	518.68	1118.90	560.28	83.52	-5.463	0.000	0.109
140.00	-2.66	-7.36	0.00	-51.89	0.00	51.89	1031.53	515.76	1102.27	551.95	84.66	-5.474	0.000	0.097
145.00	-2.45	-6.95	0.00	-15.09	0.00	15.09	1001.28	500.64	1019.81	510.66	90.41	-5.510	0.000	0.032
147.00	-0.37	-0.52	0.00	-1.18	0.00	1.18	988.70	494.35	987.19	494.33	92.71	-5.515	0.000	0.003
149.00	0.00	-0.48	0.00	-0.14	0.00	0.14	975.84	487.92	954.81	478.11	95.02	-5.515	0.000	0.000

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Wind Loading - Shaft

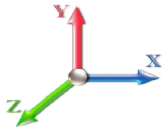
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

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	25.704	30.84	175.3	458.6	1866.3
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.266	30.32	172.4	482.2	1860.5
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	24.801	29.76	169.2	492.1	1841.1
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	24.323	29.19	176.1	496.0	1815.6
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	23.838	28.61	180.8	496.4	1786.6
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.349	28.02	184.1	494.6	1755.4
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	22.856	27.43	186.1	491.0	1722.4
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	22.362	26.83	187.3	486.2	1688.3
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	21.865	26.24	187.7	480.4	1653.1
47.25	Bot - Section 2	1.00	1.08	6.571	7.23	0.00	1.200	1.555	2.25	9.675	11.61	83.9	214.9	733.0
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	2.75	11.834	14.20	103.9	264.0	1417.8
53.25	Top - Section 1	1.00	1.11	6.739	7.41	0.00	1.200	1.574	3.25	13.792	16.55	122.7	309.0	1651.5
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	1.75	7.338	8.81	65.7	165.5	492.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	20.632	24.76	188.2	464.9	1382.6
64.00	Appurtenance(s)	1.00	1.15	7.005	7.71	0.00	1.200	1.603	4.00	16.144	19.37	149.3	366.7	1083.2
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	1.00	3.985	4.78	37.0	91.3	268.0
65.50	Appurtenance(s)	1.00	1.16	7.039	7.74	0.00	1.200	1.606	0.50	1.985	2.38	18.4	45.6	133.5
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	4.50	17.644	21.17	166.2	403.1	1183.8
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	19.127	22.95	182.9	438.8	1283.0
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	18.625	22.35	180.5	429.3	1249.0
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	18.121	21.75	177.9	419.5	1214.8
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	17.618	21.14	175.0	409.5	1180.2
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	17.113	20.54	172.0	399.1	1145.4
96.00	Bot - Section 3	1.00	1.25	7.629	8.39	0.00	1.200	1.669	1.00	3.362	4.03	33.9	79.4	225.7
99.00	Appurtenance(s)	1.00	1.26	7.679	8.45	0.00	1.200	1.674	3.00	10.091	12.11	102.3	237.6	1022.5
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	1.00	3.323	3.99	33.8	78.8	336.9
100.75	Top - Section 2	1.00	1.27	7.707	8.48	0.00	1.200	1.677	0.75	2.479	2.97	25.2	58.8	251.3
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	4.25	13.836	16.60	142.0	325.6	806.3
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	15.811	18.97	163.8	372.1	919.5
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	15.305	18.37	160.1	361.0	888.7
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	14.800	17.76	156.2	349.7	857.8
121.00	Appurtenance(s)	1.00	1.32	8.010	8.81	0.00	1.200	1.708	1.00	2.899	3.48	30.6	69.5	168.8
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	4.00	11.394	13.67	121.3	270.6	659.8
128.00	Appurtenance(s)	1.00	1.33	8.105	8.92	0.00	1.200	1.718	3.00	8.333	10.00	89.2	198.7	482.5
129.00	Top - Section 3	1.00	1.34	8.119	8.93	0.00	1.200	1.719	1.00	2.737	3.28	29.3	65.8	158.8
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	1.00	2.717	3.26	29.2	65.3	134.6
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	13.282	15.94	143.7	314.8	652.6
139.00	Appurtenance(s)	1.00	1.36	8.247	9.07	0.00	1.200	1.732	4.00	10.260	12.31	111.7	244.2	503.9
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	1.00	2.514	3.02	27.4	60.6	124.0
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	12.269	14.72	134.8	290.8	599.2
147.00	Appurtenance(s)	1.00	1.37	8.345	9.18	0.00	1.200	1.742	2.00	4.765	5.72	52.5	114.4	233.6
149.00	Appurtenance(s)	1.00	1.38	8.369	9.21	0.00	1.200	1.744	2.00	4.684	5.62	51.7	112.4	229.3
								Totals:	**149.00**			**5,081.2**		**39,663.5**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Discrete Appurtenance Forces

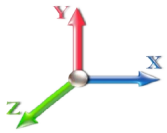
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

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	149.00	Decibel DB404-B	1	8.398	9.238	1.00	1.00	3.84	39.94	0.000	2.500	35.44	0.00	88.59
2	149.00	Pipe Mount	1	8.369	9.206	1.00	1.00	8.49	613.00	0.000	0.000	78.14	0.00	0.00
3	147.00	800MHz RRH w/ filter	3	8.345	9.180	0.90	0.90	12.88	438.98	0.000	0.000	118.26	0.00	0.00
4	147.00	RFS APXVTM14-C-120	3	8.345	9.180	0.71	0.90	15.89	681.67	0.000	0.000	145.89	0.00	0.00
5	147.00	ALU TD-RRH8x20-25	3	8.345	9.180	0.62	0.90	9.06	582.58	0.000	0.000	83.14	0.00	0.00
6	147.00	ALU 1900MHz RRH	3	8.345	9.180	0.79	0.90	12.32	391.63	0.000	0.000	113.14	0.00	0.00
7	147.00	ALU 800MHz RRH	3	8.345	9.180	0.78	0.90	8.91	380.54	0.000	0.000	81.83	0.00	0.00
8	147.00	RFS APXVSPP18-C-A20	3	8.345	9.180	0.75	0.90	24.22	574.21	0.000	0.000	222.34	0.00	0.00
9	147.00	Argus LLPX310R	3	8.345	9.180	0.62	0.90	11.10	295.62	0.000	0.000	101.87	0.00	0.00
10	147.00	Andrew VHLP2-11	1	8.345	9.180	0.90	0.90	5.36	102.06	0.000	0.000	49.17	0.00	0.00
11	147.00	Andrew VHLP800-11-DW1	1	8.345	9.180	0.90	0.90	7.40	157.18	0.000	0.000	67.92	0.00	0.00
12	147.00	U-RAS Flexible RRH	3	8.345	9.180	0.78	1.00	7.70	308.13	0.000	0.000	70.66	0.00	0.00
13	147.00	12.5' Low Profile Platform	1	8.345	9.180	1.00	1.00	39.63	2806.27	0.000	0.000	363.75	0.00	0.00
14	147.00	RFS ACU-A20-N	4	8.345	9.180	0.71	0.90	1.24	16.75	0.000	0.000	11.39	0.00	0.00
15	139.00	Powerawve LGP21901	6	8.247	9.072	0.60	0.80	2.14	72.19	0.000	0.000	19.44	0.00	0.00
16	139.00	DMP65R-BU6DA	3	8.247	9.072	0.58	0.80	24.85	1140.73	0.000	0.000	225.48	0.00	0.00
17	139.00	4415 B30	3	8.247	9.072	0.54	0.80	3.46	259.77	0.000	0.000	31.38	0.00	0.00
18	139.00	Ericsson RRUS-32 B2s	3	8.247	9.072	0.54	0.80	5.57	477.54	0.000	0.000	50.51	0.00	0.00
19	139.00	Powerwave 7020.00 RET	12	8.247	9.072	0.54	0.80	5.66	118.78	0.000	0.000	51.36	0.00	0.00
20	139.00	Raycap DC6-48-60-18-8F	2	8.247	9.072	0.80	0.80	3.46	166.03	0.000	0.000	31.42	0.00	0.00
21	139.00	4449 B5/B12	3	8.247	9.072	0.54	0.80	4.04	373.73	0.000	0.000	36.66	0.00	0.00
22	139.00	7770	3	8.247	9.072	0.58	0.80	11.49	527.75	0.000	0.000	104.21	0.00	0.00
23	139.00	HPA-65R-BUU-H6	3	8.247	9.072	0.68	0.80	22.47	921.35	0.000	0.000	203.86	0.00	0.00
24	139.00	Commscope	3	8.247	9.072	0.78	0.80	0.57	14.82	0.000	0.000	5.14	0.00	0.00
25	139.00	Powerwave LGP13519	6	8.247	9.072	0.80	0.80	3.79	78.51	0.000	0.000	34.43	0.00	0.00
26	139.00	Low Profile Platform	1	8.247	9.072	1.00	1.00	39.53	2798.98	0.000	0.000	358.60	0.00	0.00
27	128.00	Low Profile Platform	1	8.105	8.916	1.00	1.00	39.38	2788.32	0.000	0.000	351.14	0.00	0.00
28	121.00	Ericsson AIR21 B4A/B12P	3	8.010	8.811	0.71	0.80	28.11	1277.37	0.000	0.000	247.72	0.00	0.00
29	121.00	Ericsson Air 21 B2A/B4P	3	8.010	8.811	0.69	0.80	14.78	823.25	0.000	0.000	130.26	0.00	0.00
30	121.00	Commscope LNX-6515DS	3	8.010	8.811	0.64	0.80	28.16	655.90	0.000	0.000	248.13	0.00	0.00
31	121.00	Ericsson S11B12	3	8.010	8.811	0.56	0.80	5.86	339.67	0.000	0.000	51.62	0.00	0.00
32	121.00	Ericsson KRY 112 144/1	3	8.010	8.811	0.56	0.80	1.47	61.96	0.000	0.000	12.95	0.00	0.00
33	121.00	Low Profile Platform	1	8.010	8.811	1.00	1.00	39.29	2781.09	0.000	0.000	346.15	0.00	0.00
34	121.00	SitePro PRK1245	1	8.010	8.811	1.00	1.00	8.42	606.96	0.000	0.000	74.16	0.00	0.00
35	99.00	RFS APL866513-42T0	4	7.679	8.447	0.74	0.80	17.37	369.20	0.000	0.000	146.73	0.00	0.00
36	99.00	BXA-171063-12BF	1	7.679	8.447	0.67	0.80	4.70	81.87	0.000	0.000	39.70	0.00	0.00
37	99.00	Antel BXA-70063-6CF	1	7.679	8.447	0.58	0.80	5.12	186.04	0.000	0.000	43.29	0.00	0.00
38	99.00	Antel LPA-80063-6CF	2	7.679	8.447	0.74	0.80	18.45	416.68	0.000	0.000	155.86	0.00	0.00
39	99.00	Antel BXA-171063-8BF	2	7.679	8.447	0.67	0.80	6.09	113.35	0.000	0.000	51.43	0.00	0.00
40	99.00	Antel BXA-70063-4CF	1	7.679	8.447	0.58	0.80	3.79	80.48	0.000	0.000	32.03	0.00	0.00
41	99.00	RFS FD9R6004/2C-3L	6	7.679	8.447	0.80	0.80	3.77	54.72	0.000	0.000	31.84	0.00	0.00
42	99.00	Swedcom SLCP 2x6014F	1	7.679	8.447	0.71	0.80	6.04	142.67	0.000	0.000	51.00	0.00	0.00
43	99.00	Kathrein	3	7.679	8.447	0.62	0.80	25.34	603.29	0.000	0.000	214.07	0.00	0.00
44	99.00	ALU RRH2x40-AWS	3	7.679	8.447	0.66	0.80	7.27	280.96	0.000	0.000	61.39	0.00	0.00
45	99.00	RFS DB-T1-6Z-8AB-0Z	1	7.679	8.447	0.57	0.80	3.20	159.56	0.000	0.000	27.04	0.00	0.00
46	99.00	12.5' Low Profile Platform	1	7.679	8.447	0.80	0.80	31.15	2755.64	0.000	0.000	263.15	0.00	0.00
47	65.50	Decibel 26OB	1	7.039	7.743	0.80	0.80	4.17	170.64	0.000	0.000	32.29	0.00	0.00

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Discrete Appurtenance Forces

Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (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

48	64.00	3 ft Standoff	1	7.005	7.705	1.00	1.00	8.11	98.73	0.000	0.000	62.50	0.00	0.00
							Totals:		**29,187.08**			**5,369.88**		

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Total Applied Force Summary

Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (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

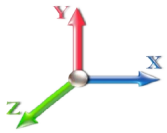
Tower Engineering Solutions

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

Iterations 23

Dead Load Factor 1.20

Wind Load Factor 1.00



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		175.34	2334.17	0.00	0.00
10.00		172.36	2343.17	0.00	0.00
15.00		169.18	2333.00	0.00	0.00
20.00		176.05	2314.43	0.00	0.00
25.00		180.84	2291.00	0.00	0.00
30.00		184.06	2264.38	0.00	0.00
35.00		186.12	2235.48	0.00	0.00
40.00		187.29	2204.84	0.00	0.00
45.00		187.73	2172.85	0.00	0.00
47.25		83.93	967.50	0.00	0.00
50.00		103.88	1705.21	0.00	0.00
53.25		122.68	1992.37	0.00	0.00
55.00		65.72	676.28	0.00	0.00
60.00		188.20	1910.34	0.00	0.00
64.00	(1) attachments	211.78	1605.55	0.00	0.00
65.00		36.97	369.82	0.00	0.00
65.50	(1) attachments	50.74	355.12	0.00	0.00
70.00		166.25	1643.68	0.00	0.00
75.00		182.87	1795.67	0.00	0.00
80.00		180.49	1763.36	0.00	0.00
85.00		177.87	1730.65	0.00	0.00
90.00		175.02	1697.58	0.00	0.00
95.00		171.96	1664.18	0.00	0.00
96.00		33.85	329.53	0.00	0.00
99.00	(26) attachments	1219.80	6578.94	0.00	0.00
100.00		33.75	386.30	0.00	0.00
100.75		25.22	288.34	0.00	0.00
105.00		141.99	1016.55	0.00	0.00
110.00		163.85	1167.22	0.00	0.00
115.00		160.10	1136.82	0.00	0.00
120.00		156.21	1106.24	0.00	0.00
121.00	(17) attachments	1141.64	6764.65	0.00	0.00
125.00		121.30	793.64	0.00	0.00
128.00	(1) attachments	440.30	3371.25	0.00	0.00
129.00		29.33	192.29	0.00	0.00
130.00		29.16	168.14	0.00	0.00
135.00		143.71	820.42	0.00	0.00
139.00	(48) attachments	1264.20	7588.50	0.00	0.00
140.00		27.41	141.60	0.00	0.00
145.00		134.76	687.41	0.00	0.00
147.00	(31) attachments	1481.84	7004.57	0.00	0.00
149.00	(2) attachments	165.32	883.52	0.00	88.59
	Totals:	**10,451.09**	**80,796.55**	**0.00**	**88.59**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Linear Appurtenance Segment Forces (Factored)

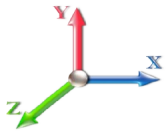
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

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	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	59.22
5.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	218.70
5.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	13.70
10.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	62.77
10.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	228.34
10.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	15.33
15.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	65.01
15.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	234.34
15.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	16.38
20.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	66.68
20.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	238.78
20.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	17.18
25.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	68.03
25.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	242.32
25.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	17.83
30.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	69.16
30.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	245.28
30.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	18.38
35.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	70.14
35.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	247.84
35.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	18.86
40.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	71.00
40.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	250.09
40.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	19.29
45.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	71.78
45.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	252.10
45.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	19.67
47.25	1 1/4" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	6.571	0.00	32.45
47.25	1 5/8" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	6.571	0.00	113.82
47.25	1/2" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	6.571	0.00	8.93
50.00	1 1/4" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	39.87
50.00	1 5/8" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	139.66
50.00	1/2" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	11.01
53.25	1 1/4" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	6.739	0.00	47.39
53.25	1 5/8" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	6.739	0.00	165.77
53.25	1/2" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	6.739	0.00	13.16
55.00	1 1/4" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	25.60
55.00	1 5/8" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	89.46
55.00	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	7.12
60.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	73.73
60.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	257.14
60.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	20.65
64.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	7.005	0.00	59.35
64.00	1 5/8" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	7.005	0.00	206.63
64.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	7.005	0.00	16.70
65.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	14.86
65.00	1 5/8" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	51.71

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Linear Appurtenance Segment Forces (Factored)

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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	

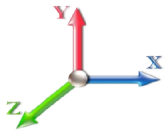
Tower Engineering Solutions

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

Iterations 23

Dead Load Factor 1.20

Wind Load Factor 1.00



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)
65.50	1 1/4" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	7.039	0.00	7.43
65.50	1 5/8" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	7.039	0.00	25.87
70.00	1 1/4" Coax	Yes	4.50	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	67.33
70.00	1 5/8" Coax	Yes	4.50	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	233.92
75.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	75.31
75.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	261.17
80.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	75.77
80.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	262.35
85.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	76.21
85.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	263.47
90.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	76.63
90.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	264.54
95.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	77.03
95.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	265.55
96.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.629	0.00	15.42
96.00	1 5/8" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.629	0.00	53.15
99.00	1 1/4" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.679	0.00	46.40
99.00	1 5/8" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.679	0.00	159.80
100.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	15.48
100.75	1 1/4" Coax	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	7.707	0.00	11.62
105.00	1 1/4" Coax	Yes	4.25	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	66.11
110.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	78.13
115.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	78.47
120.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	78.79
121.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.010	0.00	15.77
125.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	63.29
128.00	1 1/4" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.105	0.00	47.58
129.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.119	0.00	15.87
130.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	15.88
135.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	79.71
139.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	8.247	0.00	63.95
140.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.260	0.00	16.00
145.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.321	0.00	80.27
147.00	1 1/4" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.345	0.00	32.15
									Totals:		**0.0**	**7,379.6**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Calculated Forces

