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

October 26, 2018

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2820
1294 Pleasant Valley Road North, Groton, CT 06340
N 41.39997222
W 72.07922222

Dear Ms. Bachman:

AT&T currently maintains twelve (12) antennas at the 127-foot level of the existing 150-foot Monopole at 1294 Pleasant Valley Road North, Groton, CT. The tower is owned by SBA. The property is owned by the JFM Enterprises LLC. AT&T now intends to remove (6) antennas and replace them with (6) CCI HPA65R-BU8A antennas. AT&T will also install (3) Ericsson RRUS-32, (3) 4478-B14, (3) 4478-B5 and (3) 4426-B66 Remote Radio Units (RRU), also at the 127-foot level of the tower.

This facility was approved by the Connecticut Siting Council in Docket # 330 on June 7, 2007. The approval included a tower height limitation of 140 feet and a subsequent tower extension to 150 feet was approved in Petition # 835 on December 13, 2007. Since no further modification to the overall facility height is proposed, 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 the Honorable Patrice Granatosky, Mayor of the Town of Groton, and the Groton Planning &

Development Office, as well as the property owner and tower owner.

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

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

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

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

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

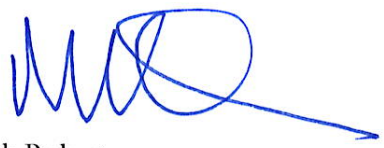
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

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

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

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Mayor Patrice Granatosky - as Elected Official
Jonathan Reiner, AICP – Director of Planning
JFM Enterprises LLC - as Property Owners
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*							5.96%
AT&T UMTS	2	500	127	0.0246	880	0.5867	0.42%
AT&T UMTS	1	500	127	0.0123	1900	1.0000	0.12%
AT&T LTE	1	500	127	0.0123	700	0.4667	0.26%
AT&T LTE	1	500	127	0.0123	1900	1.0000	0.12%
AT&T LTE	1	500	127	0.0123	2300	1.0000	0.12%
Site Total							7.01%

*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*							5.96%
AT&T UMTS	2	500	127	0.0246	850	0.5667	0.43%
AT&T LTE	2	2951	127	0.1450	700	0.4667	3.11%
AT&T LTE	1	1000	127	0.0246	850	0.5667	0.43%
AT&T 5G	1	1000	127	0.0246	850	0.5667	0.43%
AT&T LTE	2	4842	127	0.2379	1900	1.0000	2.38%
AT&T LTE	2	5070	127	0.2491	2100	1.0000	2.49%
AT&T LTE	1	1285	127	0.0316	2300	1.0000	0.32%
Site Total							15.55%

*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:
- EXISTING AT&T ANTENNAS: (HPA-65R-BUU-H8) MOUNTED @ POSITION 3 & 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3) TO BE REMOVED AND REPLACED.
- NEW AT&T ANTENNAS: (HPA65R-BU8A) MOUNTED @ POSITION 3 & 4 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- NEW AT&T RRUS: 4478 B66 (2100) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 32(WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW SURGE ARRESTOR (DC6-48-60-18-8F) (TOTAL OF 1) WITH (2) DC POWER, & (1) FIBER IN 2" INNERDUCT (TO FOLLOW EXISTING).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- SWAP DUS FOR RBS5216.
- ADD 2ND XMU.
- BASEBAND CONFIGURATION AS PER PD / SECTION-7.
- ADD IDLe.
- ADD RBS6630.

ITEMS TO REMAIN:
- (6) ANTENNAS, (9) RRU'S, (6) DC POWER, & (2) FIBER RUNS.

SITE ADDRESS:	1294 PLEASANT VALLEY ROAD NORTH GROTON, CT 06340
LATITUDE:	41.3999 N, 41° 23' 59.73" N
LONGITUDE:	72.0792 W, 72° 04' 45.19" W
TYPE OF SITE:	MONOPOLE/ INDOOR EQUIPMENT
STRUCTURE HEIGHT:	150'-3"±
RAD CENTER:	127'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT2820
SITE NAME: GROTON PLEASANT VALLEY ROAD NORTH
FA CODE:10577793
PACE ID: MRCTB030860/MRTCB031487/ MRTCB032071/ MRCTB030853
PROJECT: LTE 4C, 5C, 6C & RETROFIT

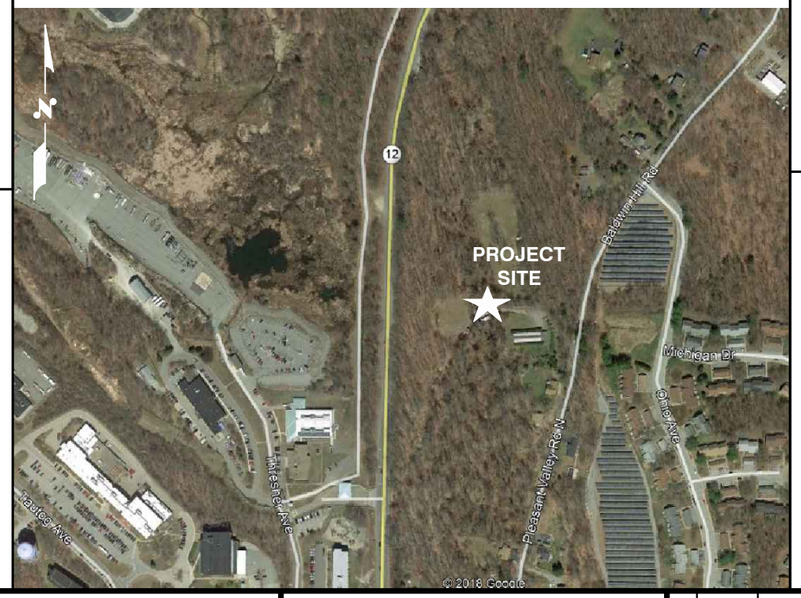
DRAWING INDEX

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

SBA SITE #: CT13075

VICINITY MAP

DIRECTIONS TO SITE:
DEPART ENTERPRISE DR TOWARD CAPITOL BLVD. 0.1 MI. TURN LEFT ONTO CAPITOL BLVD. 0.3 MI. TURN LEFT ONTO WEST ST. 0.3 MI. TAKE RAMP LEFT FOR I-91 S. 1.4 MI. AT EXIT 22S, TAKE RAMP LEFT FOR CT-9 SOUTH TOWARD MIDDLETOWN / OLD SAYBROOK. 6.3 MI. KEEP STRAIGHT ONTO CT-9 S. 22.9 MI. TAKE RAMP LEFT FOR I-95 NORTH / US-1 NORTH TOWARD NEW LONDON / PROVIDENCE. 17.2 MI. AT EXIT 86, TAKE RAMP LEFT FOR CT-184 TOWARD GALES FERRY / U.S. SUB BASE. 0.3 MI. TAKE RAMP RIGHT FOR US-1 SOUTH TOWARD NEW LONDON. 0.2 MI. TURN RIGHT ONTO US-1 / CT-12. 358 FT. KEEP STRAIGHT ONTO CT-12. 2.1 MI. TURN RIGHT ONTO OHIO AVE. 499 FT. TURN LEFT ONTO PLEASANT VALLEY RD N. 0.3 MI. ARRIVE AT SITE ON THE LEFT.



GENERAL NOTES

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

72 HOURS

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: CT2820
SITE NAME: GROTON PLEASANT VALLEY ROAD NORTH
SBA SITE ID: CT13075
1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/09/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	09/28/18	ISSUED FOR REVIEW	ET	AT	DJC
A	07/02/18	ISSUED FOR REVIEW	TR	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASER · No. 21055 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE 4C, 5C, 6C & RETROFIT)

SITE NUMBER	DRAWING NUMBER	REV
CT2820	T-1	1

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: IBC 2012 WITH 2016 CT BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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

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

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

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

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

ABBREVIATIONS

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

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: CT2820
SITE NAME: GROTON PLEASANT VALLEY ROAD NORTH
SBA SITE ID: CT13075
1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/09/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	09/28/18	ISSUED FOR REVIEW	ET	AT	DJC
A	07/02/18	ISSUED FOR REVIEW	TR	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASER · 26,235 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 4C, 5C, 6C & RETROFIT)

SITE NUMBER	DRAWING NUMBER	REV
CT2820	GN-1	1

SPECIAL CONSTRUCTION/PLANNING NOTE:

EQUIPMENT SHOWN AS "TO BE INSTALLED AS PART OF LTE BWE PROJECT" REFERS TO RECORD DRAWINGS AND NOT ACTUAL FIELD CONDITIONS. DEPLOYMENT OF EQUIPMENT "TO BE INSTALLED AS PART OF LTE BWE PROJECT" UNDER A SEPARATE BUILDING PERMIT PRIOR TO CONSTRUCTION START OF THIS PROJECT.

NOTE:

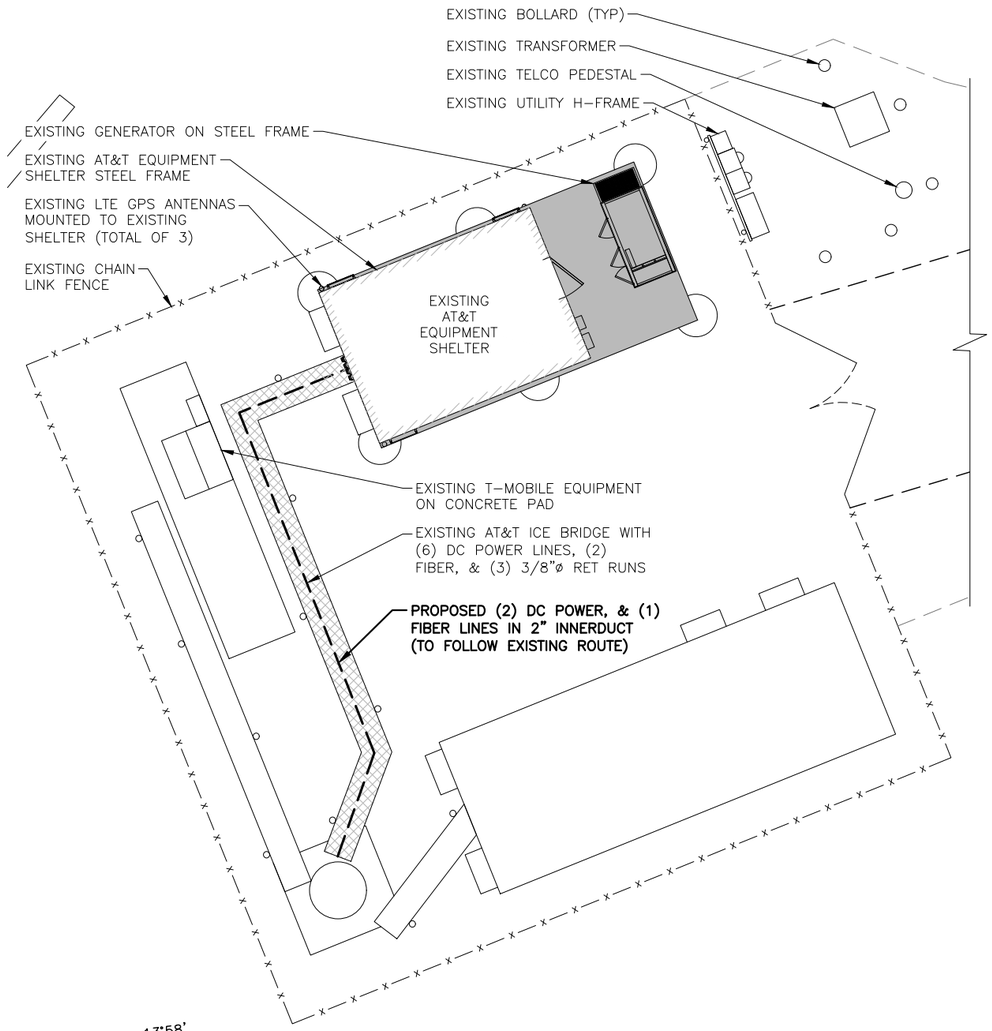
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

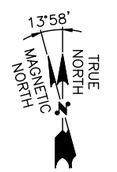
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: SEPTEMBER 06, 2018, REV.1

NOTE:

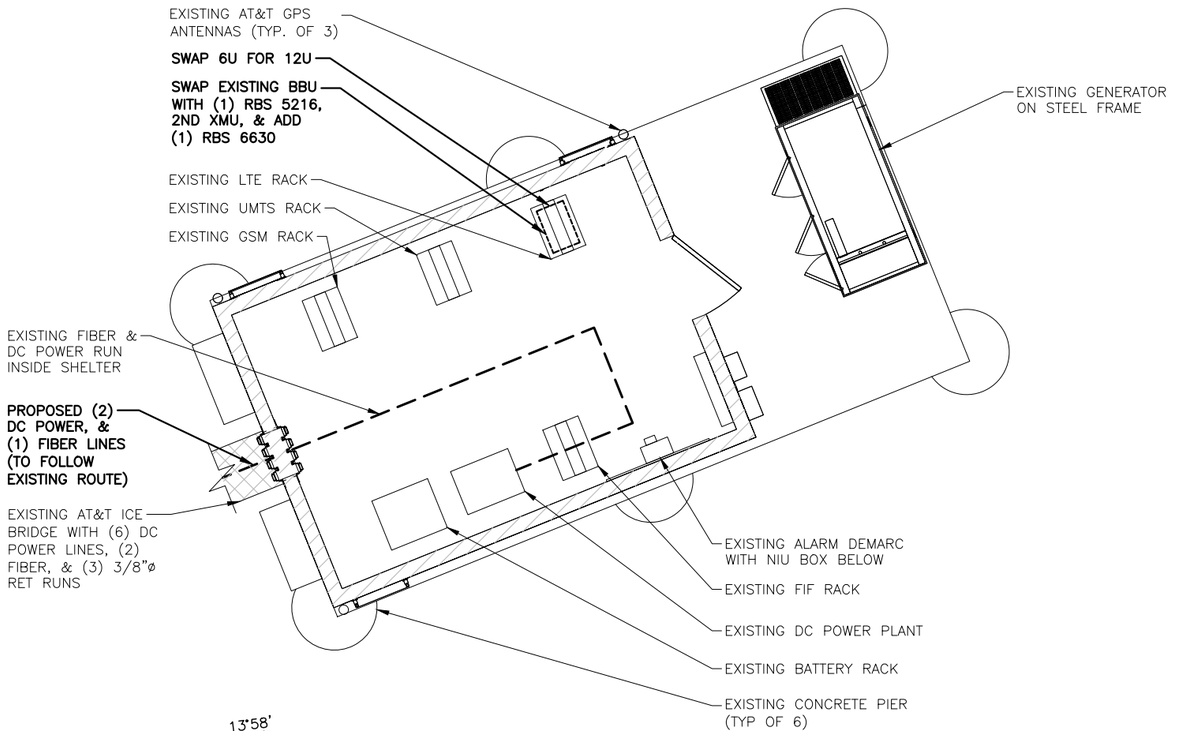
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.





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

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



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

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

SITE NUMBER: CT2820
SITE NAME: GROTON PLEASANT VALLEY ROAD NORTH
SBA SITE ID: CT13075
1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/09/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	09/28/18	ISSUED FOR REVIEW	ET	AT	DJC
A	07/02/18	ISSUED FOR REVIEW	TR	AT	DJC

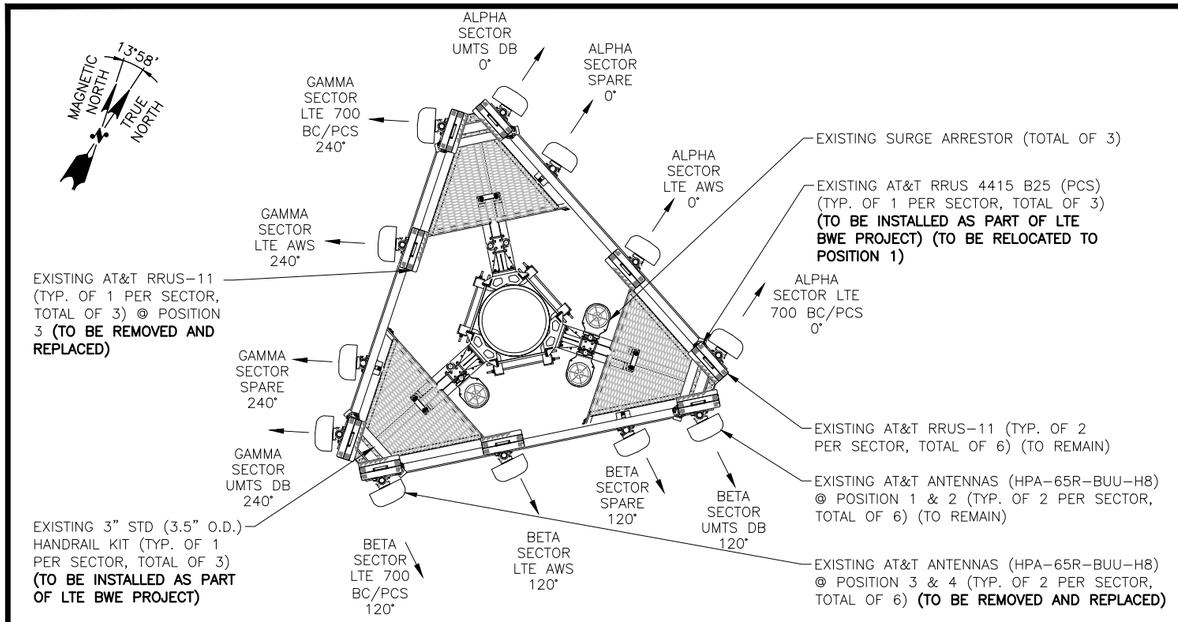
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

STATE OF CONNECTICUT · DEREK J. CREASER · No. 29795 · LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLAN
(LTE 4C, 5C, 6C & RETROFIT)

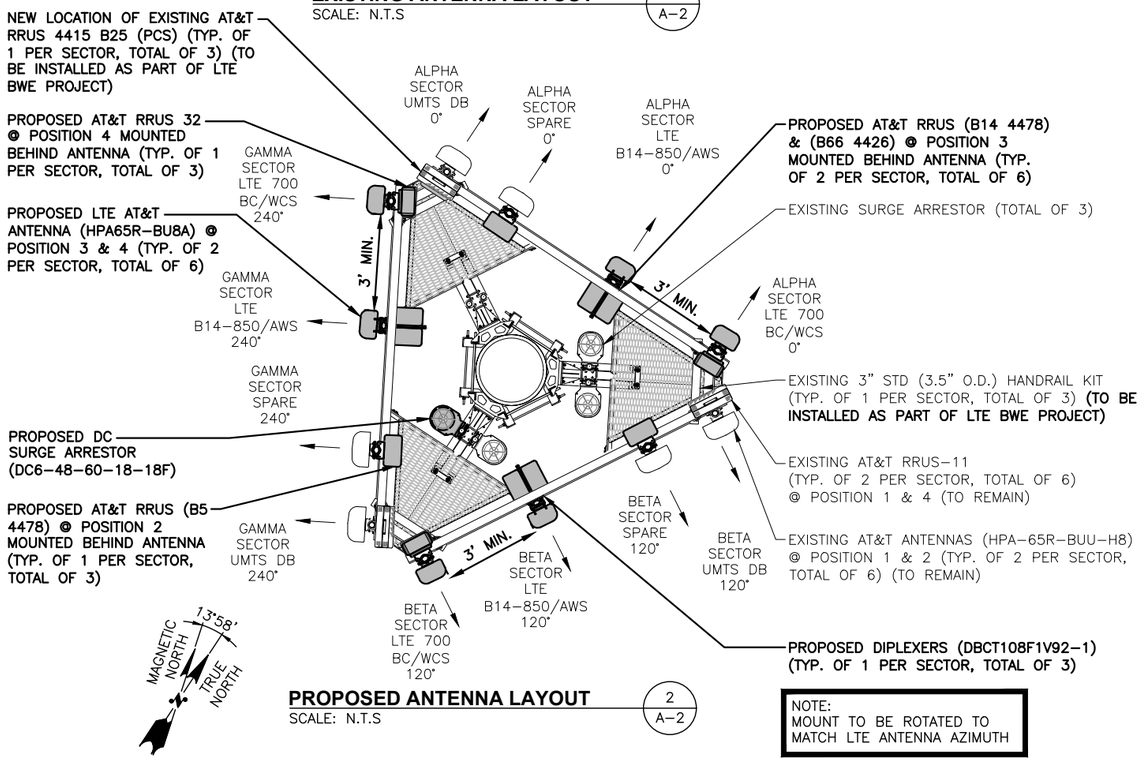
SITE NUMBER	DRAWING NUMBER	REV
CT2820	A-1	1



EXISTING ANTENNA LAYOUT

SCALE: N.T.S

1 / A-2

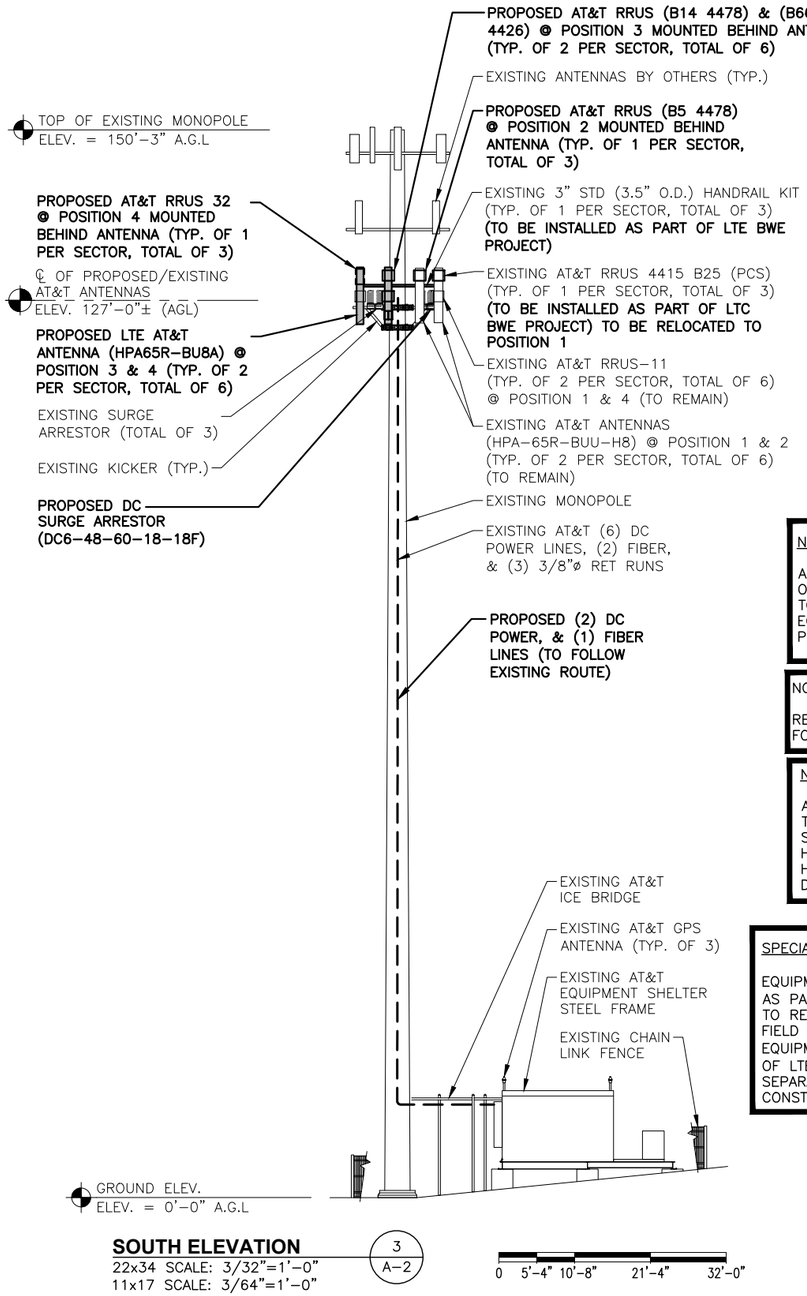


PROPOSED ANTENNA LAYOUT

SCALE: N.T.S

2 / A-2

NOTE:
MOUNT TO BE ROTATED TO MATCH LTE ANTENNA AZIMUTH



SOUTH ELEVATION

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

3 / A-2

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

NOTE:

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

NOTE:

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

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: SEPTEMBER 06, 2018, REV.1

SPECIAL CONSTRUCTION/PLANNING NOTE:

EQUIPMENT SHOWN AS "TO BE INSTALLED AS PART OF LTE BWE PROJECT" REFERS TO RECORD DRAWINGS AND NOT ACTUAL FIELD CONDITIONS. DEPLOYMENT OF EQUIPMENT "TO BE INSTALLED AS PART OF LTE BWE PROJECT" UNDER A SEPARATE BUILDING PERMIT PRIOR TO CONSTRUCTION START OF THIS PROJECT.

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: CT2820
SITE NAME: GROTON PLEASANT VALLEY ROAD NORTH
SBA SITE ID: CT13075
1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/09/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	09/28/18	ISSUED FOR REVIEW	ET	AT	DJC
A	07/02/18	ISSUED FOR REVIEW	TR	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 23955 · LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUT & ELEVATION (LTE 4C, 5C, 6C & RETROFIT)

SITE NUMBER	DRAWING NUMBER	REV
CT2820	A-2	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: SEPTEMBER 06, 2018, REV.1

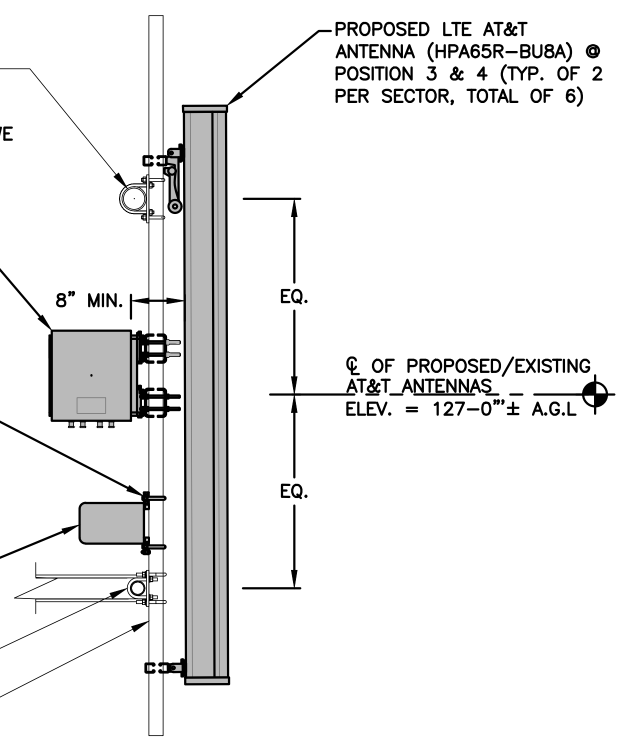
SPECIAL CONSTRUCTION/PLANNING NOTE:

EQUIPMENT SHOWN AS "TO BE INSTALLED AS PART OF LTE BWE PROJECT" REFERS TO RECORD DRAWINGS AND NOT ACTUAL FIELD CONDITIONS. DEPLOYMENT OF EQUIPMENT "TO BE INSTALLED AS PART OF LTE BWE PROJECT" UNDER A SEPARATE BUILDING PERMIT PRIOR TO CONSTRUCTION START OF THIS PROJECT.

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS DB/LTE PCS	HPA-65R-BUU-H8	92.4X14.8X7.4	127'-0"±	0°	–	(E)(1) RRUS-11 (850) (E)(1) 4415 B25 (1900)	– –	–	(E) (1) RAYCAP DC6-48-60-18-8F (P) (1) RAYCAP DC6-48-60-18-8F
A2	EXISTING	LTE B14-850	HPA-65R-BUU-H8	92.4X14.8X7.4	127'-0"±	0°	–	(P)(1) B5 4478 (850)	15.0X13.2X7.4	–	
A3	PROPOSED	LTE B14-850/AWS	HPA65R-BU8A	96X11.7X7.6	127'-0"±	0°	(P)(1) DBCT108F1V92-1	(P)(1) B66 4426 (P)(1) B14 4478	15.0X13.2X7.4 15.0X13.2X7.4	–	
A4	PROPOSED	LTE 700 BC/ WCS	HPA65R-BU8A	96X11.7X7.6	127'-0"±	0°	–	(E)(1) RRUS-11 (700) (P)(1) RRUS-32 (WCS)	19.7X17.0X7.2 27.2X12.1X7.2	–	
B1	EXISTING	UMTS DB/LTE PCS	HPA-65R-BUU-H8	92.4X14.8X7.4	127'-0"±	120°	–	(E)(1) RRUS-11 (850) (E)(1) 4415 B25 (1900)	– –	–	(E) (1) RAYCAP DC6-48-60-18-8F
B2	EXISTING	LTE B14-850	HPA-65R-BUU-H8	92.4X14.8X7.4	127'-0"±	120°	–	(P)(1) B5 4478 (850)	15.0X13.2X7.4	–	
B3	PROPOSED	LTE B14-850/AWS	HPA65R-BU8A	96X11.7X7.6	127'-0"±	120°	(P)(1) DBCT108F1V92-1	(P)(1) B66 4426 (P)(1) B14 4478	15.0X13.2X7.4 15.0X13.2X7.4	–	
B4	PROPOSED	LTE 700 BC/ WCS	HPA65R-BU8A	96X11.7X7.6	127'-0"±	120°	–	(E)(1) RRUS-11 (700) (P)(1) RRUS-32 (WCS)	19.7X17.0X7.2 27.2X12.1X7.2	–	
C1	EXISTING	UMTS DB/LTE PCS	HPA-65R-BUU-H8	92.4X14.8X7.4	127'-0"±	240°	–	(E)(1) RRUS-11 (850) (E)(1) 4415 B25 (1900)	– –	–	(E) (1) RAYCAP DC6-48-60-18-8F
C2	EXISTING	LTE B14-850	HPA-65R-BUU-H8	92.4X14.8X7.4	127'-0"±	240°	–	(P)(1) B5 4478 (850)	15.0X13.2X7.4	–	
C3	PROPOSED	LTE B14-850/AWS	HPA65R-BU8A	96X11.7X7.6	127'-0"±	240°	(P)(1) DBCT108F1V92-1	(P)(1) B66 4426 (P)(1) B14 4478	15.0X13.2X7.4 15.0X13.2X7.4	–	
C4	PROPOSED	LTE 700 BC/ WCS	HPA65R-BU8A	96X11.7X7.6	127'-0"±	240°	–	(E)(1) RRUS-11 (700) (P)(1) RRUS-32 (WCS)	19.7X17.0X7.2 27.2X12.1X7.2	–	

FINAL ANTENNA CONFIGURATION TABLE 1 / A-3



PROPOSED ANTENNA & RRU MOUNTING DETAIL 2 / A-3

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

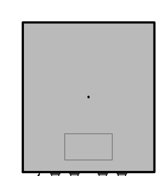
RRU CHART

QUANTITY	MODEL	L	W	D
6(E)	RRUS-11	19.7"	17.0"	7.2"
3(P)	RRUS-32	27.2"	12.1"	7.0"
3(E)	4415	15.0"	13.2"	5.4"
3(P)	4478	15.0"	13.2"	7.4"
3(P)	4426	15.0"	13.2"	7.4"
6(P)	4478	15.0"	13.2"	7.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

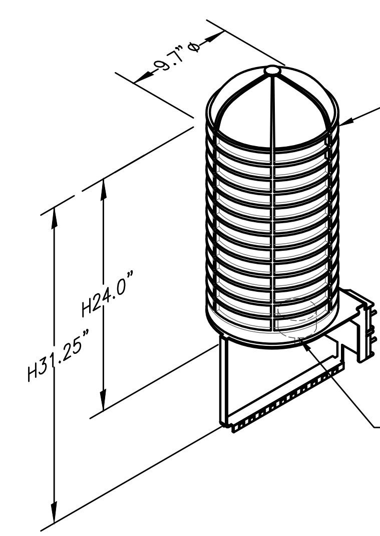


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL 3 / A-3

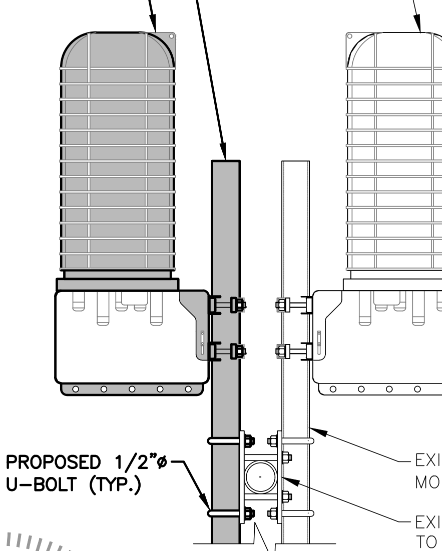
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL 4 / A-3

SCALE: N.T.S



DC SURGE MOUNTING DETAIL 5 / 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: CT2820
SITE NAME: GROTON PLEASANT VALLEY ROAD NORTH
SBA SITE ID: CT13075
1294 PLEASANT VALLEY ROAD NORTH GROTON, CT 06340 NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/09/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	09/28/18	ISSUED FOR REVIEW	ET	AT	DJC
A	07/02/18	ISSUED FOR REVIEW	TR	AT	DJC

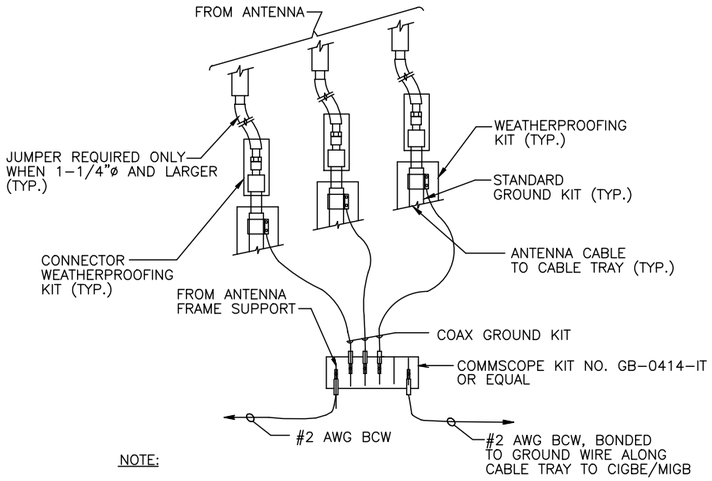
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

STATE OF CONNECTICUT DEREK J. CREASER LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS (LTE 4C, 5C, 6C & RETROFIT)

SITE NUMBER	DRAWING NUMBER	REV
CT2820	A-3	1



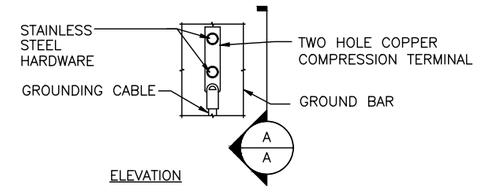
NOTE:

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

SCALE: N.T.S

1 / G-1



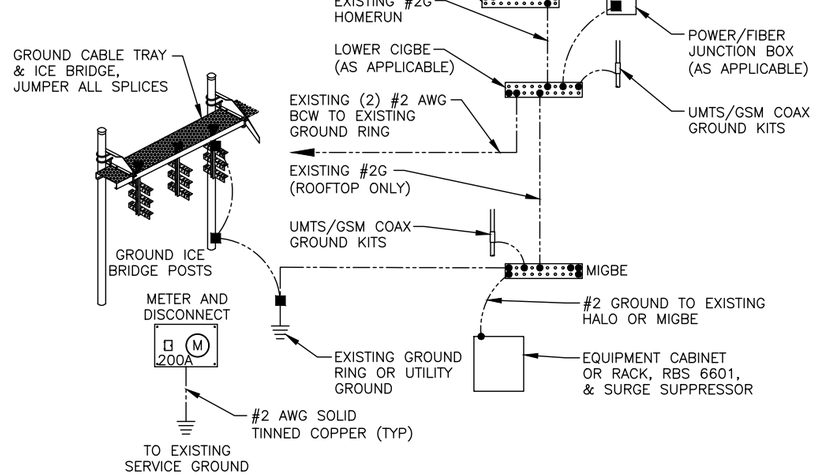
NOTE:

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

SCALE: N.T.S

3 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1

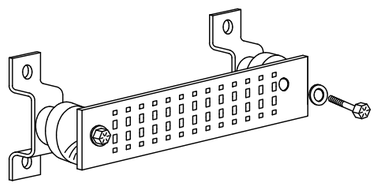
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

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: CT2820
SITE NAME: GROTON PLEASANT VALLEY ROAD NORTH
SBA SITE ID: CT13075
1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340
NEW LONDON COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/09/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	09/28/18	ISSUED FOR REVIEW	ET	AT	DJC
A	07/02/18	ISSUED FOR REVIEW	TR	AT	DJC

