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

February 15, 2019

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

**Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2298**
**459 Burr Road, Southbury, CT 06488**
**N 41.44866667**
**W 73.18271944**

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 147-foot level of the existing 150-foot Monopole at 459 Burr Rd, Southbury, CT. The tower is owned by SBA and the property is owned by Holly E. Hageman. AT&T now intends to replace three (3) Powerwave and (3) KMW antennas with (3) Kathrein 800-10965 antennas and (3) CCI HPA65R-BU6A antennas. AT&T will also swap (3) Ericsson RRUS-11 Remote Radio Units for (3) Ericsson 4449-B5/B12s and add (3) Ericsson 8843-B25/B66 Remote Radio Units (RRU). The Antennas and RRUs would be installed at the 147-foot level of the tower.

This facility was approved by the Siting Council in Docket # 222a on January 4, 2006. This approval included a condition that the monopole and antennas not exceed 150' in height. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Jeff Manville, First Selectman of the Town of Southbury, and the Southbury Planning Department as well as the

property and tower owner.

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

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

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

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

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

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

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

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

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

Sincerely,

Mark Roberts
QC Development
Consultant for AT&T

Attachments

Cc: Jeff Manville - Elected Official
DeLoris Curtis, AICP – Land Use Administrator
Holly E. Hageman – Property Owner
SBA - Tower Owner (via e-mail)

# Power Density

**Existing Loading on Tower**

| Carrier | # of Channels | ERP/Ch (W) | Antenna Centerline Height (ft) | Power Density (mW/cm^2) | Freq. Band (MHz**) | Limit S (mW /cm^2) | %MPE |
|---|---|---|---|---|---|---|---|
| Other Carriers* | | | | | | | 1.04% |
| AT&T GSM | 1 | 283 | 147 | 0.0051 | 880 | 0.5867 | 0.09% |
| AT&T UMTS | 2 | 565 | 147 | 0.0204 | 880 | 0.5867 | 0.35% |
| AT&T UMTS | 4 | 525 | 147 | 0.0380 | 1900 | 1.0000 | 0.38% |
| AT&T LTE | 1 | 1313 | 147 | 0.0238 | 734 | 0.4893 | 0.49% |
| AT&T LTE | 2 | 875 | 147 | 0.0321 | 1900 | 1.0000 | 0.32% |
| Site Total | | | | | | | 2.66% |

*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* | | | | | | | 1.04% |
| AT&T UMTS | 1 | 565 | 147 | 0.0102 | 850 | 0.5667 | 0.18% |
| AT&T LTE | 1 | 1476 | 147 | 0.0267 | 700 | 0.4667 | 0.57% |
| AT&T LTE | 1 | 1000 | 147 | 0.0181 | 850 | 0.5667 | 0.32% |
| AT&T 5G | 1 | 1000 | 147 | 0.0181 | 850 | 0.5667 | 0.32% |
| AT&T LTE | 2 | 3664 | 147 | 0.1326 | 1900 | 1.0000 | 1.33% |
| AT&T LTE | 1 | 3837 | 147 | 0.0694 | 2100 | 1.0000 | 0.69% |
| Site Total | | | | | | | 4.45% |

*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:<br>• NEW AT&T ANTENNAS: (HPA65R–BU6A) (TYP. OF 1 PER SECTOR, TOTAL OF 3).<br>• NEW AT&T ANTENNAS: (800–10965) (TYP. OF 1 PER SECTOR, TOTAL OF 3).<br>• NEW AT&T RRUS: B2/B66A 8843 (1900/AWS) (TYP. OF 1 PER SECTOR TOTAL OF 3).<br>• NEW AT&T RRUS: B5/B12 4449 (700/850) (TYP. OF 1 PER SECTOR TOTAL OF 3).<br>• NEW AT&T SURGE ARRESTOR (DC6–48–60–18–8C) (TOTAL OF 1).<br>• INSTALL (2) DC POWER, (1) FIBER, & (3) 3/8" HOME RUN RET CABLES RUN IN 2" FLEX CONDUIT (TO FOLLOW EXISTING ROUTE).<br><br>ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:<br>• SWAP BASEBAND WITH 6630.<br>• ADD XMU.<br>• ADD 5G RBS 6630.<br>• NEW DC12–48–60–RM (TOTAL OF 12). |
| SITE ADDRESS: | 459 BURR ROAD<br>SOUTHBURY, CT |
| LATITUDE: | 41.448611 N, 41° 26' 54.99" N |
| LONGITUDE: | 73.182500 W, 73° 10' 57.00" W |
| TYPE OF SITE: | MONOPOLE / INDOOR EQUIPMENT |
| STRUCTURE HEIGHT: | 149'–0"± |
| RAD CENTER: | 147'–0"± |
| CURRENT USE: | TELECOMMUNICATIONS FACILITY |
| PROPOSED USE: | TELECOMMUNICATIONS FACILITY |

# SITE NUMBER: CT2298

# SITE NAME: SOUTHBURY BURR RD

# FA CODE: 10128248

# PACE ID: MRCTB035187, MRCTB035226, MRCTB035341, MRCTB035368

# PROJECT: LTE 2C_3C 2019 UPGRADE

## DRAWING INDEX

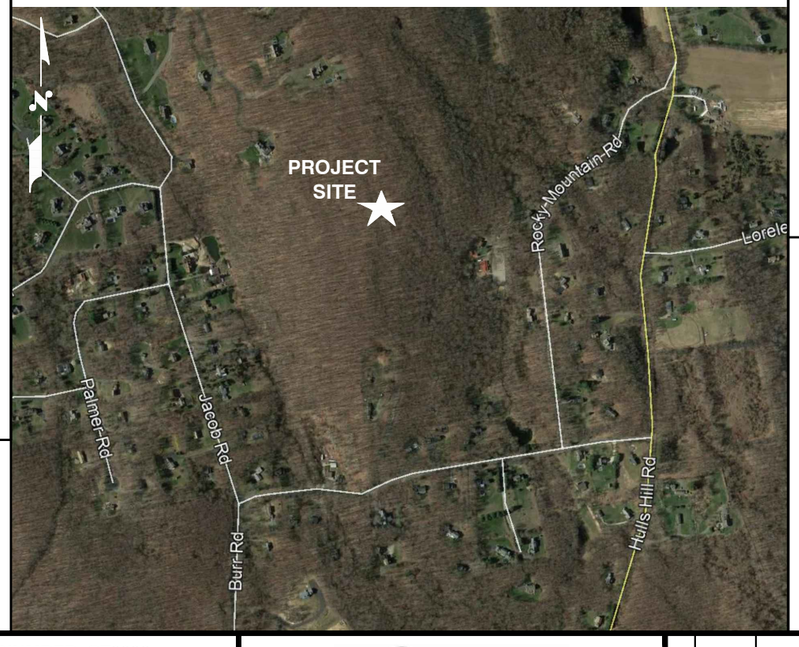
| SHEET NO. | DESCRIPTION | REV. |
|---|---|---|
| T–1 | TITLE SHEET | 1 |
| GN–1 | GENERAL NOTES | 1 |
| A–1 | COMPOUND & EQUIPMENT PLAN | 1 |
| A–2 | ANTENNA LAYOUTS & ELEVATION | 1 |
| A–3 | DETAILS | 1 |
| SN–1 | STRUCTURAL NOTES | 1 |
| S–1 | STRUCTURAL DETAILS | 1 |
| RF–1 | RF PLUMBING DIAGRAM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

SBA SITE #: CT13058

## VICINITY MAP

**DIRECTIONS TO SITE:**

FROM I–84, EXIT 15 ROUTE 67 (SOUTHFORD RD) SOUTH EAST. GO APPROXIMATELY 2 MILES AND TURN RIGHT ON TO QUAKER FARMS RD (188). GO .3 MILES AND TURN RIGHT ON HULLS HILL RD. GO APPROXIMATELY 1.8 MILES ON HULL HILL RD AND TURN RIGHT ON TO BURR ROAD. GO APPROXIMATELY .4 MILES TO DRIVEWAY ON RIGHT – #459. DRIVE SLOW PAST HOUSE TO TOWER SITE.