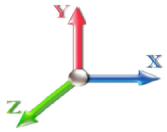
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

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	-80.79	-10.49	0.00	-1132.7	0.00	1132.79	4419.23	2209.62	10644.5	5330.19	0.00	0.000	0.000	0.231
5.00	-78.45	-10.38	0.00	-1080.3	0.00	1080.35	4369.00	2184.50	10304.7	5160.05	0.03	-0.052	0.000	0.227
10.00	-76.10	-10.28	0.00	-1028.4	0.00	1028.43	4317.04	2158.52	9966.05	4990.43	0.11	-0.105	0.000	0.224
15.00	-73.75	-10.17	0.00	-977.04	0.00	977.04	4263.35	2131.68	9628.61	4821.46	0.25	-0.159	0.000	0.220
20.00	-71.43	-10.06	0.00	-926.17	0.00	926.17	4207.92	2103.96	9292.72	4653.26	0.45	-0.213	0.000	0.216
25.00	-69.13	-9.94	0.00	-875.88	0.00	875.88	4150.77	2075.38	8958.64	4485.98	0.70	-0.268	0.000	0.212
30.00	-66.86	-9.80	0.00	-826.20	0.00	826.20	4091.88	2045.94	8626.63	4319.73	1.01	-0.324	0.000	0.208
35.00	-64.61	-9.67	0.00	-777.18	0.00	777.18	4031.25	2015.63	8296.96	4154.65	1.38	-0.380	0.000	0.203
40.00	-62.40	-9.53	0.00	-728.84	0.00	728.84	3968.90	1984.45	7969.88	3990.86	1.81	-0.437	0.000	0.198
45.00	-60.22	-9.37	0.00	-681.20	0.00	681.20	3904.81	1952.40	7645.65	3828.51	2.30	-0.494	0.000	0.193
47.25	-59.25	-9.30	0.00	-660.13	0.00	660.13	3875.40	1937.70	7500.75	3755.95	2.54	-0.520	0.000	0.191
50.00	-57.54	-9.22	0.00	-634.55	0.00	634.55	3838.99	1919.49	7324.54	3667.71	2.85	-0.553	0.000	0.188
53.25	-55.55	-9.10	0.00	-604.59	0.00	604.59	2982.57	1491.28	5685.98	2847.22	3.24	-0.591	0.000	0.231
55.00	-54.86	-9.07	0.00	-588.65	0.00	588.65	2966.84	1483.42	5604.01	2806.17	3.46	-0.611	0.000	0.228
60.00	-52.95	-8.92	0.00	-543.28	0.00	543.28	2920.75	1460.37	5370.68	2689.33	4.13	-0.678	0.000	0.220
64.00	-51.34	-8.72	0.00	-507.61	0.00	507.61	2882.62	1441.31	5185.10	2596.40	4.72	-0.731	0.000	0.213
65.00	-50.97	-8.69	0.00	-498.89	0.00	498.89	2872.92	1436.46	5138.87	2573.25	4.88	-0.745	0.000	0.212
65.50	-50.61	-8.66	0.00	-494.55	0.00	494.55	2868.04	1434.02	5115.78	2561.69	4.96	-0.752	0.000	0.211
70.00	-48.96	-8.52	0.00	-455.58	0.00	455.58	2823.36	1411.68	4908.84	2458.07	5.69	-0.811	0.000	0.203
75.00	-47.15	-8.37	0.00	-412.96	0.00	412.96	2772.06	1386.03	4680.84	2343.90	6.58	-0.876	0.000	0.193
80.00	-45.39	-8.21	0.00	-371.12	0.00	371.12	2719.04	1359.52	4455.15	2230.89	7.53	-0.940	0.000	0.183
85.00	-43.65	-8.05	0.00	-330.07	0.00	330.07	2664.28	1332.14	4232.01	2119.15	8.55	-1.003	0.000	0.172
90.00	-41.95	-7.89	0.00	-289.82	0.00	289.82	2607.79	1303.89	4011.70	2008.83	9.63	-1.064	0.000	0.160
95.00	-40.28	-7.71	0.00	-250.38	0.00	250.38	2549.57	1274.78	3794.46	1900.05	10.78	-1.122	0.000	0.148
96.00	-39.95	-7.68	0.00	-242.67	0.00	242.67	2537.71	1268.86	3751.41	1878.49	11.02	-1.134	0.000	0.145
99.00	-33.39	-6.35	0.00	-219.62	0.00	219.62	2501.74	1250.87	3623.07	1814.23	11.74	-1.168	0.000	0.134
100.00	-33.01	-6.31	0.00	-213.28	0.00	213.28	2489.61	1244.80	3580.57	1792.94	11.99	-1.179	0.000	0.132
100.75	-32.72	-6.29	0.00	-208.54	0.00	208.54	1858.32	929.16	2706.71	1355.36	12.17	-1.187	0.000	0.172
105.00	-31.70	-6.16	0.00	-181.80	0.00	181.80	1825.33	912.67	2580.97	1292.40	13.25	-1.232	0.000	0.158
110.00	-30.53	-6.00	0.00	-151.00	0.00	151.00	1784.92	892.46	2434.45	1219.03	14.57	-1.290	0.000	0.141
115.00	-29.39	-5.84	0.00	-121.01	0.00	121.01	1742.78	871.39	2289.70	1146.55	15.95	-1.343	0.000	0.122
120.00	-28.29	-5.67	0.00	-91.82	0.00	91.82	1698.90	849.45	2146.98	1075.09	17.39	-1.389	0.000	0.102
121.00	-21.55	-4.37	0.00	-86.15	0.00	86.15	1689.92	844.96	2118.70	1060.93	17.68	-1.398	0.000	0.094
125.00	-20.76	-4.24	0.00	-68.67	0.00	68.67	1653.30	826.65	2006.56	1004.77	18.86	-1.429	0.000	0.081
128.00	-17.40	-3.72	0.00	-55.96	0.00	55.96	1625.10	812.55	1923.51	963.18	19.77	-1.449	0.000	0.069
129.00	-17.21	-3.69	0.00	-52.24	0.00	52.24	1615.56	807.78	1896.04	949.43	20.07	-1.456	0.000	0.066
129.00	-17.21	-3.69	0.00	-52.24	0.00	52.24	1091.97	545.98	1287.15	644.53	20.07	-1.456	0.000	0.097
130.00	-17.04	-3.66	0.00	-48.55	0.00	48.55	1086.82	543.41	1270.20	636.04	20.38	-1.462	0.000	0.092
135.00	-16.22	-3.50	0.00	-30.26	0.00	30.26	1060.04	530.02	1185.82	593.79	21.93	-1.494	0.000	0.066
139.00	-8.67	-2.04	0.00	-16.26	0.00	16.26	1037.37	518.68	1118.90	560.28	23.19	-1.512	0.000	0.037
140.00	-8.53	-2.01	0.00	-14.22	0.00	14.22	1031.53	515.76	1102.27	551.95	23.50	-1.515	0.000	0.034
145.00	-7.84	-1.86	0.00	-4.18	0.00	4.18	1001.28	500.64	1019.81	510.66	25.10	-1.525	0.000	0.016
147.00	-0.88	-0.19	0.00	-0.47	0.00	0.47	988.70	494.35	987.19	494.33	25.74	-1.526	0.000	0.002
149.00	0.00	-0.17	0.00	-0.09	0.00	0.09	975.84	487.92	954.81	478.11	26.38	-1.526	0.000	0.000

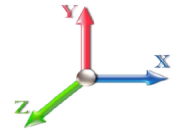
Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Seismic Segment Forces (Factored)

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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:	1.2D + 1.0E					**Iterations**	21
Gust Response Factor	1.10			**Sds**	0.22	**Ss**	0.20
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.38	**SA**	0.04	**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		1173.0	0.00	0.03	0.02	24.97	
10.00		1148.6	0.01	0.05	0.03	35.33	
15.00		1124.1	0.02	0.06	0.04	39.78	
20.00		1099.6	0.03	0.07	0.04	41.52	
25.00		1075.1	0.05	0.07	0.04	42.07	
30.00		1050.6	0.08	0.07	0.04	42.21	
35.00		1026.1	0.10	0.07	0.04	42.24	
40.00		1001.6	0.14	0.07	0.03	42.17	
45.00		977.20	0.17	0.07	0.03	41.79	
47.25	Bot - Section 2	431.75	0.19	0.06	0.02	18.50	
50.00		961.48	0.21	0.06	0.02	41.04	
53.25	Top - Section 1	1118.7	0.24	0.06	0.02	46.88	
55.00		272.47	0.26	0.05	0.02	11.21	
60.00		764.72	0.31	0.04	0.01	28.53	
64.00	Appurtenance(s)	637.08	0.35	0.03	0.01	20.35	
65.00		147.23	0.36	0.03	0.01	4.45	
65.50	Appurtenance(s)	123.31	0.37	0.03	0.01	3.62	
70.00		650.60	0.42	0.01	0.01	12.62	
75.00		703.50	0.48	-0.01	0.01	3.64	
80.00		683.09	0.54	-0.03	0.01	-7.29	
85.00		662.69	0.62	-0.06	0.02	-16.84	
90.00		642.28	0.69	-0.08	0.03	-23.39	
95.00		621.88	0.77	-0.11	0.05	-26.18	
96.00	Bot - Section 3	121.93	0.78	-0.11	0.05	-5.18	
99.00	Appurtenance(s)	2695.2	0.83	-0.12	0.06	-114.16	
100.00		215.11	0.85	-0.12	0.07	-9.00	
100.75	Top - Section 2	160.37	0.86	-0.12	0.07	-6.62	
105.00		400.54	0.94	-0.12	0.10	-14.23	
110.00		456.12	1.03	-0.10	0.15	-10.65	
115.00		439.80	1.13	-0.05	0.20	-2.34	
120.00		423.47	1.23	0.03	0.27	7.82	
121.00	Appurtenance(s)	2911.6	1.25	0.05	0.29	69.68	
125.00		324.41	1.33	0.16	0.36	15.60	
128.00	Appurtenance(s)	1736.4	1.39	0.27	0.43	119.30	
129.00	Top - Section 3	77.51	1.42	0.32	0.45	5.89	
130.00		57.77	1.44	0.36	0.47	4.83	
135.00		281.51	1.55	0.64	0.61	35.24	
139.00	Appurtenance(s)	2905.1	1.64	0.92	0.73	473.20	
140.00		52.87	1.67	1.01	0.77	9.14	
145.00		257.02	1.79	1.49	0.96	58.33	
147.00	Appurtenance(s)	2981.6	1.84	1.72	1.05	746.51	
149.00	Appurtenance(s)	461.42	1.89	1.98	1.14	126.81	
	Totals:	**35,057.2**				**1,979.4**	**Total Wind:** **37,656.0**

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

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Calculated Forces

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 21

Gust Response Factor	1.10			**Sds**	0.22			**Ss**	0.20
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.38	**SA**	0.04			**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	-48.60	-2.22	0.00	-267.67	0.00	267.67	4419.23	2209.62	10644.5	5330.19		0.00	0.00	0.061
5.00	-46.92	-2.20	0.00	-256.58	0.00	256.58	4369.00	2184.50	10304.7	5160.05		0.01	-0.01	0.060
10.00	-45.27	-2.18	0.00	-245.56	0.00	245.56	4317.04	2158.52	9966.05	4990.43		0.03	-0.02	0.060
15.00	-43.66	-2.15	0.00	-234.66	0.00	234.66	4263.35	2131.68	9628.61	4821.46		0.06	-0.04	0.059
20.00	-42.07	-2.11	0.00	-223.93	0.00	223.93	4207.92	2103.96	9292.72	4653.26		0.11	-0.05	0.058
25.00	-40.51	-2.08	0.00	-213.35	0.00	213.35	4150.77	2075.38	8958.64	4485.98		0.17	-0.06	0.057
30.00	-38.98	-2.05	0.00	-202.95	0.00	202.95	4091.88	2045.94	8626.63	4319.73		0.24	-0.08	0.057
35.00	-37.48	-2.01	0.00	-192.72	0.00	192.72	4031.25	2015.63	8296.96	4154.65		0.33	-0.09	0.056
40.00	-36.01	-1.97	0.00	-182.67	0.00	182.67	3968.90	1984.45	7969.88	3990.86		0.43	-0.11	0.055
45.00	-34.57	-1.94	0.00	-172.80	0.00	172.80	3904.81	1952.40	7645.65	3828.51		0.55	-0.12	0.054
47.25	-33.93	-1.92	0.00	-168.44	0.00	168.44	3875.40	1937.70	7500.75	3755.95		0.61	-0.13	0.054
50.00	-32.63	-1.88	0.00	-163.16	0.00	163.16	3838.99	1919.49	7324.54	3667.71		0.69	-0.14	0.053
53.25	-31.11	-1.84	0.00	-157.04	0.00	157.04	2982.57	1491.28	5685.98	2847.22		0.78	-0.15	0.066
55.00	-30.69	-1.83	0.00	-153.83	0.00	153.83	2966.84	1483.42	5604.01	2806.17		0.84	-0.15	0.065
60.00	-29.50	-1.81	0.00	-144.68	0.00	144.68	2920.75	1460.37	5370.68	2689.33		1.00	-0.17	0.064
64.00	-28.53	-1.79	0.00	-137.46	0.00	137.46	2882.62	1441.31	5185.10	2596.40		1.15	-0.18	0.063
65.00	-28.30	-1.78	0.00	-135.67	0.00	135.67	2872.92	1436.46	5138.87	2573.25		1.19	-0.19	0.063
65.50	-28.12	-1.78	0.00	-134.78	0.00	134.78	2868.04	1434.02	5115.78	2561.69		1.21	-0.19	0.062
70.00	-27.10	-1.78	0.00	-126.75	0.00	126.75	2823.36	1411.68	4908.84	2458.07		1.39	-0.20	0.061
75.00	-25.99	-1.78	0.00	-117.87	0.00	117.87	2772.06	1386.03	4680.84	2343.90		1.62	-0.22	0.060
80.00	-24.90	-1.78	0.00	-108.99	0.00	108.99	2719.04	1359.52	4455.15	2230.89		1.86	-0.24	0.058
85.00	-23.84	-1.78	0.00	-100.09	0.00	100.09	2664.28	1332.14	4232.01	2119.15		2.12	-0.26	0.056
90.00	-22.80	-1.79	0.00	-91.17	0.00	91.17	2607.79	1303.89	4011.70	2008.83		2.41	-0.28	0.054
95.00	-21.79	-1.79	0.00	-82.24	0.00	82.24	2549.57	1274.78	3794.46	1900.05		2.71	-0.30	0.052
96.00	-21.59	-1.79	0.00	-80.46	0.00	80.46	2537.71	1268.86	3751.41	1878.49		2.77	-0.30	0.051
99.00	-18.19	-1.77	0.00	-75.10	0.00	75.10	2501.74	1250.87	3623.07	1814.23		2.96	-0.31	0.049
100.00	-17.90	-1.77	0.00	-73.33	0.00	73.33	2489.61	1244.80	3580.57	1792.94		3.03	-0.32	0.048
100.75	-17.68	-1.77	0.00	-72.00	0.00	72.00	1858.32	929.16	2706.71	1355.36		3.08	-0.32	0.063
105.00	-17.04	-1.77	0.00	-64.47	0.00	64.47	1825.33	912.67	2580.97	1292.40		3.37	-0.33	0.059
110.00	-16.30	-1.78	0.00	-55.59	0.00	55.59	1784.92	892.46	2434.45	1219.03		3.73	-0.36	0.055
115.00	-15.59	-1.78	0.00	-46.72	0.00	46.72	1742.78	871.39	2289.70	1146.55		4.12	-0.38	0.050
120.00	-14.90	-1.77	0.00	-37.83	0.00	37.83	1698.90	849.45	2146.98	1075.09		4.52	-0.39	0.044
121.00	-11.36	-1.67	0.00	-36.07	0.00	36.07	1689.92	844.96	2118.70	1060.93		4.60	-0.40	0.041
125.00	-10.89	-1.66	0.00	-29.37	0.00	29.37	1653.30	826.65	2006.56	1004.77		4.94	-0.41	0.036
128.00	-8.75	-1.52	0.00	-24.40	0.00	24.40	1625.10	812.55	1923.51	963.18		5.20	-0.42	0.031
129.00	-8.63	-1.52	0.00	-22.87	0.00	22.87	1615.56	807.78	1896.04	949.43		5.29	-0.42	0.029
129.00	-8.63	-1.52	0.00	-22.87	0.00	22.87	1091.97	545.98	1287.15	644.53		5.29	-0.42	0.043
130.00	-8.54	-1.51	0.00	-21.36	0.00	21.36	1086.82	543.41	1270.20	636.04		5.38	-0.43	0.041
135.00	-8.10	-1.48	0.00	-13.79	0.00	13.79	1060.04	530.02	1185.82	593.79		5.83	-0.44	0.031
139.00	-4.54	-0.98	0.00	-7.88	0.00	7.88	1037.37	518.68	1118.90	560.28		6.21	-0.45	0.018
140.00	-4.47	-0.97	0.00	-6.91	0.00	6.91	1031.53	515.76	1102.27	551.95		6.30	-0.45	0.017
145.00	-4.14	-0.91	0.00	-2.07	0.00	2.07	1001.28	500.64	1019.81	510.66		6.77	-0.45	0.008
147.00	-0.55	-0.13	0.00	-0.26	0.00	0.26	988.70	494.35	987.19	494.33		6.97	-0.45	0.001
149.00	0.00	-0.13	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11		7.16	-0.45	0.000