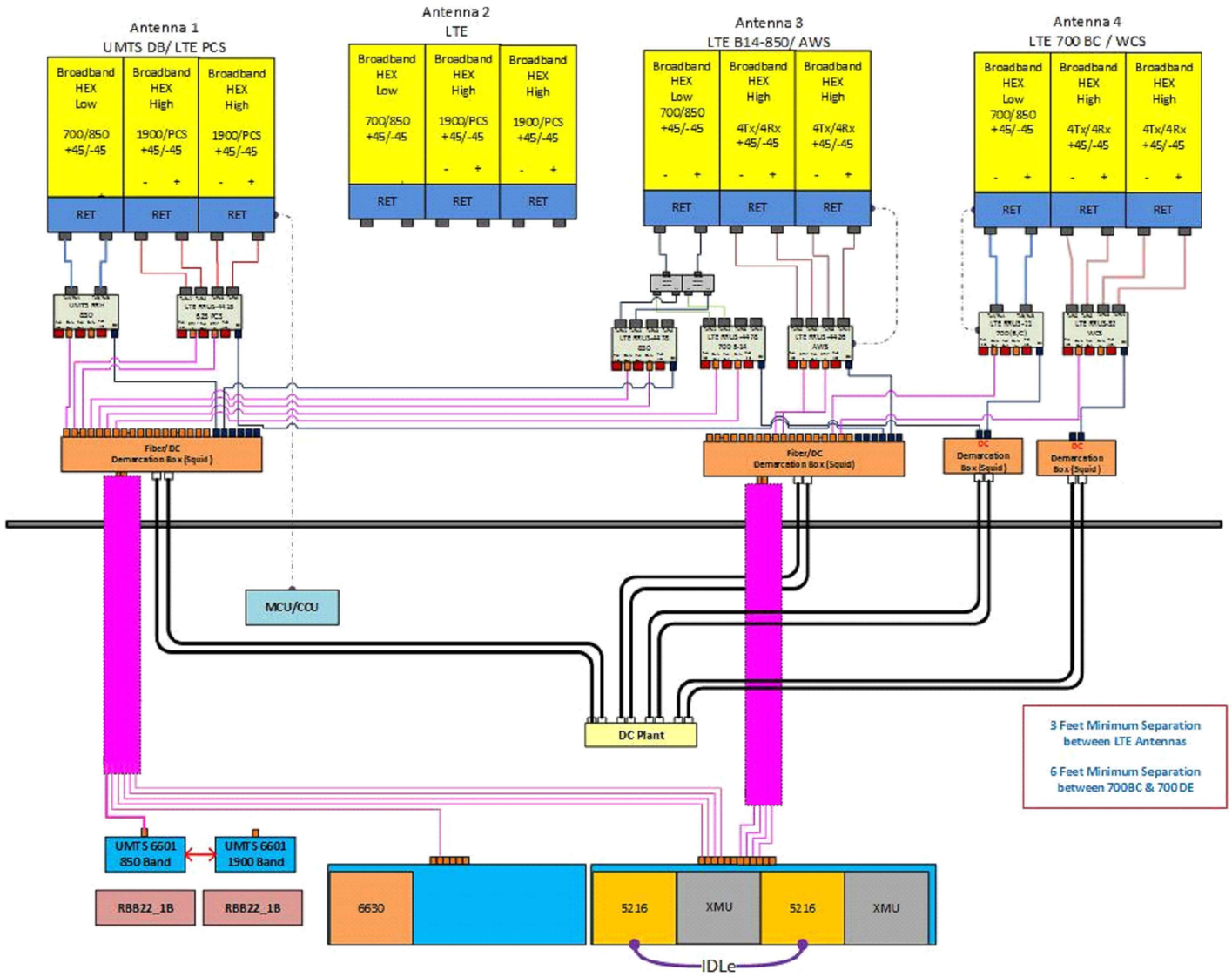
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 28955 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 4C, 5C, 6C & RETROFIT)

SITE NUMBER	DRAWING NUMBER	REV
CT2820	G-1	1



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

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

NOTE:

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

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: CT2820
SITE NAME: GROTON PLEASANT VALLEY ROAD NORTH
SBA SITE ID: CT13075
1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/09/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	09/28/18	ISSUED FOR REVIEW	ET	AT	DJC
A	07/02/18	ISSUED FOR REVIEW	TR	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASER · 26,258 · LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
(LTE 4C, 5C, 6C & RETROFIT)

SITE NUMBER	DRAWING NUMBER	REV
CT2820	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: CT13075-A

Customer Site Name: New London

Carrier Name: AT&T

Carrier Site ID / Name: CT2820 / Groton Pleasant Valley Road North

Site Location: 1294 Pleasant Valley Road North

Groton, Connecticut

New London County

Latitude: 41.399972

Longitude: -72.079222

10/15/18

Analysis Result:

Max Structural Usage: 71.7% [Pass]

Max Foundation Usage: 81.0% [Pass]

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

Report Prepared By : Linfeng Chen

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: CT13075-A

Customer Site Name: New London

Carrier Name: AT&T

Carrier Site ID / Name: CT2820 / Groton Pleasant Valley Road North

Site Location: 1294 Pleasant Valley Road North

Groton, Connecticut

New London County

Latitude: 41.399972

Longitude: -72.079222

Analysis Result:

Max Structural Usage: 71.7% [Pass]

Max Foundation Usage: 81.0% [Pass]

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

Report Prepared By : Linfeng Chen

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	Tower Design prepared by Sabre, job # 08-07173, dated 08/09/2007
Foundation Drawing	Foundation Design prepared by Sabre, job # 08-07173-E, dated 08/09/2007
Geotechnical Report	Geotechnical Report prepared by Gemini Geotechnical Associates, job # 07079CT, dated 07/20/2007
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} = 135.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 105.0 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 / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.163, S_1 = 0.059

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	150.5	3	Commscope - SBNHH-1D65B - Panel	Low Profile Platform	(12) 1 5/8" (2) 1 5/8" Hybriflex Fiber	Verizon
2	149.0	3	Commscope - LNX-6514DS-VTM - Panel			
3		3	Antel - BXA-80063/4CF - Panel			
4		3	Commscope - SBNHH-1D65B - Panel			
5		3	Alcatel Lucent - RRH 2x60 700 - RRH			
6		3	Alcatel Lucent - RRH 4X45 AWS - RRH			
7		3	Alcatel Lucent - RRH 2x60W-1900MHz - RRH			
8		1	RFS - DB-TI-6Z-8AB-0Z - Distribution Box			
9		1	RFS - DB-T1-6Z-8AB-0Z - Distribution Box			
10	140.0	3	Ericsson - AIR B2A B4P - Panel	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
11		3	Ericsson - AIR B4A B2P - Panel			
12		3	Ericsson - KRY 112 144 T - TMA			
-	127.0	12	CCI - HPA-65R-BUU-8H - Panel	MTC3607 Platform + HR & Kicker	(2) 1/2" Fiber (8) 3/4" DC (3) 3/8" RET	New Cingular
-		9	Ericsson - RRUS 11 - RRU			
-		6	Ericsson - RRUS 12 - RRU			
-		3	Ericsson - RRUS 32 - RRU			
-		3	Ericsson - RRUS E2 - RRU			
-		6	Ericsson - RRUS A2 - RRU			
-		4	Raycap - DC6-48-60-18-8F			

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	127.0	6	Cci HPA65R-BU8A - Panel	MTC3607 Platform + HR & Kicker	(4) 1/2" Fiber (8) 3/4" DC Power (3) 3/8" RET Line	AT&T
14		3	Kaelus DBCT108F1V92-1 Diplexer			
15		3	Ericsson RRUS 4426 B66 RRU			
16		3	Ericsson RRUS 4415 B25 RRU			
17		3	Ericsson RRUS 4478 B5 RRU			
18		3	Ericsson RRUS 4478 B14 RRU			
19		6	Cci HPA-65R-BUU-H8 - Panel			
20		6	Ericsson RRUS-11 RRU			
21		3	Ericsson RRUS 32 RRU			
22		4	Raycap DC6-48-60-18-8F -SP			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate	Flange Plate
Max. Usage:	**71.7%**	**66.6%**	**61.4%**	**54.4%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	5442.5	49.9
Analysis Reactions	4473.2	40.2
Factored Reactions*	7347.4	67.4
% of Design Reactions	60.9%	59.7%

* 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):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.0890 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. 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.

7. 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.

8. 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.

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

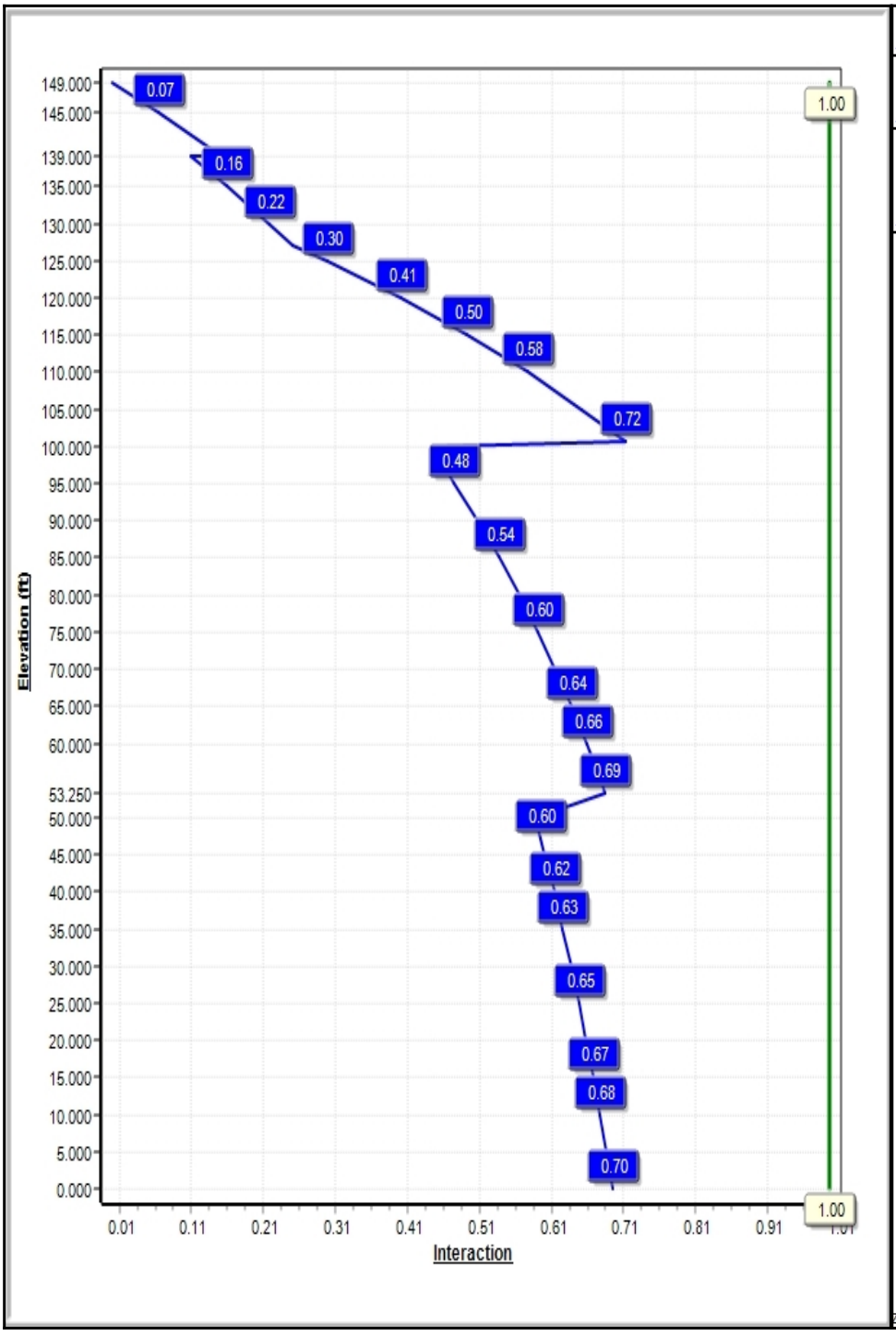
Usage Diagram - Max Ratio 71.65% at 100.8ft

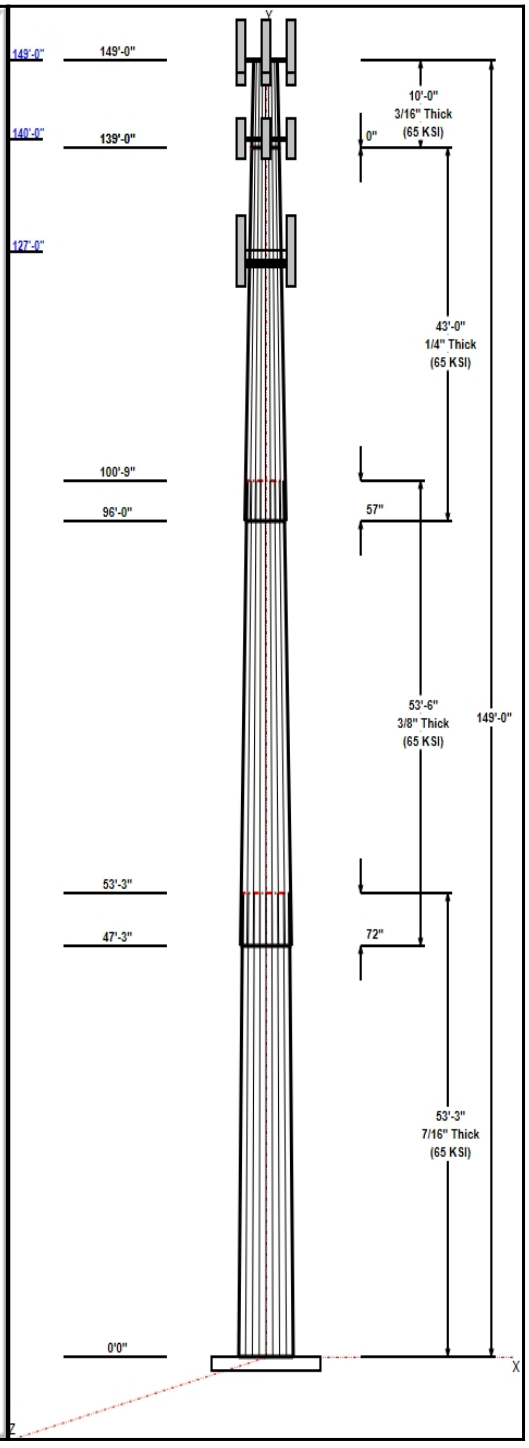
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	22
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 105 mph Wind





Structure: CT13075-A-SBA

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

Base Shape: 18 Sided
Taper: 0.23597

10/15/2018

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	45.69	58.26	0.438		0.23597	65
2	53.50	35.24	47.86	0.375	Slip	0.23597	65
3	43.00	26.71	36.86	0.250	Slip	0.23597	65
4	10.00	24.35	26.71	0.188	Butt	0.23597	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
149.00	149.00	3	LNX-6514DS-VTM	Verizon
149.00	149.00	3	BXA-80063/4CF	Verizon
149.00	149.00	3	SBNHH-1D65B	Verizon
149.00	150.50	3	SBNHH-1D65B	Verizon
149.00	149.00	3	RRH2x60 700	Verizon
149.00	149.00	3	RRH 4X45 AWS	Verizon
149.00	149.00	3	RRH 2X60W-1900MHz	Verizon
149.00	149.00	1	DB-T1-6Z-8AB-0Z	Verizon
149.00	149.00	1	DB-T1-6Z-8AB-0Z	Verizon
149.00	149.00	1	Low Profile	Verizon
140.00	140.00	3	KRY 112 144 T	T-Mobile
140.00	140.00	1	Low Profile Platform	T-Mobile
140.00	140.00	3	AIR 32 B2A B4P	T-Mobile
140.00	140.00	3	AIR 32 B4A B2P	T-Mobile
127.00	127.00	6	Cci HPA65R-BU8A	AT&T
127.00	127.00	3	Kaelus DBCT108F1V92-1	AT&T
127.00	127.00	3	Ericsson RRUS 4426 B66	AT&T
127.00	127.00	3	Ericsson RRUS 4415 B25	AT&T
127.00	127.00	3	Ericsson RRUS 4478 B5	AT&T
127.00	127.00	3	Ericsson RRUS 4478 B14	AT&T
127.00	127.00	6	Cci HPA-65R-BUU-H8	AT&T
127.00	127.00	6	Ericsson RRUS-11 RRU	AT&T
127.00	127.00	3	Ericsson RRUS 32 RRU	AT&T
127.00	127.00	4	Raycap DC6-48-60-18-8F	AT&T
127.00	127.00	1	MTC3607 Platform + HR &	AT&T

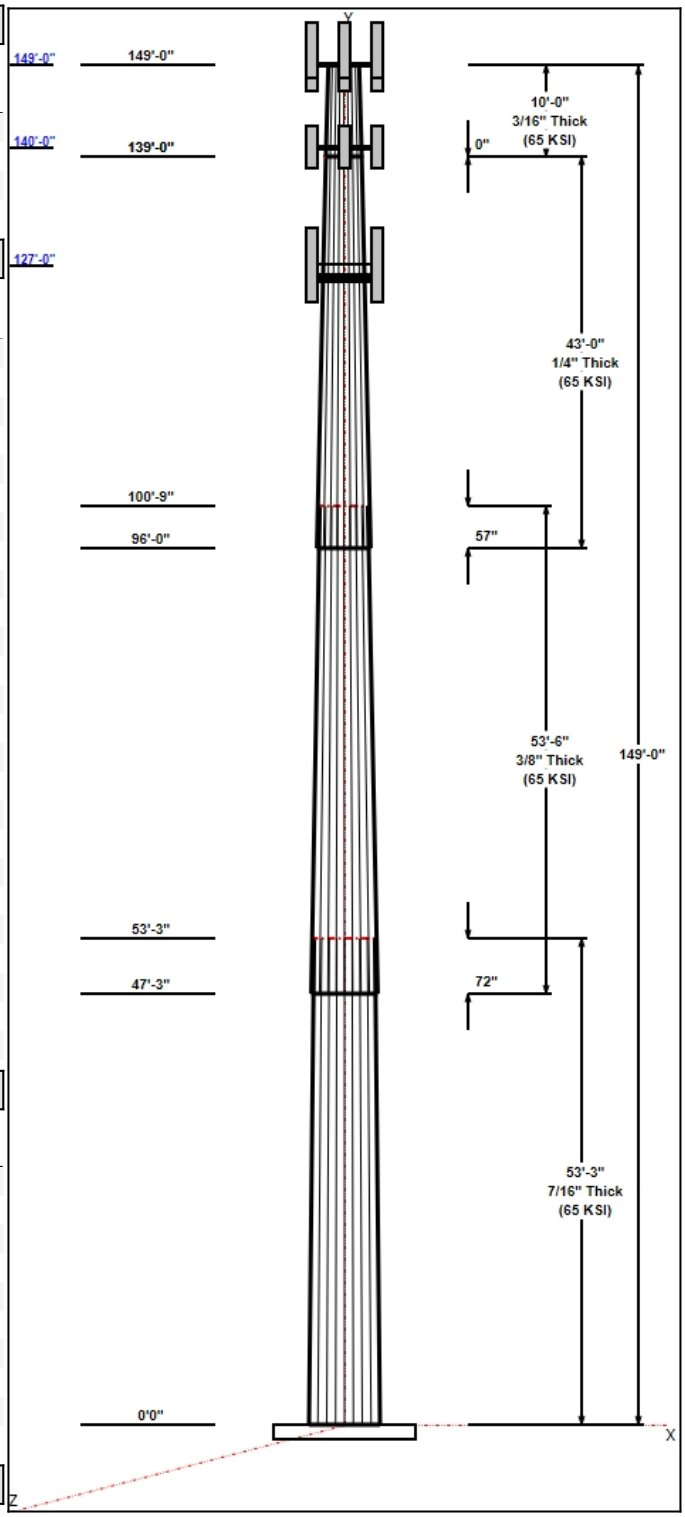
Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	149.00	Inside	1 5/8" Coax	Verizon
0.00	149.00	Inside	1 5/8" Coax	Verizon
0.00	149.00	Inside	1 5/8" Coax	Verizon
0.00	149.00	Inside	1 5/8" Coax	Verizon
0.00	149.00	Inside	1 5/8" Hybriflex Fiber	Verizon
0.00	140.00	Inside	1 5/8" Coax	T-Mobile
0.00	140.00	Inside	1 5/8" Fiber	T-Mobile
0.00	127.00	Inside	1/2" Fiber	AT&T
0.00	127.00	Inside	3/4" DC Power	AT&T
0.00	127.00	Inside	3/8" RET Line	AT&T

Anchor Bolts

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

Base Plate



Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	65.4	60.0	Clipped

Reactions

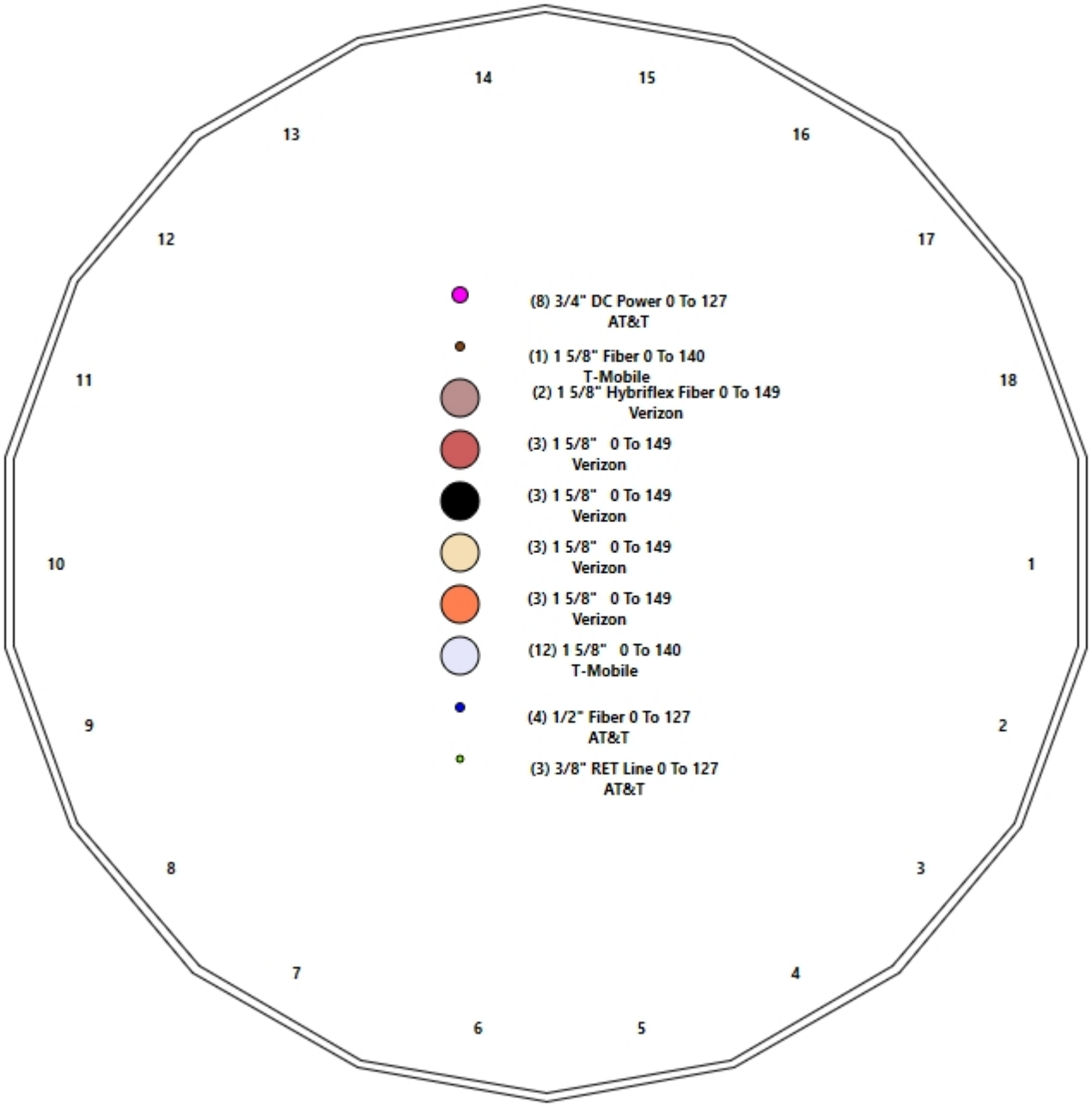
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	4473.2	40.2	47.4
0.9D + 1.6W 105 mph Wind	4437.3	40.2	35.5
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1012.3	9.4	72.6
1.2D + 1.0E	207.8	1.8	47.4
0.9D + 1.0E	206.0	1.8	35.6
1.0D + 1.0W 60 mph Wind	909.2	8.2	39.5

Structure: CT13075-A-SBA - Coax Line Placement

Type: Monopole
Site Name: New London
Height: 149.00 (ft)

10/15/2018

Tower Engineering Solutions



Shaft Properties

Structure:	CT13075-A-SBA		**Code:**	EIA/TIA-222-G	10/15/2018
Site Name:	New London		**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	0.4375	65		0.00	12,968
2	18	53.500	0.3750	65	Slip	72.00	8,921
3	18	43.000	0.2500	65	Slip	57.00	3,661
4	18	10.000	0.1875	65	Flange	0.00	513
					Total Shaft Weight:		**26,063**

	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	58.26	0.00	80.29	33916.66	22.07	133.17	45.69	53.25	62.84	16262.1	17.01	104.4	0.235973
2	47.86	47.25	56.52	16100.98	21.09	127.63	35.24	100.75	41.49	6370.66	15.16	93.96	0.235973
3	36.86	96.00	29.05	4917.70	24.58	147.43	26.71	139.00	21.00	1857.12	17.43	106.8	0.235973
4	26.71	139.0	15.78	1402.74	23.71	142.45	24.35	149.00	14.38	1060.65	21.49	129.8	0.235973

Load Summary

Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**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	LNX-6514DS-VTM	3	38.80	8.17	0.83	214.98	10.991	0.83	0.00	0.00
2	149.00	BXA-80063/4CF	3	9.90	4.72	0.72	110.33	6.567	0.72	0.00	0.00
3	149.00	SBNHH-1D65B	3	40.60	8.08	0.83	242.97	9.459	0.83	0.00	0.00
4	149.00	SBNHH-1D65B	3	40.00	8.16	0.83	242.97	9.459	0.83	0.00	1.50
5	149.00	RRH2x60 700	3	51.00	1.51	1.50	151.17	1.934	1.47	0.00	0.00
6	149.00	RRH 4X45 AWS	3	64.00	2.60	0.80	147.52	3.304	0.80	0.00	0.00
7	149.00	RRH 2X60W-1900MHz	3	46.00	1.88	0.84	115.05	2.466	0.84	0.00	0.00
8	149.00	DB-T1-6Z-8AB-0Z	1	18.90	4.80	0.67	162.51	5.673	0.67	0.00	0.00
9	149.00	DB-T1-6Z-8AB-0Z	1	18.90	4.80	0.67	162.51	5.673	0.67	0.00	0.00
10	149.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	2808.04	39.650	1.00	0.00	0.00
11	140.00	KRY 112 144 T	3	11.02	0.41	0.70	21.75	0.882	0.70	0.00	0.00
12	140.00	Low Profile Platform	1	1500.00	22.00	1.00	2799.91	39.540	1.00	0.00	0.00
13	140.00	AIR 32 B2A B4P	3	132.20	6.51	0.87	315.08	7.682	0.87	0.00	0.00
14	140.00	AIR 32 B4A B2P	3	105.80	6.51	0.87	288.68	7.682	0.87	0.00	0.00
15	127.00	Cci HPA65R-BU8A	6	69.00	11.22	0.89	339.99	12.850	0.89	0.00	0.00
16	127.00	Kaelus DBCT108F1V92-1 Diplexer	3	19.80	0.70	1.00	44.04	0.953	1.00	0.00	0.00
17	127.00	Ericsson RRUS 4426 B66 RRU	3	48.50	1.15	0.67	86.77	1.616	0.67	0.00	0.00
18	127.00	Ericsson RRUS 4415 B25 RRU	3	44.10	1.86	0.67	90.76	2.423	0.67	0.00	0.00
19	127.00	Ericsson RRUS 4478 B5 RRU	3	59.90	1.84	0.67	107.98	2.379	0.67	0.00	0.00
20	127.00	Ericsson RRUS 4478 B14 RRU	3	59.40	1.65	0.67	100.18	2.160	0.67	0.00	0.00
21	127.00	Cci HPA-65R-BUU-H8	6	68.00	12.98	0.79	353.46	14.567	0.79	0.00	0.00
22	127.00	Ericsson RRUS-11 RRU	6	50.70	2.52	0.67	138.10	3.160	0.67	0.00	0.00
23	127.00	Ericsson RRUS 32 RRU	3	77.00	3.31	0.67	124.43	2.219	0.67	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F -SP	4	31.80	2.20	1.00	92.60	3.230	1.00	0.00	0.00
25	127.00	MTC3607 Platform + HR & Kicker	1	2246.00	51.70	1.00	5330.04	89.325	1.00	0.00	0.00
		Totals:	**75**	**9,081.26**			**23,836.63**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	149.00	(3) 1 5/8" Coax	0.00	Inside
0.00	149.00	(3) 1 5/8" Coax	0.00	Inside
0.00	149.00	(3) 1 5/8" Coax	0.00	Inside
0.00	149.00	(3) 1 5/8" Coax	0.00	Inside
0.00	149.00	(2) 1 5/8" Hybriflex Fiber	0.00	Inside
0.00	140.00	(12) 1 5/8" Coax	0.00	Inside
0.00	140.00	(1) 1 5/8" Fiber	0.00	Inside
0.00	127.00	(4) 1/2" Fiber	0.00	Inside
0.00	127.00	(8) 3/4" DC Power	0.00	Inside
0.00	127.00	(3) 3/8" RET Line	0.00	Inside

Shaft Section Properties

Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**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: 7	

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		0.4375	58.260	80.291	33916.7	22.07	133.17	75.4	1146.	0.0
5.00		0.4375	57.080	78.653	31882.5	21.59	130.47	76.0	1100.	1352.1
10.00		0.4375	55.900	77.014	29931.4	21.12	127.77	76.6	1054.	1324.2
15.00		0.4375	54.720	75.376	28061.5	20.64	125.08	77.1	1010.	1296.4
20.00		0.4375	53.541	73.738	26271.2	20.17	122.38	77.7	966.4	1268.5
25.00		0.4375	52.361	72.099	24558.7	19.69	119.68	78.2	923.8	1240.6
30.00		0.4375	51.181	70.461	22922.3	19.22	116.98	78.8	882.1	1212.8
35.00		0.4375	50.001	68.823	21360.3	18.74	114.29	79.4	841.4	1184.9
40.00		0.4375	48.821	67.184	19870.8	18.27	111.59	79.9	801.7	1157.0
45.00		0.4375	47.641	65.546	18452.3	17.79	108.89	80.5	762.9	1129.1
47.25	Bot - Section 2	0.4375	47.110	64.809	17836.6	17.58	107.68	80.7	745.7	499.0
50.00		0.4375	46.461	63.908	17103.0	17.31	106.20	81.0	725.0	1127.5
53.25	Top - Section 1	0.3750	46.444	54.832	14703.3	20.43	123.85	0.0	0.0	1312.3
55.00		0.3750	46.031	54.341	14311.4	20.23	122.75	77.6	612.4	325.1
60.00		0.3750	44.852	52.936	13230.3	19.68	119.60	78.3	581.0	912.6
65.00		0.3750	43.672	51.532	12205.1	19.12	116.46	78.9	550.5	888.7
70.00		0.3750	42.492	50.128	11234.3	18.57	113.31	79.6	520.7	864.8
75.00		0.3750	41.312	48.724	10316.3	18.01	110.17	80.2	491.8	840.9
80.00		0.3750	40.132	47.319	9449.8	17.46	107.02	80.9	463.8	817.0
85.00		0.3750	38.952	45.915	8633.2	16.90	103.87	81.5	436.5	793.1
90.00		0.3750	37.772	44.511	7865.0	16.35	100.73	82.2	410.1	769.2
95.00		0.3750	36.593	43.106	7143.9	15.80	97.58	82.5	384.5	745.4
96.00	Bot - Section 3	0.3750	36.357	42.826	7005.1	15.68	96.95	82.5	379.5	146.2
100.00		0.3750	35.413	41.702	6468.2	15.24	94.43	82.5	359.8	965.5
100.75	Top - Section 2	0.2500	35.736	28.157	4479.7	23.79	142.94	0.0	0.0	178.2
105.00		0.2500	34.733	27.361	4110.5	23.09	138.93	74.2	233.1	401.4
110.00		0.2500	33.553	26.425	3702.8	22.25	134.21	75.2	217.4	457.6
115.00		0.2500	32.373	25.489	3323.0	21.42	129.49	76.2	202.2	441.6
120.00		0.2500	31.193	24.553	2970.2	20.59	124.77	77.2	187.5	425.7
125.00		0.2500	30.013	23.616	2643.2	19.76	120.05	78.2	173.5	409.8
127.00		0.2500	29.541	23.242	2519.4	19.43	118.17	78.6	168.0	159.4
130.00		0.2500	28.833	22.680	2341.2	18.93	115.33	79.1	159.9	234.4
135.00		0.2500	27.654	21.744	2063.0	18.09	110.61	80.1	146.9	377.9
139.00	Top - Section 3	0.2500	26.710	20.995	1857.1	17.43	106.84	80.9	136.9	290.9
139.00	Bot - Section 4	0.1875	26.710	15.783	1402.7	23.24	142.45	73.5	103.4	
140.00		0.1875	26.474	15.643	1365.6	23.49	141.19	73.8	101.6	53.5
145.00		0.1875	25.294	14.941	1189.9	22.38	134.90	75.1	92.7	260.2
149.00		0.1875	24.350	14.379	1060.6	21.49	129.87	76.1	85.8	199.5
										26063.1

Wind Loading - Shaft

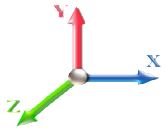
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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	22.791	25.07	477.24	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	467.57	0.650	0.000	5.00	24.400	15.86	636.2	0.0	1622.5
10.00		1.00	0.85	22.791	25.07	457.91	0.650	0.000	5.00	23.901	15.54	623.2	0.0	1589.1
15.00		1.00	0.85	22.791	25.07	448.24	0.650	0.000	5.00	23.401	15.21	610.1	0.0	1555.6
20.00		1.00	0.90	24.182	26.60	451.77	0.650	0.000	5.00	22.902	14.89	633.6	0.0	1522.2
25.00		1.00	0.95	25.345	27.88	452.31	0.650	0.000	5.00	22.403	14.56	649.6	0.0	1488.8
30.00		1.00	0.98	26.337	28.97	450.69	0.650	0.000	5.00	21.904	14.24	660.0	0.0	1455.3
35.00		1.00	1.01	27.206	29.93	447.50	0.650	0.000	5.00	21.405	13.91	666.2	0.0	1421.9
40.00		1.00	1.04	27.981	30.78	443.13	0.650	0.000	5.00	20.906	13.59	669.2	0.0	1388.4
45.00		1.00	1.07	28.684	31.55	437.81	0.650	0.000	5.00	20.406	13.26	669.6	0.0	1355.0
47.25	Bot - Section 2	1.00	1.08	28.980	31.88	435.16	0.650	0.000	2.25	9.020	5.86	299.0	0.0	598.8
50.00		1.00	1.09	29.327	32.26	431.73	0.650	0.000	2.75	11.062	7.19	371.1	0.0	1353.0
53.25	Top - Section 1	1.00	1.11	29.719	32.69	427.43	0.650	0.000	3.25	12.878	8.37	437.8	0.0	1574.8
55.00		1.00	1.12	29.922	32.91	432.05	0.650	0.000	1.75	6.847	4.45	234.4	0.0	390.1
60.00		1.00	1.14	30.475	33.52	424.85	0.650	0.000	5.00	19.226	12.50	670.3	0.0	1095.1
65.00		1.00	1.16	30.993	34.09	417.17	0.650	0.000	5.00	18.727	12.17	664.0	0.0	1066.4
70.00		1.00	1.17	31.480	34.63	409.08	0.650	0.000	5.00	18.228	11.85	656.4	0.0	1037.8
75.00		1.00	1.19	31.941	35.13	400.62	0.650	0.000	5.00	17.728	11.52	647.8	0.0	1009.1
80.00		1.00	1.21	32.377	35.62	391.83	0.650	0.000	5.00	17.229	11.20	638.2	0.0	980.4
85.00		1.00	1.22	32.793	36.07	382.75	0.650	0.000	5.00	16.730	10.87	627.6	0.0	951.8
90.00		1.00	1.24	33.190	36.51	373.39	0.650	0.000	5.00	16.231	10.55	616.3	0.0	923.1
95.00		1.00	1.25	33.570	36.93	363.79	0.650	0.000	5.00	15.732	10.23	604.2	0.0	894.4
96.00	Bot - Section 3	1.00	1.25	33.644	37.01	361.85	0.650	0.000	1.00	3.086	2.01	118.8	0.0	175.4
100.00		1.00	1.27	33.935	37.33	353.97	0.650	0.000	4.00	12.315	8.00	478.1	0.0	1158.6
100.75	Top - Section 2	1.00	1.27	33.988	37.39	352.48	0.650	0.000	0.75	2.274	1.48	88.4	0.0	213.8
105.00		1.00	1.28	34.285	37.71	348.96	0.650	0.000	4.25	12.671	8.24	497.0	0.0	481.7
110.00		1.00	1.29	34.623	38.08	338.76	0.650	0.000	5.00	14.446	9.39	572.2	0.0	549.1
115.00		1.00	1.30	34.948	38.44	328.38	0.650	0.000	5.00	13.946	9.07	557.6	0.0	530.0
120.00		1.00	1.32	35.263	38.79	317.84	0.650	0.000	5.00	13.447	8.74	542.5	0.0	510.8
125.00		1.00	1.33	35.567	39.12	307.13	0.650	0.000	5.00	12.948	8.42	526.8	0.0	491.7
127.00	Appurtenance(s)	1.00	1.33	35.686	39.25	302.81	0.650	0.000	2.00	5.039	3.28	205.7	0.0	191.3
130.00		1.00	1.34	35.862	39.45	296.28	0.650	0.000	3.00	7.409	4.82	304.0	0.0	281.3
135.00		1.00	1.35	36.148	39.76	285.29	0.650	0.000	5.00	11.950	7.77	494.2	0.0	453.5
139.00	Top - Section 3	1.00	1.36	36.371	40.01	276.40	0.650	0.000	4.00	9.200	5.98	382.8	0.0	349.0
140.00	Appurtenance(s)	1.00	1.36	36.426	40.07	274.16	0.650	0.000	1.00	2.250	1.46	93.8	0.0	64.2
145.00		1.00	1.37	36.696	40.37	262.91	0.650	0.000	5.00	10.951	7.12	459.7	0.0	312.2
149.00	Appurtenance(s)	1.00	1.38	36.907	40.60	253.83	0.650	0.000	4.00	8.402	5.46	354.7	0.0	239.4
								Totals:	**149.00**			**17,961.0**		**31,275.7**