## 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

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079


SITE NUMBER: CT2298
SITE NAME: SOUTHBURY BURR RD
SBA SITE #: CT13058
459 BURR ROAD
SOUTHBURY, CT
NEW HAVEN COUNTY


at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 1 | 02/13/19 | ISSUED FOR CONSTRUCTION | AM | AT | DJC |
| A | 01/10/19 | ISSUED FOR REVIEW | RK | AT | DJC |

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

STATE OF CONNECTICUT — REGISTERED PROFESSIONAL ENGINEER — LICENSED

AT&T

TITLE SHEET
(LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | 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 SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

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

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

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

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

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

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

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

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

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

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

## ABBREVIATIONS

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


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

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079


**SITE NUMBER: CT2298**
**SITE NAME: SOUTHBURY BURR RD**
**SBA SITE #: CT13058**
459 BURR ROAD
SOUTHBURY, CT
NEW HAVEN COUNTY


at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 1 | 02/13/19 | ISSUED FOR CONSTRUCTION | AM | AT | DJC |
| A | 01/10/19 | ISSUED FOR REVIEW | RK | AT | DJC |

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

STATE OF CONNECTICUT · DEREK J. CREASEY · 16,258 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | GN-1 | 1 |

**NOTE:**

ROTATION OF MOUNTS OR INSTALLATION OF MOUNT MODS MUST NOT ADVERSELY AFFECT, OBSTRUCT, BEND OR PINCH EXISTING SAFETY CABLE IN ANY WAY. GC, C/O AT&T, WILL PURCHASE AND INSTALL CABLE RE-ROUTING BRACKETS AS REQUIRED.

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: DECEMBER 21, 2018

NOTE:

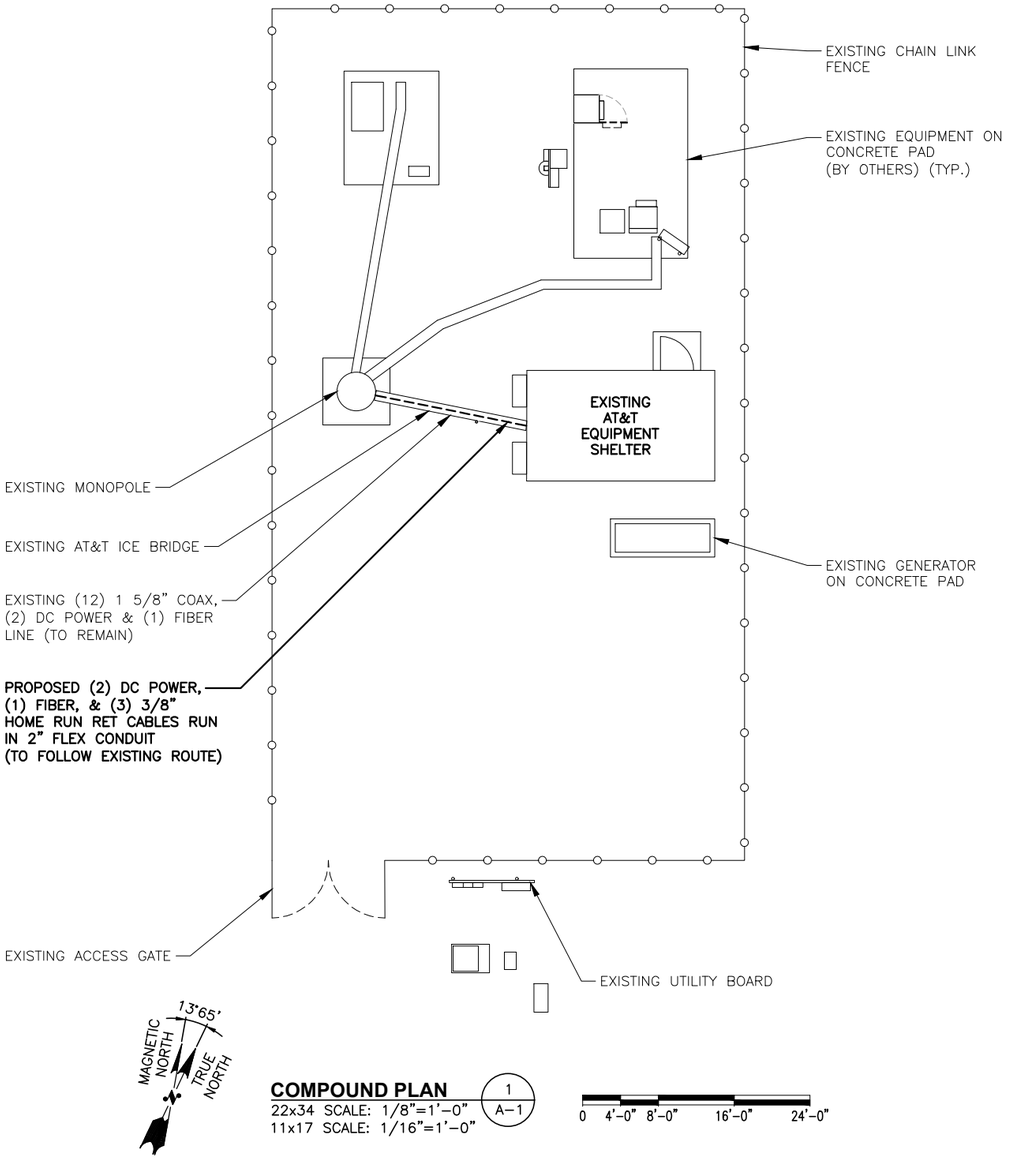
REFER TO STRUCTURAL ANALYSIS BY: IES TOWER ENGINEERING SOLUTIONS, DATED: JANUARY 24, 2019 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

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

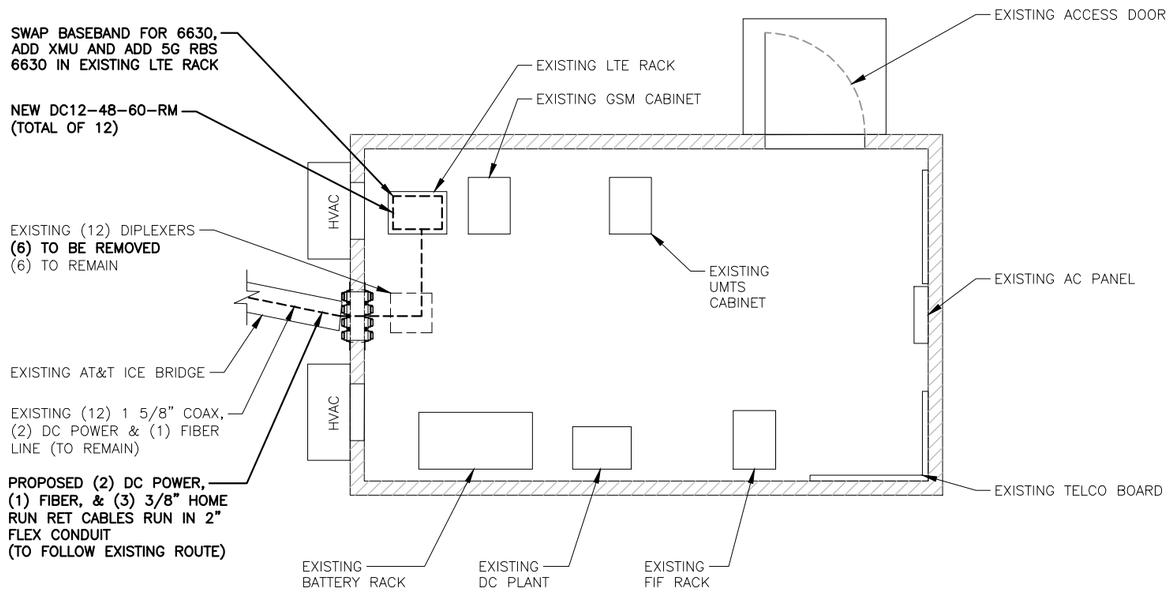
NOTE:

ALL MOUNT ADDITIONS MUST NOT INTERFERE WITH SAFETY CABLE AND MUST NOT CAUSE SAFETY CABLE TO BECOME OBSTRUCTED, BENT OR PINCHED.