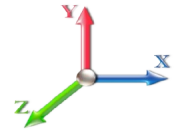
Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Seismic Segment Forces (Factored)

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.20
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.38	**SA**	0.04	**S1**	0.07
						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		1173.0	0.00	0.03	0.02	24.97	
10.00		1148.6	0.01	0.05	0.03	35.33	
15.00		1124.1	0.02	0.06	0.04	39.78	
20.00		1099.6	0.03	0.07	0.04	41.52	
25.00		1075.1	0.05	0.07	0.04	42.07	
30.00		1050.6	0.08	0.07	0.04	42.21	
35.00		1026.1	0.10	0.07	0.04	42.24	
40.00		1001.6	0.14	0.07	0.03	42.17	
45.00		977.20	0.17	0.07	0.03	41.79	
47.25	Bot - Section 2	431.75	0.19	0.06	0.02	18.50	
50.00		961.48	0.21	0.06	0.02	41.04	
53.25	Top - Section 1	1118.7	0.24	0.06	0.02	46.88	
55.00		272.47	0.26	0.05	0.02	11.21	
60.00		764.72	0.31	0.04	0.01	28.53	
64.00	Appurtenance(s)	637.08	0.35	0.03	0.01	20.35	
65.00		147.23	0.36	0.03	0.01	4.45	
65.50	Appurtenance(s)	123.31	0.37	0.03	0.01	3.62	
70.00		650.60	0.42	0.01	0.01	12.62	
75.00		703.50	0.48	-0.01	0.01	3.64	
80.00		683.09	0.54	-0.03	0.01	-7.29	
85.00		662.69	0.62	-0.06	0.02	-16.84	
90.00		642.28	0.69	-0.08	0.03	-23.39	
95.00		621.88	0.77	-0.11	0.05	-26.18	
96.00	Bot - Section 3	121.93	0.78	-0.11	0.05	-5.18	
99.00	Appurtenance(s)	2695.2	0.83	-0.12	0.06	-114.16	
100.00		215.11	0.85	-0.12	0.07	-9.00	
100.75	Top - Section 2	160.37	0.86	-0.12	0.07	-6.62	
105.00		400.54	0.94	-0.12	0.10	-14.23	
110.00		456.12	1.03	-0.10	0.15	-10.65	
115.00		439.80	1.13	-0.05	0.20	-2.34	
120.00		423.47	1.23	0.03	0.27	7.82	
121.00	Appurtenance(s)	2911.6	1.25	0.05	0.29	69.68	
125.00		324.41	1.33	0.16	0.36	15.60	
128.00	Appurtenance(s)	1736.4	1.39	0.27	0.43	119.30	
129.00	Top - Section 3	77.51	1.42	0.32	0.45	5.89	
130.00		57.77	1.44	0.36	0.47	4.83	
135.00		281.51	1.55	0.64	0.61	35.24	
139.00	Appurtenance(s)	2905.1	1.64	0.92	0.73	473.20	
140.00		52.87	1.67	1.01	0.77	9.14	
145.00		257.02	1.79	1.49	0.96	58.33	
147.00	Appurtenance(s)	2981.6	1.84	1.72	1.05	746.51	
149.00	Appurtenance(s)	461.42	1.89	1.98	1.14	126.81	
	Totals:	**35,057.2**				**1,979.4**	**Total Wind:** **37,656.0**

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

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Calculated Forces

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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: 0.9D + 1.0E

Iterations 21

Gust Response Factor	1.10			**Sds**	0.22			**Ss**	0.20
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.38	**SA**	0.04			**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	-36.45	-2.22	0.00	-264.84	0.00	264.84	4419.23	2209.62	10644.5	5330.19		0.00	0.00	0.058
5.00	-35.19	-2.20	0.00	-253.75	0.00	253.75	4369.00	2184.50	10304.7	5160.05		0.01	-0.01	0.057
10.00	-33.95	-2.17	0.00	-242.75	0.00	242.75	4317.04	2158.52	9966.05	4990.43		0.03	-0.02	0.057
15.00	-32.74	-2.14	0.00	-231.89	0.00	231.89	4263.35	2131.68	9628.61	4821.46		0.06	-0.04	0.056
20.00	-31.55	-2.10	0.00	-221.19	0.00	221.19	4207.92	2103.96	9292.72	4653.26		0.10	-0.05	0.055
25.00	-30.38	-2.07	0.00	-210.67	0.00	210.67	4150.77	2075.38	8958.64	4485.98		0.16	-0.06	0.054
30.00	-29.23	-2.03	0.00	-200.34	0.00	200.34	4091.88	2045.94	8626.63	4319.73		0.24	-0.08	0.054
35.00	-28.11	-1.99	0.00	-190.18	0.00	190.18	4031.25	2015.63	8296.96	4154.65		0.33	-0.09	0.053
40.00	-27.01	-1.96	0.00	-180.21	0.00	180.21	3968.90	1984.45	7969.88	3990.86		0.43	-0.10	0.052
45.00	-25.93	-1.92	0.00	-170.43	0.00	170.43	3904.81	1952.40	7645.65	3828.51		0.55	-0.12	0.051
47.25	-25.45	-1.90	0.00	-166.12	0.00	166.12	3875.40	1937.70	7500.75	3755.95		0.60	-0.13	0.051
50.00	-24.47	-1.86	0.00	-160.89	0.00	160.89	3838.99	1919.49	7324.54	3667.71		0.68	-0.13	0.050
53.25	-23.33	-1.81	0.00	-154.84	0.00	154.84	2982.57	1491.28	5685.98	2847.22		0.77	-0.14	0.062
55.00	-23.02	-1.81	0.00	-151.66	0.00	151.66	2966.84	1483.42	5604.01	2806.17		0.83	-0.15	0.062
60.00	-22.13	-1.78	0.00	-142.63	0.00	142.63	2920.75	1460.37	5370.68	2689.33		0.99	-0.17	0.061
64.00	-21.39	-1.76	0.00	-135.50	0.00	135.50	2882.62	1441.31	5185.10	2596.40		1.14	-0.18	0.060
65.00	-21.22	-1.76	0.00	-133.73	0.00	133.73	2872.92	1436.46	5138.87	2573.25		1.17	-0.18	0.059
65.50	-21.09	-1.76	0.00	-132.85	0.00	132.85	2868.04	1434.02	5115.78	2561.69		1.19	-0.19	0.059
70.00	-20.32	-1.75	0.00	-124.94	0.00	124.94	2823.36	1411.68	4908.84	2458.07		1.38	-0.20	0.058
75.00	-19.49	-1.75	0.00	-116.19	0.00	116.19	2772.06	1386.03	4680.84	2343.90		1.60	-0.22	0.057
80.00	-18.67	-1.75	0.00	-107.45	0.00	107.45	2719.04	1359.52	4455.15	2230.89		1.84	-0.24	0.055
85.00	-17.88	-1.75	0.00	-98.69	0.00	98.69	2664.28	1332.14	4232.01	2119.15		2.10	-0.26	0.053
90.00	-17.10	-1.76	0.00	-89.91	0.00	89.91	2607.79	1303.89	4011.70	2008.83		2.38	-0.27	0.051
95.00	-16.34	-1.76	0.00	-81.13	0.00	81.13	2549.57	1274.78	3794.46	1900.05		2.67	-0.29	0.049
96.00	-16.19	-1.76	0.00	-79.38	0.00	79.38	2537.71	1268.86	3751.41	1878.49		2.74	-0.30	0.049
99.00	-13.64	-1.75	0.00	-74.11	0.00	74.11	2501.74	1250.87	3623.07	1814.23		2.93	-0.31	0.046
100.00	-13.42	-1.74	0.00	-72.36	0.00	72.36	2489.61	1244.80	3580.57	1792.94		2.99	-0.31	0.046
100.75	-13.25	-1.75	0.00	-71.05	0.00	71.05	1858.32	929.16	2706.71	1355.36		3.04	-0.32	0.060
105.00	-12.78	-1.75	0.00	-63.63	0.00	63.63	1825.33	912.67	2580.97	1292.40		3.33	-0.33	0.056
110.00	-12.23	-1.75	0.00	-54.90	0.00	54.90	1784.92	892.46	2434.45	1219.03		3.69	-0.35	0.052
115.00	-11.69	-1.75	0.00	-46.15	0.00	46.15	1742.78	871.39	2289.70	1146.55		4.06	-0.37	0.047
120.00	-11.17	-1.74	0.00	-37.41	0.00	37.41	1698.90	849.45	2146.98	1075.09		4.46	-0.39	0.041
121.00	-8.52	-1.65	0.00	-35.67	0.00	35.67	1689.92	844.96	2118.70	1060.93		4.54	-0.39	0.039
125.00	-8.17	-1.64	0.00	-29.05	0.00	29.05	1653.30	826.65	2006.56	1004.77		4.88	-0.41	0.034
128.00	-6.56	-1.51	0.00	-24.14	0.00	24.14	1625.10	812.55	1923.51	963.18		5.14	-0.41	0.029
129.00	-6.47	-1.50	0.00	-22.63	0.00	22.63	1615.56	807.78	1896.04	949.43		5.22	-0.42	0.028
129.00	-6.47	-1.50	0.00	-22.63	0.00	22.63	1091.97	545.98	1287.15	644.53		5.22	-0.42	0.041
130.00	-6.40	-1.50	0.00	-21.13	0.00	21.13	1086.82	543.41	1270.20	636.04		5.31	-0.42	0.039
135.00	-6.07	-1.46	0.00	-13.65	0.00	13.65	1060.04	530.02	1185.82	593.79		5.76	-0.43	0.029
139.00	-3.40	-0.97	0.00	-7.81	0.00	7.81	1037.37	518.68	1118.90	560.28		6.13	-0.44	0.017
140.00	-3.35	-0.96	0.00	-6.84	0.00	6.84	1031.53	515.76	1102.27	551.95		6.22	-0.44	0.016
145.00	-3.10	-0.90	0.00	-2.05	0.00	2.05	1001.28	500.64	1019.81	510.66		6.69	-0.45	0.007
147.00	-0.42	-0.13	0.00	-0.26	0.00	0.26	988.70	494.35	987.19	494.33		6.87	-0.45	0.001
149.00	0.00	-0.13	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11		7.06	-0.45	0.000

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Wind Loading - Shaft

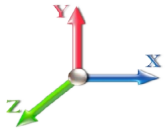
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 34	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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	275.75	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	270.09	0.650	0.000	5.00	24.669	16.03	131.3	0.0	1173.1
10.00		1.00	0.85	7.442	8.19	264.43	0.650	0.000	5.00	24.157	15.70	128.5	0.0	1148.6
15.00		1.00	0.85	7.442	8.19	258.77	0.650	0.000	5.00	23.645	15.37	125.8	0.0	1124.1
20.00		1.00	0.90	7.896	8.69	260.72	0.650	0.000	5.00	23.134	15.04	130.6	0.0	1099.6
25.00		1.00	0.95	8.276	9.10	260.95	0.650	0.000	5.00	22.622	14.70	133.9	0.0	1075.1
30.00		1.00	0.98	8.600	9.46	259.92	0.650	0.000	5.00	22.111	14.37	136.0	0.0	1050.7
35.00		1.00	1.01	8.883	9.77	257.99	0.650	0.000	5.00	21.599	14.04	137.2	0.0	1026.2
40.00		1.00	1.04	9.137	10.05	255.37	0.650	0.000	5.00	21.087	13.71	137.8	0.0	1001.7
45.00		1.00	1.07	9.366	10.30	252.20	0.650	0.000	5.00	20.576	13.37	137.8	0.0	977.2
47.25	Bot - Section 2	1.00	1.08	9.463	10.41	250.63	0.650	0.000	2.25	9.092	5.91	61.5	0.0	431.8
50.00		1.00	1.09	9.576	10.53	248.60	0.650	0.000	2.75	11.117	7.23	76.1	0.0	961.5
53.25	Top - Section 1	1.00	1.11	9.704	10.67	246.05	0.650	0.000	3.25	12.939	8.41	89.8	0.0	1118.8
55.00		1.00	1.12	9.770	10.75	247.97	0.650	0.000	1.75	6.878	4.47	48.0	0.0	272.5
60.00		1.00	1.14	9.951	10.95	243.70	0.650	0.000	5.00	19.305	12.55	137.4	0.0	764.7
64.00	Appurtenance(s)	1.00	1.15	10.087	11.10	240.09	0.650	0.000	4.00	15.076	9.80	108.7	0.0	597.1
65.00		1.00	1.16	10.120	11.13	239.17	0.650	0.000	1.00	3.718	2.42	26.9	0.0	147.2
65.50	Appurtenance(s)	1.00	1.16	10.136	11.15	238.70	0.650	0.000	0.50	1.851	1.20	13.4	0.0	73.3
70.00		1.00	1.17	10.279	11.31	234.39	0.650	0.000	4.50	16.431	10.68	120.8	0.0	650.6
75.00		1.00	1.19	10.430	11.47	229.39	0.650	0.000	5.00	17.770	11.55	132.5	0.0	703.5
80.00		1.00	1.21	10.572	11.63	224.21	0.650	0.000	5.00	17.259	11.22	130.5	0.0	683.1
85.00		1.00	1.22	10.708	11.78	218.86	0.650	0.000	5.00	16.747	10.89	128.2	0.0	662.7
90.00		1.00	1.24	10.838	11.92	213.35	0.650	0.000	5.00	16.236	10.55	125.8	0.0	642.3
95.00		1.00	1.25	10.962	12.06	207.70	0.650	0.000	5.00	15.724	10.22	123.2	0.0	621.9
96.00	Bot - Section 3	1.00	1.25	10.986	12.08	206.55	0.650	0.000	1.00	3.083	2.00	24.2	0.0	121.9
99.00	Appurtenance(s)	1.00	1.26	11.057	12.16	203.08	0.650	0.000	3.00	9.254	6.02	73.2	0.0	654.1
100.00		1.00	1.27	11.081	12.19	201.91	0.650	0.000	1.00	3.044	1.98	24.1	0.0	215.1
100.75	Top - Section 2	1.00	1.27	11.098	12.21	201.04	0.650	0.000	0.75	2.269	1.48	18.0	0.0	160.4
105.00		1.00	1.28	11.195	12.31	198.88	0.650	0.000	4.25	12.643	8.22	101.2	0.0	400.5
110.00		1.00	1.29	11.305	12.44	192.88	0.650	0.000	5.00	14.401	9.36	116.4	0.0	456.1
115.00		1.00	1.30	11.412	12.55	186.78	0.650	0.000	5.00	13.889	9.03	113.3	0.0	439.8
120.00		1.00	1.32	11.514	12.67	180.57	0.650	0.000	5.00	13.377	8.70	110.1	0.0	423.5
121.00	Appurtenance(s)	1.00	1.32	11.534	12.69	179.32	0.650	0.000	1.00	2.614	1.70	21.6	0.0	82.7
125.00		1.00	1.33	11.614	12.78	174.28	0.650	0.000	4.00	10.252	6.66	85.1	0.0	324.4
128.00	Appurtenance(s)	1.00	1.33	11.672	12.84	170.46	0.650	0.000	3.00	7.474	4.86	62.4	0.0	236.5
129.00	Top - Section 3	1.00	1.34	11.691	12.86	169.18	0.650	0.000	1.00	2.450	1.59	20.5	0.0	77.5
130.00		1.00	1.34	11.710	12.88	167.90	0.650	0.000	1.00	2.430	1.58	20.3	0.0	57.8
135.00		1.00	1.35	11.803	12.98	161.44	0.650	0.000	5.00	11.843	7.70	99.9	0.0	281.5
139.00	Appurtenance(s)	1.00	1.36	11.876	13.06	156.22	0.650	0.000	4.00	9.106	5.92	77.3	0.0	216.4
140.00		1.00	1.36	11.894	13.08	154.90	0.650	0.000	1.00	2.225	1.45	18.9	0.0	52.9
145.00		1.00	1.37	11.982	13.18	148.30	0.650	0.000	5.00	10.819	7.03	92.7	0.0	257.0
147.00	Appurtenance(s)	1.00	1.37	12.017	13.22	145.63	0.650	0.000	2.00	4.184	2.72	36.0	0.0	99.4
149.00	Appurtenance(s)	1.00	1.38	12.051	13.26	142.96	0.650	0.000	2.00	4.103	2.67	35.4	0.0	97.4
								Totals:	**149.00**			**3,672.3**		**22,662.1**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