Discrete Appurtenance Forces

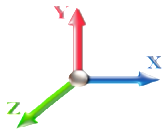
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa 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	RRH2x60 700	3	36.907	40.597	1.50	1.00	6.79	183.60	0.000	0.000	441.37	0.00	0.00
2	149.00	LNX-6514DS-VTM	3	36.907	40.597	0.83	1.00	20.34	139.68	0.000	0.000	1321.42	0.00	0.00
3	149.00	BXA-80063/4CF	3	36.907	40.597	0.72	1.00	10.20	35.64	0.000	0.000	662.24	0.00	0.00
4	149.00	SBNHH-1D65B	3	36.907	40.597	0.83	1.00	20.12	146.16	0.000	0.000	1306.86	0.00	0.00
5	149.00	SBNHH-1D65B	3	36.985	40.683	0.83	1.00	20.32	144.00	0.000	1.500	1322.58	0.00	1983.88
6	149.00	Low Profile	1	36.907	40.597	1.00	1.00	22.00	1800.00	0.000	0.000	1429.03	0.00	0.00
7	149.00	RRH 4X45 AWS	3	36.907	40.597	0.80	1.00	6.24	230.40	0.000	0.000	405.32	0.00	0.00
8	149.00	RRH 2X60W-1900MHz	3	36.907	40.597	0.84	1.00	4.74	165.60	0.000	0.000	307.73	0.00	0.00
9	149.00	DB-T1-6Z-8AB-0Z	1	36.907	40.597	0.67	1.00	3.22	22.68	0.000	0.000	208.90	0.00	0.00
10	149.00	DB-T1-6Z-8AB-0Z	1	36.907	40.597	0.67	1.00	3.22	22.68	0.000	0.000	208.90	0.00	0.00
11	140.00	AIR 32 B4A B2P	3	36.426	40.068	0.70	0.80	13.59	380.88	0.000	0.000	871.43	0.00	0.00
12	140.00	AIR 32 B2A B4P	3	36.426	40.068	0.70	0.80	13.59	475.92	0.000	0.000	871.43	0.00	0.00
13	140.00	Low Profile Platform	1	36.426	40.068	1.00	1.00	22.00	1800.00	0.000	0.000	1410.41	0.00	0.00
14	140.00	KRY 112 144 T	3	36.426	40.068	0.56	0.80	0.69	39.67	0.000	0.000	44.16	0.00	0.00
15	127.00	Ericsson RRUS 4478 B5	3	35.686	39.255	0.54	0.80	2.96	215.64	0.000	0.000	185.83	0.00	0.00
16	127.00	Cci HPA65R-BU8A	6	35.686	39.255	0.71	0.80	47.93	496.80	0.000	0.000	3010.48	0.00	0.00
17	127.00	Kaelus DBCT108F1V92-1	3	35.686	39.255	0.80	0.80	1.68	71.28	0.000	0.000	105.52	0.00	0.00
18	127.00	Ericsson RRUS 4426 B66	3	35.686	39.255	0.54	0.80	1.85	174.60	0.000	0.000	116.14	0.00	0.00
19	127.00	Ericsson RRUS 4415 B25	3	35.686	39.255	0.54	0.80	2.99	158.76	0.000	0.000	187.85	0.00	0.00
20	127.00	Cci HPA-65R-BUU-H8	6	35.686	39.255	0.63	0.80	49.22	489.60	0.000	0.000	3091.39	0.00	0.00
21	127.00	Ericsson RRUS 4478 B14	3	35.686	39.255	0.54	0.80	2.65	213.84	0.000	0.000	166.64	0.00	0.00
22	127.00	Ericsson RRUS-11 RRU	6	35.686	39.255	0.54	0.80	8.10	365.04	0.000	0.000	509.01	0.00	0.00
23	127.00	Ericsson RRUS 32 RRU	3	35.686	39.255	0.54	0.80	5.32	277.20	0.000	0.000	334.29	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	4	35.686	39.255	0.80	0.80	7.04	152.64	0.000	0.000	442.16	0.00	0.00
25	127.00	MTC3607 Platform + HR &	1	35.686	39.255	1.00	1.00	51.70	2695.20	0.000	0.000	3247.15	0.00	0.00
							Totals:		**10,897.51**			**22,208.24**		

Total Applied Force Summary

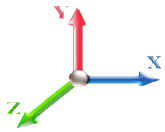
Structure:	CT13075-A-SBA		**Code:**	EIA/TIA-222-G	10/15/2018
Site Name:	New London		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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		636.17	1807.05	0.00	0.00
10.00		623.16	1773.60	0.00	0.00
15.00		610.14	1740.15	0.00	0.00
20.00		633.58	1706.70	0.00	0.00
25.00		649.58	1673.25	0.00	0.00
30.00		659.95	1639.80	0.00	0.00
35.00		666.19	1606.35	0.00	0.00
40.00		669.20	1572.90	0.00	0.00
45.00		669.62	1539.45	0.00	0.00
47.25		299.04	681.84	0.00	0.00
50.00		371.12	1454.47	0.00	0.00
53.25		437.83	1694.69	0.00	0.00
55.00		234.38	454.64	0.00	0.00
60.00		670.28	1279.62	0.00	0.00
65.00		663.97	1250.95	0.00	0.00
70.00		656.43	1222.28	0.00	0.00
75.00		647.80	1193.61	0.00	0.00
80.00		638.17	1164.94	0.00	0.00
85.00		627.64	1136.27	0.00	0.00
90.00		616.28	1107.59	0.00	0.00
95.00		604.17	1078.92	0.00	0.00
96.00		118.79	212.34	0.00	0.00
100.00		478.10	1306.22	0.00	0.00
100.75		88.40	241.51	0.00	0.00
105.00		497.00	638.56	0.00	0.00
110.00		572.17	733.57	0.00	0.00
115.00		557.59	714.45	0.00	0.00
120.00		542.47	695.34	0.00	0.00
125.00		526.84	676.22	0.00	0.00
127.00	(41) attachments	11602.20	5575.74	0.00	0.00
130.00		303.98	379.26	0.00	0.00
135.00		494.16	616.82	0.00	0.00
139.00		382.81	479.69	0.00	0.00
140.00	(10) attachments	3291.19	2793.30	0.00	0.00
145.00		459.74	400.29	0.00	0.00
149.00	(24) attachments	7969.08	3200.35	0.00	1983.88
	Totals:	**40,169.21**	**47,442.73**	**0.00**	**1,983.88**

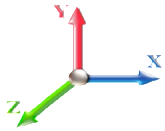
Calculated Forces

Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**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	

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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	-47.38	-40.25	0.00	-4473.2	0.00	4473.22	5451.60	2725.80	12956.4	6487.84	0.00	0.000	0.000	0.698
5.00	-45.44	-39.75	0.00	-4271.9	0.00	4271.99	5379.95	2689.97	12523.2	6270.95	0.10	-0.183	0.000	0.690
10.00	-43.54	-39.27	0.00	-4073.2	0.00	4073.22	5306.65	2653.32	12093.3	6055.68	0.39	-0.370	0.000	0.681
15.00	-41.68	-38.78	0.00	-3876.9	0.00	3876.90	5231.70	2615.85	11666.9	5842.16	0.88	-0.558	0.000	0.672
20.00	-39.85	-38.26	0.00	-3683.0	0.00	3683.01	5155.10	2577.55	11244.2	5630.50	1.57	-0.750	0.000	0.662
25.00	-38.06	-37.72	0.00	-3491.7	0.00	3491.70	5076.86	2538.43	10825.5	5420.83	2.46	-0.944	0.000	0.652
30.00	-36.30	-37.15	0.00	-3303.1	0.00	3303.12	4996.96	2498.48	10411.0	5213.26	3.55	-1.141	0.000	0.641
35.00	-34.59	-36.57	0.00	-3117.3	0.00	3117.36	4915.42	2457.71	10001.0	5007.93	4.86	-1.340	0.000	0.630
40.00	-32.90	-35.98	0.00	-2934.5	0.00	2934.50	4832.22	2416.11	9595.63	4804.95	6.37	-1.542	0.000	0.618
45.00	-31.29	-35.35	0.00	-2754.6	0.00	2754.60	4747.38	2373.69	9195.21	4604.44	8.09	-1.746	0.000	0.605
47.25	-30.56	-35.08	0.00	-2675.0	0.00	2675.06	4708.66	2354.33	9016.69	4515.05	8.94	-1.840	0.000	0.599
50.00	-29.04	-34.73	0.00	-2578.5	0.00	2578.58	4660.89	2330.44	8799.96	4406.52	10.03	-1.955	0.000	0.592
53.25	-27.30	-34.28	0.00	-2465.7	0.00	2465.72	3818.32	1909.16	7226.08	3618.41	11.41	-2.091	0.000	0.689
55.00	-26.76	-34.10	0.00	-2405.7	0.00	2405.72	3795.26	1897.63	7117.54	3564.06	12.19	-2.166	0.000	0.682
60.00	-25.37	-33.48	0.00	-2235.2	0.00	2235.21	3728.27	1864.14	6809.75	3409.94	14.58	-2.396	0.000	0.663
65.00	-24.02	-32.86	0.00	-2067.7	0.00	2067.79	3659.63	1829.82	6505.57	3257.62	17.22	-2.628	0.000	0.642
70.00	-22.70	-32.24	0.00	-1903.4	0.00	1903.48	3589.34	1794.67	6205.25	3107.24	20.09	-2.859	0.000	0.619
75.00	-21.41	-31.62	0.00	-1742.2	0.00	1742.27	3517.40	1758.70	5909.03	2958.91	23.21	-3.090	0.000	0.595
80.00	-20.16	-31.00	0.00	-1584.1	0.00	1584.18	3443.81	1721.91	5617.15	2812.75	26.57	-3.319	0.000	0.569
85.00	-18.95	-30.38	0.00	-1429.2	0.00	1429.20	3368.58	1684.29	5329.85	2668.89	30.17	-3.546	0.000	0.541
90.00	-17.77	-29.76	0.00	-1277.3	0.00	1277.32	3291.69	1645.84	5047.37	2527.44	34.00	-3.769	0.000	0.511
95.00	-16.67	-29.12	0.00	-1128.5	0.00	1128.52	3202.59	1601.29	4754.28	2380.67	38.06	-3.987	0.000	0.480
96.00	-16.41	-29.02	0.00	-1099.4	0.00	1099.40	3181.72	1590.86	4692.22	2349.60	38.90	-4.031	0.000	0.473
100.00	-15.09	-28.47	0.00	-983.33	0.00	983.33	3098.26	1549.13	4448.03	2227.32	42.35	-4.200	0.000	0.447
100.75	-14.81	-28.40	0.00	-961.97	0.00	961.97	1860.42	930.21	2714.89	1359.46	43.01	-4.232	0.000	0.717
105.00	-14.10	-27.91	0.00	-841.29	0.00	841.29	1828.32	914.16	2592.13	1297.99	46.86	-4.404	0.000	0.657
110.00	-13.29	-27.34	0.00	-701.76	0.00	701.76	1789.04	894.52	2449.03	1226.33	51.61	-4.671	0.000	0.581
115.00	-12.52	-26.77	0.00	-565.07	0.00	565.07	1748.11	874.06	2307.59	1155.51	56.63	-4.914	0.000	0.497
120.00	-11.78	-26.21	0.00	-431.21	0.00	431.21	1705.53	852.77	2168.05	1085.64	61.89	-5.127	0.000	0.405
125.00	-11.11	-25.65	0.00	-300.16	0.00	300.16	1661.30	830.65	2030.66	1016.84	67.36	-5.302	0.000	0.303
127.00	-6.62	-13.58	0.00	-248.86	0.00	248.86	1643.15	821.58	1976.36	989.65	69.59	-5.361	0.000	0.256
130.00	-6.25	-13.26	0.00	-208.11	0.00	208.11	1615.43	807.71	1895.65	949.24	72.98	-5.439	0.000	0.223
135.00	-5.66	-12.71	0.00	-141.83	0.00	141.83	1567.90	783.95	1763.28	882.95	78.73	-5.545	0.000	0.165
139.00	-5.22	-12.29	0.00	-90.98	0.00	90.98	1528.69	764.34	1659.43	830.95	83.40	-5.609	0.000	0.113
139.00	-5.22	-12.29	0.00	-90.98	0.00	90.98	1044.31	522.16	1138.99	570.34	83.40	-5.609	0.000	0.165
140.00	-2.75	-8.74	0.00	-78.69	0.00	78.69	1038.69	519.35	1122.71	562.19	84.57	-5.622	0.000	0.143
145.00	-2.39	-8.25	0.00	-34.97	0.00	34.97	1009.62	504.81	1041.96	521.75	90.49	-5.681	0.000	0.070
149.00	0.00	-7.97	0.00	-1.98	0.00	1.98	985.17	492.59	978.22	489.84	95.25	-5.699	0.000	0.004

Wind Loading - Shaft

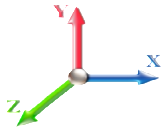
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	22.791	25.07	477.24	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	467.57	0.650	0.000	5.00	24.400	15.86	636.2	0.0	1216.9
10.00		1.00	0.85	22.791	25.07	457.91	0.650	0.000	5.00	23.901	15.54	623.2	0.0	1191.8
15.00		1.00	0.85	22.791	25.07	448.24	0.650	0.000	5.00	23.401	15.21	610.1	0.0	1166.7
20.00		1.00	0.90	24.182	26.60	451.77	0.650	0.000	5.00	22.902	14.89	633.6	0.0	1141.6
25.00		1.00	0.95	25.345	27.88	452.31	0.650	0.000	5.00	22.403	14.56	649.6	0.0	1116.6
30.00		1.00	0.98	26.337	28.97	450.69	0.650	0.000	5.00	21.904	14.24	660.0	0.0	1091.5
35.00		1.00	1.01	27.206	29.93	447.50	0.650	0.000	5.00	21.405	13.91	666.2	0.0	1066.4
40.00		1.00	1.04	27.981	30.78	443.13	0.650	0.000	5.00	20.906	13.59	669.2	0.0	1041.3
45.00		1.00	1.07	28.684	31.55	437.81	0.650	0.000	5.00	20.406	13.26	669.6	0.0	1016.2
47.25	Bot - Section 2	1.00	1.08	28.980	31.88	435.16	0.650	0.000	2.25	9.020	5.86	299.0	0.0	449.1
50.00		1.00	1.09	29.327	32.26	431.73	0.650	0.000	2.75	11.062	7.19	371.1	0.0	1014.7
53.25	Top - Section 1	1.00	1.11	29.719	32.69	427.43	0.650	0.000	3.25	12.878	8.37	437.8	0.0	1181.1
55.00		1.00	1.12	29.922	32.91	432.05	0.650	0.000	1.75	6.847	4.45	234.4	0.0	292.5
60.00		1.00	1.14	30.475	33.52	424.85	0.650	0.000	5.00	19.226	12.50	670.3	0.0	821.3
65.00		1.00	1.16	30.993	34.09	417.17	0.650	0.000	5.00	18.727	12.17	664.0	0.0	799.8
70.00		1.00	1.17	31.480	34.63	409.08	0.650	0.000	5.00	18.228	11.85	656.4	0.0	778.3
75.00		1.00	1.19	31.941	35.13	400.62	0.650	0.000	5.00	17.728	11.52	647.8	0.0	756.8
80.00		1.00	1.21	32.377	35.62	391.83	0.650	0.000	5.00	17.229	11.20	638.2	0.0	735.3
85.00		1.00	1.22	32.793	36.07	382.75	0.650	0.000	5.00	16.730	10.87	627.6	0.0	713.8
90.00		1.00	1.24	33.190	36.51	373.39	0.650	0.000	5.00	16.231	10.55	616.3	0.0	692.3
95.00		1.00	1.25	33.570	36.93	363.79	0.650	0.000	5.00	15.732	10.23	604.2	0.0	670.8
96.00	Bot - Section 3	1.00	1.25	33.644	37.01	361.85	0.650	0.000	1.00	3.086	2.01	118.8	0.0	131.6
100.00		1.00	1.27	33.935	37.33	353.97	0.650	0.000	4.00	12.315	8.00	478.1	0.0	869.0
100.75	Top - Section 2	1.00	1.27	33.988	37.39	352.48	0.650	0.000	0.75	2.274	1.48	88.4	0.0	160.4
105.00		1.00	1.28	34.285	37.71	348.96	0.650	0.000	4.25	12.671	8.24	497.0	0.0	361.3
110.00		1.00	1.29	34.623	38.08	338.76	0.650	0.000	5.00	14.446	9.39	572.2	0.0	411.8
115.00		1.00	1.30	34.948	38.44	328.38	0.650	0.000	5.00	13.946	9.07	557.6	0.0	397.5
120.00		1.00	1.32	35.263	38.79	317.84	0.650	0.000	5.00	13.447	8.74	542.5	0.0	383.1
125.00		1.00	1.33	35.567	39.12	307.13	0.650	0.000	5.00	12.948	8.42	526.8	0.0	368.8
127.00	Appurtenance(s)	1.00	1.33	35.686	39.25	302.81	0.650	0.000	2.00	5.039	3.28	205.7	0.0	143.5
130.00		1.00	1.34	35.862	39.45	296.28	0.650	0.000	3.00	7.409	4.82	304.0	0.0	211.0
135.00		1.00	1.35	36.148	39.76	285.29	0.650	0.000	5.00	11.950	7.77	494.2	0.0	340.1
139.00	Top - Section 3	1.00	1.36	36.371	40.01	276.40	0.650	0.000	4.00	9.200	5.98	382.8	0.0	261.8
140.00	Appurtenance(s)	1.00	1.36	36.426	40.07	274.16	0.650	0.000	1.00	2.250	1.46	93.8	0.0	48.1
145.00		1.00	1.37	36.696	40.37	262.91	0.650	0.000	5.00	10.951	7.12	459.7	0.0	234.2
149.00	Appurtenance(s)	1.00	1.38	36.907	40.60	253.83	0.650	0.000	4.00	8.402	5.46	354.7	0.0	179.6
								Totals:	**149.00**			**17,961.0**		**23,456.8**

Discrete Appurtenance Forces

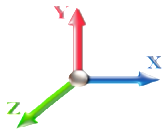
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa 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	RRH2x60 700	3	36.907	40.597	1.50	1.00	6.79	137.70	0.000	0.000	441.37	0.00	0.00
2	149.00	LNX-6514DS-VTM	3	36.907	40.597	0.83	1.00	20.34	104.76	0.000	0.000	1321.42	0.00	0.00
3	149.00	BXA-80063/4CF	3	36.907	40.597	0.72	1.00	10.20	26.73	0.000	0.000	662.24	0.00	0.00
4	149.00	SBNHH-1D65B	3	36.907	40.597	0.83	1.00	20.12	109.62	0.000	0.000	1306.86	0.00	0.00
5	149.00	SBNHH-1D65B	3	36.985	40.683	0.83	1.00	20.32	108.00	0.000	1.500	1322.58	0.00	1983.88
6	149.00	Low Profile	1	36.907	40.597	1.00	1.00	22.00	1350.00	0.000	0.000	1429.03	0.00	0.00
7	149.00	RRH 4X45 AWS	3	36.907	40.597	0.80	1.00	6.24	172.80	0.000	0.000	405.32	0.00	0.00
8	149.00	RRH 2X60W-1900MHz	3	36.907	40.597	0.84	1.00	4.74	124.20	0.000	0.000	307.73	0.00	0.00
9	149.00	DB-T1-6Z-8AB-0Z	1	36.907	40.597	0.67	1.00	3.22	17.01	0.000	0.000	208.90	0.00	0.00
10	149.00	DB-T1-6Z-8AB-0Z	1	36.907	40.597	0.67	1.00	3.22	17.01	0.000	0.000	208.90	0.00	0.00
11	140.00	AIR 32 B4A B2P	3	36.426	40.068	0.70	0.80	13.59	285.66	0.000	0.000	871.43	0.00	0.00
12	140.00	AIR 32 B2A B4P	3	36.426	40.068	0.70	0.80	13.59	356.94	0.000	0.000	871.43	0.00	0.00
13	140.00	Low Profile Platform	1	36.426	40.068	1.00	1.00	22.00	1350.00	0.000	0.000	1410.41	0.00	0.00
14	140.00	KRY 112 144 T	3	36.426	40.068	0.56	0.80	0.69	29.75	0.000	0.000	44.16	0.00	0.00
15	127.00	Ericsson RRUS 4478 B5	3	35.686	39.255	0.54	0.80	2.96	161.73	0.000	0.000	185.83	0.00	0.00
16	127.00	Cci HPA65R-BU8A	6	35.686	39.255	0.71	0.80	47.93	372.60	0.000	0.000	3010.48	0.00	0.00
17	127.00	Kaelus DBCT108F1V92-1	3	35.686	39.255	0.80	0.80	1.68	53.46	0.000	0.000	105.52	0.00	0.00
18	127.00	Ericsson RRUS 4426 B66	3	35.686	39.255	0.54	0.80	1.85	130.95	0.000	0.000	116.14	0.00	0.00
19	127.00	Ericsson RRUS 4415 B25	3	35.686	39.255	0.54	0.80	2.99	119.07	0.000	0.000	187.85	0.00	0.00
20	127.00	Cci HPA-65R-BUU-H8	6	35.686	39.255	0.63	0.80	49.22	367.20	0.000	0.000	3091.39	0.00	0.00
21	127.00	Ericsson RRUS 4478 B14	3	35.686	39.255	0.54	0.80	2.65	160.38	0.000	0.000	166.64	0.00	0.00
22	127.00	Ericsson RRUS-11 RRU	6	35.686	39.255	0.54	0.80	8.10	273.78	0.000	0.000	509.01	0.00	0.00
23	127.00	Ericsson RRUS 32 RRU	3	35.686	39.255	0.54	0.80	5.32	207.90	0.000	0.000	334.29	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	4	35.686	39.255	0.80	0.80	7.04	114.48	0.000	0.000	442.16	0.00	0.00
25	127.00	MTC3607 Platform + HR &	1	35.686	39.255	1.00	1.00	51.70	2021.40	0.000	0.000	3247.15	0.00	0.00
							Totals:		**8,173.13**			**22,208.24**		

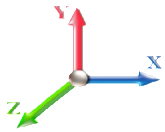
Total Applied Force Summary

Structure:	CT13075-A-SBA		**Code:**	EIA/TIA-222-G	10/15/2018
Site Name:	New London		**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

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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		636.17	1355.29	0.00	0.00
10.00		623.16	1330.20	0.00	0.00
15.00		610.14	1305.11	0.00	0.00
20.00		633.58	1280.02	0.00	0.00
25.00		649.58	1254.94	0.00	0.00
30.00		659.95	1229.85	0.00	0.00
35.00		666.19	1204.76	0.00	0.00
40.00		669.20	1179.68	0.00	0.00
45.00		669.62	1154.59	0.00	0.00
47.25		299.04	511.38	0.00	0.00
50.00		371.12	1090.85	0.00	0.00
53.25		437.83	1271.02	0.00	0.00
55.00		234.38	340.98	0.00	0.00
60.00		670.28	959.71	0.00	0.00
65.00		663.97	938.21	0.00	0.00
70.00		656.43	916.71	0.00	0.00
75.00		647.80	895.21	0.00	0.00
80.00		638.17	873.70	0.00	0.00
85.00		627.64	852.20	0.00	0.00
90.00		616.28	830.70	0.00	0.00
95.00		604.17	809.19	0.00	0.00
96.00		118.79	159.26	0.00	0.00
100.00		478.10	979.66	0.00	0.00
100.75		88.40	181.13	0.00	0.00
105.00		497.00	478.92	0.00	0.00
110.00		572.17	550.17	0.00	0.00
115.00		557.59	535.84	0.00	0.00
120.00		542.47	521.50	0.00	0.00
125.00		526.84	507.17	0.00	0.00
127.00	(41) attachments	11602.20	4181.80	0.00	0.00
130.00		303.98	284.45	0.00	0.00
135.00		494.16	462.61	0.00	0.00
139.00		382.81	359.77	0.00	0.00
140.00	(10) attachments	3291.19	2094.97	0.00	0.00
145.00		459.74	300.22	0.00	0.00
149.00	(24) attachments	7969.08	2400.26	0.00	1983.88
	Totals:	**40,169.21**	**35,582.05**	**0.00**	**1,983.88**

Calculated Forces

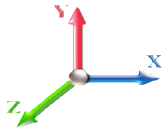
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	-35.52	-40.23	0.00	-4437.3	0.00	4437.31	5451.60	2725.80	12956.4	6487.84	0.00	0.000	0.000	0.691
5.00	-34.04	-39.70	0.00	-4236.1	0.00	4236.18	5379.95	2689.97	12523.2	6270.95	0.10	-0.182	0.000	0.682
10.00	-32.58	-39.17	0.00	-4037.7	0.00	4037.70	5306.65	2653.32	12093.3	6055.68	0.39	-0.366	0.000	0.673
15.00	-31.15	-38.66	0.00	-3841.8	0.00	3841.83	5231.70	2615.85	11666.9	5842.16	0.87	-0.554	0.000	0.664
20.00	-29.75	-38.11	0.00	-3648.5	0.00	3648.55	5155.10	2577.55	11244.2	5630.50	1.55	-0.744	0.000	0.654
25.00	-28.38	-37.54	0.00	-3458.0	0.00	3458.02	5076.86	2538.43	10825.5	5420.83	2.44	-0.936	0.000	0.644
30.00	-27.04	-36.95	0.00	-3270.3	0.00	3270.35	4996.96	2498.48	10411.0	5213.26	3.52	-1.131	0.000	0.633
35.00	-25.72	-36.34	0.00	-3085.6	0.00	3085.62	4915.42	2457.71	10001.0	5007.93	4.81	-1.328	0.000	0.622
40.00	-24.43	-35.73	0.00	-2903.9	0.00	2903.90	4832.22	2416.11	9595.63	4804.95	6.31	-1.527	0.000	0.610
45.00	-23.21	-35.09	0.00	-2725.2	0.00	2725.25	4747.38	2373.69	9195.21	4604.44	8.02	-1.729	0.000	0.597
47.25	-22.65	-34.81	0.00	-2646.3	0.00	2646.30	4708.66	2354.33	9016.69	4515.05	8.86	-1.822	0.000	0.591
50.00	-21.49	-34.45	0.00	-2550.5	0.00	2550.56	4660.89	2330.44	8799.96	4406.52	9.94	-1.936	0.000	0.584
53.25	-20.18	-34.01	0.00	-2438.5	0.00	2438.59	3818.32	1909.16	7226.08	3618.41	11.31	-2.071	0.000	0.680
55.00	-19.75	-33.81	0.00	-2379.0	0.00	2379.07	3795.26	1897.63	7117.54	3564.06	12.08	-2.145	0.000	0.673
60.00	-18.69	-33.18	0.00	-2210.0	0.00	2210.00	3728.27	1864.14	6809.75	3409.94	14.45	-2.373	0.000	0.653
65.00	-17.65	-32.55	0.00	-2044.0	0.00	2044.09	3659.63	1829.82	6505.57	3257.62	17.06	-2.602	0.000	0.633
70.00	-16.64	-31.92	0.00	-1881.3	0.00	1881.35	3589.34	1794.67	6205.25	3107.24	19.90	-2.830	0.000	0.610
75.00	-15.65	-31.29	0.00	-1721.7	0.00	1721.77	3517.40	1758.70	5909.03	2958.91	22.99	-3.058	0.000	0.587
80.00	-14.70	-30.66	0.00	-1565.3	0.00	1565.34	3443.81	1721.91	5617.15	2812.75	26.31	-3.285	0.000	0.561
85.00	-13.77	-30.03	0.00	-1412.0	0.00	1412.06	3368.58	1684.29	5329.85	2668.89	29.87	-3.509	0.000	0.533
90.00	-12.86	-29.42	0.00	-1261.8	0.00	1261.88	3291.69	1645.84	5047.37	2527.44	33.67	-3.729	0.000	0.504
95.00	-12.03	-28.79	0.00	-1114.8	0.00	1114.80	3202.59	1601.29	4754.28	2380.67	37.69	-3.944	0.000	0.472
96.00	-11.83	-28.68	0.00	-1086.0	0.00	1086.02	3181.72	1590.86	4692.22	2349.60	38.52	-3.988	0.000	0.466
100.00	-10.84	-28.15	0.00	-971.30	0.00	971.30	3098.26	1549.13	4448.03	2227.32	41.93	-4.155	0.000	0.440
100.75	-10.61	-28.07	0.00	-950.19	0.00	950.19	1860.42	930.21	2714.89	1359.46	42.58	-4.187	0.000	0.706
105.00	-10.07	-27.58	0.00	-830.90	0.00	830.90	1828.32	914.16	2592.13	1297.99	46.39	-4.356	0.000	0.647
110.00	-9.45	-27.00	0.00	-693.02	0.00	693.02	1789.04	894.52	2449.03	1226.33	51.09	-4.620	0.000	0.571
115.00	-8.85	-26.44	0.00	-558.00	0.00	558.00	1748.11	874.06	2307.59	1155.51	56.06	-4.860	0.000	0.489
120.00	-8.29	-25.88	0.00	-425.81	0.00	425.81	1705.53	852.77	2168.05	1085.64	61.26	-5.071	0.000	0.398
125.00	-7.79	-25.33	0.00	-296.40	0.00	296.40	1661.30	830.65	2030.66	1016.84	66.66	-5.244	0.000	0.297
127.00	-4.68	-13.39	0.00	-245.75	0.00	245.75	1643.15	821.58	1976.36	989.65	68.87	-5.302	0.000	0.251
130.00	-4.40	-13.07	0.00	-205.57	0.00	205.57	1615.43	807.71	1895.65	949.24	72.22	-5.378	0.000	0.220
135.00	-3.97	-12.54	0.00	-140.21	0.00	140.21	1567.90	783.95	1763.28	882.95	77.91	-5.483	0.000	0.162
139.00	-3.64	-12.13	0.00	-90.04	0.00	90.04	1528.69	764.34	1659.43	830.95	82.52	-5.547	0.000	0.111
139.00	-3.64	-12.13	0.00	-90.04	0.00	90.04	1044.31	522.16	1138.99	570.34	82.52	-5.547	0.000	0.162
140.00	-1.87	-8.65	0.00	-77.91	0.00	77.91	1038.69	519.35	1122.71	562.19	83.68	-5.560	0.000	0.141
145.00	-1.61	-8.17	0.00	-34.65	0.00	34.65	1009.62	504.81	1041.96	521.75	89.53	-5.618	0.000	0.068
149.00	0.00	-7.97	0.00	-1.98	0.00	1.98	985.17	492.59	978.22	489.84	94.24	-5.636	0.000	0.004

Wind Loading - Shaft

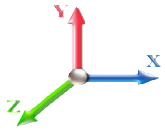
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 21

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	25.435	30.52	173.5	453.8	2076.3
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.010	30.01	170.6	477.3	2066.4
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	24.557	29.47	167.5	487.2	2042.9
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	24.091	28.91	174.4	491.3	2013.5
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	23.619	28.34	179.2	491.8	1980.6
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.142	27.77	182.4	490.2	1945.5
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	22.662	27.19	184.5	486.8	1908.7
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	22.180	26.62	185.8	482.3	1870.7
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	21.696	26.03	186.3	476.7	1831.7
47.25	Bot - Section 2	1.00	1.08	6.571	7.23	0.00	1.200	1.555	2.25	9.603	11.52	83.3	213.3	812.1
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	2.75	11.778	14.13	103.4	262.7	1615.7
53.25	Top - Section 1	1.00	1.11	6.739	7.41	0.00	1.200	1.574	3.25	13.731	16.48	122.1	307.6	1882.4
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	1.75	7.307	8.77	65.4	164.8	554.8
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	20.553	24.66	187.5	463.2	1558.3
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	20.065	24.08	186.1	455.2	1521.7
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	19.575	23.49	184.4	446.8	1484.5
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	19.085	22.90	182.5	437.9	1447.0
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	18.595	22.31	180.2	428.7	1409.2
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	18.104	21.72	177.7	419.3	1371.0
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	17.613	21.14	175.0	409.5	1332.6
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	17.121	20.55	172.0	399.5	1293.9
96.00	Bot - Section 3	1.00	1.25	7.629	8.39	0.00	1.200	1.669	1.00	3.365	4.04	33.9	79.5	254.9
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	4.00	13.433	16.12	136.4	315.6	1474.2
100.75	Top - Section 2	1.00	1.27	7.707	8.48	0.00	1.200	1.677	0.75	2.483	2.98	25.3	58.9	272.8
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	4.25	13.864	16.64	142.3	326.4	808.2
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	15.856	19.03	164.3	373.4	922.5
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	15.363	18.44	160.7	362.6	892.5
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	14.870	17.84	156.9	351.6	862.4
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	14.376	17.25	153.0	340.4	832.2
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	1.716	2.00	5.612	6.73	59.9	134.4	325.7
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	8.270	9.92	88.8	197.5	478.7
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	13.389	16.07	144.9	317.7	771.2
139.00	Top - Section 3	1.00	1.36	8.247	9.07	0.00	1.200	1.732	4.00	10.355	12.43	112.7	246.7	595.8
140.00	Appurtenance(s)	1.00	1.36	8.260	9.09	0.00	1.200	1.733	1.00	2.539	3.05	27.7	61.2	125.4
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	12.401	14.88	136.2	294.4	606.6
149.00	Appurtenance(s)	1.00	1.38	8.369	9.21	0.00	1.200	1.744	4.00	9.564	11.48	105.7	227.9	467.4
								Totals:	**149.00**			**5,072.7**		**43,709.9**

Discrete Appurtenance Forces

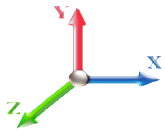
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa 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	RRH2x60 700	3	8.369	9.206	1.47	1.00	8.54	484.10	0.000	0.000	78.61	0.00	0.00
2	149.00	LNX-6514DS-VTM	3	8.369	9.206	0.83	1.00	27.37	516.73	0.000	0.000	251.95	0.00	0.00
3	149.00	BXA-80063/4CF	3	8.369	9.206	0.72	1.00	14.19	250.84	0.000	0.000	130.59	0.00	0.00
4	149.00	SBNHH-1D65B	3	8.369	9.206	0.83	1.00	23.33	750.50	0.000	0.000	214.81	0.00	0.00
5	149.00	SBNHH-1D65B	3	8.387	9.225	0.83	1.00	23.55	752.91	0.000	1.500	217.28	0.00	325.92
6	149.00	Low Profile	1	8.369	9.206	1.00	1.00	39.65	2808.04	0.000	0.000	365.01	0.00	0.00
7	149.00	RRH 4X45 AWS	3	8.369	9.206	0.80	1.00	7.93	480.95	0.000	0.000	72.99	0.00	0.00
8	149.00	RRH 2X60W-1900MHz	3	8.369	9.206	0.84	1.00	6.21	372.75	0.000	0.000	57.20	0.00	0.00
9	149.00	DB-T1-6Z-8AB-0Z	1	8.369	9.206	0.67	1.00	3.80	166.29	0.000	0.000	34.99	0.00	0.00
10	149.00	DB-T1-6Z-8AB-0Z	1	8.369	9.206	0.67	1.00	3.80	166.29	0.000	0.000	34.99	0.00	0.00
11	140.00	AIR 32 B4A B2P	3	8.260	9.086	0.70	0.80	16.04	929.51	0.000	0.000	145.73	0.00	0.00
12	140.00	AIR 32 B2A B4P	3	8.260	9.086	0.70	0.80	16.04	1024.55	0.000	0.000	145.73	0.00	0.00
13	140.00	Low Profile Platform	1	8.260	9.086	1.00	1.00	39.54	2799.91	0.000	0.000	359.25	0.00	0.00
14	140.00	KRY 112 144 T	3	8.260	9.086	0.56	0.80	1.48	62.61	0.000	0.000	13.46	0.00	0.00
15	127.00	Ericsson RRUS 4478 B5	3	8.092	8.901	0.54	0.80	3.83	324.77	0.000	0.000	34.06	0.00	0.00
16	127.00	Cci HPA65R-BU8A	6	8.092	8.901	0.71	0.80	54.89	2122.72	0.000	0.000	488.62	0.00	0.00
17	127.00	Kaelus DBCT108F1V92-1	3	8.092	8.901	0.80	0.80	2.29	144.01	0.000	0.000	20.36	0.00	0.00
18	127.00	Ericsson RRUS 4426 B66	3	8.092	8.901	0.54	0.80	2.60	289.40	0.000	0.000	23.13	0.00	0.00
19	127.00	Ericsson RRUS 4415 B25	3	8.092	8.901	0.54	0.80	3.90	268.13	0.000	0.000	34.68	0.00	0.00
20	127.00	Cci HPA-65R-BUU-H8	6	8.092	8.901	0.63	0.80	55.24	2202.37	0.000	0.000	491.69	0.00	0.00
21	127.00	Ericsson RRUS 4478 B14	3	8.092	8.901	0.54	0.80	3.47	307.99	0.000	0.000	30.91	0.00	0.00
22	127.00	Ericsson RRUS-11 RRU	6	8.092	8.901	0.54	0.80	10.16	889.41	0.000	0.000	90.45	0.00	0.00
23	127.00	Ericsson RRUS 32 RRU	3	8.092	8.901	0.54	0.80	3.57	419.49	0.000	0.000	31.76	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	4	8.092	8.901	0.80	0.80	10.34	325.06	0.000	0.000	92.01	0.00	0.00
25	127.00	MTC3607 Platform + HR &	1	8.092	8.901	1.00	1.00	89.33	4775.24	0.000	0.000	795.11	0.00	0.00
							Totals:		**23,634.56**			**4,255.36**		

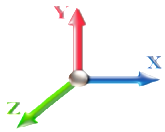
Total Applied Force Summary

Structure:	CT13075-A-SBA		**Code:**	EIA/TIA-222-G	10/15/2018
Site Name:	New London		**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

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 21

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		173.51	2260.85	0.00	0.00
10.00		170.61	2250.86	0.00	0.00
15.00		167.52	2227.38	0.00	0.00
20.00		174.38	2197.96	0.00	0.00
25.00		179.18	2165.10	0.00	0.00
30.00		182.43	2129.96	0.00	0.00
35.00		184.54	2093.18	0.00	0.00
40.00		185.76	2055.16	0.00	0.00
45.00		186.27	2016.16	0.00	0.00
47.25		83.30	895.11	0.00	0.00
50.00		103.39	1717.21	0.00	0.00
53.25		122.14	2002.31	0.00	0.00
55.00		65.45	619.40	0.00	0.00
60.00		187.48	1742.85	0.00	0.00
65.00		186.13	1706.16	0.00	0.00
70.00		184.45	1669.03	0.00	0.00
75.00		182.46	1631.53	0.00	0.00
80.00		180.21	1593.68	0.00	0.00
85.00		177.70	1555.53	0.00	0.00
90.00		174.98	1517.10	0.00	0.00
95.00		172.04	1478.41	0.00	0.00
96.00		33.88	291.84	0.00	0.00
100.00		136.44	1621.81	0.00	0.00
100.75		25.26	300.45	0.00	0.00
105.00		142.28	965.00	0.00	0.00
110.00		164.32	1106.98	0.00	0.00
115.00		160.70	1077.05	0.00	0.00
120.00		156.94	1046.94	0.00	0.00
125.00		153.05	1016.66	0.00	0.00
127.00	(41) attachments	2192.72	12468.08	0.00	0.00
130.00		88.77	576.74	0.00	0.00
135.00		144.86	934.49	0.00	0.00
139.00		112.73	726.42	0.00	0.00
140.00	(10) attachments	691.86	4974.62	0.00	0.00
145.00		136.21	694.66	0.00	0.00
149.00	(24) attachments	1564.06	7287.24	0.00	325.92
	Totals:	**9,328.02**	**72,613.91**	**0.00**	**325.92**