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

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




**EQUIPMENT PLAN** (2 / A-1)
22x34 SCALE: 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

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701


**SITE NUMBER: CT2298**
**SITE NAME: SOUTHBURY BURR RD**
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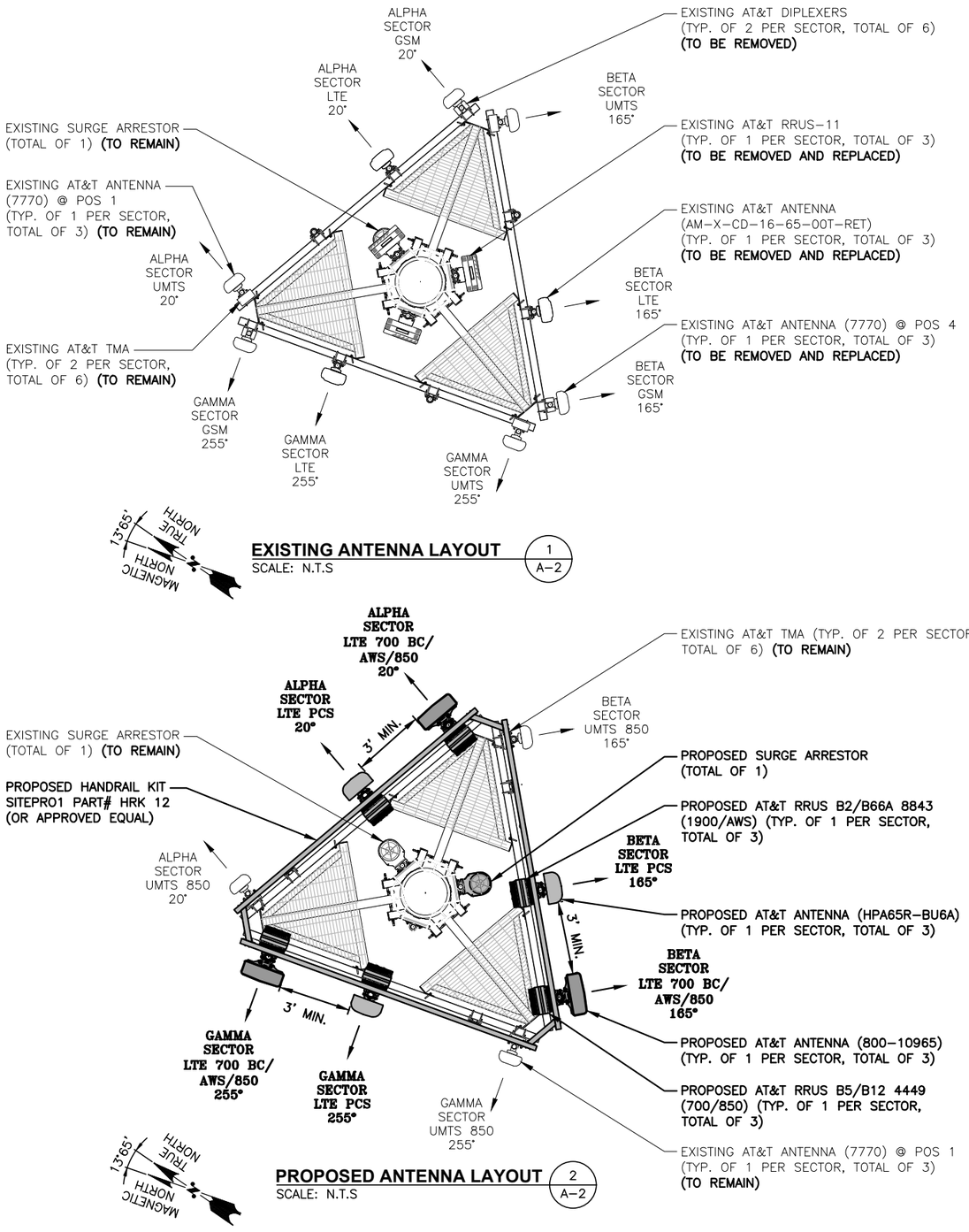
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: RK

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 28551 · LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLAN
(LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | A-1 | 1 |




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




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

**NOTE:**
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HUDSON DESIGN GROUP, LLC.
DATED: DECEMBER 21, 2018

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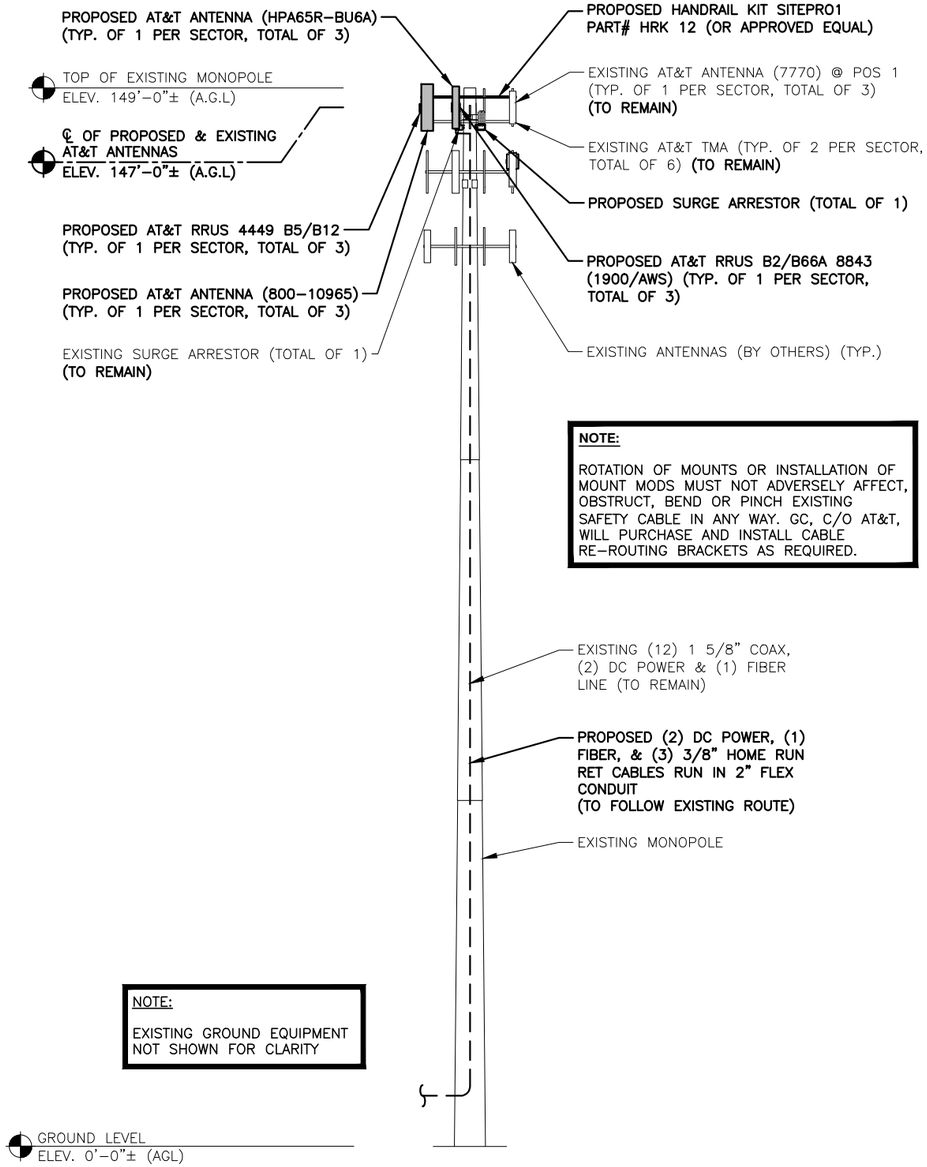
REFER TO STRUCTURAL ANALYSIS BY: IES TOWER ENGINEERING SOLUTIONS, DATED: JANUARY 24, 2019 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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

**NOTE:**
ALL MOUNT ADDITIONS MUST NOT INTERFERE WITH SAFETY CABLE AND MUST NOT CAUSE SAFETY CABLE TO BECOME OBSTRUCTED, BENT OR PINCHED.

**NOTE:**
ANTENNAS AND MOUNTS TO BE ADJUSTED AS REQUIRED TO ACHIEVE A 3'-0" MINIMUM SEPARATION BETWEEN ANTENNAS




**NOTE:**
ROTATION OF MOUNTS OR INSTALLATION OF MOUNT MODS MUST NOT ADVERSELY AFFECT, OBSTRUCT, BEND OR PINCH EXISTING SAFETY CABLE IN ANY WAY. GC, C/O AT&T, WILL PURCHASE AND INSTALL CABLE RE-ROUTING BRACKETS AS REQUIRED.

NOTE:
EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY

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

0 | 5'-14" | 10'-8" | 21'-4" | 32'-0"

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: CT2298**
**SITE NAME: SOUTHBURY BURR RD**
**SBA SITE #: CT13058**
459 BURR ROAD
SOUTHBURY, CT
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 1 | 02/13/19 | ISSUED FOR CONSTRUCTION | AM | AT | DJC |
| A | 01/10/19 | ISSUED FOR REVIEW | RK | AT | DJC |

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

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 28567 · LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION (LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | A-2 | 1 |

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: DECEMBER 21, 2018

NOTE:

ALL MOUNT ADDITIONS MUST NOT INTERFERE WITH SAFETY CABLE AND MUST NOT CAUSE SAFETY CABLE TO BECOME OBSTRUCTED, BENT OR PINCHED.