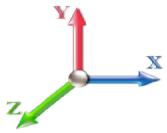
Discrete Appurtenance Forces

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (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	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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	149.00	Decibel DB404-B	1	12.093	13.303	1.00	1.00	1.03	14.00	0.000	2.500	13.70	0.00	34.25
2	149.00	Pipe Mount	1	12.051	13.256	1.00	1.00	5.00	350.00	0.000	0.000	66.28	0.00	0.00
3	147.00	800MHz RRH w/ filter	3	12.017	13.219	0.90	0.90	9.34	204.90	0.000	0.000	123.49	0.00	0.00
4	147.00	RFS APXVTM14-C-120	3	12.017	13.219	0.71	0.90	13.52	168.00	0.000	0.000	178.76	0.00	0.00
5	147.00	ALU TD-RRH8x20-25	3	12.017	13.219	0.62	0.90	7.55	210.00	0.000	0.000	99.74	0.00	0.00
6	147.00	ALU 1900MHz RRH	3	12.017	13.219	0.79	0.90	9.03	132.00	0.000	0.000	119.35	0.00	0.00
7	147.00	ALU 800MHz RRH	3	12.017	13.219	0.78	0.90	6.20	178.50	0.000	0.000	81.97	0.00	0.00
8	147.00	RFS APXVSPP18-C-A20	3	12.017	13.219	0.75	0.90	17.97	171.00	0.000	0.000	237.58	0.00	0.00
9	147.00	Argus LLPX310R	3	12.017	13.219	0.62	0.90	8.01	85.80	0.000	0.000	105.89	0.00	0.00
10	147.00	Andrew VHLP2-11	1	12.017	13.219	0.90	0.90	4.21	27.00	0.000	0.000	55.68	0.00	0.00
11	147.00	Andrew VHLP800-11-DW1	1	12.017	13.219	0.90	0.90	6.03	49.00	0.000	0.000	79.71	0.00	0.00
12	147.00	U-RAS Flexible RRH	3	12.017	13.219	0.78	1.00	5.22	152.10	0.000	0.000	68.98	0.00	0.00
13	147.00	12.5' Low Profile Platform	1	12.017	13.219	1.00	1.00	22.00	1500.00	0.000	0.000	290.81	0.00	0.00
14	147.00	RFS ACU-A20-N	4	12.017	13.219	0.71	0.90	0.40	4.00	0.000	0.000	5.26	0.00	0.00
15	139.00	Powerawve LGP21901	6	11.876	13.064	0.60	0.80	0.83	33.00	0.000	0.000	10.82	0.00	0.00
16	139.00	DMP65R-BU6DA	3	11.876	13.064	0.58	0.80	22.27	238.20	0.000	0.000	290.90	0.00	0.00
17	139.00	4415 B30	3	11.876	13.064	0.54	0.80	2.64	138.00	0.000	0.000	34.45	0.00	0.00
18	139.00	Ericsson RRUS-32 B2s	3	11.876	13.064	0.54	0.80	4.41	180.00	0.000	0.000	57.56	0.00	0.00
19	139.00	Powerwave 7020.00 RET	12	11.876	13.064	0.54	0.80	2.57	26.40	0.000	0.000	33.61	0.00	0.00
20	139.00	Raycap DC6-48-60-18-8F	2	11.876	13.064	0.80	0.80	2.35	65.60	0.000	0.000	30.73	0.00	0.00
21	139.00	4449 B5/B12	3	11.876	13.064	0.54	0.80	3.17	213.00	0.000	0.000	41.38	0.00	0.00
22	139.00	7770	3	11.876	13.064	0.58	0.80	9.64	105.00	0.000	0.000	125.88	0.00	0.00
23	139.00	HPA-65R-BUU-H6	3	11.876	13.064	0.68	0.80	19.71	153.00	0.000	0.000	257.44	0.00	0.00
24	139.00	Commscope	3	11.876	13.064	0.78	0.80	0.12	4.80	0.000	0.000	1.54	0.00	0.00
25	139.00	Powerwave LGP13519	6	11.876	13.064	0.80	0.80	1.63	31.80	0.000	0.000	21.32	0.00	0.00
26	139.00	Low Profile Platform	1	11.876	13.064	1.00	1.00	22.00	1500.00	0.000	0.000	287.40	0.00	0.00
27	128.00	Low Profile Platform	1	11.672	12.839	1.00	1.00	22.00	1500.00	0.000	0.000	282.46	0.00	0.00
28	121.00	Ericsson AIR21 B4A/B12P	3	11.534	12.688	0.71	0.80	24.65	369.00	0.000	0.000	312.75	0.00	0.00
29	121.00	Ericsson Air 21 B2A/B4P	3	11.534	12.688	0.69	0.80	12.57	274.50	0.000	0.000	159.48	0.00	0.00
30	121.00	Commscope LNX-6515DS	3	11.534	12.688	0.64	0.80	22.02	149.40	0.000	0.000	279.42	0.00	0.00
31	121.00	Ericsson S11B12	3	11.534	12.688	0.56	0.80	4.75	153.00	0.000	0.000	60.32	0.00	0.00
32	121.00	Ericsson KRY 112 144/1	3	11.534	12.688	0.56	0.80	0.69	33.00	0.000	0.000	8.74	0.00	0.00
33	121.00	Low Profile Platform	1	11.534	12.688	1.00	1.00	22.00	1500.00	0.000	0.000	279.13	0.00	0.00
34	121.00	SitePro PRK1245	1	11.534	12.688	1.00	1.00	5.00	350.00	0.000	0.000	63.44	0.00	0.00
35	99.00	RFS APL866513-42T0	4	11.057	12.163	0.74	0.80	12.05	62.80	0.000	0.000	146.60	0.00	0.00
36	99.00	BXA-171063-12BF	1	11.057	12.163	0.67	0.80	3.19	15.00	0.000	0.000	38.74	0.00	0.00
37	99.00	Antel BXA-70063-6CF	1	11.057	12.163	0.58	0.80	4.42	17.00	0.000	0.000	53.77	0.00	0.00
38	99.00	Antel LPA-80063-6CF	2	11.057	12.163	0.74	0.80	14.52	54.00	0.000	0.000	176.64	0.00	0.00
39	99.00	Antel BXA-171063-8BF	2	11.057	12.163	0.67	0.80	3.95	21.00	0.000	0.000	48.06	0.00	0.00
40	99.00	Antel BXA-70063-4CF	1	11.057	12.163	0.58	0.80	2.76	9.90	0.000	0.000	33.53	0.00	0.00
41	99.00	RFS FD9R6004/2C-3L	6	11.057	12.163	0.80	0.80	1.73	18.60	0.000	0.000	21.02	0.00	0.00
42	99.00	Swedcom SLCP 2x6014F	1	11.057	12.163	0.71	0.80	4.62	20.00	0.000	0.000	56.20	0.00	0.00
43	99.00	Kathrein	3	11.057	12.163	0.62	0.80	19.51	171.90	0.000	0.000	237.36	0.00	0.00
44	99.00	ALU RRH2x40-AWS	3	11.057	12.163	0.66	0.80	4.96	132.00	0.000	0.000	60.32	0.00	0.00
45	99.00	RFS DB-T1-6Z-8AB-0Z	1	11.057	12.163	0.57	0.80	2.73	18.90	0.000	0.000	33.16	0.00	0.00
46	99.00	12.5' Low Profile Platform	1	11.057	12.163	0.80	0.80	17.60	1500.00	0.000	0.000	214.07	0.00	0.00
47	65.50	Decibel 26OB	1	10.136	11.150	0.80	0.80	1.60	50.00	0.000	0.000	17.84	0.00	0.00

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Discrete Appurtenance Forces

Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 36

48	64.00	3 ft Standoff	1	10.087	11.096	1.00	1.00	2.63	40.00	0.000	0.000	29.18	0.00	0.00
							Totals:		**12,395.10**			**5,332.47**		

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Total Applied Force Summary

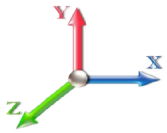
Structure:	CT13056-A-SBA		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 37

IES Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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		131.26	1396.33	0.00	0.00
10.00		128.54	1371.85	0.00	0.00
15.00		125.82	1347.36	0.00	0.00
20.00		130.61	1322.87	0.00	0.00
25.00		133.86	1298.39	0.00	0.00
30.00		135.96	1273.90	0.00	0.00
35.00		137.19	1249.41	0.00	0.00
40.00		137.76	1224.92	0.00	0.00
45.00		137.79	1200.44	0.00	0.00
47.25		61.52	532.21	0.00	0.00
50.00		76.12	1084.26	0.00	0.00
53.25		89.78	1263.89	0.00	0.00
55.00		48.05	350.61	0.00	0.00
60.00		137.36	987.96	0.00	0.00
64.00	(1) attachments	137.91	815.67	0.00	0.00
65.00		26.90	191.72	0.00	0.00
65.50	(1) attachments	31.26	145.55	0.00	0.00
70.00		120.76	850.79	0.00	0.00
75.00		132.52	925.94	0.00	0.00
80.00		130.46	905.53	0.00	0.00
85.00		128.22	885.13	0.00	0.00
90.00		125.81	864.72	0.00	0.00
95.00		123.24	844.32	0.00	0.00
96.00		24.22	166.41	0.00	0.00
99.00	(26) attachments	1192.64	2828.71	0.00	0.00
100.00		24.12	246.02	0.00	0.00
100.75		18.01	183.55	0.00	0.00
105.00		101.20	531.90	0.00	0.00
110.00		116.41	610.66	0.00	0.00
115.00		113.33	594.34	0.00	0.00
120.00		110.13	578.01	0.00	0.00
121.00	(17) attachments	1184.85	2942.54	0.00	0.00
125.00		85.13	393.72	0.00	0.00
128.00	(1) attachments	344.83	1788.44	0.00	0.00
129.00		20.48	94.84	0.00	0.00
130.00		20.34	75.10	0.00	0.00
135.00		99.94	368.15	0.00	0.00
139.00	(48) attachments	1270.35	2974.50	0.00	0.00
140.00		18.92	56.83	0.00	0.00
145.00		92.69	276.82	0.00	0.00
147.00	(31) attachments	1483.16	2989.60	0.00	0.00
149.00	(2) attachments	115.33	462.46	0.00	34.25
	Totals:	**9,004.78**	**40,496.34**	**0.00**	**34.25**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Linear Appurtenance Segment Forces (Factored)

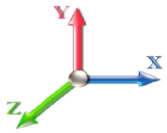
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 38	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	13.20
5.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	62.40
5.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	0.80
10.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	13.20
10.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	62.40
10.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	0.80
15.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	13.20
15.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	62.40
15.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	0.80
20.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	13.20
20.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	62.40
20.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	0.80
25.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	13.20
25.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	62.40
25.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	0.80
30.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	13.20
30.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	62.40
30.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	0.80
35.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	13.20
35.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	62.40
35.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	0.80
40.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	13.20
40.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	62.40
40.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	0.80
45.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	13.20
45.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	62.40
45.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	0.80
47.25	1 1/4" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	9.463	0.00	5.94
47.25	1 5/8" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	9.463	0.00	28.08
47.25	1/2" Coax	Yes	2.25	0.000	0.00	0.00	0.00	0.000	0.000	9.463	0.00	0.36
50.00	1 1/4" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	7.26
50.00	1 5/8" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	34.32
50.00	1/2" Coax	Yes	2.75	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	0.44
53.25	1 1/4" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	9.704	0.00	8.58
53.25	1 5/8" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	9.704	0.00	40.56
53.25	1/2" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	9.704	0.00	0.52
55.00	1 1/4" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	4.62
55.00	1 5/8" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	21.84
55.00	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	0.28
60.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	13.20
60.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	62.40
60.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	0.80
64.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	10.087	0.00	10.56
64.00	1 5/8" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	10.087	0.00	49.92
64.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	10.087	0.00	0.64
65.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	2.64
65.00	1 5/8" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	12.48

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Linear Appurtenance Segment Forces (Factored)

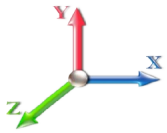
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 39	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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)
65.50	1 1/4" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	10.136	0.00	1.32
65.50	1 5/8" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	10.136	0.00	6.24
70.00	1 1/4" Coax	Yes	4.50	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	11.88
70.00	1 5/8" Coax	Yes	4.50	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	56.16
75.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	13.20
75.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	62.40
80.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	13.20
80.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	62.40
85.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	13.20
85.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	62.40
90.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	13.20
90.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	62.40
95.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	13.20
95.00	1 5/8" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	62.40
96.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.986	0.00	2.64
96.00	1 5/8" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.986	0.00	12.48
99.00	1 1/4" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.057	0.00	7.92
99.00	1 5/8" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.057	0.00	37.44
100.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	2.64
100.75	1 1/4" Coax	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	11.098	0.00	1.98
105.00	1 1/4" Coax	Yes	4.25	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	11.22
110.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	13.20
115.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	13.20
120.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	13.20
121.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	11.534	0.00	2.64
125.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	10.56
128.00	1 1/4" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.672	0.00	7.92
129.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	11.691	0.00	2.64
130.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	2.64
135.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	13.20
139.00	1 1/4" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	11.876	0.00	10.56
140.00	1 1/4" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	11.894	0.00	2.64
145.00	1 1/4" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.982	0.00	13.20
147.00	1 1/4" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.017	0.00	5.28
									Totals:		**0.0**	**1,633.8**

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Calculated Forces

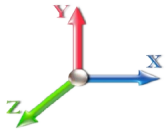
Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 40	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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	-40.49	-9.02	0.00	-977.39	0.00	977.39	4419.23	2209.62	10644.5	5330.19	0.00	0.000	0.000	0.193
5.00	-39.09	-8.92	0.00	-932.29	0.00	932.29	4369.00	2184.50	10304.7	5160.05	0.02	-0.045	0.000	0.190
10.00	-37.71	-8.82	0.00	-887.70	0.00	887.70	4317.04	2158.52	9966.05	4990.43	0.10	-0.091	0.000	0.187
15.00	-36.36	-8.72	0.00	-843.61	0.00	843.61	4263.35	2131.68	9628.61	4821.46	0.22	-0.137	0.000	0.184
20.00	-35.03	-8.61	0.00	-800.01	0.00	800.01	4207.92	2103.96	9292.72	4653.26	0.39	-0.184	0.000	0.180
25.00	-33.72	-8.50	0.00	-756.93	0.00	756.93	4150.77	2075.38	8958.64	4485.98	0.60	-0.232	0.000	0.177
30.00	-32.44	-8.39	0.00	-714.41	0.00	714.41	4091.88	2045.94	8626.63	4319.73	0.87	-0.280	0.000	0.173
35.00	-31.19	-8.27	0.00	-672.46	0.00	672.46	4031.25	2015.63	8296.96	4154.65	1.19	-0.328	0.000	0.170
40.00	-29.95	-8.15	0.00	-631.10	0.00	631.10	3968.90	1984.45	7969.88	3990.86	1.56	-0.377	0.000	0.166
45.00	-28.75	-8.03	0.00	-590.33	0.00	590.33	3904.81	1952.40	7645.65	3828.51	1.98	-0.427	0.000	0.162
47.25	-28.21	-7.97	0.00	-572.28	0.00	572.28	3875.40	1937.70	7500.75	3755.95	2.19	-0.450	0.000	0.160
50.00	-27.13	-7.90	0.00	-550.35	0.00	550.35	3838.99	1919.49	7324.54	3667.71	2.46	-0.478	0.000	0.157
53.25	-25.86	-7.81	0.00	-524.67	0.00	524.67	2982.57	1491.28	5685.98	2847.22	2.80	-0.511	0.000	0.193
55.00	-25.51	-7.78	0.00	-511.00	0.00	511.00	2966.84	1483.42	5604.01	2806.17	2.99	-0.529	0.000	0.191
60.00	-24.51	-7.65	0.00	-472.11	0.00	472.11	2920.75	1460.37	5370.68	2689.33	3.57	-0.586	0.000	0.184
64.00	-23.69	-7.52	0.00	-441.50	0.00	441.50	2882.62	1441.31	5185.10	2596.40	4.08	-0.633	0.000	0.178
65.00	-23.50	-7.49	0.00	-433.98	0.00	433.98	2872.92	1436.46	5138.87	2573.25	4.22	-0.645	0.000	0.177
65.50	-23.35	-7.47	0.00	-430.23	0.00	430.23	2868.04	1434.02	5115.78	2561.69	4.28	-0.651	0.000	0.176
70.00	-22.50	-7.36	0.00	-396.61	0.00	396.61	2823.36	1411.68	4908.84	2458.07	4.92	-0.702	0.000	0.169
75.00	-21.56	-7.24	0.00	-359.79	0.00	359.79	2772.06	1386.03	4680.84	2343.90	5.69	-0.759	0.000	0.161
80.00	-20.65	-7.12	0.00	-323.59	0.00	323.59	2719.04	1359.52	4455.15	2230.89	6.51	-0.815	0.000	0.153
85.00	-19.76	-6.99	0.00	-288.01	0.00	288.01	2664.28	1332.14	4232.01	2119.15	7.40	-0.870	0.000	0.143
90.00	-18.90	-6.87	0.00	-253.04	0.00	253.04	2607.79	1303.89	4011.70	2008.83	8.34	-0.923	0.000	0.133
95.00	-18.05	-6.74	0.00	-218.68	0.00	218.68	2549.57	1274.78	3794.46	1900.05	9.33	-0.974	0.000	0.122
96.00	-17.88	-6.72	0.00	-211.93	0.00	211.93	2537.71	1268.86	3751.41	1878.49	9.54	-0.984	0.000	0.120
99.00	-15.07	-5.49	0.00	-191.76	0.00	191.76	2501.74	1250.87	3623.07	1814.23	10.17	-1.014	0.000	0.112
100.00	-14.83	-5.46	0.00	-186.27	0.00	186.27	2489.61	1244.80	3580.57	1792.94	10.38	-1.023	0.000	0.110
100.75	-14.64	-5.45	0.00	-182.18	0.00	182.18	1858.32	929.16	2706.71	1355.36	10.54	-1.031	0.000	0.142
105.00	-14.11	-5.35	0.00	-159.04	0.00	159.04	1825.33	912.67	2580.97	1292.40	11.48	-1.070	0.000	0.131
110.00	-13.49	-5.23	0.00	-132.31	0.00	132.31	1784.92	892.46	2434.45	1219.03	12.62	-1.120	0.000	0.116
115.00	-12.90	-5.11	0.00	-106.16	0.00	106.16	1742.78	871.39	2289.70	1146.55	13.82	-1.167	0.000	0.100
120.00	-12.32	-5.00	0.00	-80.59	0.00	80.59	1698.90	849.45	2146.98	1075.09	15.07	-1.207	0.000	0.082
121.00	-9.40	-3.75	0.00	-75.59	0.00	75.59	1689.92	844.96	2118.70	1060.93	15.32	-1.215	0.000	0.077
125.00	-9.01	-3.66	0.00	-60.58	0.00	60.58	1653.30	826.65	2006.56	1004.77	16.35	-1.242	0.000	0.066
128.00	-7.23	-3.28	0.00	-49.59	0.00	49.59	1625.10	812.55	1923.51	963.18	17.14	-1.260	0.000	0.056
129.00	-7.13	-3.26	0.00	-46.31	0.00	46.31	1615.56	807.78	1896.04	949.43	17.40	-1.266	0.000	0.053
129.00	-7.13	-3.26	0.00	-46.31	0.00	46.31	1091.97	545.98	1287.15	644.53	17.40	-1.266	0.000	0.078
130.00	-7.06	-3.24	0.00	-43.05	0.00	43.05	1086.82	543.41	1270.20	636.04	17.67	-1.271	0.000	0.074
135.00	-6.69	-3.13	0.00	-26.86	0.00	26.86	1060.04	530.02	1185.82	593.79	19.02	-1.300	0.000	0.052
139.00	-3.75	-1.80	0.00	-14.32	0.00	14.32	1037.37	518.68	1118.90	560.28	20.11	-1.316	0.000	0.029
140.00	-3.69	-1.78	0.00	-12.53	0.00	12.53	1031.53	515.76	1102.27	551.95	20.39	-1.318	0.000	0.026
145.00	-3.41	-1.68	0.00	-3.64	0.00	3.64	1001.28	500.64	1019.81	510.66	21.78	-1.327	0.000	0.011
147.00	-0.46	-0.13	0.00	-0.29	0.00	0.29	988.70	494.35	987.19	494.33	22.33	-1.328	0.000	0.001
149.00	0.00	-0.12	0.00	-0.03	0.00	0.03	975.84	487.92	954.81	478.11	22.89	-1.328	0.000	0.000