Calculated Forces

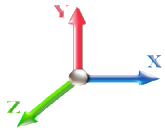
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

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 21

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	-72.61	-9.35	0.00	-1012.2	0.00	1012.25	5451.60	2725.80	12956.4	6487.84	0.00	0.000	0.000	0.169
5.00	-70.34	-9.23	0.00	-965.48	0.00	965.48	5379.95	2689.97	12523.2	6270.95	0.02	-0.041	0.000	0.167
10.00	-68.09	-9.11	0.00	-919.33	0.00	919.33	5306.65	2653.32	12093.3	6055.68	0.09	-0.084	0.000	0.165
15.00	-65.85	-8.99	0.00	-873.79	0.00	873.79	5231.70	2615.85	11666.9	5842.16	0.20	-0.126	0.000	0.162
20.00	-63.65	-8.85	0.00	-828.86	0.00	828.86	5155.10	2577.55	11244.2	5630.50	0.35	-0.169	0.000	0.160
25.00	-61.48	-8.72	0.00	-784.59	0.00	784.59	5076.86	2538.43	10825.5	5420.83	0.56	-0.213	0.000	0.157
30.00	-59.34	-8.57	0.00	-741.01	0.00	741.01	4996.96	2498.48	10411.0	5213.26	0.80	-0.257	0.000	0.154
35.00	-57.24	-8.42	0.00	-698.16	0.00	698.16	4915.42	2457.71	10001.0	5007.93	1.10	-0.302	0.000	0.151
40.00	-55.18	-8.27	0.00	-656.06	0.00	656.06	4832.22	2416.11	9595.63	4804.95	1.44	-0.347	0.000	0.148
45.00	-53.16	-8.10	0.00	-614.73	0.00	614.73	4747.38	2373.69	9195.21	4604.44	1.82	-0.392	0.000	0.145
47.25	-52.26	-8.03	0.00	-596.51	0.00	596.51	4708.66	2354.33	9016.69	4515.05	2.01	-0.413	0.000	0.143
50.00	-50.54	-7.94	0.00	-574.43	0.00	574.43	4660.89	2330.44	8799.96	4406.52	2.26	-0.439	0.000	0.141
53.25	-48.54	-7.82	0.00	-548.64	0.00	548.64	3818.32	1909.16	7226.08	3618.41	2.57	-0.469	0.000	0.164
55.00	-47.92	-7.78	0.00	-534.95	0.00	534.95	3795.26	1897.63	7117.54	3564.06	2.74	-0.486	0.000	0.163
60.00	-46.17	-7.62	0.00	-496.06	0.00	496.06	3728.27	1864.14	6809.75	3409.94	3.28	-0.537	0.000	0.158
65.00	-44.46	-7.45	0.00	-457.99	0.00	457.99	3659.63	1829.82	6505.57	3257.62	3.87	-0.589	0.000	0.153
70.00	-42.78	-7.29	0.00	-420.72	0.00	420.72	3589.34	1794.67	6205.25	3107.24	4.52	-0.640	0.000	0.147
75.00	-41.15	-7.12	0.00	-384.28	0.00	384.28	3517.40	1758.70	5909.03	2958.91	5.21	-0.691	0.000	0.142
80.00	-39.55	-6.96	0.00	-348.66	0.00	348.66	3443.81	1721.91	5617.15	2812.75	5.96	-0.741	0.000	0.135
85.00	-37.99	-6.79	0.00	-313.87	0.00	313.87	3368.58	1684.29	5329.85	2668.89	6.77	-0.791	0.000	0.129
90.00	-36.47	-6.63	0.00	-279.91	0.00	279.91	3291.69	1645.84	5047.37	2527.44	7.62	-0.840	0.000	0.122
95.00	-34.99	-6.45	0.00	-246.77	0.00	246.77	3202.59	1601.29	4754.28	2380.67	8.53	-0.888	0.000	0.115
96.00	-34.70	-6.43	0.00	-240.32	0.00	240.32	3181.72	1590.86	4692.22	2349.60	8.72	-0.897	0.000	0.113
100.00	-33.08	-6.28	0.00	-214.62	0.00	214.62	3098.26	1549.13	4448.03	2227.32	9.48	-0.934	0.000	0.107
100.75	-32.77	-6.26	0.00	-209.92	0.00	209.92	1860.42	930.21	2714.89	1359.46	9.63	-0.941	0.000	0.172
105.00	-31.81	-6.13	0.00	-183.32	0.00	183.32	1828.32	914.16	2592.13	1297.99	10.49	-0.979	0.000	0.159
110.00	-30.70	-5.97	0.00	-152.68	0.00	152.68	1789.04	894.52	2449.03	1226.33	11.54	-1.037	0.000	0.142
115.00	-29.62	-5.82	0.00	-122.82	0.00	122.82	1748.11	874.06	2307.59	1155.51	12.66	-1.090	0.000	0.123
120.00	-28.57	-5.66	0.00	-93.73	0.00	93.73	1705.53	852.77	2168.05	1085.64	13.83	-1.136	0.000	0.103
125.00	-27.55	-5.50	0.00	-65.42	0.00	65.42	1661.30	830.65	2030.66	1016.84	15.04	-1.174	0.000	0.081
127.00	-15.13	-3.05	0.00	-54.42	0.00	54.42	1643.15	821.58	1976.36	989.65	15.53	-1.187	0.000	0.064
130.00	-14.56	-2.96	0.00	-45.25	0.00	45.25	1615.43	807.71	1895.65	949.24	16.28	-1.204	0.000	0.057
135.00	-13.63	-2.80	0.00	-30.46	0.00	30.46	1567.90	783.95	1763.28	882.95	17.56	-1.227	0.000	0.043
139.00	-12.90	-2.67	0.00	-19.26	0.00	19.26	1528.69	764.34	1659.43	830.95	18.59	-1.241	0.000	0.032
139.00	-12.90	-2.67	0.00	-19.26	0.00	19.26	1044.31	522.16	1138.99	570.34	18.59	-1.241	0.000	0.046
140.00	-7.94	-1.87	0.00	-16.59	0.00	16.59	1038.69	519.35	1122.71	562.19	18.85	-1.243	0.000	0.037
145.00	-7.25	-1.72	0.00	-7.22	0.00	7.22	1009.62	504.81	1041.96	521.75	20.16	-1.256	0.000	0.021
149.00	0.00	-1.56	0.00	-0.33	0.00	0.33	985.17	492.59	978.22	489.84	21.22	-1.259	0.000	0.001

Seismic Segment Forces (Factored)

Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**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:	1.2D + 1.0E					**Iterations**	20
Gust Response Factor	1.10			**Sds**	0.17	**Ss**	0.16
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.41	**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		1352.1	0.00	0.03	0.02	19.71	
10.00		1324.2	0.01	0.05	0.03	28.67	
15.00		1296.3	0.02	0.06	0.04	32.75	
20.00		1268.5	0.03	0.07	0.04	34.48	
25.00		1240.6	0.05	0.07	0.04	35.12	
30.00		1212.7	0.08	0.07	0.04	35.35	
35.00		1184.8	0.10	0.07	0.04	35.45	
40.00		1157.0	0.14	0.07	0.03	35.44	
45.00		1129.1	0.17	0.07	0.03	35.13	
47.25	Bot - Section 2	499.01	0.19	0.06	0.02	15.56	
50.00		1127.4	0.21	0.06	0.02	35.04	
53.25	Top - Section 1	1312.3	0.24	0.06	0.02	40.11	
55.00		325.05	0.26	0.05	0.02	9.77	
60.00		912.60	0.31	0.04	0.01	25.17	
65.00		888.71	0.36	0.03	0.01	20.55	
70.00		864.82	0.42	0.01	0.01	14.17	
75.00		840.92	0.48	-0.01	0.01	6.35	
80.00		817.03	0.54	-0.03	0.01	-2.07	
85.00		793.14	0.62	-0.06	0.02	-9.83	
90.00		769.25	0.69	-0.08	0.03	-15.68	
95.00		745.35	0.77	-0.11	0.05	-18.70	
96.00	Bot - Section 3	146.20	0.78	-0.11	0.05	-3.74	
100.00		965.51	0.85	-0.12	0.07	-24.76	
100.75	Top - Section 2	178.20	0.86	-0.12	0.07	-4.52	
105.00		401.45	0.94	-0.12	0.10	-8.69	
110.00		457.56	1.03	-0.10	0.15	-5.92	
115.00		441.63	1.13	-0.05	0.20	0.22	
120.00		425.70	1.23	0.03	0.27	7.96	
125.00		409.77	1.33	0.16	0.36	17.07	
127.00	Appurtenance(s)	4584.9	1.37	0.23	0.40	239.32	
130.00		234.39	1.44	0.36	0.47	16.28	
135.00		377.91	1.55	0.64	0.61	38.60	
139.00	Top - Section 3	290.86	1.64	0.92	0.73	38.35	
140.00	Appurtenance(s)	2300.5	1.67	1.01	0.77	321.59	
145.00		260.18	1.79	1.49	0.96	47.49	
149.00	Appurtenance(s)	2608.2	1.89	1.98	1.14	574.96	
	Totals:	**35,144.4**				**1,666.8**	**Total Wind:** **40,169.2**

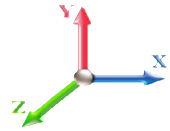
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**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: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.17			**Iterations**	20
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09			**Ss**	0.16
Wind Load Factor	0.00	**Structure Frequency**	0.41	**SA**	0.04			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.44	-1.76	0.00	-207.79	0.00	207.79	5451.60	2725.80	12956.4	6487.84		0.00	0.00	0.041
5.00	-45.64	-1.75	0.00	-198.97	0.00	198.97	5379.95	2689.97	12523.2	6270.95		0.00	-0.01	0.040
10.00	-43.86	-1.73	0.00	-190.22	0.00	190.22	5306.65	2653.32	12093.3	6055.68		0.02	-0.02	0.040
15.00	-42.12	-1.70	0.00	-181.58	0.00	181.58	5231.70	2615.85	11666.9	5842.16		0.04	-0.03	0.039
20.00	-40.41	-1.67	0.00	-173.07	0.00	173.07	5155.10	2577.55	11244.2	5630.50		0.07	-0.04	0.039
25.00	-38.74	-1.64	0.00	-164.71	0.00	164.71	5076.86	2538.43	10825.5	5420.83		0.11	-0.04	0.038
30.00	-37.10	-1.61	0.00	-156.49	0.00	156.49	4996.96	2498.48	10411.0	5213.26		0.17	-0.05	0.037
35.00	-35.49	-1.58	0.00	-148.44	0.00	148.44	4915.42	2457.71	10001.0	5007.93		0.23	-0.06	0.037
40.00	-33.92	-1.55	0.00	-140.53	0.00	140.53	4832.22	2416.11	9595.63	4804.95		0.30	-0.07	0.036
45.00	-32.38	-1.52	0.00	-132.79	0.00	132.79	4747.38	2373.69	9195.21	4604.44		0.38	-0.08	0.036
47.25	-31.70	-1.50	0.00	-129.38	0.00	129.38	4708.66	2354.33	9016.69	4515.05		0.42	-0.09	0.035
50.00	-30.24	-1.47	0.00	-125.24	0.00	125.24	4660.89	2330.44	8799.96	4406.52		0.47	-0.09	0.035
53.25	-28.55	-1.43	0.00	-120.47	0.00	120.47	3818.32	1909.16	7226.08	3618.41		0.54	-0.10	0.041
55.00	-28.10	-1.42	0.00	-117.97	0.00	117.97	3795.26	1897.63	7117.54	3564.06		0.57	-0.10	0.041
60.00	-26.82	-1.40	0.00	-110.87	0.00	110.87	3728.27	1864.14	6809.75	3409.94		0.69	-0.11	0.040
65.00	-25.56	-1.38	0.00	-103.88	0.00	103.88	3659.63	1829.82	6505.57	3257.62		0.81	-0.13	0.039
70.00	-24.34	-1.37	0.00	-96.97	0.00	96.97	3589.34	1794.67	6205.25	3107.24		0.95	-0.14	0.038
75.00	-23.15	-1.36	0.00	-90.13	0.00	90.13	3517.40	1758.70	5909.03	2958.91		1.10	-0.15	0.037
80.00	-21.98	-1.37	0.00	-83.31	0.00	83.31	3443.81	1721.91	5617.15	2812.75		1.26	-0.16	0.036
85.00	-20.85	-1.37	0.00	-76.48	0.00	76.48	3368.58	1684.29	5329.85	2668.89		1.44	-0.17	0.035
90.00	-19.74	-1.37	0.00	-69.65	0.00	69.65	3291.69	1645.84	5047.37	2527.44		1.63	-0.19	0.034
95.00	-18.66	-1.37	0.00	-62.81	0.00	62.81	3202.59	1601.29	4754.28	2380.67		1.83	-0.20	0.032
96.00	-18.45	-1.37	0.00	-61.44	0.00	61.44	3181.72	1590.86	4692.22	2349.60		1.87	-0.20	0.032
100.00	-17.14	-1.36	0.00	-55.97	0.00	55.97	3098.26	1549.13	4448.03	2227.32		2.04	-0.21	0.031
100.75	-16.90	-1.37	0.00	-54.95	0.00	54.95	1860.42	930.21	2714.89	1359.46		2.07	-0.21	0.050
105.00	-16.26	-1.37	0.00	-49.15	0.00	49.15	1828.32	914.16	2592.13	1297.99		2.27	-0.22	0.047
110.00	-15.53	-1.37	0.00	-42.32	0.00	42.32	1789.04	894.52	2449.03	1226.33		2.51	-0.24	0.043
115.00	-14.81	-1.37	0.00	-35.48	0.00	35.48	1748.11	874.06	2307.59	1155.51		2.76	-0.25	0.039
120.00	-14.12	-1.36	0.00	-28.64	0.00	28.64	1705.53	852.77	2168.05	1085.64		3.03	-0.27	0.035
125.00	-13.44	-1.34	0.00	-21.83	0.00	21.83	1661.30	830.65	2030.66	1016.84		3.32	-0.28	0.030
127.00	-7.86	-1.08	0.00	-19.15	0.00	19.15	1643.15	821.58	1976.36	989.65		3.44	-0.28	0.024
130.00	-7.49	-1.06	0.00	-15.92	0.00	15.92	1615.43	807.71	1895.65	949.24		3.62	-0.29	0.021
135.00	-6.87	-1.02	0.00	-10.63	0.00	10.63	1567.90	783.95	1763.28	882.95		3.92	-0.30	0.016
139.00	-6.39	-0.98	0.00	-6.55	0.00	6.55	1528.69	764.34	1659.43	830.95		4.17	-0.30	0.012
139.00	-6.39	-0.98	0.00	-6.55	0.00	6.55	1044.31	522.16	1138.99	570.34		4.17	-0.30	0.018
140.00	-3.60	-0.64	0.00	-5.58	0.00	5.58	1038.69	519.35	1122.71	562.19		4.23	-0.30	0.013
145.00	-3.20	-0.59	0.00	-2.37	0.00	2.37	1009.62	504.81	1041.96	521.75		4.55	-0.31	0.008
149.00	0.00	-0.57	0.00	0.00	0.00	0.00	985.17	492.59	978.22	489.84		4.81	-0.31	0.000

Seismic Segment Forces (Factored)

Structure:	CT13075-A-SBA		**Code:**	EIA/TIA-222-G	10/15/2018
Site Name:	New London		**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 + 1.0E					**Iterations**	20
Gust Response Factor	1.10			**Sds**	0.17	**Ss**	0.16
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.41	**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		1352.1	0.00	0.03	0.02	19.71	
10.00		1324.2	0.01	0.05	0.03	28.67	
15.00		1296.3	0.02	0.06	0.04	32.75	
20.00		1268.5	0.03	0.07	0.04	34.48	
25.00		1240.6	0.05	0.07	0.04	35.12	
30.00		1212.7	0.08	0.07	0.04	35.35	
35.00		1184.8	0.10	0.07	0.04	35.45	
40.00		1157.0	0.14	0.07	0.03	35.44	
45.00		1129.1	0.17	0.07	0.03	35.13	
47.25	Bot - Section 2	499.01	0.19	0.06	0.02	15.56	
50.00		1127.4	0.21	0.06	0.02	35.04	
53.25	Top - Section 1	1312.3	0.24	0.06	0.02	40.11	
55.00		325.05	0.26	0.05	0.02	9.77	
60.00		912.60	0.31	0.04	0.01	25.17	
65.00		888.71	0.36	0.03	0.01	20.55	
70.00		864.82	0.42	0.01	0.01	14.17	
75.00		840.92	0.48	-0.01	0.01	6.35	
80.00		817.03	0.54	-0.03	0.01	-2.07	
85.00		793.14	0.62	-0.06	0.02	-9.83	
90.00		769.25	0.69	-0.08	0.03	-15.68	
95.00		745.35	0.77	-0.11	0.05	-18.70	
96.00	Bot - Section 3	146.20	0.78	-0.11	0.05	-3.74	
100.00		965.51	0.85	-0.12	0.07	-24.76	
100.75	Top - Section 2	178.20	0.86	-0.12	0.07	-4.52	
105.00		401.45	0.94	-0.12	0.10	-8.69	
110.00		457.56	1.03	-0.10	0.15	-5.92	
115.00		441.63	1.13	-0.05	0.20	0.22	
120.00		425.70	1.23	0.03	0.27	7.96	
125.00		409.77	1.33	0.16	0.36	17.07	
127.00	Appurtenance(s)	4584.9	1.37	0.23	0.40	239.32	
130.00		234.39	1.44	0.36	0.47	16.28	
135.00		377.91	1.55	0.64	0.61	38.60	
139.00	Top - Section 3	290.86	1.64	0.92	0.73	38.35	
140.00	Appurtenance(s)	2300.5	1.67	1.01	0.77	321.59	
145.00		260.18	1.79	1.49	0.96	47.49	
149.00	Appurtenance(s)	2608.2	1.89	1.98	1.14	574.96	
	Totals:	**35,144.4**				**1,666.8**	**Total Wind:** **40,169.2**

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

Calculated Forces

Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**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:	0.9D + 1.0E							**Iterations**	20
Gust Response Factor	1.10			**Sds**	0.17			**Ss**	0.16
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.41	**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	-35.58	-1.76	0.00	-206.02	0.00	206.02	5451.60	2725.80	12956.4	6487.84		0.00	0.00	0.038
5.00	-34.23	-1.75	0.00	-197.21	0.00	197.21	5379.95	2689.97	12523.2	6270.95		0.00	-0.01	0.038
10.00	-32.90	-1.72	0.00	-188.47	0.00	188.47	5306.65	2653.32	12093.3	6055.68		0.02	-0.02	0.037
15.00	-31.59	-1.70	0.00	-179.84	0.00	179.84	5231.70	2615.85	11666.9	5842.16		0.04	-0.03	0.037
20.00	-30.31	-1.67	0.00	-171.37	0.00	171.37	5155.10	2577.55	11244.2	5630.50		0.07	-0.03	0.036
25.00	-29.06	-1.63	0.00	-163.04	0.00	163.04	5076.86	2538.43	10825.5	5420.83		0.11	-0.04	0.036
30.00	-27.83	-1.60	0.00	-154.87	0.00	154.87	4996.96	2498.48	10411.0	5213.26		0.16	-0.05	0.035
35.00	-26.62	-1.57	0.00	-146.86	0.00	146.86	4915.42	2457.71	10001.0	5007.93		0.22	-0.06	0.035
40.00	-25.44	-1.54	0.00	-139.01	0.00	139.01	4832.22	2416.11	9595.63	4804.95		0.30	-0.07	0.034
45.00	-24.29	-1.50	0.00	-131.32	0.00	131.32	4747.38	2373.69	9195.21	4604.44		0.38	-0.08	0.034
47.25	-23.77	-1.49	0.00	-127.94	0.00	127.94	4708.66	2354.33	9016.69	4515.05		0.42	-0.09	0.033
50.00	-22.68	-1.46	0.00	-123.84	0.00	123.84	4660.89	2330.44	8799.96	4406.52		0.47	-0.09	0.033
53.25	-21.41	-1.41	0.00	-119.11	0.00	119.11	3818.32	1909.16	7226.08	3618.41		0.53	-0.10	0.039
55.00	-21.07	-1.41	0.00	-116.64	0.00	116.64	3795.26	1897.63	7117.54	3564.06		0.57	-0.10	0.038
60.00	-20.11	-1.38	0.00	-109.60	0.00	109.60	3728.27	1864.14	6809.75	3409.94		0.68	-0.11	0.038
65.00	-19.17	-1.37	0.00	-102.68	0.00	102.68	3659.63	1829.82	6505.57	3257.62		0.80	-0.12	0.037
70.00	-18.26	-1.35	0.00	-95.85	0.00	95.85	3589.34	1794.67	6205.25	3107.24		0.94	-0.14	0.036
75.00	-17.36	-1.35	0.00	-89.09	0.00	89.09	3517.40	1758.70	5909.03	2958.91		1.09	-0.15	0.035
80.00	-16.49	-1.35	0.00	-82.35	0.00	82.35	3443.81	1721.91	5617.15	2812.75		1.25	-0.16	0.034
85.00	-15.63	-1.35	0.00	-75.60	0.00	75.60	3368.58	1684.29	5329.85	2668.89		1.42	-0.17	0.033
90.00	-14.80	-1.35	0.00	-68.85	0.00	68.85	3291.69	1645.84	5047.37	2527.44		1.61	-0.18	0.032
95.00	-13.99	-1.35	0.00	-62.10	0.00	62.10	3202.59	1601.29	4754.28	2380.67		1.81	-0.20	0.030
96.00	-13.83	-1.35	0.00	-60.75	0.00	60.75	3181.72	1590.86	4692.22	2349.60		1.85	-0.20	0.030
100.00	-12.85	-1.35	0.00	-55.35	0.00	55.35	3098.26	1549.13	4448.03	2227.32		2.02	-0.21	0.029
100.75	-12.67	-1.35	0.00	-54.34	0.00	54.34	1860.42	930.21	2714.89	1359.46		2.05	-0.21	0.047
105.00	-12.19	-1.35	0.00	-48.61	0.00	48.61	1828.32	914.16	2592.13	1297.99		2.24	-0.22	0.044
110.00	-11.64	-1.35	0.00	-41.86	0.00	41.86	1789.04	894.52	2449.03	1226.33		2.48	-0.23	0.041
115.00	-11.11	-1.35	0.00	-35.10	0.00	35.10	1748.11	874.06	2307.59	1155.51		2.73	-0.25	0.037
120.00	-10.59	-1.34	0.00	-28.35	0.00	28.35	1705.53	852.77	2168.05	1085.64		3.00	-0.26	0.032
125.00	-10.08	-1.33	0.00	-21.63	0.00	21.63	1661.30	830.65	2030.66	1016.84		3.28	-0.27	0.027
127.00	-5.90	-1.07	0.00	-18.98	0.00	18.98	1643.15	821.58	1976.36	989.65		3.40	-0.28	0.023
130.00	-5.61	-1.05	0.00	-15.78	0.00	15.78	1615.43	807.71	1895.65	949.24		3.58	-0.28	0.020
135.00	-5.15	-1.01	0.00	-10.54	0.00	10.54	1567.90	783.95	1763.28	882.95		3.88	-0.29	0.015
139.00	-4.79	-0.97	0.00	-6.50	0.00	6.50	1528.69	764.34	1659.43	830.95		4.13	-0.30	0.011
139.00	-4.79	-0.97	0.00	-6.50	0.00	6.50	1044.31	522.16	1138.99	570.34		4.13	-0.30	0.016
140.00	-2.70	-0.64	0.00	-5.53	0.00	5.53	1038.69	519.35	1122.71	562.19		4.19	-0.30	0.012
145.00	-2.40	-0.59	0.00	-2.35	0.00	2.35	1009.62	504.81	1041.96	521.75		4.50	-0.30	0.007
149.00	0.00	-0.57	0.00	0.00	0.00	0.00	985.17	492.59	978.22	489.84		4.76	-0.30	0.000

Wind Loading - Shaft

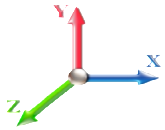
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

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	272.71	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	267.19	0.650	0.000	5.00	24.400	15.86	129.8	0.0	1352.1
10.00		1.00	0.85	7.442	8.19	261.66	0.650	0.000	5.00	23.901	15.54	127.2	0.0	1324.2
15.00		1.00	0.85	7.442	8.19	256.14	0.650	0.000	5.00	23.401	15.21	124.5	0.0	1296.4
20.00		1.00	0.90	7.896	8.69	258.15	0.650	0.000	5.00	22.902	14.89	129.3	0.0	1268.5
25.00		1.00	0.95	8.276	9.10	258.46	0.650	0.000	5.00	22.403	14.56	132.6	0.0	1240.6
30.00		1.00	0.98	8.600	9.46	257.54	0.650	0.000	5.00	21.904	14.24	134.7	0.0	1212.8
35.00		1.00	1.01	8.883	9.77	255.71	0.650	0.000	5.00	21.405	13.91	136.0	0.0	1184.9
40.00		1.00	1.04	9.137	10.05	253.21	0.650	0.000	5.00	20.906	13.59	136.6	0.0	1157.0
45.00		1.00	1.07	9.366	10.30	250.18	0.650	0.000	5.00	20.406	13.26	136.7	0.0	1129.1
47.25	Bot - Section 2	1.00	1.08	9.463	10.41	248.66	0.650	0.000	2.25	9.020	5.86	61.0	0.0	499.0
50.00		1.00	1.09	9.576	10.53	246.70	0.650	0.000	2.75	11.062	7.19	75.7	0.0	1127.5
53.25	Top - Section 1	1.00	1.11	9.704	10.67	244.24	0.650	0.000	3.25	12.878	8.37	89.4	0.0	1312.3
55.00		1.00	1.12	9.770	10.75	246.88	0.650	0.000	1.75	6.847	4.45	47.8	0.0	325.1
60.00		1.00	1.14	9.951	10.95	242.77	0.650	0.000	5.00	19.226	12.50	136.8	0.0	912.6
65.00		1.00	1.16	10.120	11.13	238.38	0.650	0.000	5.00	18.727	12.17	135.5	0.0	888.7
70.00		1.00	1.17	10.279	11.31	233.76	0.650	0.000	5.00	18.228	11.85	134.0	0.0	864.8
75.00		1.00	1.19	10.430	11.47	228.93	0.650	0.000	5.00	17.728	11.52	132.2	0.0	840.9
80.00		1.00	1.21	10.572	11.63	223.90	0.650	0.000	5.00	17.229	11.20	130.2	0.0	817.0
85.00		1.00	1.22	10.708	11.78	218.71	0.650	0.000	5.00	16.730	10.87	128.1	0.0	793.1
90.00		1.00	1.24	10.838	11.92	213.37	0.650	0.000	5.00	16.231	10.55	125.8	0.0	769.2
95.00		1.00	1.25	10.962	12.06	207.88	0.650	0.000	5.00	15.732	10.23	123.3	0.0	745.4
96.00	Bot - Section 3	1.00	1.25	10.986	12.08	206.77	0.650	0.000	1.00	3.086	2.01	24.2	0.0	146.2
100.00		1.00	1.27	11.081	12.19	202.27	0.650	0.000	4.00	12.315	8.00	97.6	0.0	965.5
100.75	Top - Section 2	1.00	1.27	11.098	12.21	201.42	0.650	0.000	0.75	2.274	1.48	18.0	0.0	178.2
105.00		1.00	1.28	11.195	12.31	199.41	0.650	0.000	4.25	12.671	8.24	101.4	0.0	401.4
110.00		1.00	1.29	11.305	12.44	193.58	0.650	0.000	5.00	14.446	9.39	116.8	0.0	457.6
115.00		1.00	1.30	11.412	12.55	187.65	0.650	0.000	5.00	13.946	9.07	113.8	0.0	441.6
120.00		1.00	1.32	11.514	12.67	181.62	0.650	0.000	5.00	13.447	8.74	110.7	0.0	425.7
125.00		1.00	1.33	11.614	12.78	175.50	0.650	0.000	5.00	12.948	8.42	107.5	0.0	409.8
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	173.03	0.650	0.000	2.00	5.039	3.28	42.0	0.0	159.4
130.00		1.00	1.34	11.710	12.88	169.30	0.650	0.000	3.00	7.409	4.82	62.0	0.0	234.4
135.00		1.00	1.35	11.803	12.98	163.02	0.650	0.000	5.00	11.950	7.77	100.8	0.0	377.9
139.00	Top - Section 3	1.00	1.36	11.876	13.06	157.94	0.650	0.000	4.00	9.200	5.98	78.1	0.0	290.9
140.00	Appurtenance(s)	1.00	1.36	11.894	13.08	156.66	0.650	0.000	1.00	2.250	1.46	19.1	0.0	53.5
145.00		1.00	1.37	11.982	13.18	150.24	0.650	0.000	5.00	10.951	7.12	93.8	0.0	260.2
149.00	Appurtenance(s)	1.00	1.38	12.051	13.26	145.04	0.650	0.000	4.00	8.402	5.46	72.4	0.0	199.5
								Totals:	**149.00**			**3,665.5**		**26,063.1**

Discrete Appurtenance Forces

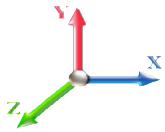
Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa 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	RRH2x60 700	3	12.051	13.256	1.50	1.00	6.79	153.00	0.000	0.000	90.08	0.00	0.00
2	149.00	LNX-6514DS-VTM	3	12.051	13.256	0.83	1.00	20.34	116.40	0.000	0.000	269.68	0.00	0.00
3	149.00	BXA-80063/4CF	3	12.051	13.256	0.72	1.00	10.20	29.70	0.000	0.000	135.15	0.00	0.00
4	149.00	SBNHH-1D65B	3	12.051	13.256	0.83	1.00	20.12	121.80	0.000	0.000	266.71	0.00	0.00
5	149.00	SBNHH-1D65B	3	12.077	13.284	0.83	1.00	20.32	120.00	0.000	1.500	269.92	0.00	404.87
6	149.00	Low Profile	1	12.051	13.256	1.00	1.00	22.00	1500.00	0.000	0.000	291.64	0.00	0.00
7	149.00	RRH 4X45 AWS	3	12.051	13.256	0.80	1.00	6.24	192.00	0.000	0.000	82.72	0.00	0.00
8	149.00	RRH 2X60W-1900MHz	3	12.051	13.256	0.84	1.00	4.74	138.00	0.000	0.000	62.80	0.00	0.00
9	149.00	DB-T1-6Z-8AB-0Z	1	12.051	13.256	0.67	1.00	3.22	18.90	0.000	0.000	42.63	0.00	0.00
10	149.00	DB-T1-6Z-8AB-0Z	1	12.051	13.256	0.67	1.00	3.22	18.90	0.000	0.000	42.63	0.00	0.00
11	140.00	AIR 32 B4A B2P	3	11.894	13.084	0.70	0.80	13.59	317.40	0.000	0.000	177.84	0.00	0.00
12	140.00	AIR 32 B2A B4P	3	11.894	13.084	0.70	0.80	13.59	396.60	0.000	0.000	177.84	0.00	0.00
13	140.00	Low Profile Platform	1	11.894	13.084	1.00	1.00	22.00	1500.00	0.000	0.000	287.84	0.00	0.00
14	140.00	KRY 112 144 T	3	11.894	13.084	0.56	0.80	0.69	33.06	0.000	0.000	9.01	0.00	0.00
15	127.00	Ericsson RRUS 4478 B5	3	11.653	12.818	0.54	0.80	2.96	179.70	0.000	0.000	37.92	0.00	0.00
16	127.00	Cci HPA65R-BU8A	6	11.653	12.818	0.71	0.80	47.93	414.00	0.000	0.000	614.38	0.00	0.00
17	127.00	Kaelus DBCT108F1V92-1	3	11.653	12.818	0.80	0.80	1.68	59.40	0.000	0.000	21.53	0.00	0.00
18	127.00	Ericsson RRUS 4426 B66	3	11.653	12.818	0.54	0.80	1.85	145.50	0.000	0.000	23.70	0.00	0.00
19	127.00	Ericsson RRUS 4415 B25	3	11.653	12.818	0.54	0.80	2.99	132.30	0.000	0.000	38.34	0.00	0.00
20	127.00	Cci HPA-65R-BUU-H8	6	11.653	12.818	0.63	0.80	49.22	408.00	0.000	0.000	630.90	0.00	0.00
21	127.00	Ericsson RRUS 4478 B14	3	11.653	12.818	0.54	0.80	2.65	178.20	0.000	0.000	34.01	0.00	0.00
22	127.00	Ericsson RRUS-11 RRU	6	11.653	12.818	0.54	0.80	8.10	304.20	0.000	0.000	103.88	0.00	0.00
23	127.00	Ericsson RRUS 32 RRU	3	11.653	12.818	0.54	0.80	5.32	231.00	0.000	0.000	68.22	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	4	11.653	12.818	0.80	0.80	7.04	127.20	0.000	0.000	90.24	0.00	0.00
25	127.00	MTC3607 Platform + HR &	1	11.653	12.818	1.00	1.00	51.70	2246.00	0.000	0.000	662.68	0.00	0.00
							Totals:		**9,081.26**			**4,532.29**		

Total Applied Force Summary

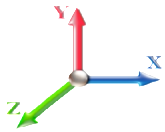
Structure:	CT13075-A-SBA		**Code:**	EIA/TIA-222-G	10/15/2018
Site Name:	New London		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

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		129.83	1505.87	0.00	0.00
10.00		127.17	1478.00	0.00	0.00
15.00		124.52	1450.12	0.00	0.00
20.00		129.30	1422.25	0.00	0.00
25.00		132.57	1394.38	0.00	0.00
30.00		134.68	1366.50	0.00	0.00
35.00		135.96	1338.63	0.00	0.00
40.00		136.57	1310.75	0.00	0.00
45.00		136.66	1282.88	0.00	0.00
47.25		61.03	568.20	0.00	0.00
50.00		75.74	1212.06	0.00	0.00
53.25		89.35	1412.24	0.00	0.00
55.00		47.83	378.87	0.00	0.00
60.00		136.79	1066.35	0.00	0.00
65.00		135.50	1042.46	0.00	0.00
70.00		133.97	1018.57	0.00	0.00
75.00		132.20	994.67	0.00	0.00
80.00		130.24	970.78	0.00	0.00
85.00		128.09	946.89	0.00	0.00
90.00		125.77	923.00	0.00	0.00
95.00		123.30	899.10	0.00	0.00
96.00		24.24	176.95	0.00	0.00
100.00		97.57	1088.51	0.00	0.00
100.75		18.04	201.26	0.00	0.00
105.00		101.43	532.13	0.00	0.00
110.00		116.77	611.31	0.00	0.00
115.00		113.79	595.38	0.00	0.00
120.00		110.71	579.45	0.00	0.00
125.00		107.52	563.52	0.00	0.00
127.00	(41) attachments	2367.80	4646.45	0.00	0.00
130.00		62.04	316.05	0.00	0.00
135.00		100.85	514.01	0.00	0.00
139.00		78.12	399.74	0.00	0.00
140.00	(10) attachments	671.67	2327.75	0.00	0.00
145.00		93.82	333.58	0.00	0.00
149.00	(24) attachments	1626.34	2666.96	0.00	404.87
	Totals:	**8,197.80**	**39,535.61**	**0.00**	**404.87**

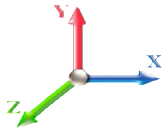
Calculated Forces

Structure:	CT13075-A-SBA	**Code:**	EIA/TIA-222-G	10/15/2018	
Site Name:	New London	**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	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

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	-39.53	-8.21	0.00	-909.22	0.00	909.22	5451.60	2725.80	12956.4	6487.84	0.00	0.000	0.000	0.147
5.00	-38.02	-8.11	0.00	-868.16	0.00	868.16	5379.95	2689.97	12523.2	6270.95	0.02	-0.037	0.000	0.146
10.00	-36.54	-8.00	0.00	-827.64	0.00	827.64	5306.65	2653.32	12093.3	6055.68	0.08	-0.075	0.000	0.144
15.00	-35.08	-7.90	0.00	-787.64	0.00	787.64	5231.70	2615.85	11666.9	5842.16	0.18	-0.113	0.000	0.142
20.00	-33.66	-7.79	0.00	-748.15	0.00	748.15	5155.10	2577.55	11244.2	5630.50	0.32	-0.152	0.000	0.139
25.00	-32.26	-7.67	0.00	-709.21	0.00	709.21	5076.86	2538.43	10825.5	5420.83	0.50	-0.192	0.000	0.137
30.00	-30.89	-7.56	0.00	-670.84	0.00	670.84	4996.96	2498.48	10411.0	5213.26	0.72	-0.232	0.000	0.135
35.00	-29.54	-7.43	0.00	-633.07	0.00	633.07	4915.42	2457.71	10001.0	5007.93	0.99	-0.272	0.000	0.132
40.00	-28.23	-7.31	0.00	-595.89	0.00	595.89	4832.22	2416.11	9595.63	4804.95	1.29	-0.313	0.000	0.130
45.00	-26.94	-7.18	0.00	-559.34	0.00	559.34	4747.38	2373.69	9195.21	4604.44	1.64	-0.355	0.000	0.127
47.25	-26.37	-7.13	0.00	-543.18	0.00	543.18	4708.66	2354.33	9016.69	4515.05	1.82	-0.374	0.000	0.126
50.00	-25.16	-7.05	0.00	-523.58	0.00	523.58	4660.89	2330.44	8799.96	4406.52	2.04	-0.397	0.000	0.124
53.25	-23.74	-6.96	0.00	-500.65	0.00	500.65	3818.32	1909.16	7226.08	3618.41	2.32	-0.425	0.000	0.145
55.00	-23.36	-6.93	0.00	-488.47	0.00	488.47	3795.26	1897.63	7117.54	3564.06	2.48	-0.440	0.000	0.143
60.00	-22.29	-6.80	0.00	-453.84	0.00	453.84	3728.27	1864.14	6809.75	3409.94	2.96	-0.487	0.000	0.139
65.00	-21.24	-6.67	0.00	-419.85	0.00	419.85	3659.63	1829.82	6505.57	3257.62	3.50	-0.534	0.000	0.135
70.00	-20.22	-6.54	0.00	-386.49	0.00	386.49	3589.34	1794.67	6205.25	3107.24	4.08	-0.581	0.000	0.130
75.00	-19.22	-6.42	0.00	-353.78	0.00	353.78	3517.40	1758.70	5909.03	2958.91	4.72	-0.628	0.000	0.125
80.00	-18.25	-6.29	0.00	-321.69	0.00	321.69	3443.81	1721.91	5617.15	2812.75	5.40	-0.674	0.000	0.120
85.00	-17.30	-6.16	0.00	-290.24	0.00	290.24	3368.58	1684.29	5329.85	2668.89	6.13	-0.720	0.000	0.114
90.00	-16.37	-6.04	0.00	-259.42	0.00	259.42	3291.69	1645.84	5047.37	2527.44	6.91	-0.765	0.000	0.108
95.00	-15.47	-5.91	0.00	-229.22	0.00	229.22	3202.59	1601.29	4754.28	2380.67	7.73	-0.810	0.000	0.101
96.00	-15.29	-5.89	0.00	-223.31	0.00	223.31	3181.72	1590.86	4692.22	2349.60	7.90	-0.819	0.000	0.100
100.00	-14.20	-5.78	0.00	-199.75	0.00	199.75	3098.26	1549.13	4448.03	2227.32	8.61	-0.853	0.000	0.094
100.75	-14.00	-5.77	0.00	-195.42	0.00	195.42	1860.42	930.21	2714.89	1359.46	8.74	-0.860	0.000	0.151
105.00	-13.46	-5.67	0.00	-170.91	0.00	170.91	1828.32	914.16	2592.13	1297.99	9.52	-0.894	0.000	0.139
110.00	-12.85	-5.55	0.00	-142.58	0.00	142.58	1789.04	894.52	2449.03	1226.33	10.49	-0.949	0.000	0.123
115.00	-12.25	-5.44	0.00	-114.82	0.00	114.82	1748.11	874.06	2307.59	1155.51	11.51	-0.998	0.000	0.106
120.00	-11.67	-5.32	0.00	-87.63	0.00	87.63	1705.53	852.77	2168.05	1085.64	12.58	-1.041	0.000	0.088
125.00	-11.11	-5.21	0.00	-61.01	0.00	61.01	1661.30	830.65	2030.66	1016.84	13.69	-1.077	0.000	0.067
127.00	-6.51	-2.76	0.00	-50.58	0.00	50.58	1643.15	821.58	1976.36	989.65	14.14	-1.089	0.000	0.055
130.00	-6.19	-2.69	0.00	-42.31	0.00	42.31	1615.43	807.71	1895.65	949.24	14.83	-1.105	0.000	0.048
135.00	-5.68	-2.58	0.00	-28.85	0.00	28.85	1567.90	783.95	1763.28	882.95	16.00	-1.126	0.000	0.036
139.00	-5.28	-2.50	0.00	-18.52	0.00	18.52	1528.69	764.34	1659.43	830.95	16.95	-1.139	0.000	0.026
139.00	-5.28	-2.50	0.00	-18.52	0.00	18.52	1044.31	522.16	1138.99	570.34	16.95	-1.139	0.000	0.038
140.00	-2.97	-1.78	0.00	-16.02	0.00	16.02	1038.69	519.35	1122.71	562.19	17.19	-1.142	0.000	0.031
145.00	-2.63	-1.68	0.00	-7.12	0.00	7.12	1009.62	504.81	1041.96	521.75	18.40	-1.154	0.000	0.016
149.00	0.00	-1.63	0.00	-0.40	0.00	0.40	985.17	492.59	978.22	489.84	19.36	-1.158	0.000	0.001