NOTE:

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

NOTE:

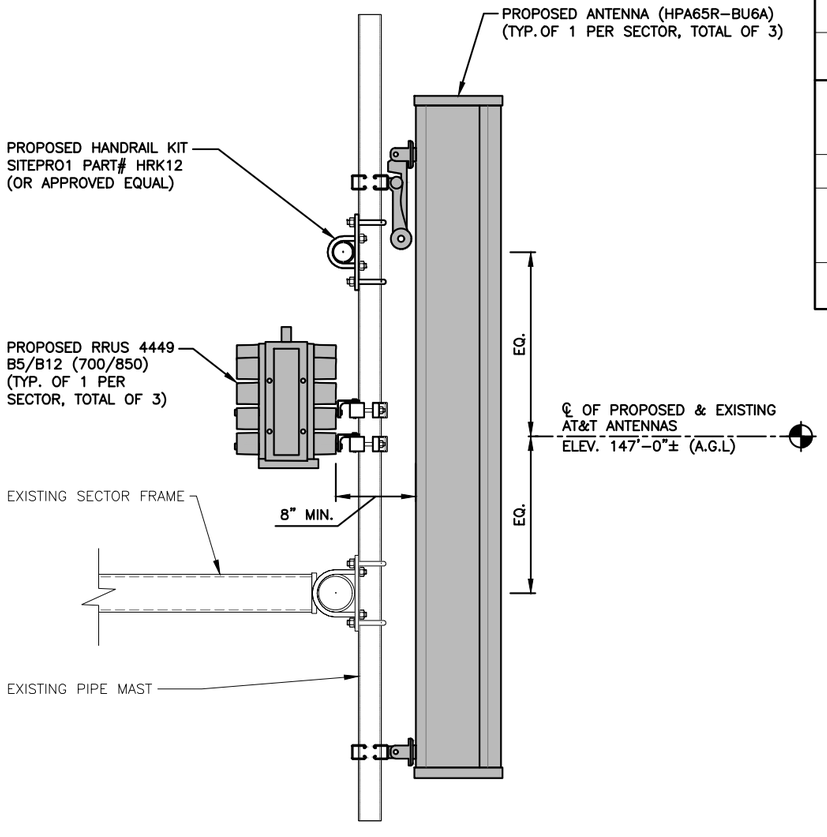
REFER TO STRUCTURAL ANALYSIS BY: IES TOWER ENGINEERING SOLUTIONS, DATED: JANUARY 24, 2019 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

MINIMUM OF 8" SEPARATION REQUIRED BETWEEN THE BACK OF ANTENNA AND THE RRH.

## ANTENNA SCHEDULE

| SECTOR | EXISTING/ PROPOSED | BAND | ANTENNA | SIZE (INCHES) (L x W x D) | ANTENNA ℄ HEIGHT | AZIMUTH | TMA/ DIPLEXER | RRU | SIZE (INCHES) (L x W x D) | FEEDER | RAYCAP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | EXISTING | UMTS 850 | 7770 | 55X11X5 | ±147' | 20° | (2)(G) POWERWAVE LGP 21901 (2) POWERWAVE LGP 21401 | – | – | (2) 1–5/8" COAX (LENGTH 216'±) | (E) (1) RAYCAP DC6–48–60–18–8C |
| A2 | – | – | – | – | – | – | – | – | – | – | |
| **A3** | **PROPOSED** | **LTE PCS** | **HPA65R–BU6A** | **71.2X11.7X8.4** | **±147'** | **20°** | – | **(P) (1) B2/B66A 8843 (AWS/1900)** | **14.9X13.2X10.9** | (2) 1–5/8" COAX (LENGTH 216'±) | |
| **A4** | **PROPOSED** | **LTE 700 BC/AWS/850** | **800–10965** | **78.7X20X6.9** | **±147'** | **20°** | – | **(P) (1) B5/B12 4449 (700/850)** | **14.9X13.2X10.4** | – | |
| B1 | EXISTING | UMTS 850 | 7770 | 55X11X5 | ±147' | 165° | (2)(G) POWERWAVE LGP 21901 (2) POWERWAVE LGP 21401 | – | – | (2) 1–5/8" COAX (LENGTH 216'±) | **(P) (1) RAYCAP DC6–48–60–18–8C** |
| B2 | – | – | – | – | – | – | – | – | – | – | |
| **B3** | **PROPOSED** | **LTE 1900** | **HPA65R–BU6A** | **71.2X11.7X8.4** | **±147'** | **165°** | –– | **(P) (1) B2/B66A 8843 (AWS/1900)** | **14.9X13.2X10.9** | (2) 1–5/8" COAX (LENGTH 216'±) | |
| **B4** | **PROPOSED** | **LTE 700 BC/AWS/850** | **800–10965** | **78.7X20X6.9** | **±147'** | **165°** | –– | **(P) (1) B5/B12 4449 (700/850)** | **14.9X13.2X10.4** | – | |
| C1 | EXISTING | UMTS 850 | 7770 | 55X11X5 | ±147' | 255° | (2)(G) POWERWAVE LGP 21901 (2) POWERWAVE LGP 21401 | – | – | (2) 1–5/8" COAX (LENGTH 216'±) | SHARED |
| C2 | – | – | – | – | – | – | – | – | – | – | |
| **C3** | **PROPOSED** | **LTE 1900** | **HPA65R–BU6A** | **71.2X11.7X8.4** | **±147'** | **255°** | –– | **(P) (1) B2/B66A 8843 (AWS/1900)** | **14.9X13.2X10.9** | (2) 1–5/8" COAX (LENGTH 216'±) | |
| **C4** | **PROPOSED** | **LTE 700 BC/AWS/850** | **800–10965** | **78.7X20X6.9** | **±147'** | **255°** | –– | **(P) (1) B5/B12 4449 (700/850)** | **14.9X13.2X10.4** | – | |




**PROPOSED ANTENNA & RRH MOUNTING DETAIL** (2 / A–3)
22x34 SCALE: 1–1/2"=1'–0"
11x17 SCALE: 3/4"=1'–0"

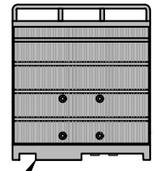
0 0'–4" 0'–8" 1'–4" 2'–0"

### RRU CHART

| QUANTITY | MODEL | L | W | D |
|---|---|---|---|---|
| 3(P) | B2/B66A 8843 (1900/AWS) | 14.9" | 13.2" | 10.9" |
| 3(P) | B5/B12 4449 (700/850) | 14.9" | 13.2" | 10.4" |

**NOTE:**
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
REFER TO RFDS FOR RRH
FREQUENCY AND
MODEL NUMBER

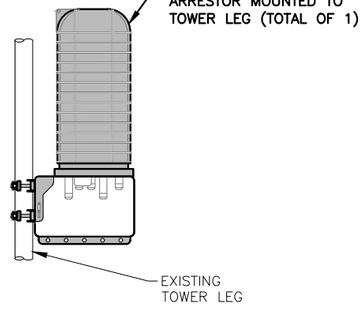


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

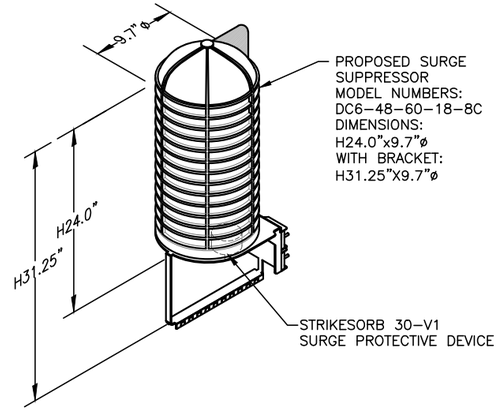
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**PROPOSED RRUS DETAIL** (3 / A–3)
SCALE: N.T.S

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




**PROPOSED SURGE ARRESTOR MOUNTING DETAIL** (4 / A–3)
SCALE: N.T.S




NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**DC SURGE SUPPRESSOR DETAIL** (5 / A–3)
SCALE: N.T.S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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: RK

STATE OF CONNECTICUT · DEREK J. CROUT · 26,256 · LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | A–3 | 1 |

## STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

## SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

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

### NOTES:

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

### NOTES:

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


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12 INDUSTRIAL WAY
SALEM, NH 03079


**SITE NUMBER: CT2298**
**SITE NAME: SOUTHBURY BURR RD**
**SBA SITE #: CT13058**
459 BURR ROAD
SOUTHBURY, CT
NEW HAVEN COUNTY


at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
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| A | 01/10/19 | ISSUED FOR REVIEW | RK | AT | DJC |

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

STATE OF CONNECTICUT · DEREK J. CREASER · No. 25[illegible] · LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | SN-1 | 1 |

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: IES TOWER ENGINEERING SOLUTIONS, DATED: JANUARY 24, 2019 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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NOTE:

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

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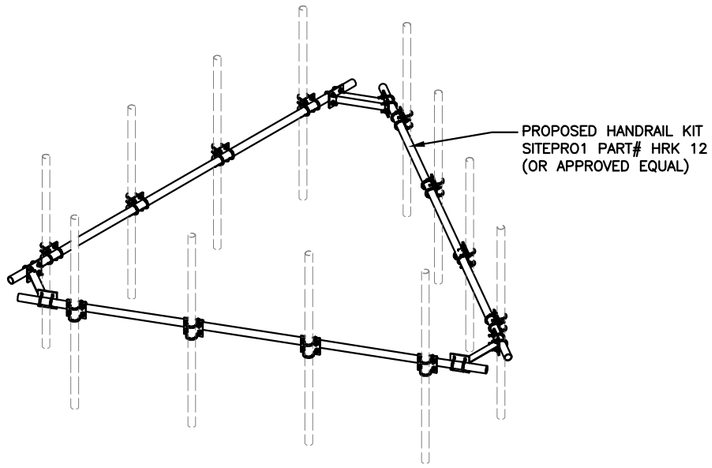
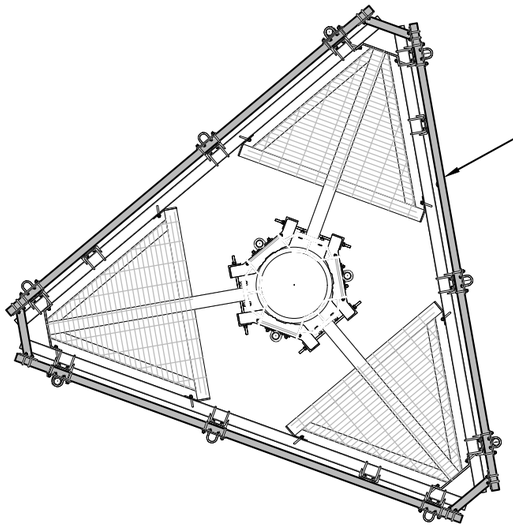
ALL MOUNT ADDITIONS MUST NOT INTERFERE WITH SAFETY CABLE AND MUST NOT CAUSE SAFETY CABLE TO BECOME OBSTRUCTED, BENT OR PINCHED.

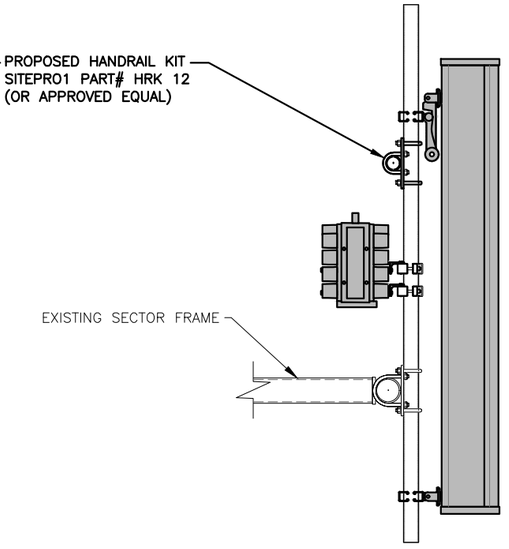



**PROPOSED HANDRAIL KIT** (1 / S-1)
SCALE: N.T.S




**PROPOSED MODIFICATIONS PLAN** (2 / S-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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




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

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

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at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 1 | 02/13/19 | ISSUED FOR CONSTRUCTION | AM | DJC | |
| A | 01/10/19 | ISSUED FOR REVIEW | RK | AT | DJC |

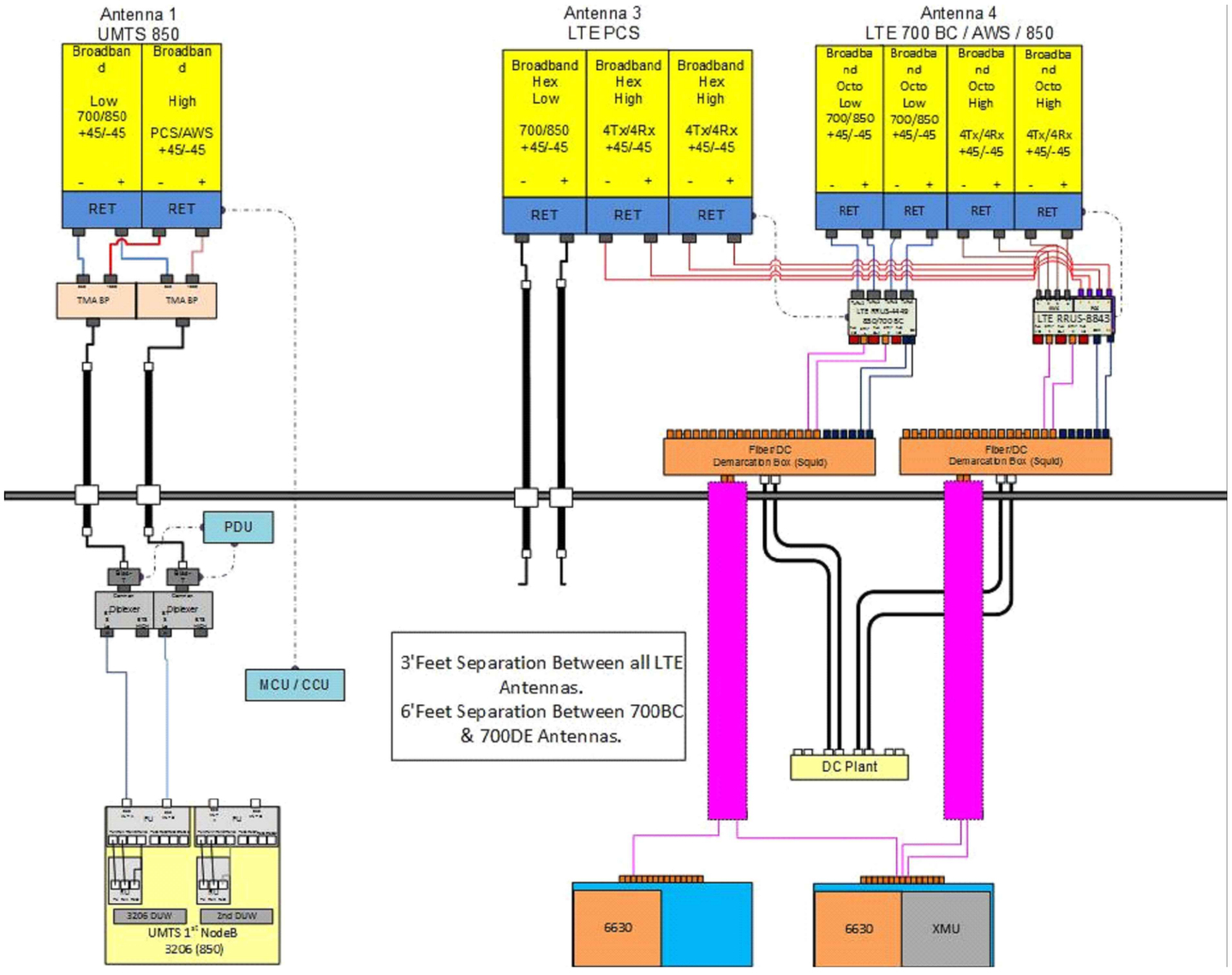
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: RK

STATE OF CONNECTICUT
DEREK J. CREASEY
LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL DETAILS
(LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | S-1 | 1 |




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

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

**NOTE:**

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


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

12 INDUSTRIAL WAY
SALEM, NH 03079


**SITE NUMBER: CT2298**
**SITE NAME: SOUTHBURY BURR RD**
**SBA SITE #: CT13058**
459 BURR ROAD
SOUTHBURY, CT
NEW HAVEN COUNTY


at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 1 | 02/13/19 | ISSUED FOR CONSTRUCTION | AM | AT | DJC |
| A | 01/10/19 | ISSUED FOR REVIEW | RK | AT | DJC |

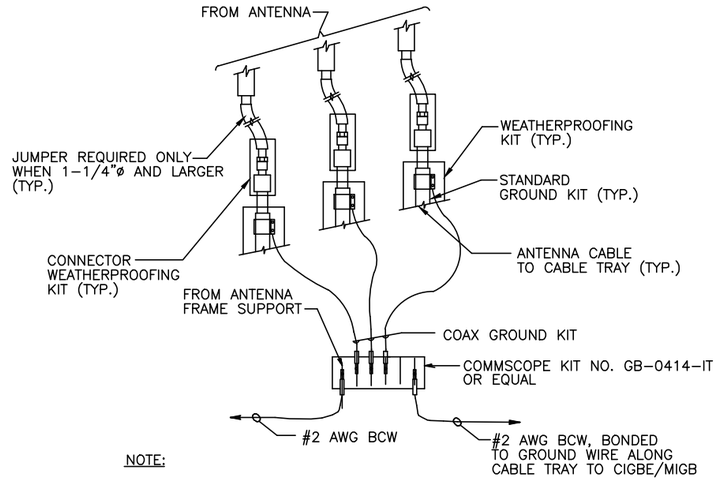
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: RK