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Final Analysis Summary

Structure:	CT13056-A-SBA	**Code:**	EIA/TIA-222-G	9/17/2019	
Site Name:	Moosehill	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 41	

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 97 mph Wind	37.7	0.00	48.53	0.00	0.00	4109.01
0.9D + 1.6W 97 mph Wind	37.7	0.00	36.38	0.00	0.00	4069.41
1.2D + 1.0Di + 1.0Wi 50 mph Wind	10.5	0.00	80.79	0.00	0.00	1132.79
1.2D + 1.0E	2.2	0.00	48.60	0.00	0.00	267.67
0.9D + 1.0E	2.2	0.00	36.45	0.00	0.00	264.84
1.0D + 1.0W 60 mph Wind	9.0	0.00	40.49	0.00	0.00	977.39

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 97 mph Wind	-29.88	-32.86	0.00	-2209.5	0.00	-2209.5	2982.57	1491.2	5685.98	2847.22	53.25	0.787
0.9D + 1.6W 97 mph Wind	-22.12	-32.55	0.00	-2179.5	0.00	-2179.5	2982.57	1491.2	5685.98	2847.22	53.25	0.773
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-55.55	-9.10	0.00	-604.59	0.00	-604.59	2982.57	1491.2	5685.98	2847.22	53.25	0.231
1.2D + 1.0E	-31.11	-1.84	0.00	-157.04	0.00	-157.04	2982.57	1491.2	5685.98	2847.22	53.25	0.066
0.9D + 1.0E	-23.33	-1.81	0.00	-154.84	0.00	-154.84	2982.57	1491.2	5685.98	2847.22	53.25	0.062
1.0D + 1.0W 60 mph Wind	-25.86	-7.81	0.00	-524.67	0.00	-524.67	2982.57	1491.2	5685.98	2847.22	53.25	0.193

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Base Plate Summary

Structure:	CT13056-A-SB		**Code:**	EIA/TIA-222-G	9/17/2019
Site Name:	Moosehill		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 42

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	4184.00
Axial (kip):	45.00
Shear (kip):	39.00
Analysis	
Moment (kip-ft):	4109.01
Axial (kip):	80.79
Shear (kip):	37.74
Moment Design %:	98.21

Base Plate	
Yield (ksi):	60.00
Width (in):	64.00
Style:	Clipped
Polygon Sides:	4.00
Clip Length (in):	8.00
Effective Len (in):	8.64
Moment (kip-in):	680.01
Allow Stress (ksi):	81.00
Applied Stress (ksi):	0.00
Stress Ratio:	0.65

Anchor Bolts	
Bolt Circle:	66.00
Number Bolts:	16.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	6.00
Start Angle (deg):	45.00
Compression	
Force (kip):	191.82
Allowable (kip):	260.00
Ratio:	0.76
Tension	
Force (kip):	181.72
Allowable (kip):	260.00
Ratio:	0.72

Copyright © 2019 by Tower Engineering Solutions, LLC. All rights reserved.

Monopole Mat Foundation Design

				Date
				9/17/2019
	Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
	Site Name:		**Structure Height (Ft.):**	149
	Site Number:	CT13056-A-SBA	**Engineer Name:**	T. Alajaj
	Engr. Number:	85602	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

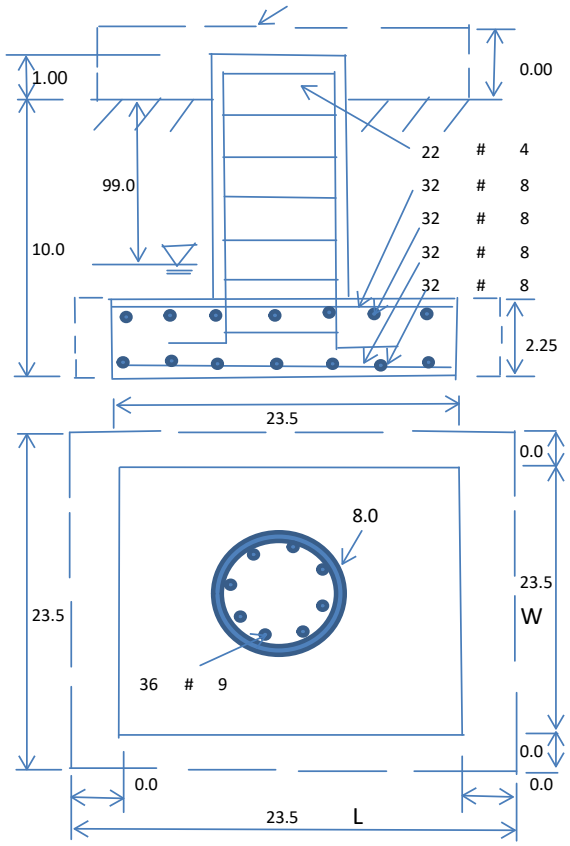
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	80.8	Shear Force (Kips):	37.7
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4109.0
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	10.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.25
Length of Pad (ft.):	23.5	Width of Pad (ft.):	23.5
Final Length of pad (ft)	23.5	Final width of pad (ft):	23.5



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	6.0	
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):	32	Qty. of Rebar in Pad (W):	32	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	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:	30
Ultimate Bearing Pressure (psf):	8000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
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.):	3890.38	Total Dry Soil Weight (Kips):	389.04
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	389.04	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1682.39	Total Dry Concrete Weight (Kips):	252.36
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	252.36	Total Vertical Load on Base (Kips):	722.20

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	3793	<	Allowable Factored Soil Bearing (psf):	6000	0.63	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	7732.2	>	Design Factored Momont (kips-ft):	4524	0.59	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.71	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):	1.00		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	7016.1	>	Design Factored Moment (Mu, Kips-F	4438.9	0.63	OK!
Calculated Shear Capacity (Kips):	993.9	>	Design Factored Shear (Kips):	37.7	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1944.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	12733.5	>	Design Factored Axial Load (Pu Kips):	80.8	0.01	OK!
Moment & Axial Strength Combination:	0.63	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.005		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	628.7	>	One-Way Factored Shear (L-D. Kips):	293.9	0.47	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	628.7	>	One-Way Factored Shear (W-D., Kips)	293.9	0.47	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	570.3	>	One-Way Factored Shear (C-C, Kips):	281.9	0.49	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0038	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0038		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2583.4	>	Moment at Bottom (L-Dir. K-Ft):	1356.3	0.53	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2583.4	>	Moment at Bottom (W-Dir. K-Ft):	1356.3	0.53	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	3613.1	>	Moment at Bottom (C-C Dir. K-Ft):	1918.2	0.53	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0038	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0038		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2583.4	>	Moment at the top (L-Dir K-Ft):	551.2	0.21	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2583.4	>	Moment at the top (W-Dir K-Ft):	551.2	0.21	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3613.1	>	Moment at the top (C-C Dir. K-Ft):	522.9	0.14	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1643.6	k-ft.	Max. factored shear stress v_{u_CD}:		0.1	Psi
Max. factored shear stress v_{u_AB}:	15.2	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	15.2	Psi	Check Usage of Punching Shear Capacity:		0.08	OK!

August 21, 2019

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT2203 (LTE 3C/4C)
	FA Number:	10035397
	PACE Number:	MRCTB040406
	PT Number:	2051A0PR29
	Site Name:	MONROE CENTER
	Site Address:	500 Moose Hill Road Monroe, CT 06468

To Whom It May Concern:

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

- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (3) HPA-65R-BUU-H6 Antennas (72.0"x14.8"x7.4" – Wt. = 51 lbs. /each)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)
- **(3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (14.9"x13.2"x10.4" – Wt. = 73 lbs. /each)**
- **(3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on May 28, 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 120 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 1.15 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 1.
- 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 ring mounts. The connection is considered OK by visual inspection.

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

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 3C/4C) Mount Rating	91	LC4	73%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

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: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	139 (ft)
	z_g=	1200 (ft)
K_z= **1.086**	α=	7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

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

K_{zt}= **#DIV/0!**

K_h=	#DIV/0!	
K_c=		(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
z=	139	
z_s=	620	(Mean elevation of base of structure above sea level)
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.98	(from 2.6.8)

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

Category= **1**

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	**1.00** in
Importance Factor =	I=	**1.0** (from Table 2-3)
	K_{iz} =	**1.15** (from Sec. 2.6.10)

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

t_{iz} = **1.15** in

Date: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	152	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=	1.086	(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=	37.18	K_e=	0.98	(from 2.6.8)
$q_{z\,(ice)}$=	6.45	K_d=	0.95	(from Table 2-2)
$q_{z\,(30)}$=	2.32	V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

Date: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

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

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

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

Ice Thickness = 1.15 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	205	45	13
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	4.86	1.31	359	74	22
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	473	94	30
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	62	16	4
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	7.77	1.43	35	11	2
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.43	1.20	48	12	3
4449 B5/B12 RRH (Shielded)	14.9	5.2	13.2	0.54	2.87	1.22	24	7	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	2.80	1.21	30	8	2
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	5.59	1.34	17	6	1
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	13	5	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	42	10	3

Date: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)

Ice Thickness =	1.15	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	205	109	181
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	359	205	321
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	473	209	407
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	62	102	72
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	35	102	52
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	48	61	51
4449 B5/B12 RRH (Shielded)	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	24	61	33
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	30	69	40
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	17	69	30
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	13	40	20

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.30	2.91	4.31	7.84	1.28	1.43	44	27	40
HPA-65R-BUU-H6 Antenna	74.3	17.1	9.7	8.83	5.01	4.34	7.65	1.28	1.42	73	46	66
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.75	5.11	3.19	7.34	1.23	1.41	93	47	82
RRUS-32 B2 RRH (Side)	29.5	9.3	14.4	1.91	2.95	3.17	2.05	1.23	1.20	15	23	17
RRUS-32 B2 RRH (Shielded)	29.5	4.7	14.4	0.95	2.95	6.34	2.05	1.37	1.20	8	23	12
4449 B5/B12 RRH (Side)	17.2	12.7	15.5	1.52	1.85	1.35	1.11	1.20	1.20	12	14	12
4449 B5/B12 RRH (Shielded)	17.2	6.4	15.5	0.76	1.85	2.71	1.11	1.21	1.20	6	14	8
4415 B30 RRH (Side)	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	8	16	10
4415 B30 RRH (Shielded)	18.8	4.1	15.7	0.54	2.05	4.58	1.20	1.29	1.20	4	16	7
LGP21401 TMA	16.7	5.0	11.3	0.58	1.31	3.34	1.48	1.24	1.20	5	10	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	11
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	13	20
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	25
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	5
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	2	4	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	2
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	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: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg) | Ice Thickness = 1.15 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	205	109	133
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	359	205	244
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	473	209	275
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	62	102	92
RRUS-32 B2 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	49	102	89
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	48	61	58
4449 B5/B12 RRH (Shielded)	14.9	7.8	13.2	0.81	1.37	1.91	1.13	1.20	1.20	36	61	55
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	30	69	59
4415 B30 RRH (Shielded)	16.5	4.4	13.4	0.51	1.54	3.73	1.23	1.25	1.20	24	69	57
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	13	40	33

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.30	2.91	4.31	7.84	1.28	1.43	44	27	31
HPA-65R-BUU-H6 Antenna	74.3	17.1	9.7	8.83	5.01	4.34	7.65	1.28	1.42	73	46	53
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.75	5.11	3.19	7.34	1.23	1.41	93	47	58
RRUS-32 B2 RRH (Side)	29.5	9.3	14.4	1.91	2.95	3.17	2.05	1.23	1.20	15	23	21
RRUS-32 B2 RRH (Shielded)	29.5	7.0	14.4	1.43	2.95	4.23	2.05	1.28	1.20	12	23	20
4449 B5/B12 RRH (Side)	17.2	12.7	15.5	1.52	1.85	1.35	1.11	1.20	1.20	12	14	14
4449 B5/B12 RRH (Shielded)	17.2	9.5	15.5	1.14	1.85	1.81	1.11	1.20	1.20	9	14	13
4415 B30 RRH (Side)	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	8	16	14
4415 B30 RRH (Shielded)	18.8	6.2	15.7	0.80	2.05	3.05	1.20	1.22	1.20	6	16	14
LGP21401 TMA	16.7	5.0	11.3	0.58	1.31	3.34	1.48	1.24	1.20	5	10	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	8
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	13	15
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	17
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B2 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	6	6
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	14.9	7.8	13.2	0.81	1.37	1.91	1.13	1.20	1.20	2	4	3
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B30 RRH (Shielded)	16.5	4.4	13.4	0.51	1.54	3.73	1.23	1.25	1.20	1	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2

Date: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.15	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	205	109	109
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	359	205	205
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	473	209	209
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	62	102	102
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	35	102	102
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	48	61	61
4449 B5/B12 RRH (Shielded)	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	24	61	61
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	30	69	69
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	17	69	69
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	13	40	40

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.30	2.91	4.31	7.84	1.28	1.43	44	27	27
HPA-65R-BUU-H6 Antenna	74.3	17.1	9.7	8.83	5.01	4.34	7.65	1.28	1.42	73	46	46
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.75	5.11	3.19	7.34	1.23	1.41	93	47	47
RRUS-32 B2 RRH (Side)	29.5	9.3	14.4	1.91	2.95	3.17	2.05	1.23	1.20	15	23	23
RRUS-32 B2 RRH (Shielded)	29.5	5.8	14.4	1.19	2.95	5.08	2.05	1.31	1.20	10	23	23
4449 B5/B12 RRH (Side)	17.2	12.7	15.5	1.52	1.85	1.35	1.11	1.20	1.20	12	14	14
4449 B5/B12 RRH (Shielded)	17.2	7.5	15.5	0.90	1.85	2.29	1.11	1.20	1.20	7	14	14
4415 B30 RRH (Side)	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	8	16	16
4415 B30 RRH (Shielded)	18.8	5.3	15.7	0.69	2.05	3.58	1.20	1.25	1.20	6	16	16
LGP21401 TMA	16.7	5.0	11.3	0.58	1.31	3.34	1.48	1.24	1.20	5	10	10

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-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	13	13
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	13
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	6
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	2	4	4
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	3

Date: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.15	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	205	109	133
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	359	205	244
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	473	209	275
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	62	102	92
RRUS-32 B2 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	49	102	89
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	48	61	58
4449 B5/B12 RRH (Shielded)	14.9	7.8	13.2	0.81	1.37	1.91	1.13	1.20	1.20	36	61	55
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	30	69	59
4415 B30 RRH (Shielded)	16.5	4.4	13.4	0.51	1.54	3.73	1.23	1.25	1.20	24	69	57
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	13	40	33