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 105 mph Wind	40.2	0.00	47.38	0.00	0.00	4473.22
0.9D + 1.6W 105 mph Wind	40.2	0.00	35.52	0.00	0.00	4437.31
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.4	0.00	72.61	0.00	0.00	1012.25
1.2D + 1.0E	1.8	0.00	47.44	0.00	0.00	207.79
0.9D + 1.0E	1.8	0.00	35.58	0.00	0.00	206.02
1.0D + 1.0W 60 mph Wind	8.2	0.00	39.53	0.00	0.00	909.22

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 105 mph Wind	-14.81	-28.40	0.00	-961.97	0.00	-961.97	1860.42	930.21	2714.89	1359.46	100.75	0.717
0.9D + 1.6W 105 mph Wind	-10.61	-28.07	0.00	-950.19	0.00	-950.19	1860.42	930.21	2714.89	1359.46	100.75	0.706
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-32.77	-6.26	0.00	-209.92	0.00	-209.92	1860.42	930.21	2714.89	1359.46	100.75	0.172
1.2D + 1.0E	-16.90	-1.37	0.00	-54.95	0.00	-54.95	1860.42	930.21	2714.89	1359.46	100.75	0.050
0.9D + 1.0E	-12.67	-1.35	0.00	-54.34	0.00	-54.34	1860.42	930.21	2714.89	1359.46	100.75	0.047
1.0D + 1.0W 60 mph Wind	-14.00	-5.77	0.00	-195.42	0.00	-195.42	1860.42	930.21	2714.89	1359.46	100.75	0.151

Base Plate Summary

Structure:	CT13075-A-SB		**Code:**	EIA/TIA-222-G	10/15/2018
Site Name:	New London		**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

Reactions		Base Plate		Anchor Bolts	
Original Design		**Yield (ksi):**	60.00	**Bolt Circle:**	64.88
Moment (kip-ft):	5442.50	**Width (in):**	65.37	**Number Bolts:**	20.00
Axial (kip):	53.57	**Style:**	Clipped	**Bolt Type:**	2.25" 18J
Shear (kip):	49.90	**Polygon Sides:**	8.00	**Bolt Diameter (in):**	2.25
Analysis		**Clip Length (in):**	14.00	**Yield (ksi):**	75.00
Moment (kip-ft):	4473.22	**Effective Len (in):**	8.93	**Ultimate (ksi):**	100.00
Axial (kip):	72.61	**Moment (kip-in):**	559.72	**Arrangement:**	Clustered
Shear (kip):	40.25	**Allow Stress (ksi):**	81.00	**Cluster Dist (in):**	6.00
		Applied Stress (ksi):	0.00	**Start Angle (deg):**	45.00
Moment Design %:	82.19	**Stress Ratio:**	0.61	Compression	
				Force (kip):	169.10
				Allowable (kip):	260.00
				Ratio:	0.67
				Tension	
				Force (kip):	161.84
				Allowable (kip):	260.00
				Ratio:	0.64

Monopole Mat Foundation Design

			Date: 10/15/2018
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	149
Site Number:	CT13075-A-SBA	**Engineer Name:**	J. Chen
Engr. Number:	63002	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

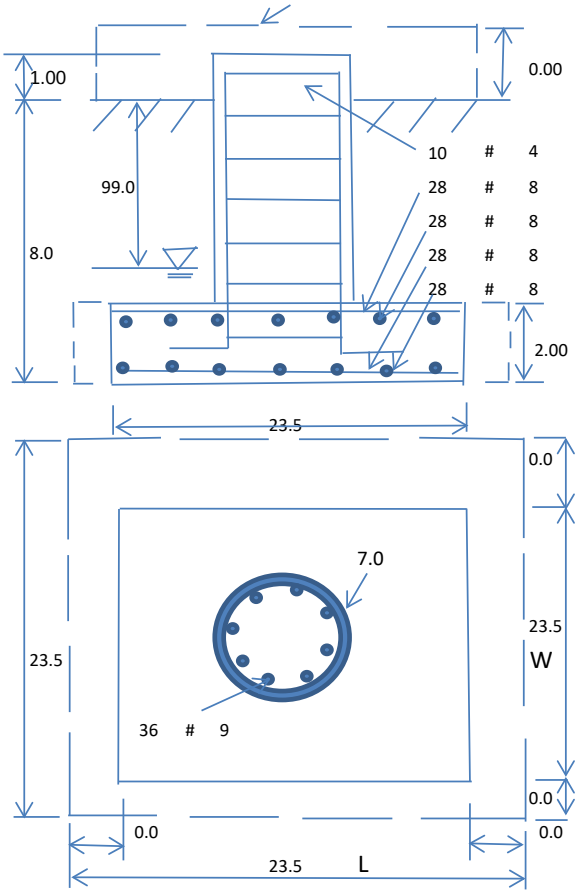
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	47.4	Shear Force (Kips):	40.2
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4473.2
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	8.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.00
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
Control Value for Cell D18:	0	Control Value for Cell F18:	0



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):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	28	Qty. of Rebar in Pad (W):	28

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	28	Qty. of Rebar in Pad (W):	28
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.):	3082.59	Total Dry Soil Weight (Kips):	308.26
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	308.26	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1373.89	Total Dry Concrete Weight (Kips):	206.08
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	206.08	Total Vertical Load on Base (Kips):	561.72

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	4487	<	Allowable Factored Soil Bearing (psf): 6000	0.75	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	5995.9	>	Design Factored Momont (kips-ft): 4835	0.81	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.24	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):	6026.1 >	Design Factored Moment (Mu, Kips-F	4754.6	0.79	OK!
Calculated Shear Capacity (Kips):	660.1 >	Design Factored Shear (Kips):	40.2	0.06	OK!
Calculated Tension Capacity (Tn, Kips):	1944.0 >	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9734.2 >	Design Factored Axial Load (Pu Kips):	47.4	0.00	OK!
Moment & Axial Strength Combination:	0.79 OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.006	Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:					
One-Way Design Shear Capacity (L-Direction, Kips):	548.4 >	One-Way Factored Shear (L-D. Kips):	322.7	0.59	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	548.4 >	One-Way Factored Shear (W-D., Kips)	322.7	0.59	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	532.5 >	One-Way Factored Shear (C-C, Kips):	333.2	0.63	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):	1971.7 >	Moment at Bottom (L-Dir. K-Ft):	1451.6	0.74	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	1971.7 >	Moment at Bottom (W-Dir. K-Ft):	1451.6	0.74	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	2762.4 >	Moment at Bottom (C-C Dir. K-Ft):	2052.9	0.74	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):	1971.7 >	Moment at the top (L-Dir K-Ft):	696.5	0.35	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	1971.7 >	Moment at the top (W-Dir K-Ft):	696.5	0.35	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	2762.4 >	Moment at the top (C-C Dir. K-Ft):	655.2	0.24	OK!

(3).Check Punching Shear Capacity due to Moment in the Pier:

Moment transferred by punching shear:	1789.3	k-ft.	Max. factored shear stress v_{u_CD}:	6.3	Psi
Max. factored shear stress v_{u_AB}:	18.1	Psi	Factored shear Strength ϕv_n:	189.7	Psi
Max. factored shear stress v_u:	18.1	Psi	Check Usage of Punching Shear Capacity:	0.10	OK!

June 25, 2018
September 6, 2018 (Rev.1)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:

Site Number:	CT2820 (LTE 6C)
FA Number:	10577793
PACE Number:	MRCTB032071
PT Number:	2051A0GJXL
Site Name:	Groton Pleasant Valley Road North S2820A
Site Address:	1294 Pleasant Valley Road North Groton, CT 06340

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 mount to determine its capability of supporting the following equipment loading:

- (6) HPA-65R-BUU-H8 Antennas (92.4"x14.8"x7.4" – Wt. = 68 lbs. /each)
- (6) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (3) 4415 B25 RRH's (15.0"x13.2"x5.4" – Wt. = 44 lbs. /each)
- (3) Squid Surge Arrestors (24.0"x9.7" ø – Wt. = 33 lbs. /each)
- **(6) HPA65R-BU8A Antennas (96.0"x11.7"x7.6" – Wt. = 54 lbs. /each)**
- **(3) 4478 B5 RRH's (16.5"x13.4"x7.7" – Wt. = 60 lbs. /each)**
- **(3) 4426 B66 RRH's (15.0"x13.2"x5.8" – Wt. = 49 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) RRUS-32 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)**
- **(3) DBCT108F1V92-1 Diplexers (10.7"x6.8"x7.2" – Wt. = 29 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" ø – Wt. = 33 lbs.)**

**Proposed Loading Shown in Bold.*

HDG's sub-consultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mount on June 11, 2018.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the International Building Code 2012 with 2005 Connecticut Supplement with 2016 Amendments, and AT&T Mount Technical Directive – R7.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-G Annex B, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph. Per the AT&T Mount Technical Directive and Appendix N of the Connecticut State Building Code, an ultimate wind speed of 135 mph converted to a nominal wind speed of 105 mph 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 in flat terrain or the bottom of a hill or ridge.
- The mount has been analyzed with load combinations consisting of 500 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.

Based on our analysis, we have determined that the existing antenna mount **IS CAPABLE** of supporting the proposed antenna installation.

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 6C) Mount Rating	12	LC1	97%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC dated June 21, 2018.
- Fabrication drawings prepared by CommScope (P/N MTC3607) dated October 30, 2013.

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
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Dr., N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Dr., N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 9/6/2018
Project Name: Groton Pleasant Valley Road North S2820A
Project Number: CT2820
Designed By: BD **Checked By**: MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	127 (ft)
	z_g=	1200 (ft)
K_z= 1.058	α=	7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
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

2.6.6.4 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

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

K_{zt}= #DIV/0!

	K_h=	#DIV/0!
	K_e=	0 (from Table 2-4)
(If Category 1 then K_{zt}=1.0)	K_t=	0 (from Table 2-5)
	f=	0 (from Table 2-5)
Category= 1	z=	127
	H=	0 (Ht. of the crest above surrounding terrain)
	K_{zt}=	1.00
	K_{iz} =	1.14 (from Sec. 2.6.8)

2.6.8 Design Ice Thickness

Max Ice Thickness = t_i = 0.75 in

$t_{iz} = 2.0*t_i*I*K_{iz}*(Kzt)^{0.35}$ t_{iz} = 1.72 in

Date: 9/6/2018
Project Name: Groton Pleasant Valley Road North S2820A
Project Number: CT2820
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

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

h= 150 Gh= 0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

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

Gh= 1.35 **Gh= 1.00**

2.6.9.2 Design Wind Force on Appurtenances

State Code Ultimate Design Wind Speed: V_{ult} = 135 mph

Nomial Design Wind Speed, $V_{asd} = V_{ult}\sqrt{(0.6)}$ V_{asd} = 105 mph

V_{asd} per the AT&T Mount Technical Directive and Connecticut State Building Code, Latest Edition.
Per TIA-222-G, V_{min} = 105 mph V_{max} = 120 mph

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

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

		K_z=	1.058
		K_{zt}=	1.0
q_z=	**28.37**	K_d=	0.95
$q_{z\,(ice)}$=	**6.43**	V_{asd}=	105 mph
$q_{z\,(30)}$=	**2.32**	$V_{max\,(ice)}$=	50 mph
		V_{30}=	30 mph
		I=	1.0

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

Date: 9/6/2018
Project Name: Groton Pleasant Valley Road North S2820A
Project Number: CT2820
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-8

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
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (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 = 1.72 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)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	6.24	1.37	368	107	30
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	8.21	1.44	319	97	26
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	79	25	6
RRUS-11 RRH (Shielded)	19.7	2.2	7.2	0.30	8.95	1.47	13	9	1
4415 B25 RRH	15.0	13.2	5.4	1.38	1.14	1.20	47	16	4
4415 B25 RRH (Shielded)	15.0	0.0	5.4	0.00	0.00	1.20	0	0	0
4478 B5 RRH	16.5	13.4	7.7	1.54	1.23	1.20	52	18	4
4478 B5 RRH (Shielded)	16.5	0.0	7.7	0.00	0.00	1.20	0	0	0
4426 B66 RRH	15.0	13.2	5.8	1.38	1.14	1.20	47	16	4
4426 B66 RRH (Shielded)	15.0	1.5	5.8	0.16	10.00	1.50	7	6	1
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	57	19	5
B14 4478 RRH (Shielded)	18.1	1.7	8.3	0.21	10.65	1.52	9	8	1
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	78	26	6
RRUS-32 RRH (Shielded)	27.2	0.4	7.0	0.08	68.00	3.43	7	18	1
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	1.57	1.20	17	8	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	32	11	3
2" Pipe	2.4	12.0		0.20	0.20	1.20	7	5	1
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	8	5	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	10	6	1
2x2x3/16 Angle	2.0	12.0		0.17	0.17	2.00	9	7	1
HSS 3x2x3/16	3.0	12.0		0.25	0.25	2.00	14	9	1
PL 6x3/8	6.0	12.0		0.50	0.50	2.00	28	13	2

Date: 9/6/2018

Project Name: Groton Pleasant Valley Road North S2820A

Project Number: CT2820

Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.72	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)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	368	213	329
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	319	228	296
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	79	34	68
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	40	34	38
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	47	19	40
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	23	19	22
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	52	30	47
4478 B5 RRH (Shielded)	16.5	6.7	7.7	0.77	0.88	2.46	2.14	1.20	1.20	26	30	27
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	47	21	40
4426 B66 RRH (Shielded)	15.0	6.6	5.8	0.69	0.60	2.27	2.59	1.20	1.20	23	21	23
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	57	36	52
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	29	36	31
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	78	47	70
RRUS-32 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	42	47	43
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	17	18	17

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.8	18.2	10.8	12.13	7.21	5.26	8.85	1.32	1.46	103	68	94
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.45	7.62	6.57	9.01	1.38	1.47	93	72	88
RRUS-11 RRH	23.1	20.4	10.6	3.28	1.71	1.13	2.18	1.20	1.20	25	13	22
RRUS-11 RRH (Shielded)	23.1	10.2	10.6	1.64	1.71	2.26	2.18	1.20	1.20	13	13	13
4415 B25 RRH	18.4	16.6	8.8	2.13	1.13	1.11	2.09	1.20	1.20	16	9	15
4415 B25 RRH (Shielded)	18.4	8.3	8.8	1.06	1.13	2.22	2.09	1.20	1.20	8	9	8
4478 B5 RRH	19.9	16.8	11.1	2.33	1.54	1.18	1.79	1.20	1.20	18	12	16
4478 B5 RRH (Shielded)	19.9	8.4	11.1	1.17	1.54	2.37	1.79	1.20	1.20	9	12	10
4426 B66 RRH	18.4	16.6	9.2	2.13	1.18	1.11	2.00	1.20	1.20	16	9	15
4426 B66 RRH (Shielded)	18.4	8.3	9.2	1.06	1.18	2.22	2.00	1.20	1.20	8	9	8
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	19	14	18
B14 4478 RRH (Shielded)	21.5	8.4	11.7	1.26	1.75	2.56	1.84	1.20	1.20	10	14	11
RRUS-32 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	26	17	23
RRUS-32 RRH (Shielded)	30.6	7.8	10.4	1.65	2.22	3.94	2.94	1.26	1.22	13	17	14
DBCT108F1V92-1 Diplexer	14.1	10.2	10.6	1.00	1.04	1.38	1.33	1.20	1.20	8	8	8

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	30	17	27
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	26	19	24
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	6
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	3	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	3
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	2	2	2
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	4	2	4
4478 B5 RRH (Shielded)	16.5	6.7	7.7	0.77	0.88	2.46	2.14	1.20	1.20	2	2	2
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	3
4426 B66 RRH (Shielded)	15.0	6.6	5.8	0.69	0.60	2.27	2.59	1.20	1.20	2	2	2
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	2
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	4
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 9/6/2018

Project Name: Groton Pleasant Valley Road North S2820A

Project Number: CT2820

Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.72 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)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	368	213	252
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	319	228	251
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	79	34	45
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	59	34	40
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	47	19	26
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	35	19	23
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	52	30	36
4478 B5 RRH (Shielded)	16.5	10.1	7.7	1.15	0.88	1.64	2.14	1.20	1.20	39	30	32
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	47	21	27
4426 B66 RRH (Shielded)	15.0	9.9	5.8	1.03	0.60	1.52	2.59	1.20	1.20	35	21	24
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	57	36	41
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	43	36	37
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	78	47	55
RRUS-32 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	59	47	50
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	17	18	18

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.8	18.2	10.8	12.13	7.21	5.26	8.85	1.32	1.46	103	68	77
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.45	7.62	6.57	9.01	1.38	1.47	93	72	77
RRUS-11 RRH	23.1	20.4	10.6	3.28	1.71	1.13	2.18	1.20	1.20	25	13	16
RRUS-11 RRH (Shielded)	23.1	15.3	10.6	2.46	1.71	1.51	2.18	1.20	1.20	19	13	15
4415 B25 RRH	18.4	16.6	8.8	2.13	1.13	1.11	2.09	1.20	1.20	16	9	11
4415 B25 RRH (Shielded)	18.4	12.5	8.8	1.60	1.13	1.48	2.09	1.20	1.20	12	9	10
4478 B5 RRH	19.9	16.8	11.1	2.33	1.54	1.18	1.79	1.20	1.20	18	12	13
4478 B5 RRH (Shielded)	19.9	12.6	11.1	1.75	1.54	1.58	1.79	1.20	1.20	13	12	12
4426 B66 RRH	18.4	16.6	9.2	2.13	1.18	1.11	2.00	1.20	1.20	16	9	11
4426 B66 RRH (Shielded)	18.4	12.5	9.2	1.60	1.18	1.48	2.00	1.20	1.20	12	9	10
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	19	14	15
B14 4478 RRH (Shielded)	21.5	12.6	11.7	1.89	1.75	1.71	1.84	1.20	1.20	15	14	14
RRUS-32 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	26	17	19
RRUS-32 RRH (Shielded)	30.6	11.6	10.4	2.48	2.22	2.63	2.94	1.21	1.22	19	17	18
DBCT108F1V92-1 Diplexer	14.1	10.2	10.6	1.00	1.04	1.38	1.33	1.20	1.20	8	8	8

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	30	17	21
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	26	19	20
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	4
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	5	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	2
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	3	2	2
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	4	2	3
4478 B5 RRH (Shielded)	16.5	10.1	7.7	1.15	0.88	1.64	2.14	1.20	1.20	3	2	3
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	2
4426 B66 RRH (Shielded)	15.0	9.9	5.8	1.03	0.60	1.52	2.59	1.20	1.20	3	2	2
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	4	3	3
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	4
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 9/6/2018
Project Name: Groton Pleasant Valley Road North S2820A
Project Number: CT2820
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.72	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)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	368	213	213
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	319	228	228
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	79	34	34
RRUS-11 RRH (Shielded)	19.7	2.2	7.2	0.30	0.99	8.95	2.74	1.47	1.21	13	34	34
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	47	19	19
4415 B25 RRH (Shielded)	15.0	0.0	5.4	0.00	0.56	0.00	2.78	1.20	1.21	0	19	19
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	52	30	30
4478 B5 RRH (Shielded)	16.5	0.0	7.7	0.00	0.88	0.00	2.14	1.20	1.20	0	30	30
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	47	21	21
4426 B66 RRH (Shielded)	15.0	1.5	5.8	0.16	0.60	10.00	2.59	1.50	1.20	7	21	21
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	57	36	36
B14 4478 RRH (Shielded)	18.1	1.7	8.3	0.21	1.04	10.65	2.18	1.52	1.20	9	36	36
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	78	47	47
RRUS-32 RRH (Shielded)	27.2	0.4	7.0	0.08	1.32	0.00	3.89	1.20	1.26	3	47	47
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	17	18	18

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.8	18.2	10.8	12.13	7.21	5.26	8.85	1.32	1.46	103	68	68
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.45	7.62	6.57	9.01	1.38	1.47	93	72	72
RRUS-11 RRH	23.1	20.4	10.6	3.28	1.71	1.13	2.18	1.20	1.20	25	13	13
RRUS-11 RRH (Shielded)	23.1	5.6	10.6	0.90	1.71	4.11	2.18	1.27	1.20	7	13	13
4415 B25 RRH	18.4	16.6	8.8	2.13	1.13	1.11	2.09	1.20	1.20	16	9	9
4415 B25 RRH (Shielded)	18.4	3.4	8.8	0.44	1.13	5.37	2.09	1.33	1.20	4	9	9
4478 B5 RRH	19.9	16.8	11.1	2.33	1.54	1.18	1.79	1.20	1.20	18	12	12
4478 B5 RRH (Shielded)	19.9	3.4	11.1	0.48	1.54	5.81	1.79	1.35	1.20	4	12	12
4426 B66 RRH	18.4	16.6	9.2	2.13	1.18	1.11	2.00	1.20	1.20	16	9	9
4426 B66 RRH (Shielded)	18.4	4.9	9.2	0.63	1.18	3.74	2.00	1.25	1.20	5	9	9
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	19	14	14
B14 4478 RRH (Shielded)	21.5	5.1	11.7	0.77	1.75	4.20	1.84	1.28	1.20	6	14	14
RRUS-32 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	26	17	17
RRUS-32 RRH (Shielded)	30.6	3.8	10.4	0.82	2.22	7.99	2.94	1.43	1.22	8	17	17
DBCT108F1V92-1 Diplexer	14.1	10.2	10.6	1.00	1.04	1.38	1.33	1.20	1.20	8	8	8

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	30	17	17
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	26	19	19
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	3
RRUS-11 RRH (Shielded)	19.7	2.2	7.2	0.30	0.99	8.95	2.74	1.47	1.21	1	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	2
4415 B25 RRH (Shielded)	15.0	0.0	5.4	0.00	0.56	0.00	2.78	1.20	1.21	0	2	2
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	4	2	2
4478 B5 RRH (Shielded)	16.5	0.0	7.7	0.00	0.88	0.00	2.14	1.20	1.20	0	2	2
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	2
4426 B66 RRH (Shielded)	15.0	1.5	5.8	0.16	0.60	10.00	2.59	1.50	1.20	1	2	2
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Shielded)	18.1	1.7	8.3	0.21	1.04	10.65	2.18	1.52	1.20	1	3	3
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 RRH (Shielded)	27.2	0.4	7.0	0.08	1.32	68.00	3.89	3.43	1.26	1	4	4
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 9/6/2018
Project Name: Groton Pleasant Valley Road North S2820A
Project Number: CT2820
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.72	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)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	368	213	252
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	319	228	251
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	79	34	45
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	59	34	40
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	47	19	26
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	35	19	23
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	52	30	36
4478 B5 RRH (Shielded)	16.5	10.1	7.7	1.15	0.88	1.64	2.14	1.20	1.20	39	30	32
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	47	21	27
4426 B66 RRH (Shielded)	15.0	9.9	5.8	1.03	0.60	1.52	2.59	1.20	1.20	35	21	24
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	57	36	41
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	43	36	37
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	78	47	55
RRUS-32 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	59	47	50
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	17	18	18

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.8	18.2	10.8	12.13	7.21	5.26	8.85	1.32	1.46	103	68	77
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.45	7.62	6.57	9.01	1.38	1.47	93	72	77
RRUS-11 RRH	23.1	20.4	10.6	3.28	1.71	1.13	2.18	1.20	1.20	25	13	16
RRUS-11 RRH (Shielded)	23.1	15.3	10.6	2.46	1.71	1.51	2.18	1.20	1.20	19	13	15
4415 B25 RRH	18.4	16.6	8.8	2.13	1.13	1.11	2.09	1.20	1.20	16	9	11
4415 B25 RRH (Shielded)	18.4	12.5	8.8	1.60	1.13	1.48	2.09	1.20	1.20	12	9	10
4478 B5 RRH	19.9	16.8	11.1	2.33	1.54	1.18	1.79	1.20	1.20	18	12	13
4478 B5 RRH (Shielded)	19.9	12.6	11.1	1.75	1.54	1.58	1.79	1.20	1.20	13	12	12
4426 B66 RRH	18.4	16.6	9.2	2.13	1.18	1.11	2.00	1.20	1.20	16	9	11
4426 B66 RRH (Shielded)	18.4	12.5	9.2	1.60	1.18	1.48	2.00	1.20	1.20	12	9	10
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	19	14	15
B14 4478 RRH (Shielded)	21.5	12.6	11.7	1.89	1.75	1.71	1.84	1.20	1.20	15	14	14
RRUS-32 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	26	17	19
RRUS-32 RRH (Shielded)	30.6	11.6	10.4	2.48	2.22	2.63	2.94	1.21	1.22	19	17	18
DBCT108F1V92-1 Diplexer	14.1	10.2	10.6	1.00	1.04	1.38	1.33	1.20	1.20	8	8	8

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	30	17	21
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	26	19	20
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	4
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	5	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	2
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	3	2	2
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	4	2	3
4478 B5 RRH (Shielded)	16.5	10.1	7.7	1.15	0.88	1.64	2.14	1.20	1.20	3	2	3
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	2
4426 B66 RRH (Shielded)	15.0	9.9	5.8	1.03	0.60	1.52	2.59	1.20	1.20	3	2	2
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	4	3	3
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	4
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 9/6/2018
Project Name: Groton Pleasant Valley Road North S2820A
Project Number: CT2820
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.72	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)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	368	213	329
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	319	228	296
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	79	34	68
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	40	34	38
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	47	19	40
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	23	19	22
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	52	30	47
4478 B5 RRH (Shielded)	16.5	6.7	7.7	0.77	0.88	2.46	2.14	1.20	1.20	26	30	27
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	47	21	40
4426 B66 RRH (Shielded)	15.0	6.6	5.8	0.69	0.60	2.27	2.59	1.20	1.20	23	21	23
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	57	36	52
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	29	36	31
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	78	47	70
RRUS-32 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	42	47	43
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	17	18	17

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.8	18.2	10.8	12.13	7.21	5.26	8.85	1.32	1.46	103	68	94
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.45	7.62	6.57	9.01	1.38	1.47	93	72	88
RRUS-11 RRH	23.1	20.4	10.6	3.28	1.71	1.13	2.18	1.20	1.20	25	13	22
RRUS-11 RRH (Shielded)	23.1	10.2	10.6	1.64	1.71	2.26	2.18	1.20	1.20	13	13	13
4415 B25 RRH	18.4	16.6	8.8	2.13	1.13	1.11	2.09	1.20	1.20	16	9	15
4415 B25 RRH (Shielded)	18.4	8.3	8.8	1.06	1.13	2.22	2.09	1.20	1.20	8	9	8
4478 B5 RRH	19.9	16.8	11.1	2.33	1.54	1.18	1.79	1.20	1.20	18	12	16
4478 B5 RRH (Shielded)	19.9	8.4	11.1	1.17	1.54	2.37	1.79	1.20	1.20	9	12	10
4426 B66 RRH	18.4	16.6	9.2	2.13	1.18	1.11	2.00	1.20	1.20	16	9	15
4426 B66 RRH (Shielded)	18.4	8.3	9.2	1.06	1.18	2.22	2.00	1.20	1.20	8	9	8
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	19	14	18
B14 4478 RRH (Shielded)	21.5	8.4	11.7	1.26	1.75	2.56	1.84	1.20	1.20	10	14	11
RRUS-32 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	26	17	23
RRUS-32 RRH (Shielded)	30.6	7.8	10.4	1.65	2.22	3.94	2.94	1.26	1.22	13	17	14
DBCT108F1V92-1 Diplexer	14.1	10.2	10.6	1.00	1.04	1.38	1.33	1.20	1.20	8	8	8

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	30	17	27
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	26	19	24
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	6
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	3	3	3
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	4	2	3
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	2	2	2
4478 B5 RRH	16.5	13.4	7.7	1.54	0.88	1.23	2.14	1.20	1.20	4	2	4
4478 B5 RRH (Shielded)	16.5	6.7	7.7	0.77	0.88	2.46	2.14	1.20	1.20	2	2	2
4426 B66 RRH	15.0	13.2	5.8	1.38	0.60	1.14	2.59	1.20	1.20	4	2	3
4426 B66 RRH (Shielded)	15.0	6.6	5.8	0.69	0.60	2.27	2.59	1.20	1.20	2	2	2
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	2
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	4
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 9/6/2018
Project Name: Groton Pleasant Valley Road North S2820A
Project Number: CT2820
Designed By: BD **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 0.75 in.
Density of ice: 56 pcf

HPA-65R-BUU-H8 Antenna

Weight of ice based on total radial SF area:

Height (in):	92.4	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:		114 lbs
Weight of object:	68 lbs	
Combined weight of ice and object:		182 lbs

HPA65R-BU8A Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	11.7	
Depth (in):	7.6	
Total weight of ice on object:		103 lbs
Weight of object:	54 lbs	
Combined weight of ice and object:		157 lbs

RRUS-11 RRH

Weight of ice based on total radial SF area:

Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		32 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		83 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	13.2	
Depth (in):	5.4	
Total weight of ice on object:		20 lbs
Weight of object:	44 lbs	
Combined weight of ice and object:		64 lbs

4478 B5 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.4	
Depth (in):	7.7	
Total weight of ice on object:		25 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		85 lbs

4426 B66 RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	13.2	
Depth (in):	5.8	
Total weight of ice on object:		20 lbs
Weight of object:	49 lbs	
Combined weight of ice and object:		69 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		28 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		88 lbs

RRUS-32 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:		33 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		93 lbs

DBCT108F1V92-1 Diplexer

Weight of ice based on total radial SF area:

Height (in):	10.7	
Width (in):	6.8	
Depth (in):	7.2	
Total weight of ice on object:		12 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		41 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:		25 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		58 lbs

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		3 plf

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		3 plf

HSS 3x2x3/16

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	2	
Per foot weight of ice on object:		4 plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		4 plf

PL 6x3/8

Weight of ice based on total radial SF area:

Height (in):	6	
Width (in):	0.375	
Per foot weight of ice on object:		5 plf

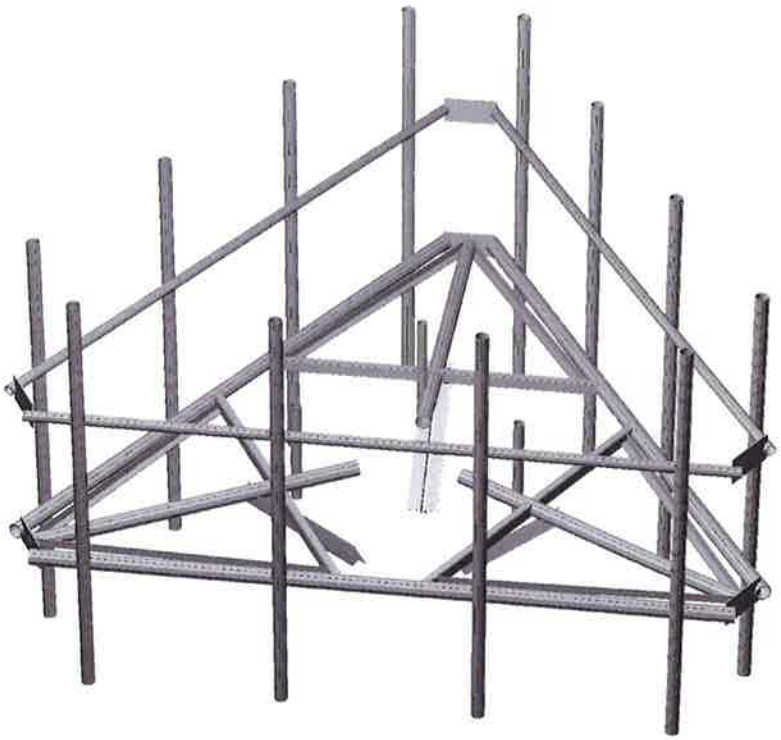
L 2x2x3/16 Angles

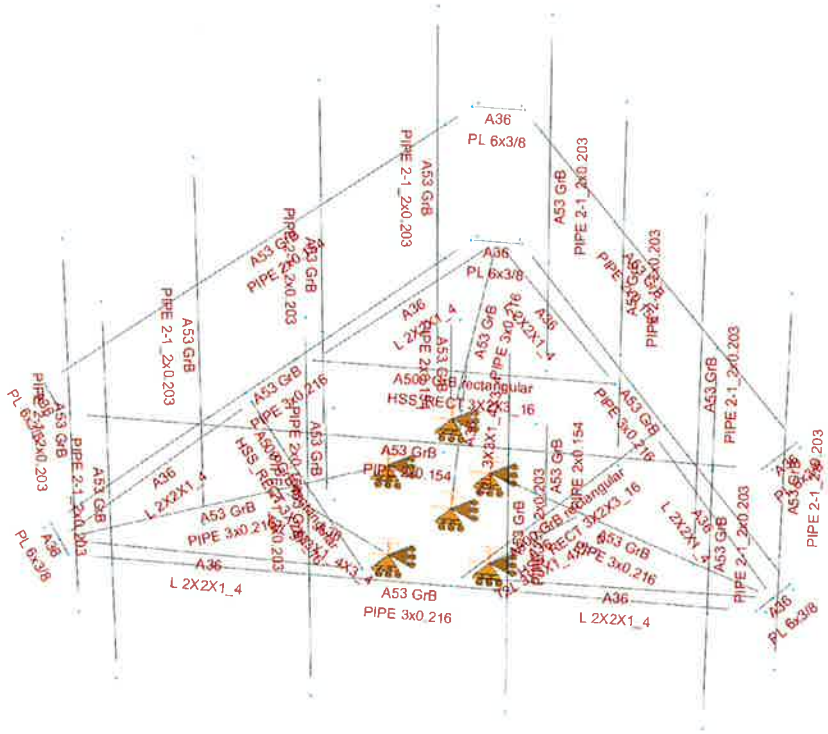
Weight of ice based on total radial SF area:

Height (in):	2	
Width (in):	2	
Per foot weight of ice on object:		3 plf

HUDSON
Design Group LLC

Mount Calculations


Y
X


A36
PL 6x3/8
A53 GrB
PIPE 2-1_2x0.203
PIPE 3x0.216
PIPE 2x0.154
L 2X2X1_4
HSS_RECT 3X2X3_16
A500 Gr.B Rectangular

Bentley

Current Date: 6/25/2018 9:33 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2820\LTE 6C\CT2820 (LTE 6C).etz\

Load data

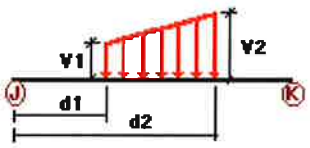
GLOSSARY

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	500 lb Live Load on Antenna 1	No	LL
LLa2	500 lb Live Load on Antenna 2	No	LL
LLa3	500 lb Live Load on Antenna 3	No	LL
LLa4	500 lb Live Load on Antenna 4	No	LL

Distributed force on members

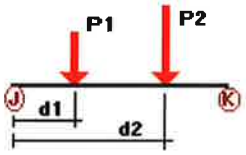


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	2	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	3	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	4	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	6	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	7	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	8	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	13	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	14	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	15	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
W0	1	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	4	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	5	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	8	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	9	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	10	Z	-0.01	-0.01	0.00	Yes	100.00	Yes