STATE OF CONNECTICUT · DEREK J. CREASEY · 26,255 · LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
(LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | RF–1 | 1 |



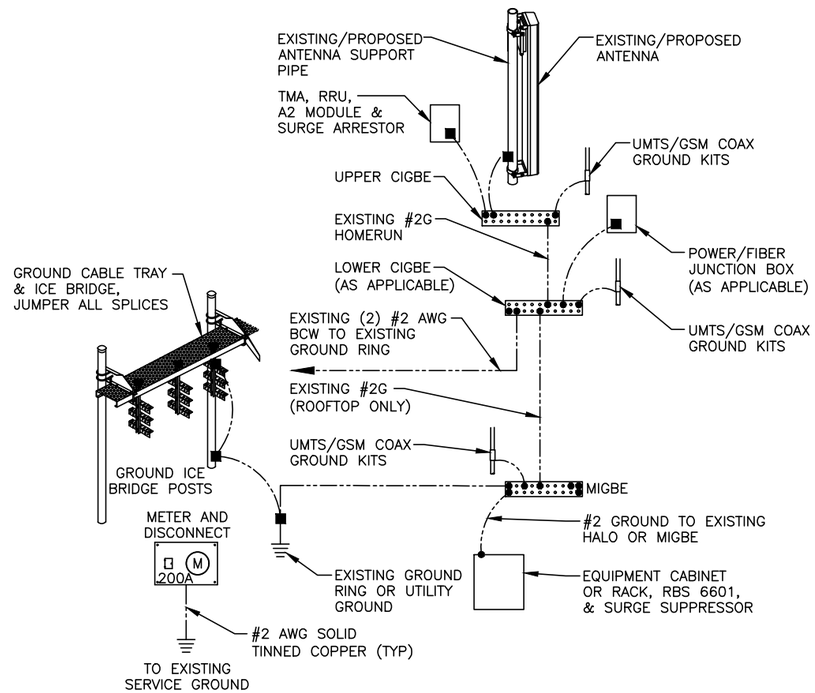

NOTE:

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

## GROUND WIRE TO GROUND BAR CONNECTION DETAIL

1 / G-1

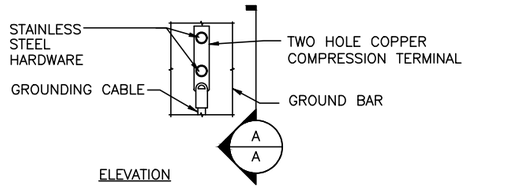
SCALE: N.T.S




## GROUNDING RISER DIAGRAM

2 / G-1

SCALE: N.T.S




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

3 / G-1

SCALE: N.T.S

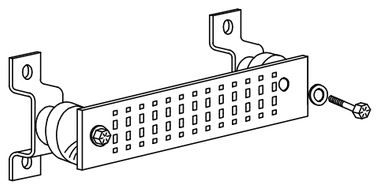
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



## GROUND BAR - DETAIL

4 / G-1

SCALE: N.T.S

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

12 INDUSTRIAL WAY
SALEM, NH 03079

**SITE NUMBER: CT2298**
**SITE NAME: SOUTHBURY BURR RD**
**SBA SITE #: CT13058**
459 BURR ROAD
SOUTHBURY, CT
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
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| 1 | 02/13/19 | ISSUED FOR CONSTRUCTION | AM | AT | DJC |
| A | 01/10/19 | ISSUED FOR REVIEW | RK | AT | DJC |

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

STATE OF CONNECTICUT · DEREK J. CREASEY · 26,255 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 2C_3C)

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CT2298 | G-1 | 1 |

SBA Communications Corporation
8051 Congress Avenue
Boca Raton, FL 33487-1307

T + 561 995 7670
F + 561 995 7626

sbasite.com

# Structural Analysis Report

## Client: AT&T

Client Site ID / Name: CT2298 / SOUTHBURY BURR RD
AppID: 105473, V2

SBA Site Name: Southbury
SBA Site ID: CT13058-A
149 ft Monopole
459 Burr Road
Southbury, Connecticut 6488
Lat: 41.448661, Long: -73.182638

Project number: CT13058-ATT-012418

### Analysis Results

| | | |
|---|---|---|
| **Tower** | 75.3% | Pass |
| **Foundation** | 74.9% | Pass |

### Client Mount modification / replacement

| | |
|---|---|
| Net change in tower stress due to mount Modification / replacement | 1.30% |

*Prepared by*

*Serge Berthomieux*

January 24, 2019


Prepared in compliance with:

- *ANSI/TIA/EIA 222-G Structural Standard for Antennas and Antenna Supporting Structures*
- *2015 International Building Code (IBC)/2018 Connecticut State Building Code (CSBC)*

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# Structural Analysis Report

## Client: AT&T

Client Site ID / Name: CT2298 / SOUTHBURY BURR RD
AppID: 105473, V2

SBA Site Name: Southbury
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149 ft Monopole
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Lat: 41.448661, Long: -73.182638

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January 24, 2019

Prepared in compliance with:

- *ANSI/TIA/EIA 222-G Structural Standard for Antennas and Antenna Supporting Structures*
- *2015 International Building Code (IBC)/2018 Connecticut State Building Code (CSBC)*

## Table of Contents

## Executive Summary

The enclosed structural analysis was performed for AT&T on January 24, 2019 to verify the structural capacity of the 149 ft Monopole located at 459 Burr Road, Southbury, Connecticut 6488 to support the proposed antenna, transmission lines and mounting equipment in addition to those currently installed. The following documents were used to determine the geotechnical characteristics, foundation data, tower geometry and member sizes/type:

*Table 1 List of Documents Used*

| Item | Document |
|---|---|
| **Tower design/drawings** | Sabre, Job # 07-07055-01, dated 07/14/2006 |
| **Foundation drawings** | Sabre, Job # 07-07055-MM, dated 07/14/2006 |
| **Geotechnical report** | JGI eastern, job# 06439G, dated 09/08/2006 |
| **Latest SA** | TES, Project Number: 28003, dated 11/28/2016 |

The analysis was performed in accordance with the following requirements:

*Table 2 Code Related Data*

| | |
|---|---|
| **Jurisdiction (State/County/City)** | Connecticut/New Haven/Southbury |
| **Governing Codes** | ANSI/TIA/EIA 222-G, 2015 IBC/2018 CSBC |
| **Base Wind Speed** | 93 mph (Ultimate Wind Speed: 120 mph 3-sec gust) |
| **Wind Speed with Ice** | 50 mph (3-Sec. Gust) |
| **Ice Thickness** | 0.75” |
| **Structural Class** | II |
| **Exposure Category** | B |
| **Topographic Category** | 2 |
| **Crest Height** | 89 ft |

“This structural analysis is based upon the tower being classified as a 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.”

The SBA Communications Corporation verifies that the 149 ft Monopole located at 459 Burr Road, Southbury, Connecticut 6488 is ***Sufficient*** to support the proposed loadings for AT&T in addition to those currently existing based on standards set forth in governing building codes and dependent on AT&T satisfying all Installation Requirements provided herein. The analysis performed assumes the site information provided is accurate and the tower/foundation has been properly designed, manufactured, installed and maintained. Additional details regarding the assumptions and limitations are provided within the Assumptions and Limitations section of this report.

## Assumptions

This analysis was completed based on the following assumptions:

- Tower has been properly maintained
- Tower erection was in accordance to manufacturer drawings
- Leg flanges have been properly designed by manufacturer to not be a limiting reaction
- Welds have been properly designed and installed by manufacturer to not be a limiting reaction
- Foundation was constructed in accordance to manufacturer drawings
- Foundation does not have structural damage
- Bolts have been properly tightened according to manufacturer specifications
- Appurtenance, mount and transmission line sizes and weights are best estimates using the TES database and manufacturer information

## Limitations

The computer generated analysis performed by the TES software is limited to theoretical capacities of the towers structural members and does not account for any missing or damaged members or connections. The tower and foundation are assumed to have been properly designed, fabricated, installed and maintained, barring any conflicting findings from the most recent inspection. All leg flanges, welds and bolts are assumed to be designed by the manufacturer in such a way that these are not limiting reactions.
SBA Communications Corporation has used its due diligence to verify the information provided to perform this analysis. It is unreasonable to perform a more detailed inspection of a tower and its components. This report is not a condition assessment of the tower or foundation.

## Installation Requirements

This analysis was performed under the assumption that AT&T will place the proposed equipment and feed lines at a height of 147 ft and in accordance with the coax layout shown. RRUs are to be installed on existing mounts behind tenant's antennas unless otherwise noted. No equipment is to be installed directly in the climbing path. All equipment is to be installed per mount manufacturer specifications. In case site conditions do not allow for the required installation parameters to be met AT&T must notify SBA Communications Corporation engineers for approval of an alternative placement.