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.30	2.91	4.31	7.84	1.28	1.43	44	27	31
HPA-65R-BUU-H6 Antenna	74.3	17.1	9.7	8.83	5.01	4.34	7.65	1.28	1.42	73	46	53
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.75	5.11	3.19	7.34	1.23	1.41	93	47	58
RRUS-32 B2 RRH (Side)	29.5	9.3	14.4	1.91	2.95	3.17	2.05	1.23	1.20	15	23	21
RRUS-32 B2 RRH (Shielded)	29.5	7.0	14.4	1.43	2.95	4.23	2.05	1.28	1.20	12	23	20
4449 B5/B12 RRH (Side)	17.2	12.7	15.5	1.52	1.85	1.35	1.11	1.20	1.20	12	14	14
4449 B5/B12 RRH (Shielded)	17.2	9.5	15.5	1.14	1.85	1.81	1.11	1.20	1.20	9	14	13
4415 B30 RRH (Side)	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	8	16	14
4415 B30 RRH (Shielded)	18.8	6.2	15.7	0.80	2.05	3.05	1.20	1.22	1.20	6	16	14
LGP21401 TMA	16.7	5.0	11.3	0.58	1.31	3.34	1.48	1.24	1.20	5	10	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	8
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	13	15
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	17
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B2 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	6	6
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	14.9	7.8	13.2	0.81	1.37	1.91	1.13	1.20	1.20	2	4	3
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
4415 B30 RRH (Shielded)	16.5	4.4	13.4	0.51	1.54	3.73	1.23	1.25	1.20	1	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2

Date: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.15	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	205	109	181
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	359	205	321
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	473	209	407
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	62	102	72
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	35	102	52
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	48	61	51
4449 B5/B12 RRH (Shielded)	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	24	61	33
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	30	69	40
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	17	69	30
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	13	40	20

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.30	2.91	4.31	7.84	1.28	1.43	44	27	40
HPA-65R-BUU-H6 Antenna	74.3	17.1	9.7	8.83	5.01	4.34	7.65	1.28	1.42	73	46	66
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.75	5.11	3.19	7.34	1.23	1.41	93	47	82
RRUS-32 B2 RRH (Side)	29.5	9.3	14.4	1.91	2.95	3.17	2.05	1.23	1.20	15	23	17
RRUS-32 B2 RRH (Shielded)	29.5	4.7	14.4	0.95	2.95	6.34	2.05	1.37	1.20	8	23	12
4449 B5/B12 RRH (Side)	17.2	12.7	15.5	1.52	1.85	1.35	1.11	1.20	1.20	12	14	12
4449 B5/B12 RRH (Shielded)	17.2	6.4	15.5	0.76	1.85	2.71	1.11	1.21	1.20	6	14	8
4415 B30 RRH (Side)	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	8	16	10
4415 B30 RRH (Shielded)	18.8	4.1	15.7	0.54	2.05	4.58	1.20	1.29	1.20	4	16	7
LGP21401 TMA	16.7	5.0	11.3	0.58	1.31	3.34	1.48	1.24	1.20	5	10	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	11
HPA-65R-BUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	22	13	20
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	25
RRUS-32 B2 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	5
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3
4449 B5/B12 RRH (Side)	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	2	4	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	2
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	4	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: 8/21/2019
Project Name: MONROE CENTER
Project No.: CT2203
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.15 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:		85 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		120 lbs

HPA-65R-BUU-H6 Antenna
Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:		149 lbs
Weight of object:	51.0 lbs	
Combined weight of ice and object:		200 lbs

DMP65R-BU6DA Antenna
Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		194 lbs
Weight of object:	80.0 lbs	
Combined weight of ice and object:		274 lbs

RRUS-32 B2 RRH
Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		48 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		108 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:		31 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		104 lbs

4415 B30 RRH
Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.4	
Depth (in):	5.9	
Total weight of ice on object:		31 lbs
Weight of object:	46.0 lbs	
Combined weight of ice and object:		77 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:		30 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		63 lbs

L 2-1/2x2-1/2 Angles
Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:		7 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

PL 6-1/2x1/2
Weight of ice based on total radial SF area:

Height (in):	6.5	
Width (in):	0.5	
Per foot weight of ice on object:		11 plf

2" pipe
Per foot weight of ice:

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

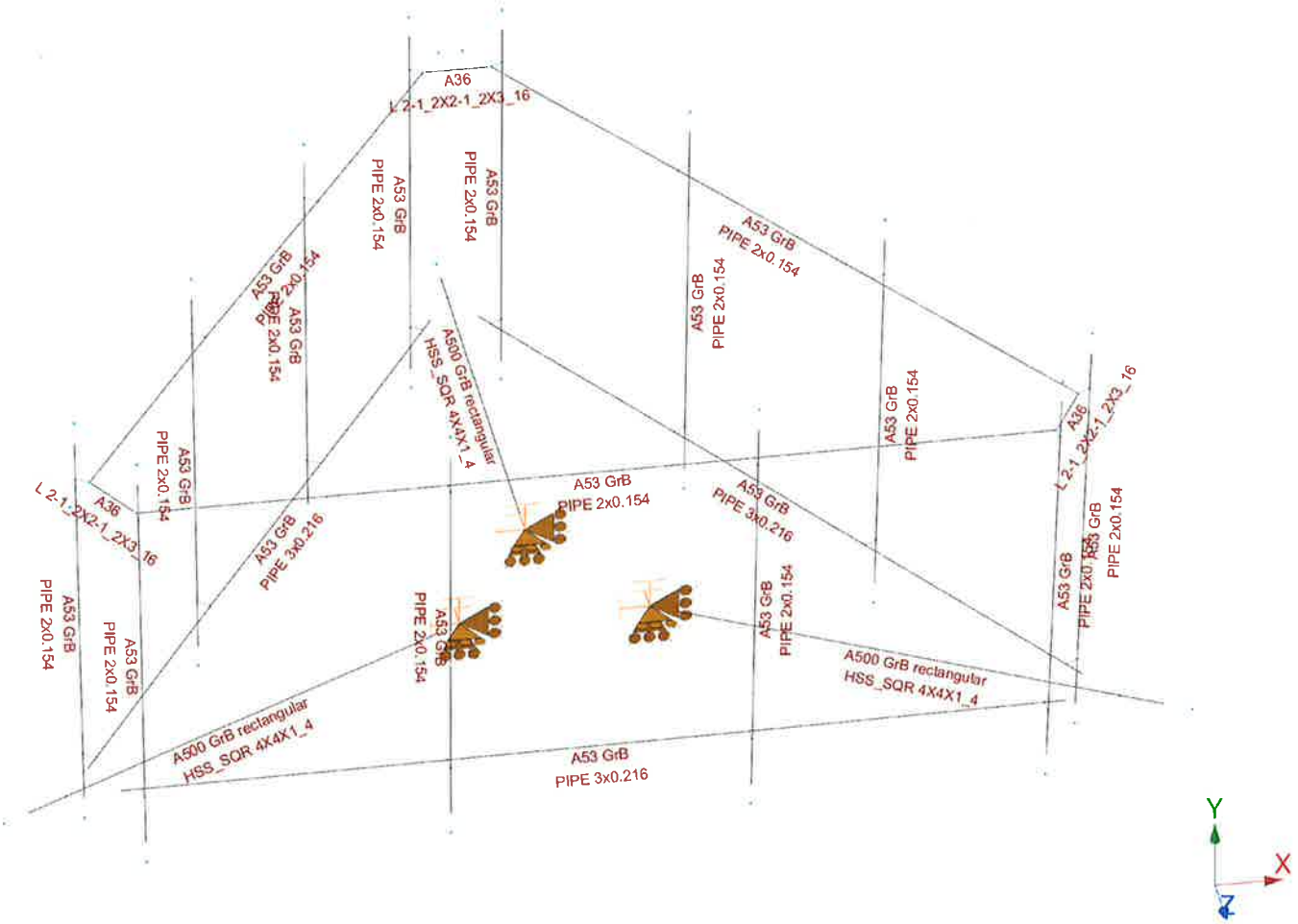
3" Pipe
Per foot weight of ice:

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

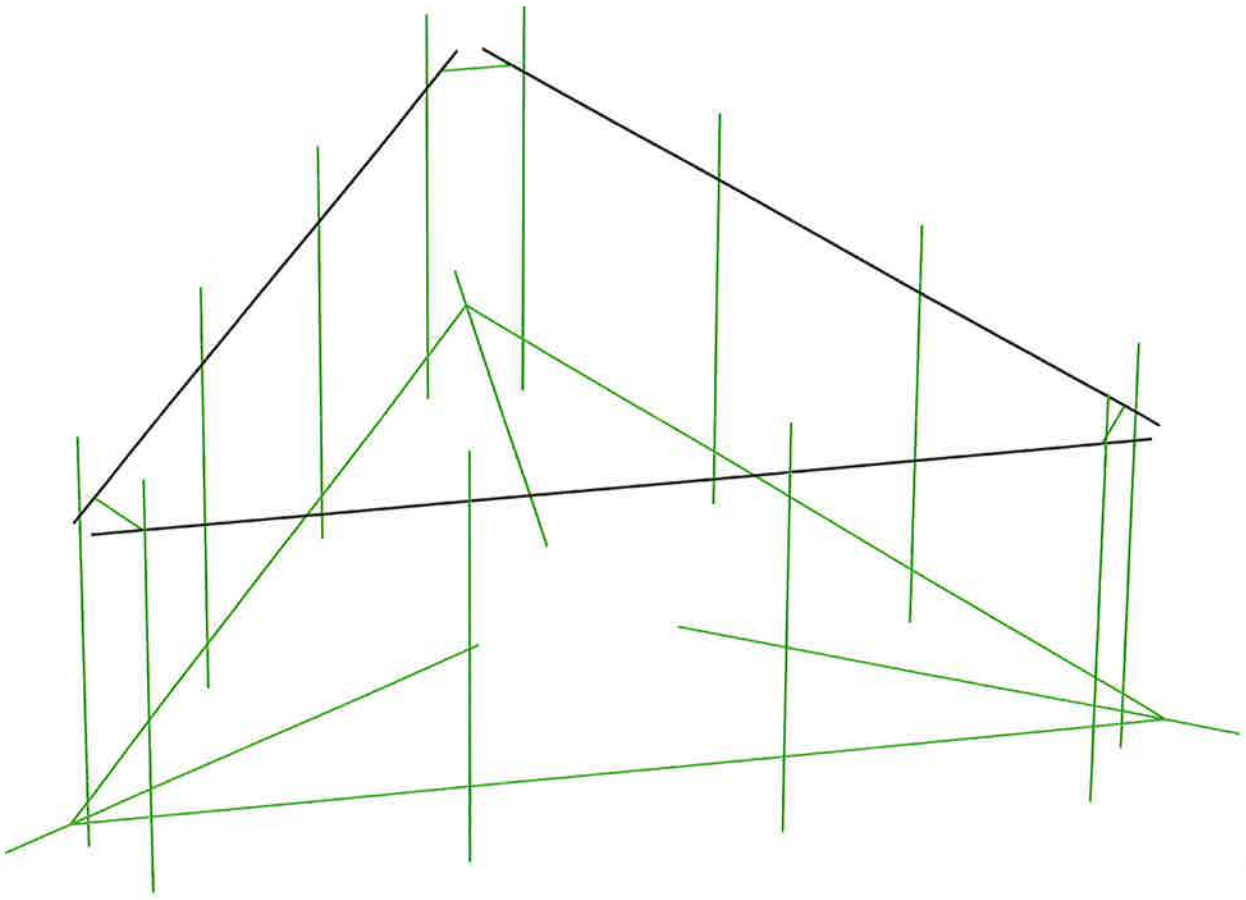
HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)


Y
X
Z

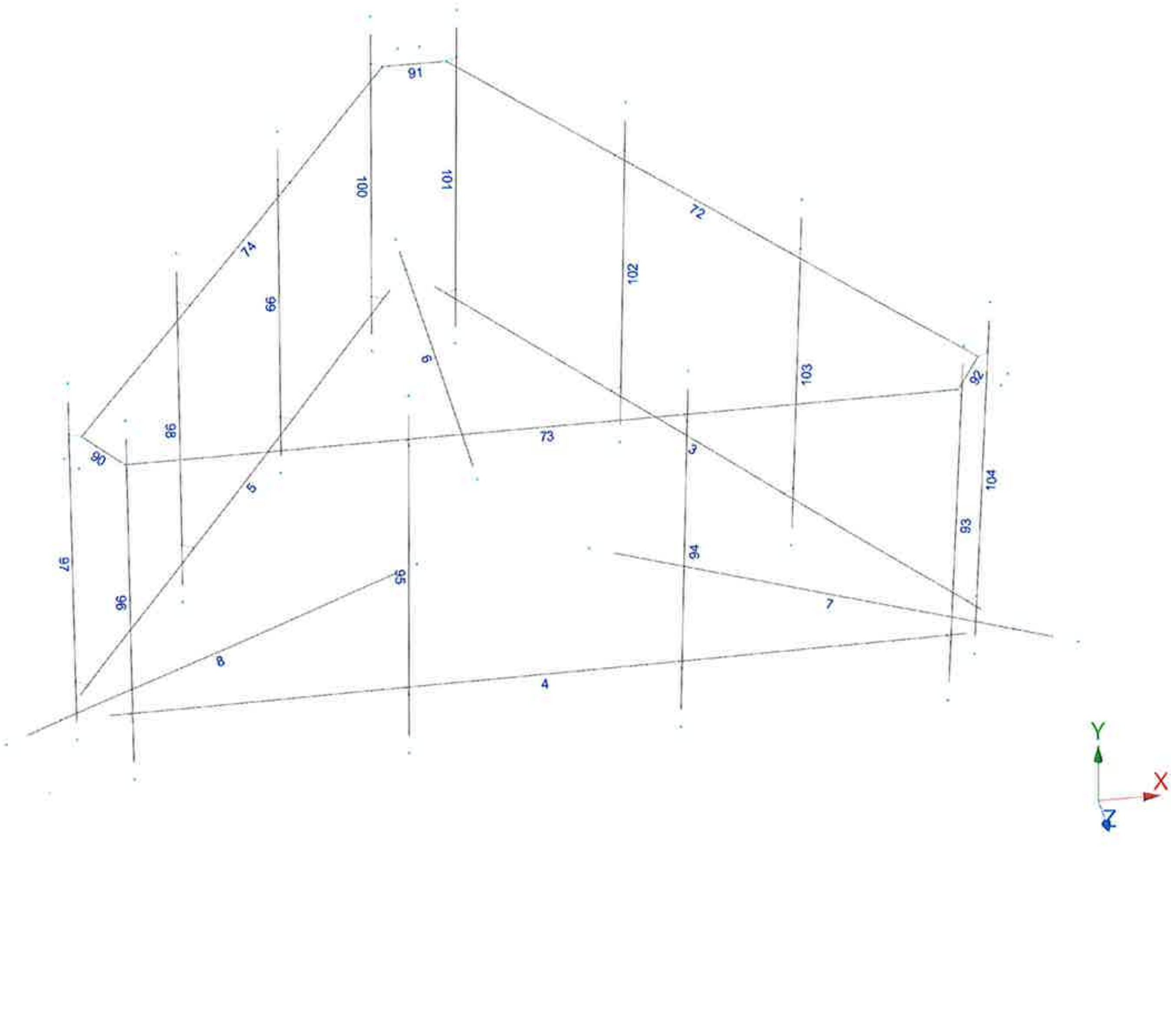

A36
L 2-1_2X2-1_2X3_16
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A500 GrB rectangular
HSS_SQR 4X4X1_4
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 3x0.216
A53 GrB
PIPE 3x0.216
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A500 GrB rectangular
HSS_SQR 4X4X1_4
A53 GrB
PIPE 3x0.216
A500 GrB rectangular
HSS_SQR 4X4X1_4
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A36
L 2-1_2X2-1_2X3_16
A36
L 2-1_2X2-1_2X3_16
Y
X
Z

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



Hewlett-Packard Company

Current Date: 8/21/2019 2:45 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2203\LTE 3C-4C\CT2203 (LTE 3C-4C).retx



Bentley Hewlett-Packard Company

Current Date: 8/21/2019 2:45 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2203\LTE 3C-4C\CT2203 (LTE 3C-4C).retx\

Load data

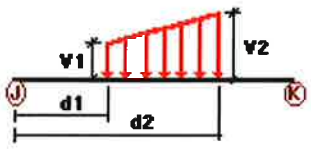
GLOSSARY

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
LLa4	250 lb Live Load Antenna 4	No	LL

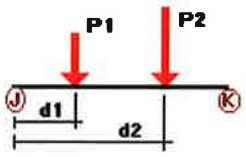
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	3	y	-0.01	-0.01	3.00	No	10.00	No
	4	y	-0.01	-0.01	3.00	No	10.00	No
	5	y	-0.01	-0.01	3.00	No	10.00	No
	6	y	-0.01	-0.01	4.00	No	7.00	No
	7	y	-0.01	-0.01	4.00	No	7.00	No
	8	y	-0.01	-0.01	4.00	No	7.00	No
W0	3	z	-0.013	0.00	0.00	No	0.00	No
	4	z	-0.013	0.00	0.00	No	0.00	No
	5	z	-0.013	0.00	0.00	No	0.00	No
	7	z	-0.025	0.00	0.00	No	0.00	No
	8	z	-0.025	0.00	0.00	No	0.00	No
	72	z	-0.009	0.00	0.00	No	0.00	No
	73	z	-0.009	0.00	0.00	No	0.00	No
	74	z	-0.009	0.00	0.00	No	0.00	No