	11	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	13	z	-0.014	-0.014	0.00	Yes	100.00	Yes
	56	Z	-0.007	-0.007	0.00	Yes	100.00	Yes
	57	Z	-0.007	-0.007	0.00	Yes	100.00	Yes
	58	Z	-0.007	-0.007	0.00	Yes	100.00	Yes
	106	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	107	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	108	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	109	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	151	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	152	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	153	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
	150	Z	-0.008	-0.008	0.00	Yes	100.00	Yes
W30	1	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	4	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	5	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	8	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	10	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	11	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	12	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	57	X	-0.007	-0.007	0.00	Yes	100.00	Yes
	58	X	-0.007	-0.007	0.00	Yes	100.00	Yes
	106	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	107	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	108	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	109	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	151	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	152	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	153	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	163	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	164	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	162	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	165	X	-0.008	-0.008	0.00	Yes	100.00	Yes
	150	X	-0.008	-0.008	0.00	Yes	100.00	Yes
Di	1	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	2	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	3	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	4	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	5	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	6	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	7	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	8	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	9	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	10	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	11	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	12	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	13	Y	-0.004	-0.004	0.00	Yes	100.00	Yes
	14	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	15	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	25	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	26	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	27	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	56	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	57	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	58	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	59	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	60	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	61	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	106	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
	107	Y	-0.003	-0.003	0.00	Yes	100.00	Yes

108	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
109	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
151	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
152	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
153	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
163	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
164	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
162	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
165	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
166	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
167	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
168	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
169	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
170	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
171	Y	-0.003	-0.003	0.00	Yes	100.00	Yes
150	Y	-0.003	-0.003	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	106	y	-0.027	0.00	No
		y	-0.027	8.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
	107	y	-0.027	0.00	No
		y	-0.027	8.00	No
		y	-0.06	2.00	No
		y	-0.052	6.50	No
		y	-0.049	4.00	No
	108	y	-0.034	0.15	No
		y	-0.034	7.85	No
		y	-0.06	2.00	No
	109	y	-0.034	0.15	No
		y	-0.034	7.85	No
		y	-0.051	2.00	No
		y	-0.044	4.00	No
	151	y	-0.027	0.00	No
		y	-0.027	8.00	No
		y	-0.06	2.00	No
		y	-0.052	6.50	No
		y	-0.049	4.00	No
	152	y	-0.034	0.15	No
		y	-0.034	7.85	No
		y	-0.06	2.00	No
	153	y	-0.034	0.15	No
		y	-0.034	7.85	No
		y	-0.051	2.00	No
		y	-0.044	4.00	No
	163	y	-0.027	0.00	No

		y	-0.027	8.00	No
		y	-0.06	2.00	No
		y	-0.052	6.50	No
		y	-0.049	4.00	No
	164	y	-0.034	0.15	No
		y	-0.034	7.85	No
		y	-0.06	2.00	No
	162	y	-0.027	0.00	No
		y	-0.027	8.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
	165	y	-0.034	0.15	No
		y	-0.034	7.85	No
		y	-0.051	2.00	No
		y	-0.044	4.00	No
	169	y	-0.033	1.00	No
	170	y	-0.066	1.00	No
	171	y	-0.033	1.00	No
	150	y	-0.027	0.00	No
		y	-0.027	8.00	No
		y	-0.051	2.00	No
		y	-0.06	4.00	No
W0	106	z	-0.126	0.00	No
		z	-0.126	8.00	No
		z	-0.04	2.00	No
		z	-0.05	4.00	No
	107	z	-0.126	0.00	No
		z	-0.126	8.00	No
		z	-0.037	2.00	No
		z	-0.024	4.00	No
	108	z	-0.126	0.15	No
		z	-0.126	7.85	No
	109	z	-0.126	0.15	No
		z	-0.126	7.85	No
		z	-0.04	2.00	No
	151	z	-0.126	0.00	No
		z	-0.126	8.00	No
		z	-0.037	2.00	No
		z	-0.024	4.00	No
	152	z	-0.126	0.15	No
		z	-0.126	7.85	No
	153	z	-0.126	0.15	No
		z	-0.126	7.85	No
		z	-0.04	2.00	No
	163	z	-0.16	0.00	No
		z	-0.16	8.00	No
		z	-0.009	2.00	No
		z	-0.007	4.00	No
	164	z	-0.184	0.15	No
		z	-0.184	7.85	No
	162	z	-0.16	0.00	No
		z	-0.16	8.00	No
		z	-0.013	2.00	No
		z	-0.007	4.00	No
	165	z	-0.184	0.15	No
		z	-0.184	7.85	No
		z	-0.013	2.00	No
	169	z	-0.032	1.00	No
	170	z	-0.064	1.00	No
	171	z	-0.032	1.00	No

	150	z	-0.126	0.00	No
		z	-0.126	8.00	No
		z	-0.04	2.00	No
		z	-0.05	4.00	No
W30	106	x	-0.148	0.00	No
		x	-0.148	8.00	No
		x	-0.038	2.00	No
		x	-0.043	4.00	No
	107	x	-0.148	0.00	No
		x	-0.148	8.00	No
		x	-0.031	2.00	No
		x	-0.012	6.50	No
		x	-0.023	4.00	No
	108	x	-0.165	0.15	No
		x	-0.165	7.85	No
		x	-0.027	2.00	No
	109	x	-0.165	0.15	No
		x	-0.165	7.85	No
		x	-0.038	2.00	No
		x	-0.022	4.00	No
	151	x	-0.148	0.00	No
		x	-0.148	8.00	No
		x	-0.031	2.00	No
		x	-0.012	6.50	No
		x	-0.023	4.00	No
	152	x	-0.165	0.15	No
		x	-0.165	7.85	No
		x	-0.027	2.00	No
	153	x	-0.165	0.15	No
		x	-0.165	7.85	No
		x	-0.038	2.00	No
		x	-0.022	4.00	No
	163	x	-0.114	0.00	No
		x	-0.114	8.00	No
		x	-0.036	2.00	No
		x	-0.012	6.50	No
		x	-0.021	4.00	No
	164	x	-0.107	0.15	No
		x	-0.107	7.85	No
		x	-0.019	2.00	No
	162	x	-0.114	0.00	No
		x	-0.114	8.00	No
		x	-0.034	2.00	No
		x	-0.047	4.00	No
	165	x	-0.107	0.15	No
		x	-0.107	7.85	No
		x	-0.034	2.00	No
		x	-0.019	4.00	No
	169	x	-0.032	1.00	No
	170	x	-0.064	1.00	No
	171	x	-0.032	1.00	No
	150	x	-0.148	0.00	No
		x	-0.148	8.00	No
		x	-0.038	2.00	No
		x	-0.043	4.00	No
Di	106	y	-0.052	0.00	No
		y	-0.052	8.00	No
		y	-0.032	2.00	No
		y	-0.033	4.00	No
	107	y	-0.052	0.00	No

		y	-0.052	8.00	No
		y	-0.028	2.00	No
		y	-0.018	6.50	No
		y	-0.02	4.00	No
	108	y	-0.057	0.15	No
		y	-0.057	7.85	No
		y	-0.025	2.00	No
	109	y	-0.057	0.15	No
		y	-0.057	7.85	No
		y	-0.032	2.00	No
		y	-0.02	4.00	No
	151	y	-0.052	0.00	No
		y	-0.052	8.00	No
		y	-0.028	2.00	No
		y	-0.018	6.50	No
		y	-0.02	4.00	No
	152	y	-0.057	0.15	No
		y	-0.057	7.85	No
		y	-0.025	2.00	No
	153	y	-0.057	0.15	No
		y	-0.057	7.85	No
		y	-0.032	2.00	No
		y	-0.02	4.00	No
	163	y	-0.052	0.00	No
		y	-0.052	8.00	No
		y	-0.028	2.00	No
		y	-0.018	6.50	No
		y	-0.02	4.00	No
	164	y	-0.057	0.15	No
		y	-0.057	7.85	No
		y	-0.025	2.00	No
	162	y	-0.052	0.00	No
		y	-0.052	8.00	No
		y	-0.032	2.00	No
		y	-0.033	4.00	No
	165	y	-0.057	0.15	No
		y	-0.057	7.85	No
		y	-0.032	2.00	No
		y	-0.02	4.00	No
	169	y	-0.025	1.00	No
	170	y	-0.05	1.00	No
	171	y	-0.025	1.00	No
	150	y	-0.052	0.00	No
		y	-0.052	8.00	No
		y	-0.032	2.00	No
		y	-0.033	4.00	No
Wi0	106	z	-0.039	0.00	No
		z	-0.039	8.00	No
		z	-0.015	2.00	No
		z	-0.018	4.00	No
	107	z	-0.039	0.00	No
		z	-0.039	8.00	No
		z	-0.014	2.00	No
		z	-0.01	4.00	No
	108	z	-0.039	0.15	No
		z	-0.039	7.85	No
	109	z	-0.039	0.15	No
		z	-0.039	7.85	No
		z	-0.015	2.00	No
	151	z	-0.039	0.00	No

		z	-0.039	8.00	No
		z	-0.014	2.00	No
		z	-0.01	4.00	No
	152	z	-0.039	0.15	No
		z	-0.039	7.85	No
	153	z	-0.039	0.15	No
		z	-0.039	7.85	No
		z	-0.015	2.00	No
	163	z	-0.049	0.00	No
		z	-0.049	8.00	No
		z	-0.008	2.00	No
		z	-0.006	4.00	No
	164	z	-0.054	0.15	No
		z	-0.054	7.85	No
	162	z	-0.049	0.00	No
		z	-0.049	8.00	No
		z	-0.009	2.00	No
		z	-0.018	4.00	No
	165	z	-0.054	0.15	No
		z	-0.054	7.85	No
		z	-0.009	2.00	No
	169	z	-0.011	1.00	No
	170	z	-0.022	1.00	No
	171	z	-0.011	1.00	No
	150	z	-0.039	0.00	No
		z	-0.039	8.00	No
		z	-0.015	2.00	No
		z	-0.018	4.00	No
Wi30	106	x	-0.044	0.00	No
		x	-0.044	8.00	No
		x	-0.013	2.00	No
		x	-0.014	4.00	No
	107	x	-0.044	0.00	No
		x	-0.044	8.00	No
		x	-0.011	2.00	No
		x	-0.006	6.50	No
		x	-0.008	4.00	No
	108	x	-0.047	0.15	No
		x	-0.047	7.85	No
		x	-0.013	2.00	No
	109	x	-0.047	0.15	No
		x	-0.047	7.85	No
		x	-0.013	2.00	No
		x	-0.008	4.00	No
	151	x	-0.044	0.00	No
		x	-0.044	8.00	No
		x	-0.011	2.00	No
		x	-0.006	6.50	No
		x	-0.008	4.00	No
	152	x	-0.047	0.15	No
		x	-0.047	7.85	No
		x	-0.013	2.00	No
	153	x	-0.047	0.15	No
		x	-0.047	7.85	No
		x	-0.013	2.00	No
		x	-0.008	4.00	No
	163	x	-0.036	0.00	No
		x	-0.036	8.00	No
		x	-0.014	2.00	No
		x	-0.006	6.50	No

		x	-0.009	4.00	No
	164	x	-0.034	0.15	No
		x	-0.034	7.85	No
		x	-0.013	2.00	No
	162	x	-0.036	0.00	No
		x	-0.036	8.00	No
		x	-0.013	2.00	No
		x	-0.017	4.00	No
	165	x	-0.034	0.15	No
		x	-0.034	7.85	No
		x	-0.013	2.00	No
		x	-0.009	4.00	No
	169	x	-0.011	1.00	No
	170	x	-0.022	1.00	No
	171	x	-0.011	1.00	No
	150	x	-0.044	0.00	No
		x	-0.044	8.00	No
		x	-0.013	2.00	No
		x	-0.014	4.00	No
WL0	106	z	-0.01	0.00	No
		z	-0.01	8.00	No
		z	-0.003	2.00	No
		z	-0.004	4.00	No
	107	z	-0.01	0.00	No
		z	-0.01	8.00	No
		z	-0.003	2.00	No
		z	-0.002	4.00	No
	108	z	-0.011	0.15	No
		z	-0.011	7.85	No
	109	z	-0.011	0.15	No
		z	-0.011	7.85	No
		z	-0.003	2.00	No
	151	z	-0.01	0.00	No
		z	-0.01	8.00	No
		z	-0.003	2.00	No
		z	-0.002	4.00	No
	152	z	-0.011	0.15	No
		z	-0.011	7.85	No
	153	z	-0.011	0.15	No
		z	-0.011	7.85	No
		z	-0.003	2.00	No
	163	z	-0.013	0.00	No
		z	-0.013	8.00	No
		z	-0.001	2.00	No
		z	-0.001	4.00	No
	164	z	-0.015	0.15	No
		z	-0.015	7.85	No
	162	z	-0.013	0.00	No
		z	-0.013	8.00	No
		z	-0.001	2.00	No
		z	-0.001	4.00	No
	165	z	-0.015	0.15	No
		z	-0.015	7.85	No
		z	-0.001	2.00	No
	169	z	-0.003	1.00	No
	170	z	-0.006	1.00	No
	171	z	-0.003	1.00	No
	150	z	-0.01	0.00	No
		z	-0.01	8.00	No
		z	-0.003	2.00	No

		z	-0.004	4.00	No
WL30	106	x	-0.012	0.00	No
		x	-0.012	8.00	No
		x	-0.003	2.00	No
		x	-0.004	4.00	No
	107	x	-0.012	0.00	No
		x	-0.012	8.00	No
		x	-0.002	2.00	No
		x	-0.001	6.50	No
		x	-0.002	4.00	No
	108	x	-0.014	0.15	No
		x	-0.014	7.85	No
		x	-0.003	2.00	No
	109	x	-0.014	0.15	No
		x	-0.014	7.85	No
		x	-0.003	2.00	No
		x	-0.002	4.00	No
	151	x	-0.012	0.00	No
		x	-0.012	8.00	No
		x	-0.002	2.00	No
		x	-0.001	6.50	No
		x	-0.002	4.00	No
	152	x	-0.014	0.15	No
		x	-0.014	7.85	No
		x	-0.003	2.00	No
	153	x	-0.014	0.15	No
		x	-0.014	7.85	No
		x	-0.003	2.00	No
		x	-0.002	4.00	No
	163	x	-0.01	0.00	No
		x	-0.01	8.00	No
		x	-0.003	2.00	No
		x	-0.001	6.50	No
		x	-0.002	4.00	No
	164	x	-0.009	0.15	No
		x	-0.009	7.85	No
		x	-0.003	2.00	No
	162	x	-0.01	0.00	No
		x	-0.01	8.00	No
		x	-0.003	2.00	No
		x	-0.004	4.00	No
	165	x	-0.009	0.15	No
		x	-0.009	7.85	No
		x	-0.003	2.00	No
		x	-0.002	4.00	No
	169	x	-0.003	1.00	No
	170	x	-0.006	1.00	No
	171	x	-0.003	1.00	No
	150	x	-0.012	0.00	No
		x	-0.012	8.00	No
		x	-0.003	2.00	No
		x	-0.004	4.00	No
LL1	9	y	-0.25	6.25	No
LL2	9	y	-0.25	0.00	No
LLa1	165	y	-0.50	4.00	No
LLa2	164	y	-0.50	4.00	No
LLa3	163	y	-0.50	4.00	No
LLa4	162	y	-0.50	4.00	No

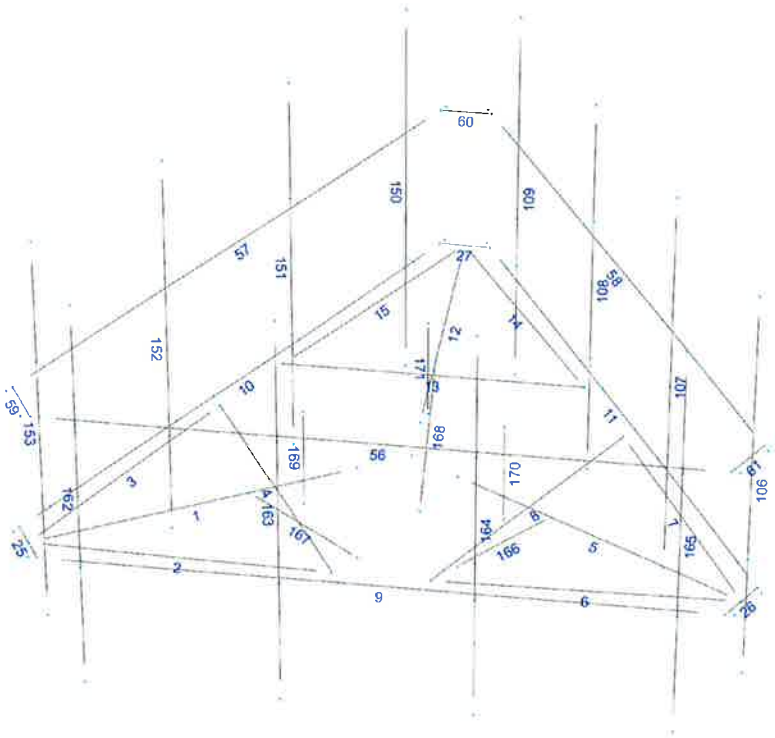
Self weight multipliers for load conditions

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	500 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load on 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

Current Date: 6/25/2018 9:34 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2820\LTE 6C\CT2820 (LTE 6C).etz\

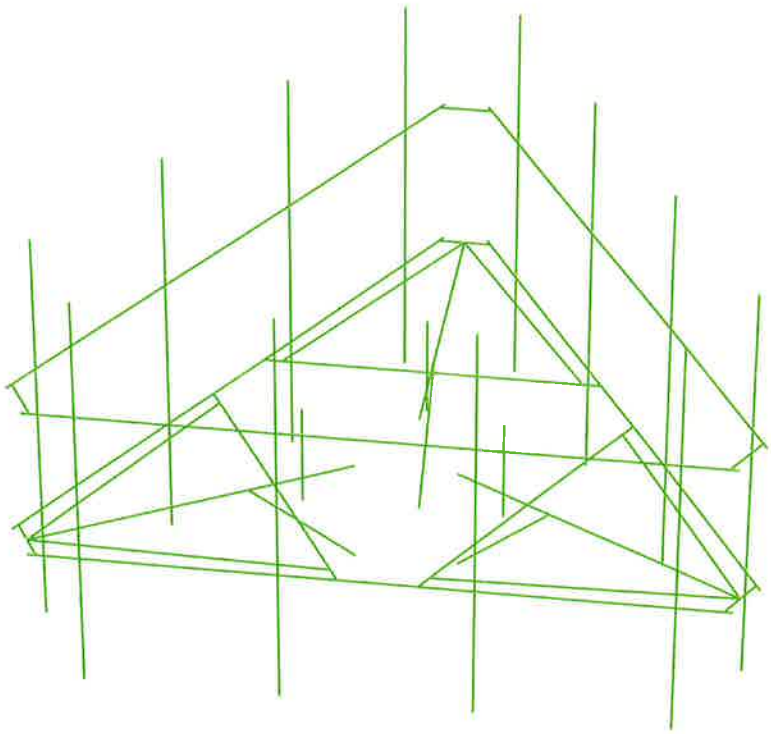


Bentley

Current Date: 6/25/2018 9:34 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2820\LTE 6C\CT2820 (LTE 6C).etz\

Design status

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



Bentley

Current Date: 6/25/2018 9:34 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2820\LTE 6C\CT2820 (LTE 6C).etz\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

W180=-W0
W210=-W30
Wi180=-Wi0
Wi210=-Wi30
WL180=-WL0
WL210=-WL30
LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC15=1.2DL+1.6LL1
LC16=1.2DL+1.6LL2
LC17=1.2DL+WL0+LLa1
LC18=1.2DL+WL30+LLa1
LC19=1.2DL-WL0+LLa1
LC20=1.2DL-WL30+LLa1
LC21=1.2DL+WL0+LLa2
LC22=1.2DL+WL30+LLa2
LC23=1.2DL-WL0+LLa2
LC24=1.2DL-WL30+LLa2
LC25=1.2DL+WL0+LLa3
LC26=1.2DL+WL30+LLa3
LC27=1.2DL-WL0+LLa3
LC28=1.2DL-WL30+LLa3
LC29=1.2DL+WL0+LLa4
LC30=1.2DL+WL30+LLa4
LC31=1.2DL-WL0+LLa4
LC32=1.2DL-WL30+LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_RECT 3X2X3_16	**4**	LC1 at 100.00%	0.52	OK	Eq. H1-1b
			LC10 at 50.00%	0.63	OK	
			LC11 at 50.00%	0.63	OK	
			LC12 at 50.00%	0.54	OK	
			LC13 at 50.00%	0.36	OK	
			LC14 at 50.00%	0.27	OK	
			LC15 at 50.00%	0.46	OK	
			LC16 at 50.00%	0.46	OK	
			LC17 at 50.00%	0.39	OK	
			LC18 at 50.00%	0.41	OK	
			LC19 at 50.00%	0.41	OK	

	LC2 at 48.44%	**0.76**	**OK**	Eq. H1-1b
	LC20 at 50.00%	0.38	OK	
	LC21 at 50.00%	0.44	OK	
	LC22 at 50.00%	0.46	OK	
	LC23 at 50.00%	0.46	OK	
	LC24 at 50.00%	0.44	OK	
	LC25 at 50.00%	0.49	OK	
	LC26 at 50.00%	0.51	OK	
	LC27 at 50.00%	0.52	OK	
	LC28 at 50.00%	0.49	OK	
	LC29 at 50.00%	0.48	OK	
	LC3 at 50.00%	0.68	OK	Eq. H1-1b
	LC30 at 50.00%	0.50	OK	
	LC31 at 50.00%	0.50	OK	
	LC32 at 50.00%	0.48	OK	
	LC4 at 0.00%	0.47	OK	Eq. H1-1b
	LC5 at 100.00%	0.49	OK	
	LC6 at 48.44%	0.67	OK	
	LC7 at 50.00%	0.59	OK	
	LC8 at 0.00%	0.44	OK	
	LC9 at 50.00%	0.56	OK	
	W180 at 100.00%	0.24	OK	
	W210 at 48.44%	0.27	OK	
	Wi180 at 100.00%	0.06	OK	
	Wi210 at 48.44%	0.06	OK	
	WL180 at 100.00%	0.02	OK	
	WL210 at 48.44%	0.02	OK	
8	LC1 at 100.00%	0.52	OK	Eq. H1-1b
	LC10 at 50.00%	0.54	OK	
	LC11 at 50.00%	0.63	OK	
	LC12 at 50.00%	0.63	OK	
	LC13 at 50.00%	0.36	OK	
	LC14 at 50.00%	0.27	OK	
	LC15 at 50.00%	0.45	OK	
	LC16 at 50.00%	0.37	OK	
	LC17 at 50.00%	0.48	OK	
	LC18 at 50.00%	0.48	OK	
	LC19 at 50.00%	0.50	OK	
	LC2 at 0.00%	0.48	OK	Eq. H1-1b
	LC20 at 50.00%	0.50	OK	
	LC21 at 50.00%	0.49	OK	
	LC22 at 50.00%	0.49	OK	
	LC23 at 50.00%	0.51	OK	
	LC24 at 50.00%	0.51	OK	
	LC25 at 50.00%	0.44	OK	
	LC26 at 50.00%	0.44	OK	
	LC27 at 50.00%	0.46	OK	
	LC28 at 50.00%	0.46	OK	
	LC29 at 50.00%	0.38	OK	
	LC3 at 50.00%	0.69	OK	Eq. H1-1b
	LC30 at 50.00%	0.38	OK	
	LC31 at 50.00%	0.40	OK	
	LC32 at 50.00%	0.40	OK	
	LC4 at 48.44%	**0.76**	**OK**	Eq. H1-1b
	LC5 at 100.00%	0.49	OK	
	LC6 at 0.00%	0.44	OK	
	LC7 at 50.00%	0.60	OK	
	LC8 at 48.44%	0.67	OK	
	LC9 at 50.00%	0.56	OK	
	W180 at 100.00%	0.24	OK	
	W210 at 48.44%	0.26	OK	
	Wi180 at 100.00%	0.06	OK	
	Wi210 at 48.44%	0.06	OK	

		WL180 at 100.00%	0.02	OK	
		WL210 at 48.44%	0.02	OK	
	13	LC1 at 50.00%	**0.72**	**OK**	Eq. H1-1b
		LC10 at 48.44%	0.59	OK	
		LC11 at 50.00%	0.53	OK	
		LC12 at 50.00%	0.61	OK	
		LC13 at 50.00%	0.36	OK	
		LC14 at 50.00%	0.27	OK	
		LC15 at 50.00%	0.34	OK	
		LC16 at 48.44%	0.35	OK	
		LC17 at 50.00%	0.37	OK	
		LC18 at 50.00%	0.35	OK	
		LC19 at 50.00%	0.34	OK	
		LC2 at 100.00%	0.60	OK	Eq. H1-1b
		LC20 at 50.00%	0.36	OK	
		LC21 at 50.00%	0.35	OK	
		LC22 at 50.00%	0.34	OK	
		LC23 at 50.00%	0.32	OK	
		LC24 at 50.00%	0.34	OK	
		LC25 at 50.00%	0.35	OK	
		LC26 at 48.44%	0.33	OK	
		LC27 at 50.00%	0.32	OK	
		LC28 at 50.00%	0.34	OK	
		LC29 at 48.44%	0.36	OK	
		LC3 at 0.00%	0.23	OK	
		LC30 at 48.44%	0.35	OK	
		LC31 at 48.44%	0.33	OK	
		LC32 at 48.44%	0.34	OK	
		LC4 at 0.00%	0.61	OK	Eq. H1-1b
		LC5 at 50.00%	0.63	OK	
		LC6 at 100.00%	0.57	OK	
		LC7 at 100.00%	0.21	OK	
		LC8 at 0.00%	0.58	OK	
		LC9 at 50.00%	0.64	OK	
		W180 at 50.00%	0.23	OK	
		W210 at 0.00%	0.29	OK	
		Wi180 at 50.00%	0.06	OK	
		Wi210 at 100.00%	0.07	OK	
		WL180 at 50.00%	0.01	OK	
		WL210 at 100.00%	0.02	OK	
L 2X2X1_4	**2**	LC1 at 0.00%	0.36	OK	
		LC10 at 0.00%	0.42	OK	
		LC11 at 0.00%	0.36	OK	
		LC12 at 0.00%	0.32	OK	
		LC13 at 0.00%	0.24	OK	
		LC14 at 0.00%	0.18	OK	
		LC15 at 0.00%	0.28	OK	
		LC16 at 0.00%	0.30	OK	
		LC17 at 0.00%	0.24	OK	
		LC18 at 0.00%	0.25	OK	
		LC19 at 0.00%	0.23	OK	
		LC2 at 0.00%	**0.72**	**OK**	Eq. H2-1
		LC20 at 0.00%	0.22	OK	
		LC21 at 0.00%	0.27	OK	
		LC22 at 0.00%	0.28	OK	
		LC23 at 0.00%	0.26	OK	
		LC24 at 0.00%	0.25	OK	
		LC25 at 0.00%	0.31	OK	
		LC26 at 0.00%	0.32	OK	
		LC27 at 0.00%	0.31	OK	
		LC28 at 0.00%	0.29	OK	
		LC29 at 0.00%	0.30	OK	

	LC3 at 0.00%	0.47	OK	
	LC30 at 0.00%	0.32	OK	
	LC31 at 0.00%	0.30	OK	
	LC32 at 0.00%	0.29	OK	
	LC4 at 37.50%	0.20	OK	
	LC5 at 0.00%	0.29	OK	
	LC6 at 0.00%	0.67	OK	
	LC7 at 0.00%	0.41	OK	
	LC8 at 25.00%	0.22	OK	
	LC9 at 0.00%	0.38	OK	
	W180 at 0.00%	0.19	OK	
	W210 at 0.00%	0.23	OK	
	Wi180 at 0.00%	0.05	OK	
	Wi210 at 0.00%	0.06	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 0.00%	0.02	OK	
3	LC1 at 43.75%	0.11	OK	
	LC10 at 0.00%	0.39	OK	
	LC11 at 0.00%	0.42	OK	
	LC12 at 0.00%	0.37	OK	
	LC13 at 0.00%	0.25	OK	
	LC14 at 0.00%	0.19	OK	
	LC15 at 0.00%	0.27	OK	
	LC16 at 0.00%	0.33	OK	
	LC17 at 0.00%	0.24	OK	
	LC18 at 0.00%	0.26	OK	
	LC19 at 0.00%	0.27	OK	
	LC2 at 0.00%	**0.71**	**OK**	Eq. H2-1
	LC20 at 0.00%	0.25	OK	
	LC21 at 0.00%	0.26	OK	
	LC22 at 0.00%	0.28	OK	
	LC23 at 0.00%	0.28	OK	
	LC24 at 0.00%	0.27	OK	
	LC25 at 0.00%	0.29	OK	
	LC26 at 0.00%	0.30	OK	
	LC27 at 0.00%	0.31	OK	
	LC28 at 0.00%	0.29	OK	
	LC29 at 0.00%	0.34	OK	
	LC3 at 0.00%	0.51	OK	Sec. F1
	LC30 at 0.00%	0.35	OK	
	LC31 at 0.00%	0.36	OK	
	LC32 at 0.00%	0.34	OK	
	LC4 at 0.00%	0.25	OK	
	LC5 at 31.25%	0.13	OK	
	LC6 at 0.00%	0.65	OK	
	LC7 at 0.00%	0.45	OK	
	LC8 at 0.00%	0.19	OK	
	LC9 at 0.00%	0.33	OK	
	W180 at 0.00%	0.18	OK	
	W210 at 0.00%	0.14	OK	
	Wi180 at 0.00%	0.05	OK	
	Wi210 at 0.00%	0.03	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 0.00%	0.01	OK	
6	LC1 at 0.00%	0.36	OK	
	LC10 at 0.00%	0.32	OK	
	LC11 at 0.00%	0.36	OK	
	LC12 at 0.00%	0.42	OK	
	LC13 at 0.00%	0.24	OK	
	LC14 at 0.00%	0.18	OK	
	LC15 at 0.00%	0.28	OK	
	LC16 at 0.00%	0.23	OK	

	LC17 at 0.00%	0.30	OK	
	LC18 at 0.00%	0.29	OK	
	LC19 at 0.00%	0.30	OK	
	LC2 at 37.50%	0.20	OK	
	LC20 at 0.00%	0.32	OK	
	LC21 at 0.00%	0.31	OK	
	LC22 at 0.00%	0.29	OK	
	LC23 at 0.00%	0.31	OK	
	LC24 at 0.00%	0.32	OK	
	LC25 at 0.00%	0.27	OK	
	LC26 at 0.00%	0.25	OK	
	LC27 at 0.00%	0.26	OK	
	LC28 at 0.00%	0.28	OK	
	LC29 at 0.00%	0.24	OK	
	LC3 at 0.00%	0.47	OK	
	LC30 at 0.00%	0.23	OK	
	LC31 at 0.00%	0.23	OK	
	LC32 at 0.00%	0.25	OK	
	LC4 at 0.00%	**0.72**	**OK**	Eq. H2-1
	LC5 at 0.00%	0.30	OK	
	LC6 at 25.00%	0.22	OK	
	LC7 at 0.00%	0.42	OK	
	LC8 at 0.00%	0.67	OK	
	LC9 at 0.00%	0.38	OK	
	W180 at 0.00%	0.20	OK	
	W210 at 0.00%	0.32	OK	
	Wi180 at 0.00%	0.05	OK	
	Wi210 at 0.00%	0.08	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 0.00%	0.02	OK	
7	LC1 at 43.75%	0.12	OK	
	LC10 at 0.00%	0.37	OK	
	LC11 at 0.00%	0.42	OK	
	LC12 at 0.00%	0.39	OK	
	LC13 at 0.00%	0.25	OK	
	LC14 at 0.00%	0.19	OK	
	LC15 at 0.00%	0.27	OK	
	LC16 at 0.00%	0.25	OK	
	LC17 at 0.00%	0.34	OK	
	LC18 at 0.00%	0.34	OK	
	LC19 at 0.00%	0.36	OK	
	LC2 at 0.00%	0.25	OK	
	LC20 at 0.00%	0.35	OK	
	LC21 at 0.00%	0.29	OK	
	LC22 at 0.00%	0.29	OK	
	LC23 at 0.00%	0.31	OK	
	LC24 at 0.00%	0.31	OK	
	LC25 at 0.00%	0.26	OK	
	LC26 at 0.00%	0.27	OK	
	LC27 at 0.00%	0.29	OK	
	LC28 at 0.00%	0.28	OK	
	LC29 at 0.00%	0.25	OK	
	LC3 at 0.00%	0.52	OK	Sec. F1
	LC30 at 0.00%	0.26	OK	
	LC31 at 0.00%	0.27	OK	
	LC32 at 0.00%	0.26	OK	
	LC4 at 0.00%	**0.71**	**OK**	Eq. H2-1
	LC5 at 37.50%	0.13	OK	
	LC6 at 0.00%	0.19	OK	
	LC7 at 0.00%	0.45	OK	
	LC8 at 0.00%	0.65	OK	
	LC9 at 0.00%	0.33	OK	
	W180 at 0.00%	0.18	OK	

	W210 at 0.00%	0.31	OK	
	Wi180 at 0.00%	0.05	OK	
	Wi210 at 0.00%	0.07	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 0.00%	0.02	OK	
14	LC1 at 100.00%	**0.76**	**OK**	Eq. H2-1
	LC10 at 100.00%	0.40	OK	
	LC11 at 100.00%	0.34	OK	
	LC12 at 100.00%	0.33	OK	
	LC13 at 100.00%	0.24	OK	
	LC14 at 100.00%	0.18	OK	
	LC15 at 100.00%	0.23	OK	
	LC16 at 100.00%	0.24	OK	
	LC17 at 100.00%	0.23	OK	
	LC18 at 100.00%	0.23	OK	
	LC19 at 100.00%	0.21	OK	
	LC2 at 100.00%	0.48	OK	Eq. H2-1
	LC20 at 100.00%	0.21	OK	
	LC21 at 100.00%	0.24	OK	
	LC22 at 100.00%	0.24	OK	
	LC23 at 100.00%	0.22	OK	
	LC24 at 100.00%	0.22	OK	
	LC25 at 100.00%	0.24	OK	
	LC26 at 100.00%	0.24	OK	
	LC27 at 100.00%	0.22	OK	
	LC28 at 100.00%	0.22	OK	
	LC29 at 100.00%	0.24	OK	
	LC3 at 56.25%	0.19	OK	
	LC30 at 100.00%	0.25	OK	
	LC31 at 100.00%	0.23	OK	
	LC32 at 100.00%	0.23	OK	
	LC4 at 0.00%	0.23	OK	
	LC5 at 100.00%	0.71	OK	
	LC6 at 100.00%	0.42	OK	
	LC7 at 62.50%	0.21	OK	
	LC8 at 0.00%	0.21	OK	
	LC9 at 100.00%	0.41	OK	
	W180 at 100.00%	0.20	OK	
	W210 at 100.00%	0.21	OK	
	Wi180 at 100.00%	0.05	OK	
	Wi210 at 100.00%	0.05	OK	
	WL180 at 100.00%	0.01	OK	
	WL210 at 100.00%	0.01	OK	
15	LC1 at 100.00%	**0.76**	**OK**	Eq. H2-1
	LC10 at 100.00%	0.34	OK	
	LC11 at 100.00%	0.35	OK	
	LC12 at 100.00%	0.41	OK	
	LC13 at 100.00%	0.25	OK	
	LC14 at 100.00%	0.19	OK	
	LC15 at 100.00%	0.24	OK	
	LC16 at 100.00%	0.23	OK	
	LC17 at 100.00%	0.25	OK	
	LC18 at 100.00%	0.23	OK	
	LC19 at 100.00%	0.24	OK	
	LC2 at 0.00%	0.21	OK	
	LC20 at 100.00%	0.25	OK	
	LC21 at 100.00%	0.25	OK	
	LC22 at 100.00%	0.23	OK	
	LC23 at 100.00%	0.23	OK	
	LC24 at 100.00%	0.25	OK	
	LC25 at 100.00%	0.24	OK	
	LC26 at 100.00%	0.22	OK	

		LC27 at 100.00%	0.23	OK	
		LC28 at 100.00%	0.24	OK	
		LC29 at 100.00%	0.24	OK	
		LC3 at 50.00%	0.20	OK	
		LC30 at 100.00%	0.22	OK	
		LC31 at 100.00%	0.22	OK	
		LC32 at 100.00%	0.24	OK	
		LC4 at 100.00%	0.48	OK	Eq. H2-1
		LC5 at 100.00%	0.71	OK	
		LC6 at 62.50%	0.20	OK	
		LC7 at 56.25%	0.21	OK	
		LC8 at 100.00%	0.42	OK	
		LC9 at 100.00%	0.42	OK	
		W180 at 100.00%	0.20	OK	
		W210 at 100.00%	0.15	OK	
		Wi180 at 100.00%	0.05	OK	
		Wi210 at 100.00%	0.04	OK	
		WL180 at 100.00%	0.01	OK	
		WL210 at 100.00%	0.01	OK	
PIPE 2-1_2x0.203	**106**	LC1 at 66.67%	0.48	OK	
		LC10 at 66.67%	0.26	OK	
		LC11 at 66.67%	0.17	OK	
		LC12 at 31.25%	0.17	OK	
		LC13 at 66.67%	0.11	OK	
		LC14 at 66.67%	0.08	OK	
		LC15 at 66.67%	0.12	OK	
		LC16 at 66.67%	0.12	OK	
		LC17 at 66.67%	0.17	OK	
		LC18 at 66.67%	0.19	OK	
		LC19 at 66.67%	0.16	OK	
		LC2 at 66.67%	**0.54**	**OK**	Eq. H1-1b
		LC20 at 66.67%	0.15	OK	
		LC21 at 66.67%	0.14	OK	
		LC22 at 66.67%	0.15	OK	
		LC23 at 66.67%	0.13	OK	
		LC24 at 66.67%	0.11	OK	
		LC25 at 66.67%	0.12	OK	
		LC26 at 66.67%	0.14	OK	
		LC27 at 66.67%	0.12	OK	
		LC28 at 66.67%	0.10	OK	
		LC29 at 66.67%	0.12	OK	
		LC3 at 66.67%	0.44	OK	
		LC30 at 66.67%	0.13	OK	
		LC31 at 66.67%	0.11	OK	
		LC32 at 66.67%	0.09	OK	
		LC4 at 68.75%	0.36	OK	Eq. H1-1b
		LC5 at 66.67%	0.47	OK	
		LC6 at 66.67%	0.52	OK	
		LC7 at 66.67%	0.44	OK	
		LC8 at 68.75%	0.36	OK	
		LC9 at 66.67%	0.21	OK	
		W180 at 66.67%	0.28	OK	
		W210 at 66.67%	0.27	OK	
		Wi180 at 66.67%	0.08	OK	
		Wi210 at 66.67%	0.07	OK	
		WL180 at 66.67%	0.02	OK	
		WL210 at 66.67%	0.02	OK	
	107	LC1 at 66.67%	0.69	OK	
		LC10 at 66.67%	0.34	OK	
		LC11 at 66.67%	0.20	OK	
		LC12 at 66.67%	0.08	OK	
		LC13 at 66.67%	0.13	OK	