# Appurtenance Loading

## Existing Loading:

The existing antenna and feed line information was obtained from the Site Summary and/or previous Structural Analysis. SBA Communications Corporation uses due diligence to ensure reasonably accurate information has been recorded. The existing loadings are shown in Table 3.

*Table 3 Existing Appurtenances*

| Mount Elev. (ft) | CL Elev. (ft) | Carrier | Type | Qty | Manufacturer | Model | Qty | Feed Line Size | Mount Type Qty |
|---|---|---|---|---|---|---|---|---|---|
| 147 | 147 | AT&T | Panel | 6 | Powerwave | 7770.00 | 12<br>2<br>1<br>1 | 1-5/8"<br>3/4" DC<br>1/2" Fiber<br>3" Conduit | Low Profile Platform |
| | | | Panel | 3 | KMW | AM-X-CD-16-65-00T-RET | | | |
| | | | TMA | 6 | Powerwave | LGP21401 | | | |
| | | | Diplexer | 6 | Powerwave | LGP13519 | | | |
| | | | RRU | 6 | Ericsson | RRUS-11 | | | |
| | | | Other | 1 | Raycap | DC6-48-60-18-8F | | | |
| 138 | 138 | Sprint | Panel | 3 | RFS | APXVSPP18-C-A20 | 4 | 1-1/4" | Low Profile Platform |
| | | | Panel | 3 | RFS | APXVTM14-C-120 | | | |
| | | | RRU | 3 | ALU | 800MHz | | | |
| | | | RET | 4 | RFS | ACU-A20-N | | | |
| | | | RRU | 3 | ALU | TD-RRH8x20-25 | | | |
| | | | RRU | 3 | ALU | 1900MHz | | | |
| | | | RRU Filter | 3 | ALU | 800MHz | | | |
| 127.5 | 127.5 | T-Mobile | Panel | 3 | RFS | APX16DWV-16DWVS-C-A20 | 18 | 1-5/8" | Platform w/ Handrail [Commscope VSR-MS-B and MT-195-14] |
| | | | Panel | 3 | RFS | APXV18-209014-C | | | |
| | | | Panel | 3 | Commscope | LNX-6515DS-A1M | | | |
| | | | TMA | 3 | RFS | ATMAA1412D-1A20 | | | |
| | | | TMA | 3 | RFS | ATMPP1412D-1CWA | | | |
| | | | TMA | 3 | Remec | S20057A1 | | | |
| | | | Bias T | 3 | Kathrein | 782 11054 | | | |

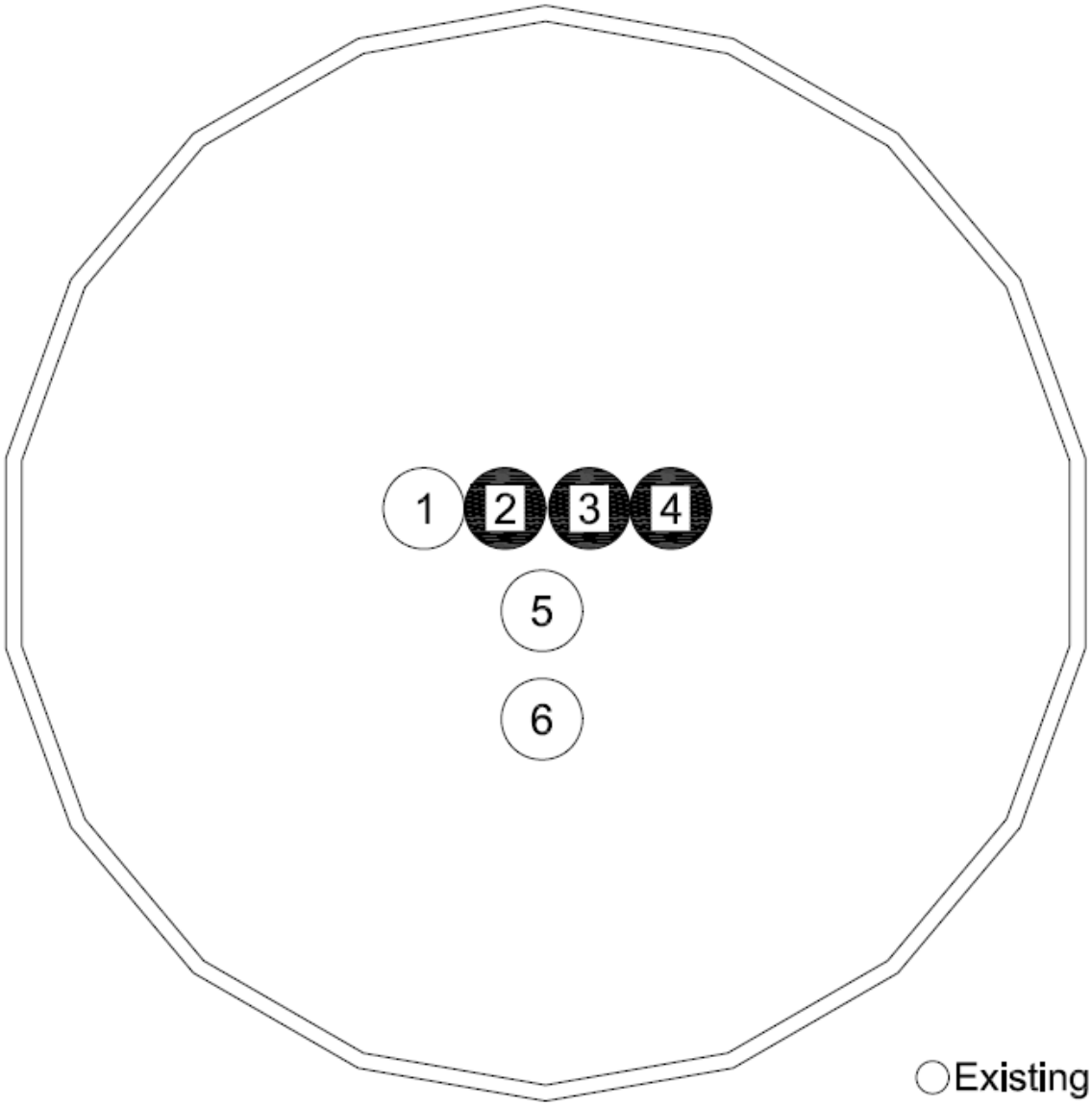
## Proposed Loading:

Information pertaining to proposed antennas and transmission lines were based upon the APP ID 105472, v2 from AT&T and is listed in Table 4.

*Table 4 Proposed Appurtenances*

| Mount Elev. (ft) | CL Elev. (ft) | Carrier | Type | Qty | Manufacturer | Model | Qty | Feed Line Size | Mount Type Qty |
|---|---|---|---|---|---|---|---|---|---|
| 147 | 147 | AT&T | Panel | 3 | Powerwave | 7770.00 | 12<br>4<br>2<br>1<br>3<br>1 | 1-5/8"<br>3/4" DC<br>1/2" Fiber<br>3" Conduit<br>3/8" RET<br>2" Conduit | Low Profile Platform w/ Handrail Kit [SitePro1 P/N HRK-12] |
| | | | Panel | 3 | CCI | HPA65R-BU6A | | | |
| | | | Panel | 3 | Kathrein | 800 10965 | | | |
| | | | TMA | 6 | Powerwave | LGP21401 | | | |
| | | | Diplexer | 6 | Powerwave | LGP13519 | | | |
| | | | RRU | 3 | Ericsson | RRUS 8843 B2 B66A | | | |
| | | | RRU | 3 | Ericsson | RRUS 4449 B5, B12 | | | |
| | | | Other | 1 | Raycap | DC6-48-60-18-8F | | | |
| | | | Other | 1 | Raycap | DC6-48-60-18-8C | | | |

## Coax Layout




| CT13058-A | | | | | |
|---|---|---|---|---|---|
| # | CARRIER | SIZE | QTY. | ELEVATION | NOTES |
| 1 | AT&T | 1-5/8" | 12 | 147' | |
| 2 | AT&T | 3/4" | 4 | 147' | DC Power [2 Proposed] within 3" Conduit |
| 3 | AT&T | 1/2" | 2 | 147' | Fiber [1 Proposed] within 3" Conduit |
| 4 | AT&T | 3/8" | 3 | 147' | RET [3 Proposed] within 2" Conduit |
| 5 | Sprint | 1-1/4" | 4 | 138' | |
| 6 | T-Mobile | 1-5/8" | 18 | 127.5' | |

# Results

## Tower

The results of the structural analysis performed with the TES software are shown below. Table 5 shows the most critical member elements and the percentage of the force in the member with respect to the member capacity. Capacities of up to 105% are considered acceptable. The foundation reactions obtained from TES are shown in Table 6. Table 7 displays the twist and sway at service wind speeds. These reactions are used for the analysis of the foundation systems. Additional information for the tower analysis is provided within the Appendix.