	90	z	-0.015	0.00	0.00	No	0.00	No
	91	z	-0.015	0.00	0.00	No	0.00	No
	92	z	-0.015	0.00	0.00	No	0.00	No
	94	z	-0.009	0.00	0.00	No	0.00	No
	97	z	-0.009	0.00	0.00	No	0.00	No
	98	z	-0.009	0.00	0.00	No	0.00	No
	99	z	-0.009	0.00	0.00	No	0.00	No
	100	z	-0.009	0.00	0.00	No	0.00	No
	101	z	-0.009	0.00	0.00	No	0.00	No
	102	z	-0.009	0.00	0.00	No	0.00	No
	103	z	-0.009	0.00	0.00	No	0.00	No
	104	z	-0.009	0.00	0.00	No	0.00	No
W30	3	x	-0.013	0.00	0.00	No	0.00	No
	5	x	-0.013	0.00	0.00	No	0.00	No
	6	x	-0.025	0.00	0.00	No	0.00	No
	7	x	-0.025	0.00	0.00	No	0.00	No
	8	x	-0.025	0.00	0.00	No	0.00	No
	72	x	-0.009	0.00	0.00	No	0.00	No
	74	x	-0.009	0.00	0.00	No	0.00	No
	90	x	-0.015	0.00	0.00	No	0.00	No
	92	x	-0.015	0.00	0.00	No	0.00	No
	93	x	-0.009	0.00	0.00	No	0.00	No
	94	x	-0.009	0.00	0.00	No	0.00	No
	95	x	-0.009	0.00	0.00	No	0.00	No
	96	x	-0.009	0.00	0.00	No	0.00	No
	97	x	-0.009	0.00	0.00	No	0.00	No
	98	x	-0.009	0.00	0.00	No	0.00	No
	99	x	-0.009	0.00	0.00	No	0.00	No
	100	x	-0.009	0.00	0.00	No	0.00	No
	101	x	-0.009	0.00	0.00	No	0.00	No
	102	x	-0.009	0.00	0.00	No	0.00	No
	103	x	-0.009	0.00	0.00	No	0.00	No
	104	x	-0.009	0.00	0.00	No	0.00	No
Di	3	y	-0.007	0.00	0.00	No	0.00	No
	4	y	-0.007	0.00	0.00	No	0.00	No
	5	y	-0.007	0.00	0.00	No	0.00	No
	6	y	-0.01	0.00	0.00	No	0.00	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	72	y	-0.005	0.00	0.00	No	0.00	No
	73	y	-0.005	0.00	0.00	No	0.00	No
	74	y	-0.005	0.00	0.00	No	0.00	No
	90	y	-0.007	0.00	0.00	No	0.00	No
	91	y	-0.007	0.00	0.00	No	0.00	No
	92	y	-0.007	0.00	0.00	No	0.00	No
	93	y	-0.005	0.00	0.00	No	0.00	No
	94	y	-0.005	0.00	0.00	No	0.00	No
	95	y	-0.005	0.00	0.00	No	0.00	No
	96	y	-0.005	0.00	0.00	No	0.00	No
	97	y	-0.005	0.00	0.00	No	0.00	No
	98	y	-0.005	0.00	0.00	No	0.00	No
	99	y	-0.005	0.00	0.00	No	0.00	No
	100	y	-0.005	0.00	0.00	No	0.00	No
	101	y	-0.005	0.00	0.00	No	0.00	No
	102	y	-0.005	0.00	0.00	No	0.00	No
	103	y	-0.005	0.00	0.00	No	0.00	No
	104	y	-0.005	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	93	y	-0.018	1.00	No
		y	-0.018	5.00	No
		y	-0.038	3.00	No
	95	y	-0.026	0.50	No
		y	-0.026	5.50	No
		y	-0.06	3.00	No
	96	y	-0.04	0.50	No
		y	-0.04	5.50	No
		y	-0.073	3.00	No
		y	-0.046	3.00	No
	97	y	-0.018	1.00	No
		y	-0.018	5.00	No
		y	-0.038	3.00	No
	99	y	-0.026	0.50	No
		y	-0.026	5.50	No
		y	-0.06	3.00	No
	100	y	-0.04	0.50	No
		y	-0.04	5.50	No
		y	-0.073	3.00	No
		y	-0.046	3.00	No
	101	y	-0.018	1.00	No
		y	-0.018	5.00	No
		y	-0.038	3.00	No
	103	y	-0.026	0.50	No
		y	-0.026	5.50	No
		y	-0.06	3.00	No
	104	y	-0.04	0.50	No
		y	-0.04	5.50	No
		y	-0.073	3.00	No
		y	-0.046	3.00	No
W0	93	z	-0.103	1.00	No
		z	-0.103	5.00	No
	95	z	-0.18	0.50	No
		z	-0.18	5.50	No
		z	-0.035	3.00	No
	96	z	-0.237	0.50	No
		z	-0.237	5.50	No
		z	-0.024	3.00	No
		z	-0.017	3.00	No
	97	z	-0.067	1.00	No
		z	-0.067	5.00	No
		z	-0.033	3.00	No
	99	z	-0.122	0.50	No
		z	-0.122	5.50	No
		z	-0.089	3.00	No
	100	z	-0.138	0.50	No
		z	-0.138	5.50	No
		z	-0.057	3.00	No
	101	z	-0.067	1.00	No
		z	-0.067	5.00	No
		z	-0.033	3.00	No
	103	z	-0.122	0.50	No
		z	-0.122	5.50	No
		z	-0.089	3.00	No

	104	z	-0.138	0.50	No
		z	-0.138	5.50	No
		z	-0.057	3.00	No
W30	93	x	-0.055	1.00	No
		x	-0.055	5.00	No
		x	-0.04	3.00	No
	95	x	-0.103	0.50	No
		x	-0.103	5.50	No
		x	-0.102	3.00	No
	96	x	-0.105	0.50	No
		x	-0.105	5.50	No
		x	-0.069	3.00	No
	97	x	-0.091	1.00	No
		x	-0.091	5.00	No
		x	-0.02	3.00	No
	99	x	-0.161	0.50	No
		x	-0.161	5.50	No
		x	-0.052	3.00	No
	100	x	-0.204	0.50	No
		x	-0.204	5.50	No
		x	-0.033	3.00	No
	101	x	-0.091	1.00	No
		x	-0.091	5.00	No
		x	-0.02	3.00	No
	103	x	-0.161	0.50	No
		x	-0.161	5.50	No
		x	-0.052	3.00	No
	104	x	-0.204	0.50	No
		x	-0.204	5.50	No
		x	-0.033	3.00	No
Di	93	y	-0.043	1.00	No
		y	-0.043	5.00	No
		y	-0.036	3.00	No
	95	y	-0.075	0.50	No
		y	-0.075	5.50	No
		y	-0.048	3.00	No
	96	y	-0.097	0.50	No
		y	-0.097	5.50	No
		y	-0.031	3.00	No
		y	-0.031	3.00	No
	97	y	-0.043	1.00	No
		y	-0.043	5.00	No
		y	-0.036	3.00	No
	99	y	-0.075	0.50	No
		y	-0.075	5.50	No
		y	-0.048	3.00	No
	100	y	-0.097	0.50	No
		y	-0.097	5.50	No
		y	-0.031	3.00	No
		y	-0.031	3.00	No
	101	y	-0.043	1.00	No
		y	-0.043	5.00	No
		y	-0.036	3.00	No
	103	y	-0.075	0.50	No
		y	**-0.075**	**5.50**	No
		y	**-0.048**	**3.00**	No
	104	y	**-0.097**	**0.50**	No
		y	**-0.097**	**5.50**	No
		y	**-0.031**	**3.00**	No
		y	**-0.031**	**3.00**	No

Wi0	93	z	-0.023	1.00	No
		z	-0.023	5.00	No
	95	z	-0.038	0.50	No
		z	-0.038	5.50	No
		z	-0.011	3.00	No
	96	z	-0.048	0.50	No
		z	-0.048	5.50	No
		z	-0.007	3.00	No
		z	-0.006	3.00	No
	97	z	-0.016	1.00	No
		z	-0.016	5.00	No
		z	-0.009	3.00	No
	99	z	-0.027	0.50	No
		z	-0.027	5.50	No
		z	-0.02	3.00	No
	100	z	-0.03	0.50	No
		z	-0.03	5.50	No
		z	-0.014	3.00	No
	101	z	-0.016	1.00	No
		z	-0.016	5.00	No
		z	-0.009	3.00	No
	103	z	-0.027	0.50	No
		z	-0.027	5.50	No
		z	-0.02	3.00	No
	104	z	-0.03	0.50	No
		z	-0.03	5.50	No
		z	-0.014	3.00	No
Wi30	93	x	-0.014	1.00	No
		x	-0.014	5.00	No
		x	-0.01	3.00	No
	95	x	-0.023	0.50	No
		x	-0.023	5.50	No
		x	-0.023	3.00	No
	96	x	-0.024	0.50	No
		x	-0.024	5.50	No
		x	-0.016	3.00	No
	97	x	-0.02	1.00	No
		x	-0.02	5.00	No
		x	-0.006	3.00	No
	99	x	-0.034	0.50	No
		x	-0.034	5.50	No
		x	-0.012	3.00	No
	100	x	-0.041	0.50	No
		x	-0.041	5.50	No
		x	-0.008	3.00	No
	101	x	-0.02	1.00	No
		x	-0.02	5.00	No
		x	-0.006	3.00	No
	103	x	-0.034	0.50	No
		x	-0.034	5.50	No
		x	-0.012	3.00	No
	104	x	-0.041	0.50	No
		x	-0.041	5.50	No
		x	-0.008	3.00	No
WL0	93	z	-0.007	1.00	No
		z	-0.007	5.00	No
	95	z	-0.012	0.50	No
		z	-0.012	5.50	No
		z	-0.002	3.00	No
	96	z	-0.015	0.50	No

		z	-0.015	5.50	No
		z	-0.002	3.00	No
		z	-0.001	3.00	No
	97	z	-0.005	1.00	No
		z	-0.005	5.00	No
		z	-0.002	3.00	No
	99	z	-0.008	0.50	No
		z	-0.008	5.50	No
		z	-0.006	3.00	No
	100	z	-0.009	0.50	No
		z	-0.009	5.50	No
		z	-0.004	3.00	No
	101	z	-0.005	1.00	No
		z	-0.005	5.00	No
		z	-0.002	3.00	No
	103	z	-0.008	0.50	No
		z	-0.008	5.50	No
		z	-0.006	3.00	No
	104	z	-0.009	0.50	No
		z	-0.009	5.50	No
		z	-0.004	3.00	No
WL30	93	x	-0.004	1.00	No
		x	-0.004	5.00	No
		x	-0.003	3.00	No
	95	x	-0.007	0.50	No
		x	-0.007	5.50	No
		x	-0.006	3.00	No
	96	x	-0.007	0.50	No
		x	-0.007	5.50	No
		x	-0.004	3.00	No
	97	x	-0.006	1.00	No
		x	-0.006	5.00	No
		x	-0.001	3.00	No
	99	x	-0.011	0.50	No
		x	-0.011	5.50	No
		x	-0.003	3.00	No
	100	x	-0.013	0.50	No
		x	-0.013	5.50	No
		x	-0.002	3.00	No
	101	x	-0.006	1.00	No
		x	-0.006	5.00	No
		x	-0.001	3.00	No
	103	x	-0.011	0.50	No
		x	-0.011	5.50	No
		x	-0.003	3.00	No
	104	x	-0.013	0.50	No
		x	-0.013	5.50	No
		x	-0.002	3.00	No
LL1	4	y	-0.25	50.00	Yes
LL2	8	y	-0.25	0.00	Yes
LLa1	93	y	-0.25	50.00	Yes
LLa2	94	y	-0.25	50.00	Yes
LLa3	95	y	-0.25	50.00	Yes
LLa4	96	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
LLa4	250 lb Live Load Antenna 4	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
LLa4	0.00	0.00	0.00

Bentley Hewlett-Packard Company

Current Date: 8/21/2019 2:45 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2203\LTE 3C-4C\CT2203 (LTE 3C-4C).retx\

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
LC29=1.2DL+WL0+1.5LLa4
LC30=1.2DL+WL30+1.5LLa4
LC31=1.2DL-WL0+1.5LLa4
LC32=1.2DL-WL30+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**6**	LC9 at 100.00%	**0.72**	**OK**	Eq. H1-1b
		7	LC12 at 100.00%	0.72	OK	Eq. H1-1b
		8	LC10 at 100.00%	0.71	OK	Eq. H1-1b
	L 2-1_2X2-1_2X3_16	**90**	LC1 at 0.00%	0.64	OK	Eq. H3-8
		91	LC4 at 0.00%	**0.73**	**OK**	Eq. H3-8
		92	LC3 at 0.00%	0.56	OK	Eq. H3-8
	PIPE 2x0.154	**72**	LC1 at 35.00%	0.38	With warnings	Eq. H1-1b
		73	LC4 at 5.00%	0.42	With warnings	Eq. H1-1b
		74	LC2 at 65.00%	0.41	With warnings	Eq. H1-1b
		93	LC2 at 81.25%	0.37	OK	Eq. H1-1b
		94	LC4 at 81.25%	0.57	OK	Eq. H1-1b
		95	LC2 at 81.25%	0.57	OK	Eq. H1-1b
		96	LC2 at 81.25%	0.39	OK	Eq. H1-1b
		97	LC1 at 81.25%	0.41	OK	Eq. H1-1b
		98	LC3 at 81.25%	0.58	OK	Eq. H1-1b

	99	LC1 at 81.25%	**0.62**	**OK**	Eq. H1-1b
	100	LC3 at 81.25%	0.39	OK	Eq. H1-1b
	101	LC4 at 81.25%	0.36	OK	Eq. H1-1b
	102	LC1 at 81.25%	0.60	OK	Eq. H1-1b
	103	LC3 at 81.25%	0.55	OK	Eq. H1-1b
	104	LC1 at 81.25%	0.41	OK	Eq. H1-1b
PIPE 3x0.216	**3**	LC4 at 0.00%	**0.70**	**OK**	Eq. H1-1b
	4	LC3 at 100.00%	0.68	OK	Eq. H1-1b
	5	LC12 at 100.00%	0.62	OK	Eq. H1-1b

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
16	7.866	0.00	4.5413	0
17	-1.299	0.00	0.75	0
18	0.00	0.00	-1.50	0
19	1.299	0.00	0.75	0
20	0.00	0.00	-9.0828	0
21	-7.8659	0.00	4.5415	0
71	4.6732	-1.00	-0.3886	0
72	2.6732	-1.00	-3.8528	0
73	4.6732	5.00	-0.3886	0
74	2.6732	5.00	-3.8528	0
77	0.6732	-1.00	-7.3169	0
78	0.6732	5.00	-7.3169	0
103	6.6732	-1.00	3.0755	0
104	6.6732	5.00	3.0755	0
131	-0.6732	-1.00	-7.3169	0
132	-0.6732	5.00	-7.3169	0
135	-2.6732	-1.00	-3.8528	0
136	-2.6732	5.00	-3.8528	0
139	-4.6732	-1.00	-0.3887	0
140	-4.6732	5.00	-0.3887	0
141	-6.6732	-1.00	3.0754	0

142	-6.6732	5.00	3.0754	0
147	-6.00	-1.00	4.2414	0
148	-6.00	5.00	4.2414	0
151	-2.00	-1.00	4.2414	0
152	-2.00	5.00	4.2414	0
155	2.00	-1.00	4.2414	0
156	2.00	5.00	4.2414	0
157	6.00	-1.00	4.2415	0
158	6.00	5.00	4.2415	0
172	0.1771	4.167	-7.7762	0
173	6.8228	4.167	3.7348	0
174	-6.823	4.167	3.7347	0
175	-0.177	4.167	-7.7761	0
176	6.6458	4.167	4.0415	0
177	-6.6458	4.167	4.0413	0
194	-9.69E-05	0.00	-8.0829	0
195	6.9999	0.00	4.0415	0
196	-7.00	0.00	4.0413	0
168	0.50	4.167	-7.2169	0
170	6.4999	4.167	3.1755	0
192	6.00	4.167	4.0415	0
186	-6.00	4.167	4.0414	0
184	-6.50	4.167	3.1754	0
178	-0.4999	4.167	-7.2168	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
17	1	1	1	1	1	1
18	1	1	1	1	1	1
19	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
3	195	194		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
4	195	196		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
5	196	194		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
6	20	18		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
7	16	19		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	21	17		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
72	173	172		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
73	176	177		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
74	174	175		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
90	184	186		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
91	168	178		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
92	192	170		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
93	158	157		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	156	155		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
95	152	151		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

96	148	147	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
97	142	141	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
98	140	139	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
99	136	135	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
100	132	131	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
101	78	77	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
102	74	72	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
103	73	71	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
104	104	103	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
90	90.00	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

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
6	0.00	-2.00	0.00	0.00	-2.00	0.00
7	0.00	-2.00	0.00	0.00	-2.00	0.00
8	0.00	-2.00	0.00	0.00	-2.00	0.00