	LC14 at 66.67%	0.10	OK	
	LC15 at 66.67%	0.14	OK	
	LC16 at 66.67%	0.13	OK	
	LC17 at 66.67%	0.16	OK	
	LC18 at 66.67%	0.19	OK	
	LC19 at 66.67%	0.16	OK	
	LC2 at 66.67%	**0.89**	**OK**	Eq. H1-1b
	LC20 at 66.67%	0.13	OK	
	LC21 at 66.67%	0.15	OK	
	LC22 at 66.67%	0.17	OK	
	LC23 at 66.67%	0.14	OK	
	LC24 at 66.67%	0.11	OK	
	LC25 at 66.67%	0.14	OK	
	LC26 at 66.67%	0.17	OK	
	LC27 at 66.67%	0.13	OK	
	LC28 at 66.67%	0.10	OK	
	LC29 at 66.67%	0.13	OK	
	LC3 at 66.67%	0.70	OK	
	LC30 at 66.67%	0.16	OK	
	LC31 at 66.67%	0.12	OK	
	LC32 at 66.67%	0.10	OK	
	LC4 at 66.67%	0.64	OK	
	LC5 at 66.67%	0.69	OK	
	LC6 at 66.67%	0.86	OK	
	LC7 at 66.67%	0.70	OK	
	LC8 at 66.67%	0.67	OK	
	LC9 at 66.67%	0.23	OK	
	W180 at 66.67%	0.43	OK	
	W210 at 66.67%	0.48	OK	
	Wi180 at 66.67%	0.11	OK	
	Wi210 at 66.67%	0.12	OK	
	WL180 at 66.67%	0.03	OK	
	WL210 at 66.67%	0.03	OK	
108	LC1 at 66.67%	0.49	OK	
	LC10 at 66.67%	0.26	OK	
	LC11 at 66.67%	0.31	OK	
	LC12 at 66.67%	0.15	OK	
	LC13 at 66.67%	0.13	OK	
	LC14 at 66.67%	0.09	OK	
	LC15 at 66.67%	0.14	OK	
	LC16 at 66.67%	0.12	OK	
	LC17 at 66.67%	0.14	OK	
	LC18 at 66.67%	0.18	OK	
	LC19 at 66.67%	0.19	OK	
	LC2 at 66.67%	**0.85**	**OK**	Eq. H1-1b
	LC20 at 66.67%	0.15	OK	
	LC21 at 66.67%	0.12	OK	
	LC22 at 66.67%	0.16	OK	
	LC23 at 66.67%	0.18	OK	
	LC24 at 66.67%	0.13	OK	
	LC25 at 66.67%	0.11	OK	
	LC26 at 66.67%	0.15	OK	
	LC27 at 66.67%	0.16	OK	
	LC28 at 66.67%	0.12	OK	
	LC29 at 66.67%	0.10	OK	
	LC3 at 66.67%	0.72	OK	
	LC30 at 66.67%	0.14	OK	
	LC31 at 66.67%	0.15	OK	
	LC32 at 66.67%	0.11	OK	
	LC4 at 66.67%	0.84	OK	
	LC5 at 66.67%	0.51	OK	
	LC6 at 66.67%	0.85	OK	
	LC7 at 66.67%	0.69	OK	

	LC8 at 66.67%	0.84	OK	
	LC9 at 66.67%	0.11	OK	
	W180 at 66.67%	0.37	OK	
	W210 at 66.67%	0.53	OK	
	Wi180 at 66.67%	0.10	OK	
	Wi210 at 66.67%	0.13	OK	
	WL180 at 66.67%	0.03	OK	
	WL210 at 66.67%	0.04	OK	
109	LC1 at 68.75%	0.29	OK	
	LC10 at 66.67%	0.19	OK	
	LC11 at 66.67%	0.23	OK	
	LC12 at 31.25%	0.18	OK	
	LC13 at 66.67%	0.10	OK	
	LC14 at 66.67%	0.08	OK	
	LC15 at 66.67%	0.11	OK	
	LC16 at 66.67%	0.10	OK	
	LC17 at 66.67%	0.11	OK	
	LC18 at 66.67%	0.14	OK	
	LC19 at 66.67%	0.14	OK	
	LC2 at 66.67%	0.45	OK	
	LC20 at 66.67%	0.12	OK	
	LC21 at 66.67%	0.10	OK	
	LC22 at 66.67%	0.12	OK	
	LC23 at 66.67%	0.13	OK	
	LC24 at 66.67%	0.11	OK	
	LC25 at 66.67%	0.09	OK	
	LC26 at 66.67%	0.12	OK	
	LC27 at 66.67%	0.13	OK	
	LC28 at 66.67%	0.10	OK	
	LC29 at 66.67%	0.09	OK	
	LC3 at 66.67%	0.45	OK	
	LC30 at 66.67%	0.11	OK	
	LC31 at 66.67%	0.12	OK	
	LC32 at 66.67%	0.10	OK	
	LC4 at 66.67%	**0.49**	**OK**	Eq. H1-1b
	LC5 at 68.75%	0.29	OK	
	LC6 at 66.67%	0.45	OK	
	LC7 at 66.67%	0.43	OK	
	LC8 at 66.67%	0.49	OK	
	LC9 at 31.25%	0.14	OK	
	W180 at 66.67%	0.22	OK	
	W210 at 66.67%	0.29	OK	
	Wi180 at 66.67%	0.06	OK	
	Wi210 at 66.67%	0.08	OK	
	WL180 at 66.67%	0.02	OK	
	WL210 at 66.67%	0.02	OK	
150	LC1 at 68.75%	0.31	OK	
	LC10 at 31.25%	0.18	OK	
	LC11 at 66.67%	0.26	OK	
	LC12 at 66.67%	0.21	OK	
	LC13 at 66.67%	0.12	OK	
	LC14 at 66.67%	0.09	OK	
	LC15 at 66.67%	0.13	OK	
	LC16 at 66.67%	0.14	OK	
	LC17 at 66.67%	0.11	OK	
	LC18 at 66.67%	0.11	OK	
	LC19 at 66.67%	0.14	OK	
	LC2 at 66.67%	**0.52**	**OK**	Eq. H1-1b
	LC20 at 66.67%	0.13	OK	
	LC21 at 66.67%	0.11	OK	
	LC22 at 66.67%	0.12	OK	
	LC23 at 66.67%	0.14	OK	

	LC24 at 66.67%	0.13	OK	
	LC25 at 66.67%	0.12	OK	
	LC26 at 66.67%	0.13	OK	
	LC27 at 66.67%	0.15	OK	
	LC28 at 66.67%	0.14	OK	
	LC29 at 66.67%	0.13	OK	
	LC3 at 66.67%	0.50	OK	
	LC30 at 66.67%	0.14	OK	
	LC31 at 66.67%	0.17	OK	
	LC32 at 66.67%	0.16	OK	
	LC4 at 66.67%	0.47	OK	
	LC5 at 68.75%	0.31	OK	
	LC6 at 66.67%	0.51	OK	
	LC7 at 66.67%	0.47	OK	
	LC8 at 66.67%	0.48	OK	
	LC9 at 31.25%	0.14	OK	
	W180 at 66.67%	0.24	OK	
	W210 at 66.67%	0.31	OK	
	Wi180 at 66.67%	0.07	OK	
	Wi210 at 66.67%	0.08	OK	
	WL180 at 66.67%	0.02	OK	
	WL210 at 66.67%	0.02	OK	
151	LC1 at 66.67%	0.49	OK	
	LC10 at 66.67%	0.17	OK	
	LC11 at 66.67%	0.32	OK	
	LC12 at 66.67%	0.27	OK	
	LC13 at 66.67%	0.14	OK	
	LC14 at 66.67%	0.10	OK	
	LC15 at 66.67%	0.15	OK	
	LC16 at 66.67%	0.17	OK	
	LC17 at 66.67%	0.11	OK	
	LC18 at 66.67%	0.12	OK	
	LC19 at 66.67%	0.16	OK	
	LC2 at 66.67%	0.83	OK	
	LC20 at 66.67%	0.15	OK	
	LC21 at 66.67%	0.12	OK	
	LC22 at 66.67%	0.13	OK	
	LC23 at 66.67%	0.17	OK	
	LC24 at 66.67%	0.16	OK	
	LC25 at 66.67%	0.13	OK	
	LC26 at 66.67%	0.14	OK	
	LC27 at 66.67%	0.18	OK	
	LC28 at 66.67%	0.17	OK	
	LC29 at 66.67%	0.15	OK	
	LC3 at 66.67%	0.74	OK	
	LC30 at 66.67%	0.16	OK	
	LC31 at 66.67%	0.20	OK	
	LC32 at 66.67%	0.19	OK	
	LC4 at 66.67%	**0.84**	**OK**	Eq. H1-1b
	LC5 at 66.67%	0.52	OK	
	LC6 at 66.67%	0.83	OK	
	LC7 at 66.67%	0.71	OK	
	LC8 at 66.67%	0.84	OK	
	LC9 at 66.67%	0.12	OK	
	W180 at 66.67%	0.38	OK	
	W210 at 66.67%	0.52	OK	
	Wi180 at 66.67%	0.10	OK	
	Wi210 at 66.67%	0.13	OK	
	WL180 at 66.67%	0.03	OK	
	WL210 at 66.67%	0.04	OK	
152	LC1 at 66.67%	0.66	OK	
	LC10 at 66.67%	0.08	OK	

	LC11 at 66.67%	0.19	OK	
	LC12 at 66.67%	0.33	OK	
	LC13 at 66.67%	0.12	OK	
	LC14 at 66.67%	0.09	OK	
	LC15 at 66.67%	0.13	OK	
	LC16 at 66.67%	0.15	OK	
	LC17 at 66.67%	0.12	OK	
	LC18 at 66.67%	0.08	OK	
	LC19 at 66.67%	0.11	OK	
	LC2 at 66.67%	0.65	OK	
	LC20 at 66.67%	0.15	OK	
	LC21 at 66.67%	0.13	OK	
	LC22 at 66.67%	0.09	OK	
	LC23 at 66.67%	0.12	OK	
	LC24 at 66.67%	0.16	OK	
	LC25 at 66.67%	0.14	OK	
	LC26 at 66.67%	0.10	OK	
	LC27 at 66.67%	0.13	OK	
	LC28 at 66.67%	0.17	OK	
	LC29 at 66.67%	0.16	OK	
	LC3 at 66.67%	0.68	OK	
	LC30 at 66.67%	0.12	OK	
	LC31 at 66.67%	0.15	OK	
	LC32 at 66.67%	0.19	OK	
	LC4 at 66.67%	**0.89**	**OK**	Eq. H1-1b
	LC5 at 66.67%	0.66	OK	
	LC6 at 66.67%	0.68	OK	
	LC7 at 66.67%	0.67	OK	
	LC8 at 66.67%	0.86	OK	
	LC9 at 66.67%	0.22	OK	
	W180 at 66.67%	0.41	OK	
	W210 at 66.67%	0.48	OK	
	Wi180 at 66.67%	0.11	OK	
	Wi210 at 66.67%	0.12	OK	
	WL180 at 66.67%	0.03	OK	
	WL210 at 66.67%	0.03	OK	
153	LC1 at 66.67%	0.46	OK	
	LC10 at 31.25%	0.17	OK	
	LC11 at 66.67%	0.19	OK	
	LC12 at 66.67%	0.27	OK	
	LC13 at 66.67%	0.12	OK	
	LC14 at 66.67%	0.09	OK	
	LC15 at 66.67%	0.13	OK	
	LC16 at 66.67%	0.18	OK	
	LC17 at 66.67%	0.13	OK	
	LC18 at 66.67%	0.10	OK	
	LC19 at 66.67%	0.12	OK	
	LC2 at 68.75%	0.38	OK	Eq. H1-1b
	LC20 at 66.67%	0.14	OK	
	LC21 at 66.67%	0.13	OK	
	LC22 at 66.67%	0.10	OK	
	LC23 at 66.67%	0.12	OK	
	LC24 at 66.67%	0.15	OK	
	LC25 at 66.67%	0.14	OK	
	LC26 at 66.67%	0.12	OK	
	LC27 at 66.67%	0.13	OK	
	LC28 at 66.67%	0.16	OK	
	LC29 at 66.67%	0.18	OK	
	LC3 at 66.67%	0.40	OK	
	LC30 at 66.67%	0.15	OK	
	LC31 at 66.67%	0.17	OK	
	LC32 at 66.67%	0.20	OK	
	LC4 at 66.67%	**0.57**	**OK**	Eq. H1-1b

	LC5 at 66.67%	0.45	OK	
	LC6 at 68.75%	0.38	OK	
	LC7 at 66.67%	0.41	OK	
	LC8 at 66.67%	0.54	OK	
	LC9 at 66.67%	0.22	OK	
	W180 at 66.67%	0.27	OK	
	W210 at 66.67%	0.28	OK	
	Wi180 at 66.67%	0.07	OK	
	Wi210 at 66.67%	0.07	OK	
	WL180 at 66.67%	0.02	OK	
	WL210 at 66.67%	0.02	OK	
163	LC1 at 66.67%	**0.67**	**OK**	Eq. H1-1b
	LC10 at 66.67%	0.16	OK	
	LC11 at 66.67%	0.13	OK	
	LC12 at 66.67%	0.30	OK	
	LC13 at 66.67%	0.14	OK	
	LC14 at 66.67%	0.10	OK	
	LC15 at 66.67%	0.12	OK	
	LC16 at 66.67%	0.17	OK	
	LC17 at 66.67%	0.18	OK	
	LC18 at 66.67%	0.13	OK	
	LC19 at 66.67%	0.12	OK	
	LC2 at 66.67%	0.49	OK	
	LC20 at 66.67%	0.17	OK	
	LC21 at 66.67%	0.14	OK	
	LC22 at 66.67%	0.10	OK	
	LC23 at 66.67%	0.09	OK	
	LC24 at 66.67%	0.14	OK	
	LC25 at 66.67%	0.20	OK	
	LC26 at 66.67%	0.16	OK	
	LC27 at 66.67%	0.15	OK	
	LC28 at 66.67%	0.20	OK	
	LC29 at 66.67%	0.21	OK	
	LC3 at 66.67%	0.58	OK	
	LC30 at 66.67%	0.17	OK	
	LC31 at 66.67%	0.16	OK	
	LC32 at 66.67%	0.21	OK	
	LC4 at 66.67%	0.54	OK	
	LC5 at 66.67%	0.63	OK	
	LC6 at 66.67%	0.49	OK	
	LC7 at 66.67%	0.58	OK	
	LC8 at 66.67%	0.51	OK	
	LC9 at 66.67%	0.32	OK	
	W180 at 66.67%	0.36	OK	
	W210 at 66.67%	0.30	OK	
	Wi180 at 66.67%	0.11	OK	
	Wi210 at 66.67%	0.08	OK	
	WL180 at 66.67%	0.03	OK	
	WL210 at 66.67%	0.02	OK	
164	LC1 at 66.67%	**0.66**	**OK**	Eq. H1-1b
	LC10 at 66.67%	0.27	OK	
	LC11 at 66.67%	0.11	OK	
	LC12 at 66.67%	0.13	OK	
	LC13 at 66.67%	0.12	OK	
	LC14 at 66.67%	0.09	OK	
	LC15 at 66.67%	0.11	OK	
	LC16 at 66.67%	0.14	OK	
	LC17 at 66.67%	0.19	OK	
	LC18 at 66.67%	0.19	OK	
	LC19 at 66.67%	0.14	OK	
	LC2 at 66.67%	0.51	OK	
	LC20 at 66.67%	0.15	OK	

	LC21 at 66.67%	0.19	OK	
	LC22 at 66.67%	0.18	OK	
	LC23 at 66.67%	0.14	OK	
	LC24 at 66.67%	0.15	OK	
	LC25 at 66.67%	0.13	OK	
	LC26 at 66.67%	0.12	OK	
	LC27 at 66.67%	0.08	OK	
	LC28 at 66.67%	0.08	OK	
	LC29 at 66.67%	0.16	OK	
	LC3 at 66.67%	0.59	OK	
	LC30 at 66.67%	0.15	OK	
	LC31 at 66.67%	0.10	OK	
	LC32 at 66.67%	0.12	OK	
	LC4 at 66.67%	0.48	OK	
	LC5 at 66.67%	0.63	OK	
	LC6 at 66.67%	0.48	OK	
	LC7 at 66.67%	0.59	OK	
	LC8 at 66.67%	0.48	OK	
	LC9 at 66.67%	0.30	OK	
	W180 at 66.67%	0.37	OK	
	W210 at 66.67%	0.29	OK	
	Wi180 at 66.67%	0.11	OK	
	Wi210 at 66.67%	0.08	OK	
	WL180 at 66.67%	0.03	OK	
	WL210 at 66.67%	0.02	OK	
162	LC1 at 66.67%	0.37	OK	Eq. H1-1b
	LC10 at 66.67%	0.12	OK	
	LC11 at 31.25%	0.18	OK	
	LC12 at 66.67%	0.21	OK	
	LC13 at 66.67%	0.10	OK	
	LC14 at 66.67%	0.07	OK	
	LC15 at 66.67%	0.09	OK	
	LC16 at 66.67%	0.17	OK	
	LC17 at 66.67%	0.13	OK	
	LC18 at 66.67%	0.10	OK	
	LC19 at 66.67%	0.10	OK	
	LC2 at 66.67%	0.29	OK	
	LC20 at 66.67%	0.13	OK	
	LC21 at 66.67%	0.11	OK	
	LC22 at 66.67%	0.08	OK	
	LC23 at 66.67%	0.08	OK	
	LC24 at 66.67%	0.10	OK	
	LC25 at 66.67%	0.09	OK	
	LC26 at 66.67%	0.06	OK	
	LC27 at 66.67%	0.06	OK	
	LC28 at 66.67%	0.09	OK	
	LC29 at 66.67%	0.17	OK	
	LC3 at 31.25%	**0.39**	**OK**	Eq. H1-1b
	LC30 at 66.67%	0.15	OK	
	LC31 at 66.67%	0.15	OK	
	LC32 at 66.67%	0.17	OK	
	LC4 at 66.67%	0.36	OK	
	LC5 at 66.67%	0.35	OK	
	LC6 at 66.67%	0.29	OK	
	LC7 at 31.25%	0.37	OK	
	LC8 at 66.67%	0.33	OK	
	LC9 at 66.67%	0.22	OK	
	W180 at 31.25%	0.20	OK	
	W210 at 66.67%	0.19	OK	
	Wi180 at 31.25%	0.06	OK	
	Wi210 at 66.67%	0.05	OK	
	WL180 at 31.25%	0.02	OK	
	WL210 at 66.67%	0.01	OK	

	165	LC1 at 66.67%	0.41	OK	Eq. H1-1b
		LC10 at 66.67%	0.24	OK	
		LC11 at 31.25%	0.19	OK	
		LC12 at 66.67%	0.15	OK	
		LC13 at 66.67%	0.12	OK	
		LC14 at 66.67%	0.09	OK	
		LC15 at 66.67%	0.10	OK	
		LC16 at 66.67%	0.14	OK	
		LC17 at 66.67%	0.20	OK	
		LC18 at 66.67%	0.20	OK	
		LC19 at 66.67%	0.17	OK	
		LC2 at 66.67%	0.38	OK	
		LC20 at 66.67%	0.17	OK	
		LC21 at 66.67%	0.10	OK	
		LC22 at 66.67%	0.10	OK	
		LC23 at 66.67%	0.08	OK	
		LC24 at 66.67%	0.08	OK	
		LC25 at 66.67%	0.12	OK	
		LC26 at 66.67%	0.12	OK	
		LC27 at 66.67%	0.09	OK	
		LC28 at 66.67%	0.10	OK	
		LC29 at 66.67%	0.15	OK	
		LC3 at 31.25%	**0.42**	**OK**	Eq. H1-1b
		LC30 at 66.67%	0.15	OK	
		LC31 at 66.67%	0.12	OK	
		LC32 at 66.67%	0.12	OK	
		LC4 at 66.67%	0.29	OK	
		LC5 at 66.67%	0.38	OK	
		LC6 at 66.67%	0.35	OK	
		LC7 at 31.25%	0.41	OK	
		LC8 at 66.67%	0.30	OK	
		LC9 at 66.67%	0.25	OK	
		W180 at 31.25%	0.22	OK	
		W210 at 66.67%	0.19	OK	
		Wi180 at 31.25%	0.06	OK	
		Wi210 at 66.67%	0.05	OK	
		WL180 at 31.25%	0.02	OK	
		WL210 at 66.67%	0.01	OK	
PIPE 2x0.154	**56**	LC1 at 92.86%	0.61	OK	
		LC10 at 64.29%	0.37	OK	
		LC11 at 35.71%	0.34	OK	
		LC12 at 35.71%	0.37	OK	
		LC13 at 64.29%	0.19	OK	
		LC14 at 64.29%	0.14	OK	
		LC15 at 64.29%	0.17	OK	
		LC16 at 35.71%	0.27	OK	
		LC17 at 64.29%	0.26	OK	
		LC18 at 64.29%	0.29	OK	
		LC19 at 64.29%	0.28	OK	
		LC2 at 91.96%	0.65	OK	Eq. H1-1b
		LC20 at 64.29%	0.26	OK	
		LC21 at 35.71%	0.18	OK	
		LC22 at 64.29%	0.18	OK	
		LC23 at 35.71%	0.20	OK	
		LC24 at 35.71%	0.20	OK	
		LC25 at 64.29%	0.18	OK	
		LC26 at 64.29%	0.20	OK	
		LC27 at 64.29%	0.20	OK	
		LC28 at 35.71%	0.18	OK	
		LC29 at 35.71%	0.26	OK	
		LC3 at 92.86%	**0.72**	**OK**	Eq. H1-1b
		LC30 at 35.71%	0.26	OK	

	LC31 at 35.71%	0.28	OK	
	LC32 at 35.71%	0.28	OK	
	LC4 at 36.61%	0.64	OK	Eq. H1-1b
	LC5 at 92.86%	0.62	OK	
	LC6 at 91.96%	0.63	OK	
	LC7 at 92.86%	0.71	OK	
	LC8 at 36.61%	0.63	OK	
	LC9 at 64.29%	0.28	OK	
	W180 at 92.86%	0.42	OK	
	W210 at 63.39%	0.39	OK	
	Wi180 at 92.86%	0.12	OK	
	Wi210 at 63.39%	0.10	OK	
	WL180 at 92.86%	0.03	OK	
	WL210 at 63.39%	0.03	OK	
57	LC1 at 35.71%	0.58	OK	Eq. H1-1b
	LC10 at 64.29%	0.37	OK	
	LC11 at 64.29%	0.34	OK	
	LC12 at 35.71%	0.33	OK	
	LC13 at 35.71%	0.19	OK	
	LC14 at 35.71%	0.14	OK	
	LC15 at 35.71%	0.21	OK	
	LC16 at 35.71%	0.27	OK	
	LC17 at 35.71%	0.21	OK	
	LC18 at 64.29%	0.20	OK	
	LC19 at 64.29%	0.19	OK	
	LC2 at 92.86%	**0.83**	**OK**	Eq. H1-1b
	LC20 at 35.71%	0.19	OK	
	LC21 at 35.71%	0.22	OK	
	LC22 at 64.29%	0.21	OK	
	LC23 at 64.29%	0.20	OK	
	LC24 at 35.71%	0.20	OK	
	LC25 at 35.71%	0.24	OK	
	LC26 at 35.71%	0.22	OK	
	LC27 at 64.29%	0.21	OK	
	LC28 at 35.71%	0.23	OK	
	LC29 at 35.71%	0.28	OK	
	LC3 at 91.96%	0.58	OK	Eq. H1-1b
	LC30 at 35.71%	0.27	OK	
	LC31 at 35.71%	0.25	OK	
	LC32 at 35.71%	0.27	OK	
	LC4 at 92.86%	0.70	OK	
	LC5 at 8.04%	0.55	OK	
	LC6 at 92.86%	0.82	OK	
	LC7 at 91.96%	0.56	OK	
	LC8 at 92.86%	0.71	OK	
	LC9 at 35.71%	0.38	OK	
	W180 at 36.61%	0.33	OK	
	W210 at 92.86%	0.47	OK	
	Wi180 at 36.61%	0.09	OK	
	Wi210 at 92.86%	0.12	OK	
	WL180 at 36.61%	0.02	OK	
	WL210 at 92.86%	0.03	OK	
58	LC1 at 64.29%	0.62	OK	Eq. H1-1b
	LC10 at 64.29%	0.31	OK	
	LC11 at 35.71%	0.36	OK	
	LC12 at 35.71%	0.38	OK	
	LC13 at 35.71%	0.19	OK	
	LC14 at 35.71%	0.15	OK	
	LC15 at 35.71%	0.20	OK	
	LC16 at 35.71%	0.19	OK	
	LC17 at 64.29%	0.27	OK	
	LC18 at 64.29%	0.26	OK	

	LC19 at 35.71%	0.25	OK	
	LC2 at 7.14%	0.72	OK	
	LC20 at 64.29%	0.26	OK	
	LC21 at 64.29%	0.23	OK	
	LC22 at 64.29%	0.22	OK	
	LC23 at 35.71%	0.23	OK	
	LC24 at 35.71%	0.23	OK	
	LC25 at 64.29%	0.21	OK	
	LC26 at 64.29%	0.20	OK	
	LC27 at 35.71%	0.21	OK	
	LC28 at 35.71%	0.22	OK	
	LC29 at 64.29%	0.20	OK	
	LC3 at 8.04%	0.57	OK	Eq. H1-1b
	LC30 at 64.29%	0.18	OK	
	LC31 at 35.71%	0.20	OK	
	LC32 at 35.71%	0.21	OK	
	LC4 at 7.14%	**0.83**	**OK**	Eq. H1-1b
	LC5 at 63.39%	0.60	OK	
	LC6 at 7.14%	0.73	OK	
	LC7 at 8.04%	0.55	OK	
	LC8 at 7.14%	0.82	OK	
	LC9 at 64.29%	0.38	OK	
	W180 at 63.39%	0.36	OK	
	W210 at 7.14%	0.50	OK	
	Wi180 at 63.39%	0.10	OK	
	Wi210 at 7.14%	0.13	OK	
	WL180 at 63.39%	0.02	OK	
	WL210 at 7.14%	0.03	OK	
169	LC1 at 71.88%	**0.02**	**OK**	Eq. H1-1b
	LC10 at 71.88%	0.01	OK	
	LC11 at 71.88%	0.01	OK	
	LC12 at 71.88%	0.01	OK	
	LC13 at 71.88%	0.00	OK	
	LC14 at 71.88%	0.00	OK	
	LC15 at 71.88%	0.00	OK	
	LC16 at 71.88%	0.00	OK	
	LC17 at 71.88%	0.00	OK	
	LC18 at 71.88%	0.00	OK	
	LC19 at 71.88%	0.00	OK	
	LC2 at 71.88%	0.02	OK	
	LC20 at 71.88%	0.00	OK	
	LC21 at 71.88%	0.00	OK	
	LC22 at 71.88%	0.00	OK	
	LC23 at 71.88%	0.00	OK	
	LC24 at 71.88%	0.00	OK	
	LC25 at 71.88%	0.00	OK	
	LC26 at 71.88%	0.00	OK	
	LC27 at 71.88%	0.00	OK	
	LC28 at 71.88%	0.00	OK	
	LC29 at 71.88%	0.00	OK	
	LC3 at 71.88%	0.02	OK	
	LC30 at 71.88%	0.00	OK	
	LC31 at 71.88%	0.00	OK	
	LC32 at 71.88%	0.00	OK	
	LC4 at 71.88%	0.02	OK	
	LC5 at 71.88%	0.02	OK	
	LC6 at 71.88%	0.02	OK	
	LC7 at 71.88%	0.02	OK	
	LC8 at 71.88%	0.02	OK	
	LC9 at 71.88%	0.01	OK	
	W180 at 71.88%	0.01	OK	
	W210 at 71.88%	0.01	OK	
	Wi180 at 71.88%	0.00	OK	

	Wi210 at 71.88%	0.00	OK	
	WL180 at 71.88%	0.00	OK	
	WL210 at 71.88%	0.00	OK	
170	LC1 at 71.88%	**0.04**	**OK**	Eq. H1-1b
	LC10 at 71.88%	0.01	OK	
	LC11 at 71.88%	0.01	OK	
	LC12 at 71.88%	0.01	OK	
	LC13 at 71.88%	0.00	OK	
	LC14 at 71.88%	0.00	OK	
	LC15 at 71.88%	0.00	OK	
	LC16 at 71.88%	0.00	OK	
	LC17 at 71.88%	0.00	OK	
	LC18 at 71.88%	0.00	OK	
	LC19 at 71.88%	0.00	OK	
	LC2 at 71.88%	0.04	OK	
	LC20 at 71.88%	0.00	OK	
	LC21 at 71.88%	0.00	OK	
	LC22 at 71.88%	0.00	OK	
	LC23 at 71.88%	0.00	OK	
	LC24 at 71.88%	0.00	OK	
	LC25 at 71.88%	0.00	OK	
	LC26 at 71.88%	0.00	OK	
	LC27 at 71.88%	0.00	OK	
	LC28 at 71.88%	0.00	OK	
	LC29 at 71.88%	0.00	OK	
	LC3 at 71.88%	0.04	OK	
	LC30 at 71.88%	0.00	OK	
	LC31 at 71.88%	0.00	OK	
	LC32 at 71.88%	0.00	OK	
	LC4 at 71.88%	0.04	OK	
	LC5 at 71.88%	0.04	OK	
	LC6 at 71.88%	0.04	OK	
	LC7 at 71.88%	0.04	OK	
	LC8 at 71.88%	0.04	OK	
	LC9 at 71.88%	0.01	OK	
	W180 at 71.88%	0.02	OK	
	W210 at 71.88%	0.02	OK	
	Wi180 at 71.88%	0.01	OK	
	Wi210 at 71.88%	0.01	OK	
	WL180 at 71.88%	0.00	OK	
	WL210 at 71.88%	0.00	OK	
171	LC1 at 71.88%	0.02	OK	
	LC10 at 71.88%	0.01	OK	
	LC11 at 71.88%	0.01	OK	
	LC12 at 71.88%	0.01	OK	
	LC13 at 71.88%	0.00	OK	
	LC14 at 71.88%	0.00	OK	
	LC15 at 71.88%	0.00	OK	
	LC16 at 71.88%	0.00	OK	
	LC17 at 71.88%	0.00	OK	
	LC18 at 71.88%	0.00	OK	
	LC19 at 71.88%	0.00	OK	
	LC2 at 71.88%	0.02	OK	
	LC20 at 71.88%	0.00	OK	
	LC21 at 71.88%	0.00	OK	
	LC22 at 71.88%	0.00	OK	
	LC23 at 71.88%	0.00	OK	
	LC24 at 71.88%	0.00	OK	
	LC25 at 71.88%	0.00	OK	
	LC26 at 71.88%	0.00	OK	
	LC27 at 71.88%	0.00	OK	
	LC28 at 71.88%	0.00	OK	

		LC29 at 71.88%	0.00	OK	
		LC3 at 71.88%	0.02	OK	
		LC30 at 71.88%	0.00	OK	
		LC31 at 71.88%	0.00	OK	
		LC32 at 71.88%	0.00	OK	
		LC4 at 71.88%	**0.02**	**OK**	Eq. H1-1b
		LC5 at 71.88%	0.02	OK	
		LC6 at 71.88%	0.02	OK	
		LC7 at 71.88%	0.02	OK	
		LC8 at 71.88%	0.02	OK	
		LC9 at 71.88%	0.01	OK	
		W180 at 71.88%	0.01	OK	
		W210 at 71.88%	0.01	OK	
		Wi180 at 71.88%	0.00	OK	
		Wi210 at 71.88%	0.00	OK	
		WL180 at 71.88%	0.00	OK	
		WL210 at 71.88%	0.00	OK	
PIPE 3x0.216	**1**	LC1 at 100.00%	0.40	OK	
		LC10 at 65.63%	0.63	OK	
		LC11 at 65.63%	0.60	OK	
		LC12 at 65.63%	0.47	OK	
		LC13 at 65.63%	0.34	OK	
		LC14 at 65.63%	0.25	OK	
		LC15 at 65.63%	0.38	OK	
		LC16 at 65.63%	0.54	OK	
		LC17 at 65.63%	0.31	OK	
		LC18 at 65.63%	0.35	OK	
		LC19 at 65.63%	0.34	OK	
		LC2 at 65.63%	**0.92**	**OK**	Eq. H1-1b
		LC20 at 65.63%	0.30	OK	
		LC21 at 65.63%	0.36	OK	
		LC22 at 65.63%	0.40	OK	
		LC23 at 65.63%	0.38	OK	
		LC24 at 65.63%	0.35	OK	
		LC25 at 65.63%	0.42	OK	
		LC26 at 65.63%	0.46	OK	
		LC27 at 65.63%	0.45	OK	
		LC28 at 65.63%	0.41	OK	
		LC29 at 65.63%	0.54	OK	
		LC3 at 65.63%	0.66	OK	
		LC30 at 65.63%	0.58	OK	
		LC31 at 65.63%	0.56	OK	
		LC32 at 65.63%	0.53	OK	
		LC4 at 75.00%	0.32	OK	
		LC5 at 100.00%	0.41	OK	
		LC6 at 65.63%	0.84	OK	
		LC7 at 65.63%	0.58	OK	
		LC8 at 65.63%	0.35	OK	
		LC9 at 65.63%	0.51	OK	
		W180 at 100.00%	0.28	OK	
		W210 at 65.63%	0.37	OK	
		Wi180 at 100.00%	0.07	OK	
		Wi210 at 65.63%	0.09	OK	
		WL180 at 100.00%	0.02	OK	
		WL210 at 65.63%	0.03	OK	
	5	LC1 at 100.00%	0.47	OK	
		LC10 at 65.63%	0.47	OK	
		LC11 at 65.63%	0.60	OK	
		LC12 at 65.63%	0.64	OK	
		LC13 at 65.63%	0.34	OK	
		LC14 at 65.63%	0.26	OK	
		LC15 at 65.63%	0.38	OK	

	LC16 at 65.63%	0.32	OK	
	LC17 at 65.63%	0.54	OK	
	LC18 at 65.63%	0.53	OK	
	LC19 at 65.63%	0.56	OK	
	LC2 at 75.00%	0.33	OK	
	LC20 at 65.63%	0.58	OK	
	LC21 at 65.63%	0.42	OK	
	LC22 at 65.63%	0.41	OK	
	LC23 at 65.63%	0.45	OK	
	LC24 at 65.63%	0.46	OK	
	LC25 at 65.63%	0.36	OK	
	LC26 at 65.63%	0.35	OK	
	LC27 at 65.63%	0.38	OK	
	LC28 at 65.63%	0.40	OK	
	LC29 at 65.63%	0.31	OK	
	LC3 at 65.63%	0.67	OK	
	LC30 at 65.63%	0.30	OK	
	LC31 at 65.63%	0.34	OK	
	LC32 at 65.63%	0.35	OK	
	LC4 at 65.63%	**0.94**	**OK**	Eq. H1-1b
	LC5 at 100.00%	0.49	OK	
	LC6 at 65.63%	0.36	OK	
	LC7 at 65.63%	0.59	OK	
	LC8 at 65.63%	0.85	OK	
	LC9 at 65.63%	0.51	OK	
	W180 at 100.00%	0.32	OK	
	W210 at 65.63%	0.38	OK	
	Wi180 at 100.00%	0.08	OK	
	Wi210 at 65.63%	0.10	OK	
	WL180 at 100.00%	0.02	OK	
	WL210 at 65.63%	0.03	OK	
9	LC1 at 56.25%	0.31	OK	Eq. H3-6
	LC10 at 43.75%	0.25	OK	
	LC11 at 56.25%	0.24	OK	
	LC12 at 56.25%	0.26	OK	
	LC13 at 56.25%	0.14	OK	
	LC14 at 56.25%	0.10	OK	
	LC15 at 56.25%	0.13	OK	
	LC16 at 43.75%	0.20	OK	
	LC17 at 56.25%	0.22	OK	
	LC18 at 56.25%	0.21	OK	
	LC19 at 56.25%	0.22	OK	
	LC2 at 43.75%	0.41	OK	Eq. H1-1b
	LC20 at 56.25%	0.23	OK	
	LC21 at 56.25%	0.16	OK	
	LC22 at 43.75%	0.15	OK	
	LC23 at 56.25%	0.15	OK	
	LC24 at 56.25%	0.16	OK	
	LC25 at 43.75%	0.16	OK	
	LC26 at 43.75%	0.16	OK	
	LC27 at 43.75%	0.15	OK	
	LC28 at 56.25%	0.16	OK	
	LC29 at 43.75%	0.22	OK	
	LC3 at 56.25%	0.34	OK	
	LC30 at 43.75%	0.22	OK	
	LC31 at 43.75%	0.21	OK	
	LC32 at 43.75%	0.21	OK	
	LC4 at 56.25%	**0.42**	**OK**	Eq. H1-1b
	LC5 at 56.25%	0.28	OK	
	LC6 at 43.75%	0.38	OK	
	LC7 at 56.25%	0.31	OK	
	LC8 at 56.25%	0.39	OK	
	LC9 at 56.25%	0.25	OK	