500 MOOSE HILL RD

Location	500 MOOSE HILL RD	**Map/Lot**	051/ 067/ 0C/ /
Acct#	0510670C	**Owner**	ST JOHN THE BAPTIST GREEK CATHOLIC CEM
Assessment	$902,300	**Appraisal**	$1,288,900
PID	8045	**Building Count**	1
Survey	2806 2859	**Affordable**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$60,500	$1,228,400	$1,288,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$42,400	$859,900	$902,300

Owner of Record

Owner	ST JOHN THE BAPTIST GREEK CATHOLIC CEM	**Sale Price**	$0
Co-Owner	ASSOC INC	**Certificate**	1
Address	50 PARADISE GREEN PL STRATFORD, CT 33487	**Book & Page**	176/ 349
		Sale Date	08/01/1978
		Instrument	

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ST JOHN THE BAPTIST GREEK CATHOLIC CEM	$0	1	176/ 349		08/01/1978

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Stories:	
Occupancy	
Exterior Wall 1	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	
Fireplaces	
Basement Gar.	
Basement	
In Law Apt	

Building Photo

No Image is Available

(http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\01/25.JPG)

Building Layout

(http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/8045_8045.jpg)

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 906V
Description Church
Zone RF1
Neighborhood
Alt Land Approved No
Category

Land Line Valuation

Size (Acres) 52.42
Appraised Value $1,228,400

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
RG5	Garage 1/2S			1920 S.F.	$60,500	1

Valuation History

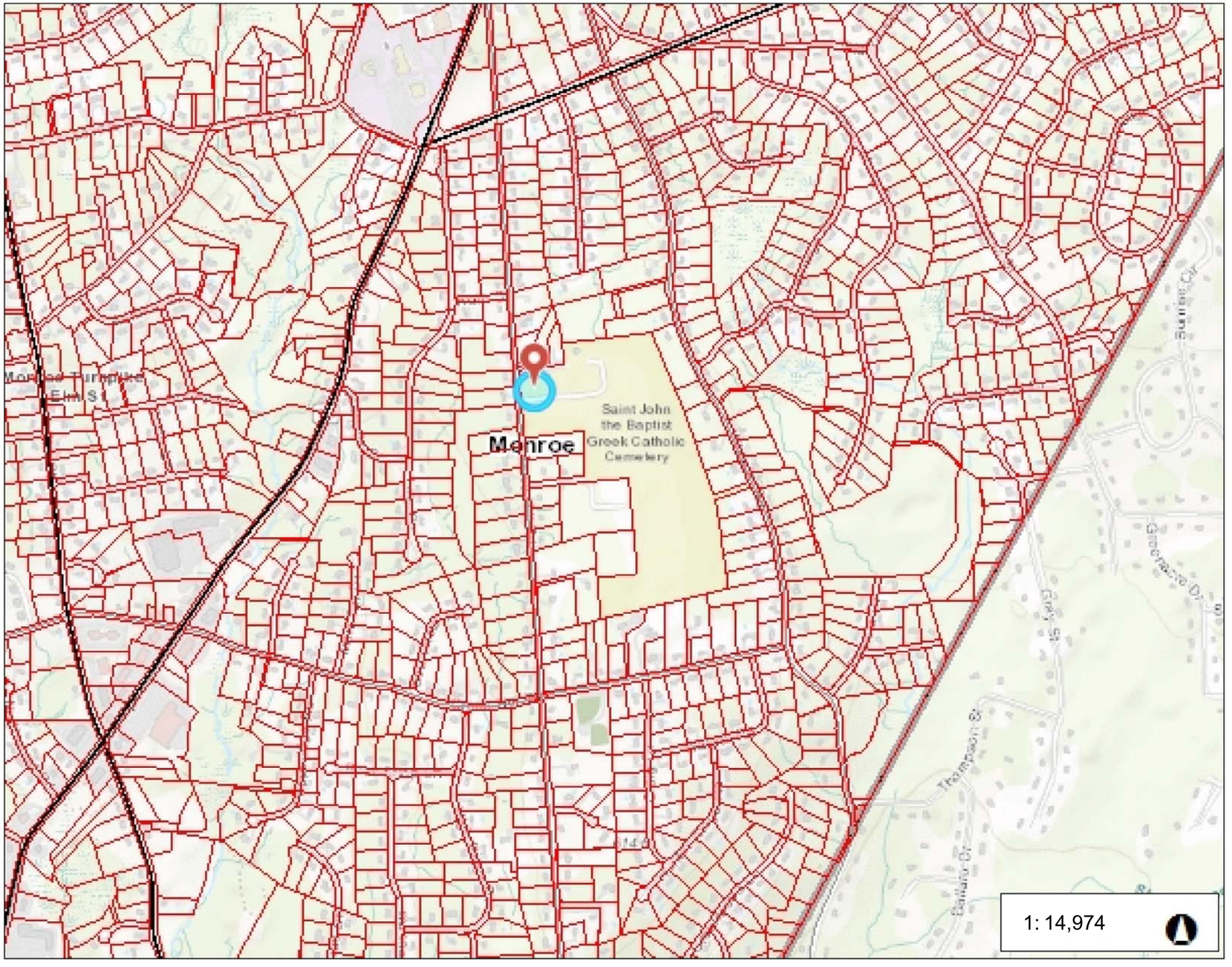
Appraisal			
Valuation Year	Improvements	Land	Total
2018	$60,500	$1,228,400	$1,288,900
2017	$60,500	$1,228,400	$1,288,900

Assessment			
Valuation Year	Improvements	Land	Total
2018	$42,400	$859,900	$902,300
2017	$42,400	$859,900	$902,300

(c) 2016 Vision Government Solutions, Inc. All rights reserved.

Town of Monroe

500 MOOSE HILL ROAD, MONROE



Legend

- Parcels
- Streetname
- Roadways
  - Local
  - Collector
  - Minor Collector
  - Minor Arterial
  - Major Collector
  - PA Other
  - PA Other Expwy
  - PA Interstate
- Town Boundary

2,495.7 0 1,247.87 2,495.7 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

METROCOG
Connecticut Metropolitan Council of Governments

DOCKET NO 207 - James E. Dwyer Co., Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a cellular telecommunications facility at 500 Moose Hill Road, Monroe, Connecticut.	} } }	Connecticut Siting Council March 21, 2002

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility at the proposed site in Monroe, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to James E. Dwyer Co., Inc. for the construction, maintenance and operation of a cellular telecommunications facility at the proposed site located at 500 Moose Hill Road, Monroe, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole facility, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T and other entities, both public and private, but such tower shall not exceed a height of 130 feet above ground level (AGL).

2. The Certificate Holder shall prepare a D&M Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site development to include the location and specifications for the tower foundation, placement of carrier antennas, tower height, provisions for tower extension, equipment buildings, security fence, access road, and utility line; construction plans for site clearing, tree trimming, water drainage, and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; landscaping and provisions to protect the existing vegetative buffer that would extend around the facility compound; a tower finish that may include painting; and provisions for the prevention and containment of spills and/or other discharge into surface water and groundwater bodies. The applicant must have commitments from at least two carriers prior to commencement of construction of the facility.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed

entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or Federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antenna becomes obsolete and ceases to function.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed and the site in operation as a telecommunications facility within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant and The Advocate.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

James E. Dwyer Co., Inc.
(Dwyer)
Dennis Morrissey, P.E.
Attorney at Law
106 Sherman Street
Fairfield, CT 06430

Petition No. 628T
Sprint Spectrum L.P.
500 Moose Hill Road
Monroe, Connecticut
June 19, 2003
***Revised* Staff Report**
~~~

On May 16, 2003, Sprint Spectrum L.P. (Sprint) submitted a petition to the Connecticut Siting Council (Council) for a determination that no Certificate of Environmental Compatibility and Public Need would be required for the proposed extension of this tower by 20 feet because this proposed modification would not have an substantial adverse environmental effect. On May 27, 2003, Edward S. Wilensky of the Council and Robert K. Erling of the Council staff met Laura A. McGeachy of Cacace, Tusch and Santagata, Christopher K. Daddi of Dewberry-Goodkind, Inc., Tony Wells of Sprint and Tom Nolan of Connecticut Architectural Towers (CAT) for a field review of this petition.

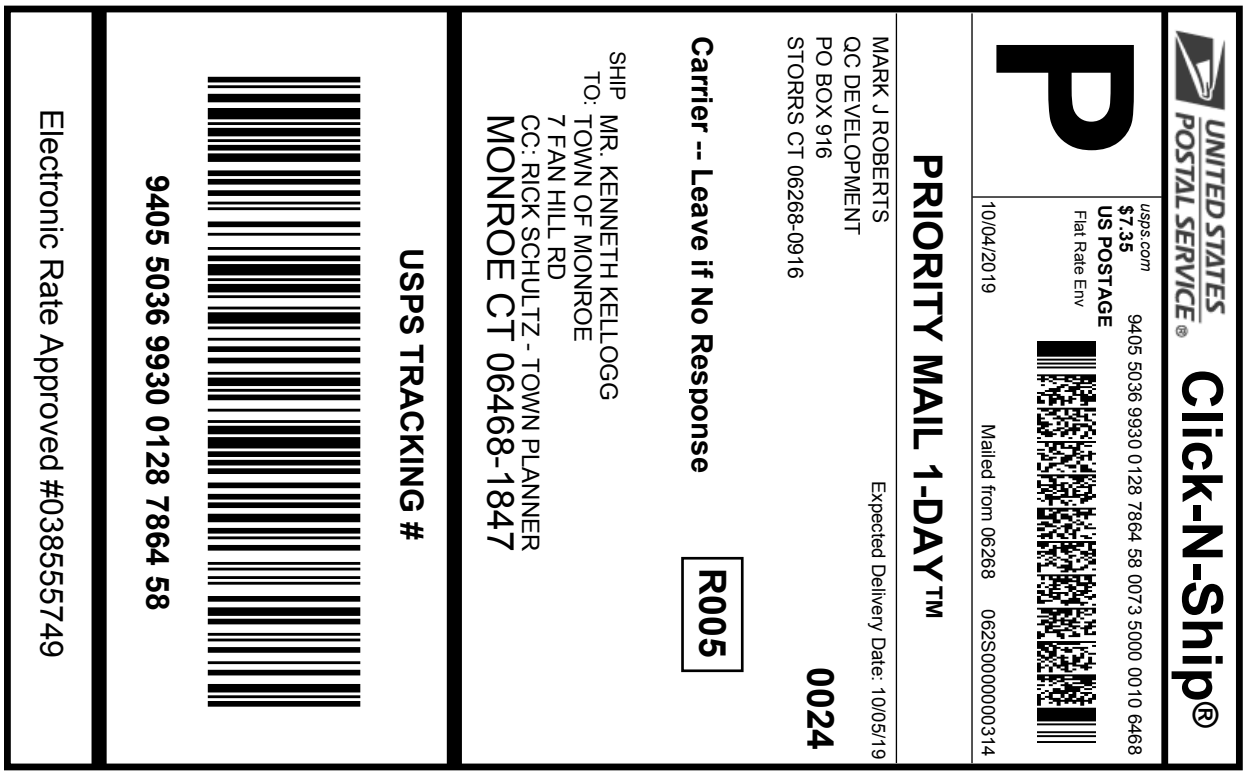
Sprint proposes to extend the height of this tower, which is owned by CAT, and approved by the Council in Docket No. 207, from its existing height of 130 feet to a new height of 150 feet in order to accommodate Sprint antennas at a centerline level of 147.5 feet above ground level (AGL). AT&T currently has its antennas at 127.5 feet AGL and Voicestream at 117.5 feet AGL on this tower. If Sprint's petition is approved by the Council, another telecommunications provider may be interested in co-locating at 140 feet AGL.

During the field review, members of the field review team requested that Sprint notify all abutting property owners of St. John's Cemetery of this petition and also provide radio frequency propagation plots for antennas mounted at 107.5 feet and 137.5 feet for this tower. On May 29, 2003, Sprint sent all abutting property owners notice of this petition. To date, Sprint has received one telephone response on the petition, from a resident who was not opposed to the project but had concerns about a right-of-way adjacent to his property on Wheeler Road. Sprint informed him that it would not use this right-of-way, but rather use the existing access way to the tower from Moose Hill Road.

Sprint's coverage maps indicate coverage from antennas mounted at 107.5 feet AGL would leave coverage gaps along Route 110 and Route 111. Antennas mounted at 137.5 feet AGL would leave some gaps along Route 111 north of Route 110 and Route 110 north of the site. Coverage from antennas mounted 147.5 feet AGL would be satisfactory in these areas.

Sprint also performed a visual analysis of how the 20-foot extension would be perceived from surrounding areas. The nearest home is approximately 600 feet to the east. The tower itself sits on a 53.27-acre parcel of land owned by the St. John the Baptist Greek Catholic Cemetery Association, Inc. The viewshed analysis indicates the 130 foot tower is currently visible over an area of approximately 25 acres, while the proposed 150-foot tower would be visible to approximately 28 acres. The extension would be partially visible during the winter months from intermittent areas along Wheeler Road, Moose Hill Road, and Cross Hill Road.

Sprint would add its equipment cabinets inside the existing fenced 80-foot by 100-foot compound. During the field review, staff noted that the previous owner of the tower had left the 20-foot extension of the tower on the ground outside the fenced compound, along with barrels of equipment for the tower. Staff recommends that all of this material be removed from this area as soon as possible, regardless of the disposition of his petition.



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0128 7864 58

Trans. #:	473992687
Print Date:	10/03/2019
Ship Date:	10/04/2019
Expected Delivery Date:	10/05/2019

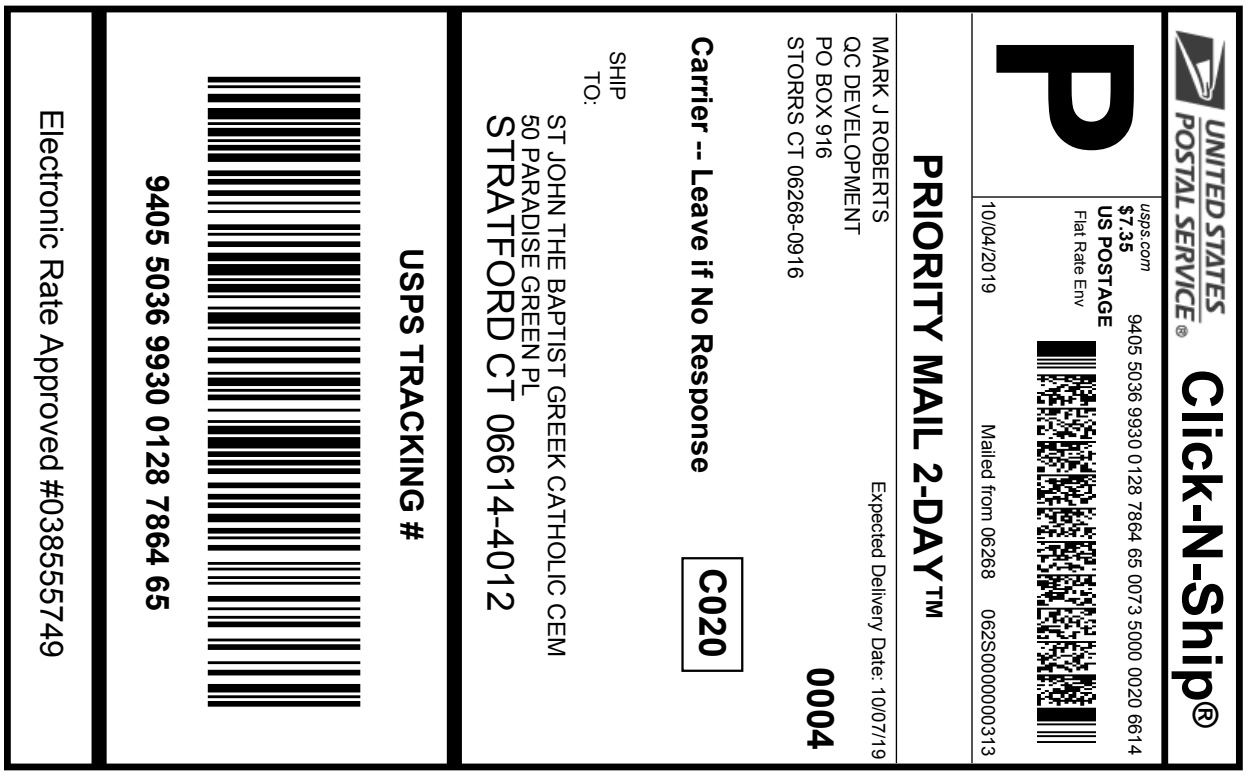
Priority Mail® Postage:	**$7.35**
Total:	**$7.35**

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

To: MR. KENNETH KELLOGG
TOWN OF MONROE
7 FAN HILL RD
CC: RICK SCHULTZ - TOWN PLANNER
MONROE CT 06468-1847

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0128 7864 65

Trans. #:	473992687
Print Date:	10/03/2019
Ship Date:	10/04/2019
Expected Delivery Date:	10/07/2019

Priority Mail® Postage:	**$7.35**
Total:	**$7.35**

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

To: ST JOHN THE BAPTIST GREEK CATHOLIC CEM
50 PARADISE GREEN PL
STRATFORD CT 06614-4012

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com