	W180 at 56.25%	0.13	OK	
	W210 at 43.75%	0.19	OK	
	Wi180 at 91.67%	0.03	OK	
	Wi210 at 56.25%	0.05	OK	
	WL180 at 91.67%	0.01	OK	
	WL210 at 56.25%	0.01	OK	
10	LC1 at 56.25%	0.44	OK	Eq. H1-1b
	LC10 at 43.75%	0.25	OK	
	LC11 at 43.75%	0.27	OK	
	LC12 at 56.25%	0.26	OK	
	LC13 at 43.75%	0.14	OK	
	LC14 at 43.75%	0.10	OK	
	LC15 at 43.75%	0.16	OK	
	LC16 at 43.75%	0.21	OK	
	LC17 at 43.75%	0.13	OK	
	LC18 at 43.75%	0.14	OK	
	LC19 at 43.75%	0.15	OK	
	LC2 at 43.75%	0.42	OK	Eq. H1-1b
	LC20 at 43.75%	0.14	OK	
	LC21 at 43.75%	0.15	OK	
	LC22 at 43.75%	0.16	OK	
	LC23 at 43.75%	0.16	OK	
	LC24 at 43.75%	0.16	OK	
	LC25 at 43.75%	0.17	OK	
	LC26 at 43.75%	0.18	OK	
	LC27 at 43.75%	0.19	OK	
	LC28 at 43.75%	0.18	OK	
	LC29 at 43.75%	0.21	OK	
	LC3 at 43.75%	0.40	OK	Eq. H3-6
	LC30 at 43.75%	0.22	OK	
	LC31 at 43.75%	0.23	OK	
	LC32 at 43.75%	0.22	OK	
	LC4 at 56.25%	**0.45**	**OK**	Eq. H3-6
	LC5 at 56.25%	0.41	OK	
	LC6 at 43.75%	0.39	OK	
	LC7 at 43.75%	0.35	OK	
	LC8 at 56.25%	0.40	OK	
	LC9 at 56.25%	0.25	OK	Eq. H1-1b
	W180 at 56.25%	0.21	OK	
	W210 at 43.75%	0.19	OK	
	Wi180 at 56.25%	0.05	OK	
	Wi210 at 43.75%	0.05	OK	
	WL180 at 56.25%	0.01	OK	
	WL210 at 43.75%	0.01	OK	
11	LC1 at 43.75%	0.43	OK	Eq. H1-1b
	LC10 at 43.75%	0.27	OK	
	LC11 at 56.25%	0.26	OK	
	LC12 at 56.25%	0.25	OK	
	LC13 at 43.75%	0.14	OK	
	LC14 at 43.75%	0.10	OK	
	LC15 at 56.25%	0.16	OK	
	LC16 at 56.25%	0.13	OK	
	LC17 at 56.25%	0.21	OK	
	LC18 at 56.25%	0.21	OK	
	LC19 at 56.25%	0.22	OK	
	LC2 at 43.75%	**0.44**	**OK**	Eq. H3-6
	LC20 at 56.25%	0.22	OK	
	LC21 at 56.25%	0.17	OK	
	LC22 at 56.25%	0.18	OK	
	LC23 at 56.25%	0.18	OK	
	LC24 at 56.25%	0.18	OK	
	LC25 at 56.25%	0.15	OK	

		LC26 at 56.25%	0.15	OK	
		LC27 at 56.25%	0.16	OK	
		LC28 at 56.25%	0.16	OK	
		LC29 at 43.75%	0.13	OK	
		LC3 at 56.25%	0.41	OK	Eq. H3-6
		LC30 at 43.75%	0.14	OK	
		LC31 at 56.25%	0.14	OK	
		LC32 at 56.25%	0.14	OK	
		LC4 at 56.25%	0.42	OK	Eq. H1-1b
		LC5 at 43.75%	0.40	OK	
		LC6 at 43.75%	0.39	OK	
		LC7 at 56.25%	0.36	OK	
		LC8 at 56.25%	0.39	OK	
		LC9 at 43.75%	0.26	OK	Eq. H1-1b
		W180 at 43.75%	0.20	OK	
		W210 at 56.25%	0.19	OK	
		Wi180 at 43.75%	0.05	OK	
		Wi210 at 56.25%	0.05	OK	
		WL180 at 43.75%	0.01	OK	
		WL210 at 56.25%	0.01	OK	
	12	LC1 at 34.38%	**0.97**	**OK**	Eq. H1-1b
		LC10 at 34.38%	0.55	OK	
		LC11 at 34.38%	0.47	OK	Eq. H1-1b
		LC12 at 34.38%	0.56	OK	
		LC13 at 34.38%	0.34	OK	
		LC14 at 34.38%	0.25	OK	
		LC15 at 34.38%	0.31	OK	
		LC16 at 34.38%	0.30	OK	
		LC17 at 34.38%	0.32	OK	
		LC18 at 34.38%	0.30	OK	
		LC19 at 34.38%	0.27	OK	
		LC2 at 0.00%	0.64	OK	Eq. H1-1b
		LC20 at 34.38%	0.30	OK	
		LC21 at 34.38%	0.33	OK	
		LC22 at 34.38%	0.30	OK	
		LC23 at 34.38%	0.28	OK	
		LC24 at 34.38%	0.30	OK	
		LC25 at 34.38%	0.33	OK	
		LC26 at 34.38%	0.30	OK	
		LC27 at 34.38%	0.28	OK	
		LC28 at 34.38%	0.30	OK	
		LC29 at 34.38%	0.32	OK	
		LC3 at 34.38%	0.31	OK	
		LC30 at 34.38%	0.29	OK	
		LC31 at 34.38%	0.27	OK	
		LC32 at 34.38%	0.30	OK	
		LC4 at 0.00%	0.64	OK	
		LC5 at 34.38%	0.88	OK	
		LC6 at 0.00%	0.63	OK	
		LC7 at 34.38%	0.40	OK	
		LC8 at 0.00%	0.62	OK	
		LC9 at 34.38%	0.64	OK	
		W180 at 34.38%	0.40	OK	
		W210 at 0.00%	0.37	OK	
		Wi180 at 34.38%	0.10	OK	
		Wi210 at 0.00%	0.08	OK	
		WL180 at 34.38%	0.03	OK	
		WL210 at 0.00%	0.02	OK	
PL 6x3/8	**25**	LC1 at 0.00%	0.24	OK	Eq. H1-1b
		LC10 at 50.00%	0.30	OK	
		LC11 at 0.00%	0.30	OK	
		LC12 at 0.00%	0.25	OK	

	LC13 at 0.00%	0.16	OK	
	LC14 at 0.00%	0.12	OK	
	LC15 at 50.00%	0.18	OK	
	LC16 at 0.00%	0.23	OK	
	LC17 at 0.00%	0.16	OK	
	LC18 at 0.00%	0.17	OK	
	LC19 at 0.00%	0.17	OK	
	LC2 at 50.00%	**0.52**	**OK**	Eq. H3-6
	LC20 at 0.00%	0.16	OK	
	LC21 at 50.00%	0.17	OK	
	LC22 at 0.00%	0.18	OK	
	LC23 at 0.00%	0.19	OK	
	LC24 at 0.00%	0.17	OK	
	LC25 at 50.00%	0.21	OK	
	LC26 at 50.00%	0.22	OK	
	LC27 at 0.00%	0.21	OK	
	LC28 at 50.00%	0.20	OK	
	LC29 at 0.00%	0.23	OK	
	LC3 at 0.00%	0.36	OK	Eq. H3-1
	LC30 at 0.00%	0.25	OK	
	LC31 at 0.00%	0.25	OK	
	LC32 at 0.00%	0.24	OK	
	LC4 at 100.00%	0.27	OK	
	LC5 at 0.00%	0.22	OK	
	LC6 at 50.00%	0.48	OK	
	LC7 at 0.00%	0.32	OK	
	LC8 at 100.00%	0.27	OK	
	LC9 at 50.00%	0.26	OK	
	W180 at 0.00%	0.13	OK	
	W210 at 50.00%	0.18	OK	
	Wi180 at 0.00%	0.03	OK	
	Wi210 at 50.00%	0.04	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 50.00%	0.01	OK	
26	LC1 at 50.00%	0.24	OK	
	LC10 at 50.00%	0.25	OK	
	LC11 at 50.00%	0.30	OK	
	LC12 at 0.00%	0.30	OK	
	LC13 at 50.00%	0.16	OK	
	LC14 at 50.00%	0.12	OK	
	LC15 at 0.00%	0.18	OK	
	LC16 at 50.00%	0.16	OK	
	LC17 at 0.00%	0.24	OK	
	LC18 at 50.00%	0.24	OK	
	LC19 at 50.00%	0.25	OK	
	LC2 at 0.00%	0.26	OK	
	LC20 at 50.00%	0.25	OK	
	LC21 at 0.00%	0.21	OK	
	LC22 at 0.00%	0.20	OK	
	LC23 at 50.00%	0.21	OK	
	LC24 at 0.00%	0.22	OK	
	LC25 at 0.00%	0.17	OK	
	LC26 at 50.00%	0.17	OK	
	LC27 at 50.00%	0.19	OK	
	LC28 at 50.00%	0.18	OK	
	LC29 at 50.00%	0.16	OK	
	LC3 at 50.00%	0.37	OK	Eq. H3-1
	LC30 at 50.00%	0.16	OK	
	LC31 at 50.00%	0.17	OK	
	LC32 at 50.00%	0.17	OK	
	LC4 at 0.00%	**0.50**	**OK**	Eq. H3-6
	LC5 at 100.00%	0.22	OK	
	LC6 at 0.00%	0.27	OK	

	LC7 at 50.00%	0.33	OK	
	LC8 at 0.00%	0.47	OK	
	LC9 at 0.00%	0.26	OK	
	W180 at 50.00%	0.13	OK	
	W210 at 0.00%	0.18	OK	
	Wi180 at 50.00%	0.03	OK	
	Wi210 at 50.00%	0.04	OK	
	WL180 at 50.00%	0.01	OK	
	WL210 at 50.00%	0.01	OK	
27	LC1 at 50.00%	**0.50**	**OK**	Eq. H3-6
	LC10 at 0.00%	0.28	OK	
	LC11 at 50.00%	0.24	OK	
	LC12 at 50.00%	0.29	OK	
	LC13 at 50.00%	0.16	OK	
	LC14 at 50.00%	0.12	OK	
	LC15 at 50.00%	0.15	OK	
	LC16 at 50.00%	0.15	OK	
	LC17 at 50.00%	0.16	OK	
	LC18 at 50.00%	0.15	OK	
	LC19 at 50.00%	0.15	OK	
	LC2 at 0.00%	0.31	OK	
	LC20 at 50.00%	0.16	OK	
	LC21 at 50.00%	0.16	OK	
	LC22 at 50.00%	0.15	OK	
	LC23 at 50.00%	0.14	OK	
	LC24 at 50.00%	0.16	OK	
	LC25 at 50.00%	0.16	OK	
	LC26 at 0.00%	0.15	OK	
	LC27 at 50.00%	0.14	OK	
	LC28 at 50.00%	0.16	OK	
	LC29 at 50.00%	0.15	OK	
	LC3 at 50.00%	0.30	OK	
	LC30 at 0.00%	0.15	OK	
	LC31 at 50.00%	0.14	OK	
	LC32 at 50.00%	0.15	OK	
	LC4 at 50.00%	0.32	OK	
	LC5 at 50.00%	0.47	OK	
	LC6 at 0.00%	0.27	OK	
	LC7 at 50.00%	0.30	OK	
	LC8 at 50.00%	0.28	OK	
	LC9 at 50.00%	0.30	OK	
	W180 at 50.00%	0.21	OK	
	W210 at 50.00%	0.10	OK	
	Wi180 at 50.00%	0.05	OK	
	Wi210 at 50.00%	0.02	OK	
	WL180 at 50.00%	0.01	OK	
	WL210 at 50.00%	0.01	OK	
59	LC1 at 100.00%	0.54	OK	Eq. H3-6
	LC10 at 100.00%	0.16	OK	
	LC11 at 0.00%	0.17	OK	
	LC12 at 0.00%	0.11	OK	
	LC13 at 100.00%	0.06	OK	
	LC14 at 100.00%	0.04	OK	
	LC15 at 0.00%	0.08	OK	
	LC16 at 0.00%	0.08	OK	
	LC17 at 100.00%	0.09	OK	
	LC18 at 100.00%	0.10	OK	
	LC19 at 100.00%	0.07	OK	
	LC2 at 100.00%	0.52	OK	Eq. H1-1b
	LC20 at 100.00%	0.06	OK	
	LC21 at 0.00%	0.06	OK	
	LC22 at 0.00%	0.07	OK	

	LC23 at 0.00%	0.10	OK	
	LC24 at 0.00%	0.09	OK	
	LC25 at 0.00%	0.09	OK	
	LC26 at 0.00%	0.10	OK	
	LC27 at 0.00%	0.13	OK	
	LC28 at 0.00%	0.11	OK	
	LC29 at 0.00%	0.09	OK	
	LC3 at 0.00%	**0.62**	**OK**	Eq. H3-6
	LC30 at 0.00%	0.10	OK	
	LC31 at 0.00%	0.13	OK	
	LC32 at 0.00%	0.12	OK	
	LC4 at 100.00%	0.45	OK	
	LC5 at 0.00%	0.54	OK	
	LC6 at 100.00%	0.50	OK	
	LC7 at 0.00%	0.61	OK	
	LC8 at 100.00%	0.47	OK	
	LC9 at 100.00%	0.17	OK	
	W180 at 0.00%	0.30	OK	
	W210 at 100.00%	0.29	OK	
	Wi180 at 0.00%	0.10	OK	
	Wi210 at 100.00%	0.07	OK	
	WL180 at 0.00%	0.02	OK	
	WL210 at 100.00%	0.02	OK	
60	LC1 at 0.00%	0.21	OK	
	LC10 at 0.00%	0.20	OK	
	LC11 at 0.00%	0.08	OK	
	LC12 at 100.00%	0.17	OK	
	LC13 at 0.00%	0.06	OK	
	LC14 at 0.00%	0.05	OK	
	LC15 at 0.00%	0.06	OK	
	LC16 at 100.00%	0.07	OK	
	LC17 at 0.00%	0.10	OK	
	LC18 at 0.00%	0.12	OK	
	LC19 at 0.00%	0.09	OK	
	LC2 at 0.00%	**0.88**	**OK**	Eq. H3-6
	LC20 at 0.00%	0.07	OK	
	LC21 at 0.00%	0.08	OK	
	LC22 at 0.00%	0.10	OK	
	LC23 at 0.00%	0.07	OK	
	LC24 at 100.00%	0.06	OK	
	LC25 at 0.00%	0.06	OK	
	LC26 at 0.00%	0.08	OK	
	LC27 at 0.00%	0.05	OK	
	LC28 at 100.00%	0.08	OK	
	LC29 at 100.00%	0.08	OK	
	LC3 at 0.00%	0.09	OK	
	LC30 at 0.00%	0.07	OK	
	LC31 at 100.00%	0.07	OK	
	LC32 at 100.00%	0.10	OK	
	LC4 at 100.00%	0.88	OK	Eq. H3-6
	LC5 at 0.00%	0.20	OK	
	LC6 at 0.00%	0.86	OK	
	LC7 at 0.00%	0.10	OK	
	LC8 at 100.00%	0.87	OK	
	LC9 at 0.00%	0.13	OK	
	W180 at 0.00%	0.10	OK	
	W210 at 100.00%	0.48	OK	
	Wi180 at 0.00%	0.03	OK	
	Wi210 at 100.00%	0.10	OK	
	WL180 at 0.00%	0.01	OK	
	WL210 at 100.00%	0.03	OK	
61	LC1 at 0.00%	0.60	OK	Eq. H3-6

		LC10 at 100.00%	0.12	OK	
		LC11 at 100.00%	0.17	OK	
		LC12 at 0.00%	0.16	OK	
		LC13 at 0.00%	0.06	OK	
		LC14 at 0.00%	0.04	OK	
		LC15 at 100.00%	0.08	OK	
		LC16 at 0.00%	0.08	OK	
		LC17 at 100.00%	0.09	OK	
		LC18 at 100.00%	0.12	OK	
		LC19 at 100.00%	0.13	OK	
		LC2 at 0.00%	0.39	OK	
		LC20 at 100.00%	0.11	OK	
		LC21 at 100.00%	0.08	OK	
		LC22 at 100.00%	0.11	OK	
		LC23 at 100.00%	0.13	OK	
		LC24 at 100.00%	0.10	OK	
		LC25 at 0.00%	0.06	OK	
		LC26 at 100.00%	0.09	OK	
		LC27 at 100.00%	0.10	OK	
		LC28 at 100.00%	0.07	OK	
		LC29 at 0.00%	0.09	OK	
		LC3 at 100.00%	**0.67**	**OK**	Eq. H3-6
		LC30 at 0.00%	0.06	OK	
		LC31 at 100.00%	0.07	OK	
		LC32 at 0.00%	0.09	OK	
		LC4 at 0.00%	0.51	OK	Eq. H1-1b
		LC5 at 0.00%	0.59	OK	
		LC6 at 0.00%	0.41	OK	
		LC7 at 100.00%	0.66	OK	
		LC8 at 0.00%	0.49	OK	
		LC9 at 0.00%	0.16	OK	
		W180 at 100.00%	0.33	OK	
		W210 at 0.00%	0.28	OK	
		Wi180 at 100.00%	0.09	OK	
		Wi210 at 0.00%	0.07	OK	
		WL180 at 100.00%	0.02	OK	
		WL210 at 0.00%	0.02	OK	
T2L 3X3X1_4X3_4	**166**	LC1 at 0.00%	0.16	OK	
		LC10 at 0.00%	0.38	OK	
		LC11 at 0.00%	0.50	OK	
		LC12 at 0.00%	0.54	OK	
		LC13 at 0.00%	0.27	OK	
		LC14 at 0.00%	0.21	OK	
		LC15 at 0.00%	0.33	OK	
		LC16 at 0.00%	0.27	OK	
		LC17 at 0.00%	0.45	OK	
		LC18 at 0.00%	0.45	OK	
		LC19 at 0.00%	0.48	OK	
		LC2 at 0.00%	0.23	OK	
		LC20 at 0.00%	0.48	OK	
		LC21 at 0.00%	0.37	OK	
		LC22 at 0.00%	0.37	OK	
		LC23 at 0.00%	0.40	OK	
		LC24 at 0.00%	0.40	OK	
		LC25 at 0.00%	0.31	OK	
		LC26 at 0.00%	0.31	OK	
		LC27 at 0.00%	0.34	OK	
		LC28 at 0.00%	0.34	OK	
		LC29 at 0.00%	0.26	OK	
		LC3 at 0.00%	0.66	OK	
		LC30 at 0.00%	0.26	OK	
		LC31 at 0.00%	0.30	OK	
		LC32 at 0.00%	0.30	OK	

	LC4 at 0.00%	**0.86**	**OK**	Eq. H2-1
	LC5 at 0.00%	0.18	OK	
	LC6 at 0.00%	0.28	OK	
	LC7 at 0.00%	0.59	OK	
	LC8 at 0.00%	0.79	OK	
	LC9 at 0.00%	0.43	OK	
	W180 at 0.00%	0.24	OK	
	W210 at 0.00%	0.37	OK	
	Wi180 at 0.00%	0.07	OK	
	Wi210 at 0.00%	0.09	OK	
	WL180 at 0.00%	0.02	OK	
	WL210 at 0.00%	0.02	OK	
167	LC1 at 100.00%	0.16	OK	
	LC10 at 100.00%	0.53	OK	
	LC11 at 100.00%	0.51	OK	
	LC12 at 100.00%	0.38	OK	
	LC13 at 100.00%	0.27	OK	
	LC14 at 100.00%	0.20	OK	
	LC15 at 100.00%	0.33	OK	
	LC16 at 100.00%	0.45	OK	
	LC17 at 100.00%	0.27	OK	
	LC18 at 100.00%	0.30	OK	
	LC19 at 100.00%	0.30	OK	
	LC2 at 100.00%	**0.84**	**OK**	Eq. H2-1
	LC20 at 100.00%	0.27	OK	
	LC21 at 100.00%	0.31	OK	
	LC22 at 100.00%	0.35	OK	
	LC23 at 100.00%	0.35	OK	
	LC24 at 100.00%	0.31	OK	
	LC25 at 100.00%	0.37	OK	
	LC26 at 100.00%	0.40	OK	
	LC27 at 100.00%	0.41	OK	
	LC28 at 100.00%	0.37	OK	
	LC29 at 100.00%	0.46	OK	
	LC3 at 100.00%	0.66	OK	
	LC30 at 100.00%	0.49	OK	
	LC31 at 100.00%	0.49	OK	
	LC32 at 100.00%	0.46	OK	
	LC4 at 100.00%	0.23	OK	
	LC5 at 100.00%	0.18	OK	
	LC6 at 100.00%	0.77	OK	
	LC7 at 100.00%	0.60	OK	
	LC8 at 100.00%	0.27	OK	
	LC9 at 100.00%	0.42	OK	
	W180 at 100.00%	0.25	OK	
	W210 at 100.00%	0.25	OK	
	Wi180 at 100.00%	0.07	OK	
	Wi210 at 100.00%	0.06	OK	
	WL180 at 100.00%	0.02	OK	
	WL210 at 100.00%	0.02	OK	
168	LC1 at 100.00%	**0.77**	**OK**	Eq. H2-1
	LC10 at 100.00%	0.48	OK	
	LC11 at 100.00%	0.37	OK	
	LC12 at 100.00%	0.47	OK	
	LC13 at 100.00%	0.27	OK	
	LC14 at 100.00%	0.21	OK	
	LC15 at 100.00%	0.25	OK	
	LC16 at 100.00%	0.26	OK	
	LC17 at 100.00%	0.27	OK	
	LC18 at 100.00%	0.24	OK	
	LC19 at 100.00%	0.23	OK	
	LC2 at 100.00%	0.45	OK	

LC20 at 100.00%	0.25	OK
LC21 at 100.00%	0.26	OK
LC22 at 100.00%	0.25	OK
LC23 at 100.00%	0.22	OK
LC24 at 100.00%	0.25	OK
LC25 at 100.00%	0.27	OK
LC26 at 100.00%	0.26	OK
LC27 at 100.00%	0.23	OK
LC28 at 100.00%	0.24	OK
LC29 at 100.00%	0.27	OK
LC3 at 100.00%	0.16	OK
LC30 at 100.00%	0.26	OK
LC31 at 100.00%	0.23	OK
LC32 at 100.00%	0.25	OK
LC4 at 100.00%	0.44	OK
LC5 at 100.00%	0.71	OK
LC6 at 100.00%	0.38	OK
LC7 at 100.00%	0.20	OK
LC8 at 100.00%	0.38	OK
LC9 at 100.00%	0.53	OK
W180 at 100.00%	0.21	OK
W210 at 100.00%	0.11	OK
Wi180 at 100.00%	0.05	OK
Wi210 at 100.00%	0.03	OK
WL180 at 100.00%	0.01	OK
WL210 at 100.00%	0.01	OK

Bentley

Current Date: 6/25/2018 9:34 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2820\LTE 6C\CT2820 (LTE 6C).etz\

Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	-0.7253	0.00	0.00	0
3	-6.0833	0.00	0.00	0
4	-6.25	0.00	0.00	0
5	-6.3333	0.00	-0.433	0
6	-6.5833	0.00	-0.866	0
7	-3.7376	0.00	-5.2176	0
8	-3.9043	0.00	-5.5062	0
9	-0.892	0.00	-0.2887	0
10	-6.6667	0.00	-0.7217	0
11	-3.179	0.00	-6.7625	0
12	-2.8457	0.00	-6.7625	0
13	-0.50	0.00	-11.4027	0
14	-0.4167	0.00	-11.547	0
17	0.7253	0.00	0.00	0
18	6.0833	0.00	0.00	0
19	6.25	0.00	0.00	0
20	6.3333	0.00	-0.433	0
21	6.5833	0.00	-0.866	0
22	3.7376	0.00	-5.2176	0
23	3.9043	0.00	-5.5062	0
24	0.892	0.00	-0.2887	0
25	6.6667	0.00	-0.7217	0

26	3.179	0.00	-6.7625	0
27	2.8457	0.00	-6.7625	0
28	0.50	0.00	-11.4027	0
29	0.4167	0.00	-11.547	0
32	0.00	0.00	-11.4027	0
69	0.9427	0.00	-3.5453	0
70	0.00	0.00	-5.1781	0
71	-0.9427	0.00	-3.5453	0
146	0.00	0.00	-4.09	0
147	-6.25	3.00	0.00	0
148	6.25	3.00	0.00	0
149	-6.6667	3.00	-0.7217	0
150	-0.4167	3.00	-11.547	0
151	0.4167	3.00	-11.547	0
152	6.6667	3.00	-0.7217	0
153	-6.5833	3.00	-0.866	0
154	-6.0833	3.00	0.00	0
155	0.50	3.00	-11.4027	0
156	-0.50	3.00	-11.4027	0
157	6.0833	3.00	0.00	0
158	6.5833	3.00	-0.866	0
247	6.3402	5.50	-1.6884	0
248	6.3402	-2.50	-1.6884	0
249	4.5902	5.50	-4.7195	0
250	4.5902	-2.50	-4.7195	0
251	2.8402	5.50	-7.7505	0
252	2.8402	-2.50	-7.7505	0
253	1.0902	5.50	-10.7816	0
254	1.0902	-2.50	-10.7816	0
255	6.167	3.00	-1.5884	0
256	6.3402	3.00	-1.6884	0
257	6.167	0.00	-1.5884	0
258	6.3402	0.00	-1.6884	0
259	4.417	3.00	-4.6195	0
260	4.5902	3.00	-4.7195	0
261	4.417	0.00	-4.6195	0
262	4.5902	0.00	-4.7195	0
263	2.667	3.00	-7.6505	0
264	2.8402	3.00	-7.7505	0
265	2.667	0.00	-7.6505	0
266	2.8402	0.00	-7.7505	0
267	0.917	3.00	-10.6816	0
268	1.0902	3.00	-10.7816	0
269	0.917	0.00	-10.6816	0
270	1.0902	0.00	-10.7816	0
319	-6.3402	5.50	-1.6884	0
320	-6.167	3.00	-1.5884	0
321	-6.3402	3.00	-1.6884	0
322	-6.167	0.00	-1.5884	0
323	-6.3402	0.00	-1.6884	0
324	-6.3402	-2.50	-1.6884	0
325	-4.417	3.00	-4.6195	0
326	-4.5902	3.00	-4.7195	0
327	-4.417	0.00	-4.6195	0
328	-4.5902	0.00	-4.7195	0
329	-2.667	0.00	-7.6505	0
330	-2.8402	0.00	-7.7505	0
331	-2.667	3.00	-7.6505	0
332	-2.8402	3.00	-7.7505	0
333	-0.917	3.00	-10.6816	0

334	-1.0902	3.00	-10.7816	0
335	-0.917	0.00	-10.6816	0
336	-1.0902	0.00	-10.7816	0
337	-1.0902	-2.50	-10.7816	0
338	-1.0902	5.50	-10.7816	0
339	-2.8402	5.50	-7.7505	0
340	-2.8402	-2.50	-7.7505	0
341	-4.5902	-2.50	-4.7195	0
342	-4.5902	5.50	-4.7195	0
343	5.25	5.50	0.20	0
344	5.25	3.00	0.00	0
345	5.25	3.00	0.20	0
346	5.25	0.00	0.00	0
347	5.25	0.00	0.20	0
348	5.25	-2.50	0.20	0
349	1.75	3.00	0.00	0
350	1.75	3.00	0.20	0
351	1.75	0.00	0.00	0
352	1.75	0.00	0.20	0
353	-1.75	0.00	0.00	0
354	-1.75	0.00	0.20	0
355	-1.75	3.00	0.00	0
356	-1.75	3.00	0.20	0
357	-5.25	3.00	0.00	0
358	-5.25	3.00	0.20	0
359	-5.25	0.00	0.00	0
360	-5.25	0.00	0.20	0
361	-5.25	-2.50	0.20	0
362	-5.25	5.50	0.20	0
363	-1.75	5.50	0.20	0
364	-1.75	-2.50	0.20	0
365	1.75	-2.50	0.20	0
366	1.75	5.50	0.20	0
373	-2.7396	0.00	-2.5079	0
393	2.7396	0.00	-2.5079	0
413	0.00	0.00	-7.253	0
414	-0.9427	-2.00	-3.5453	0
415	0.9427	-2.00	-3.5453	0
416	0.00	-2.00	-5.1781	0
417	-1.8412	0.00	-3.0266	0
418	0.00	0.00	-6.2155	0
419	1.8412	0.00	-3.0266	0
420	-1.8412	1.50	-3.0266	0
421	1.8412	1.50	-3.0266	0
422	0.00	1.50	-6.2155	0
423	1.8412	-0.50	-3.0266	0
424	-1.8412	-0.50	-3.0266	0
425	0.00	-0.50	-6.2155	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
69	1	1	1	1	1	1
70	1	1	1	1	1	1
71	1	1	1	1	1	1
414	1	1	1	1	1	1
415	1	1	1	1	1	1
416	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	5	71		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
2	5	9		L 2X2X1_4	A36	0.00	0.00	0.00
3	5	7		L 2X2X1_4	A36	0.00	0.00	0.00
4	8	2		HSS_RECT 3X2X3_16	A500 GrB rectangular	0.00	0.00	0.00
5	20	69		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
6	20	24		L 2X2X1_4	A36	0.00	0.00	0.00
7	20	22		L 2X2X1_4	A36	0.00	0.00	0.00
8	23	17		HSS_RECT 3X2X3_16	A500 GrB rectangular	0.00	0.00	0.00
9	4	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
10	10	14		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
11	29	25		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
12	70	32		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
13	11	26		HSS_RECT 3X2X3_16	A500 GrB rectangular	0.00	0.00	0.00
14	27	32		L 2X2X1_4	A36	0.00	0.00	0.00
15	12	32		L 2X2X1_4	A36	0.00	0.00	0.00
25	6	3		PL 6x3/8	A36	0.00	0.00	0.00
26	18	21		PL 6x3/8	A36	0.00	0.00	0.00
27	28	13		PL 6x3/8	A36	0.00	0.00	0.00
56	147	148		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	149	150		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
58	151	152		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
59	153	154		PL 6x3/8	A36	0.00	0.00	0.00
60	155	156		PL 6x3/8	A36	0.00	0.00	0.00
61	157	158		PL 6x3/8	A36	0.00	0.00	0.00
106	247	248		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
107	249	250		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
108	251	252		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
109	253	254		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
151	339	340		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
152	342	341		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
153	319	324		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
163	363	364		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
164	366	365		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
162	362	361		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
165	343	348		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
166	393	415		T2L 3X3X1_4X3_4	A36	0.00	0.00	0.00
167	414	373		T2L 3X3X1_4X3_4	A36	0.00	0.00	0.00
168	416	413		T2L 3X3X1_4X3_4	A36	0.00	0.00	0.00
169	420	424		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
170	421	423		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
171	422	425		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
150	338	337		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
2	270.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
14	270.00	0	0.00	0.00	0.00
106	0.00	2	-0.50	0.00	-0.866
107	0.00	2	-0.50	0.00	-0.866
108	0.00	2	-0.50	0.00	-0.866
109	0.00	2	-0.50	0.00	-0.866
151	0.00	2	-0.50	0.00	0.866
152	0.00	2	-0.50	0.00	0.866
153	0.00	2	-0.50	0.00	0.866
150	0.00	2	-0.50	0.00	0.866

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
169	-2.00	0.00	-2.00	-2.00	0.00	-2.00
170	2.00	0.00	-2.00	2.00	0.00	-2.00
171	-2.00	0.00	0.00	-2.00	0.00	0.00

Back

Parcel Detail

1294 PLEASANT VALLEY RD NORTH

Property Information

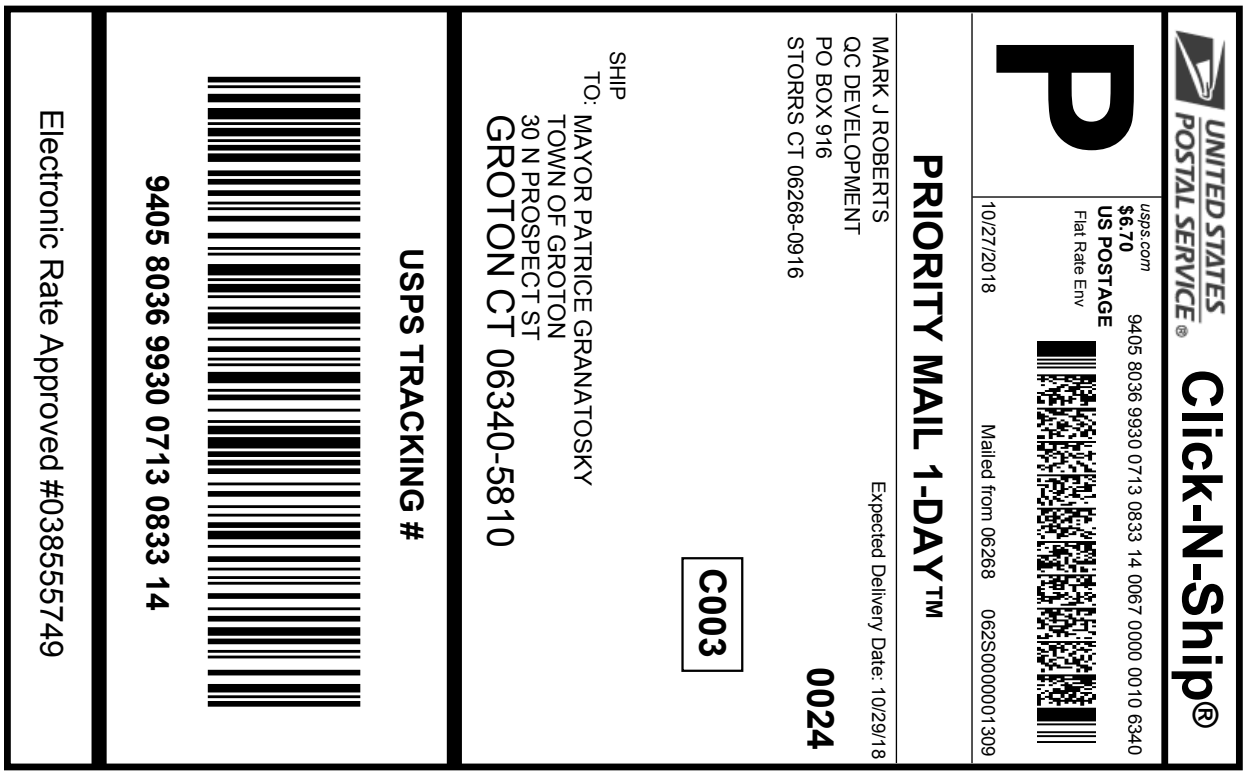
PIN: 178010470143
PROPERTY TYPE: COMMERCIAL
DISTRICT: POQUONNOCK BRIDGE FIRE DISTRICT
OWNER: JFM ENTERPRISES LLC
ACREAGE: 3.66AC.
ZONING: RU-20
USE CODE: SMALL RETAIL AND SERVICE STORES UNDER 10
CT GRAND LIST CODE: COMMERCIAL
LIVING UNITS: N/A
NEIGHBORHOOD: 3100
DEED BOOK/PAGE: 774/624
LAND VALUE: $197,900
BUILDING VALUE: $75,100
TOTAL VALUE: $273,000
GROSS ASSESSED VALUE: $191,100

Structure Information

CARD: 1 OF 1
BUILDING #: 1
IMPROVED NAME: PAWS PLACE
YEAR BUILT: 1975
 # OF UNITS: 1
IDENTICAL UNITS: 1
STRUCTURE TYPE: RETAIL-SINGLEOCCUPANCY
BUILDING AREA: 2388 SQFT

Google Maps 1294 Pleasant Valley Rd N

Map data ©2018 Google 200 ft



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 # / Insurance Number:
9405 8036 9930 0713 0833 14

Trans. #:	447298344
Print Date:	10/26/2018
Ship Date:	10/27/2018
Expected Delivery Date:	10/29/2018
Insured Value:	$50.00

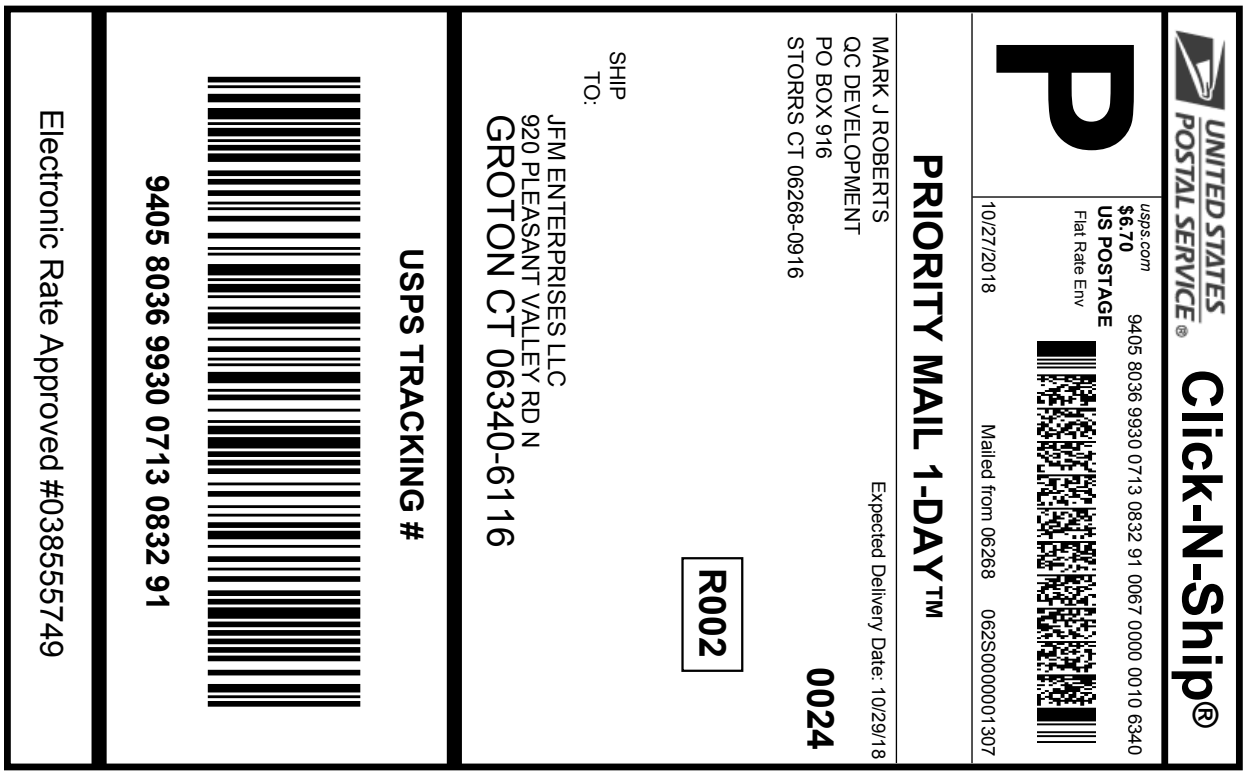
Priority Mail® Postage:	**$6.70**
Insurance Fee	**$0.00**
Total	**$6.70**

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

To: MAYOR PATRICE GRANATOSKY
TOWN OF GROTON
30 N PROSPECT ST
GROTON CT 06340-5810

* 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 # / Insurance Number:
9405 8036 9930 0713 0832 91

Trans. #:	447298344
Print Date:	10/26/2018
Ship Date:	10/27/2018
Expected Delivery Date:	10/29/2018
Insured Value:	$50.00

Priority Mail® Postage:	**$6.70**
Insurance Fee	**$0.00**
Total	**$6.70**

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

To: JFM ENTERPRISES LLC
920 PLEASANT VALLEY RD N
GROTON CT 06340-6116

* 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