*Table 5 Tower Analysis Summary*

| | Pole shafts | Anchor Bolts | Base Plate |
|---|---|---|---|
| **Max. Usage:** | 75.3% | 69.3% | 51.7% |
| **Pass/Fail** | Pass | Pass | Pass |

*Table 6 Tower Base Reactions*

| | Moment (Kip-Ft) | Shear (Kips) | Axial (Kips) |
|---|---|---|---|
| **Analysis Reactions** | 2500.7 | 24.0 | 54.4 |

*Table 7 Client mount modification / replacement*

| Tower stress with mount Modification / replacement | Tower stress without mount Modification / replacement | Difference |
|---|---|---|
| 75.30% | 74.00% | 1.30% |

## Foundation System

The results of the foundation based on the geotechnical report and foundation mapping or design drawings are shown below in Table 8. Additional information for the foundation analysis is provided within the Appendix.

*Table 8 Foundation Analysis Summary*

| Structural Component | % capacity | Analysis Result |
|---|---|---|
| **Foundation** | 74.9% | Pass |

# Appendix

# Usage Diagram - Max Ratio 75.33% at 0.0ft

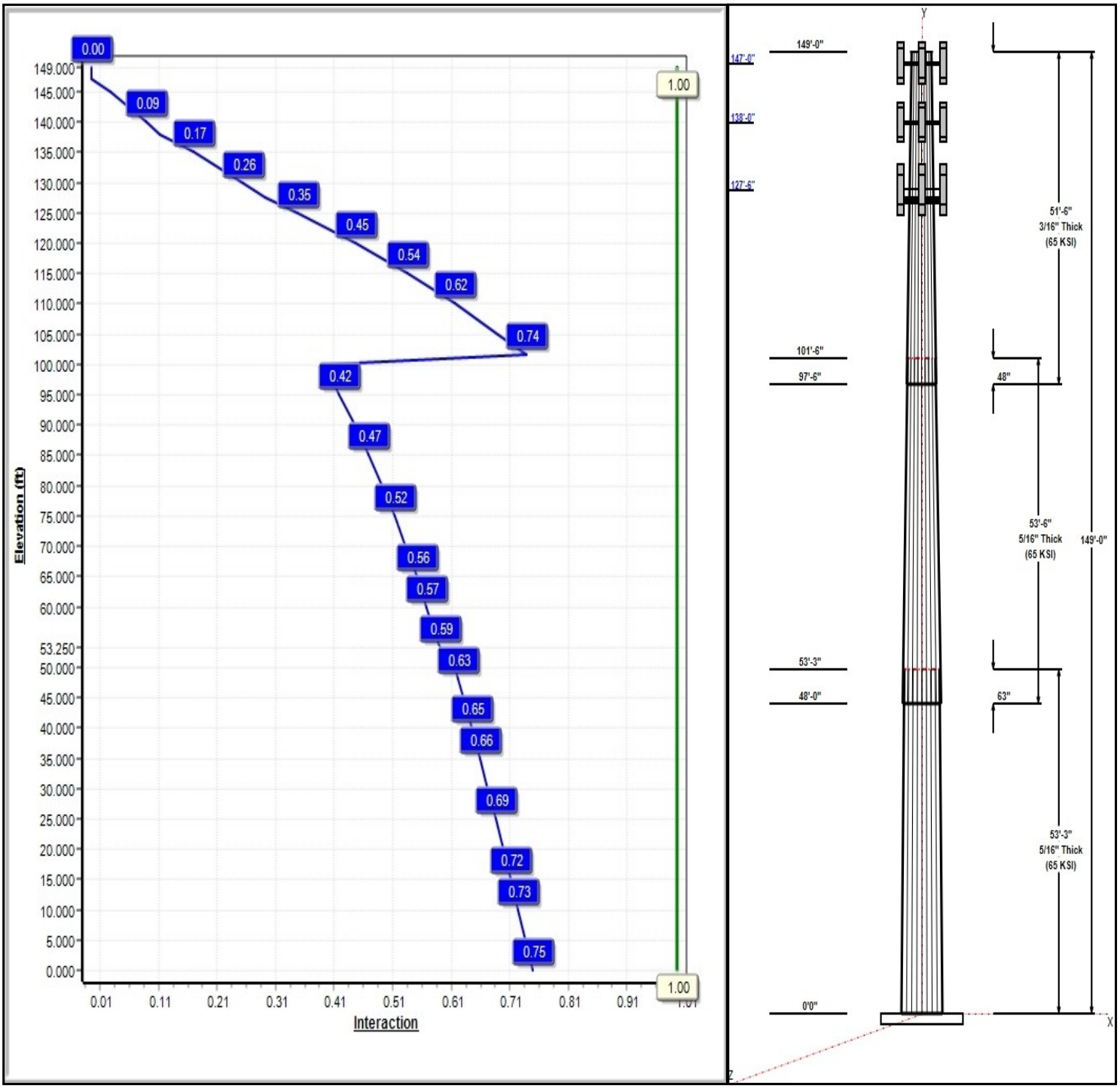
| | | | | |
|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | **Gh:** | 1.1 | |
| **Base Elev:** | 0.000 (ft) | | | Page: 1 |

| | |
|---|---|
| Dead Load Factor: | 1.20 |
| Wind Load Factor: | 1.60 |

**Load Case : 1.2D + 1.6W 93 mph Wind**

**Iterations:** 26





# Structure: CT13058-A

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

**Base Shape:** 18 Sided
**Taper:** 0.22000

1/24/2019



## Shaft Properties

| Seq | Length (ft) | Top (in) | Bottom (in) | Thic (in) | Joint Type | Taper | Grade ( si) |
|---|---|---|---|---|---|---|---|
| 1 | 53.25 | 40.31 | 52.03 | 0.313 | | 0.22000 | 65 |
| 2 | 53.50 | 30.32 | 42.09 | 0.313 | Slip | 0.22000 | 65 |
| 3 | 51.50 | 20.25 | 31.58 | 0.188 | Slip | 0.22000 | 65 |

## Discrete Appurtenances

| Attach Elev (ft) | Force Elev (ft) | Qty | Description | Carrier |
|---|---|---|---|---|
| 147.00 | 147.00 | 3 | CCI HPA65R-BU6A | AT&T |
| 147.00 | 147.00 | 3 | Ericsson RRUS 4449 B5, | AT&T |
| 147.00 | 147.00 | 3 | Ericsson RRUS 8843 B2 | AT&T |
| 147.00 | 147.00 | 3 | Handrail Kit P/N HRK-12 | AT&T |
| 147.00 | 147.00 | 3 | Kathrein 800 10965 | AT&T |
| 147.00 | 147.00 | 1 | Low Profile Platform | AT&T |
| 147.00 | 147.00 | 3 | Powerwave 7770.00 | AT&T |
| 147.00 | 147.00 | 6 | Powerwave LGP13519 | AT&T |
| 147.00 | 147.00 | 6 | Powerwave LGP21401 | AT&T |
| 147.00 | 147.00 | 1 | Raycap DC6-48-60-18-8C | AT&T |
| 147.00 | 147.00 | 1 | Raycap DC6-48-60-18-8F | AT&T |
| 138.00 | 138.00 | 3 | ALU 1900MHz | Sprint |
| 138.00 | 138.00 | 3 | ALU 800MHz | Sprint |
| 138.00 | 138.00 | 3 | ALU 800MHz RRH | Sprint |
| 138.00 | 138.00 | 3 | ALU TD-RRH8x20-25 | Sprint |
| 138.00 | 138.00 | 1 | Low Profile Platform | Sprint |
| 138.00 | 138.00 | 4 | RFS ACU-A20-N | Sprint |
| 138.00 | 138.00 | 3 | RFS APXVSPP18-C-A20 | Sprint |
| 138.00 | 138.00 | 3 | RFS APXVTM14-C-120 | Sprint |
| 127.50 | 127.50 | 3 | Commscope | T-Mobile |
| 127.50 | 127.50 | 3 | Kathrein 782 11054 | T-Mobile |
| 127.50 | 127.50 | 1 | Platform w/ Hand Rail | T-Mobile |
| 127.50 | 127.50 | 3 | Remec S20057A1 | T-Mobile |
| 127.50 | 127.50 | 3 | RFS | T-Mobile |
| 127.50 | 127.50 | 3 | RFS APXV18-209014-C | T-Mobile |
| 127.50 | 127.50 | 3 | RFS ATMAA1412D-1A20 | T-Mobile |
| 127.50 | 127.50 | 3 | RFS ATMPP1412D-1CWA | T-Mobile |

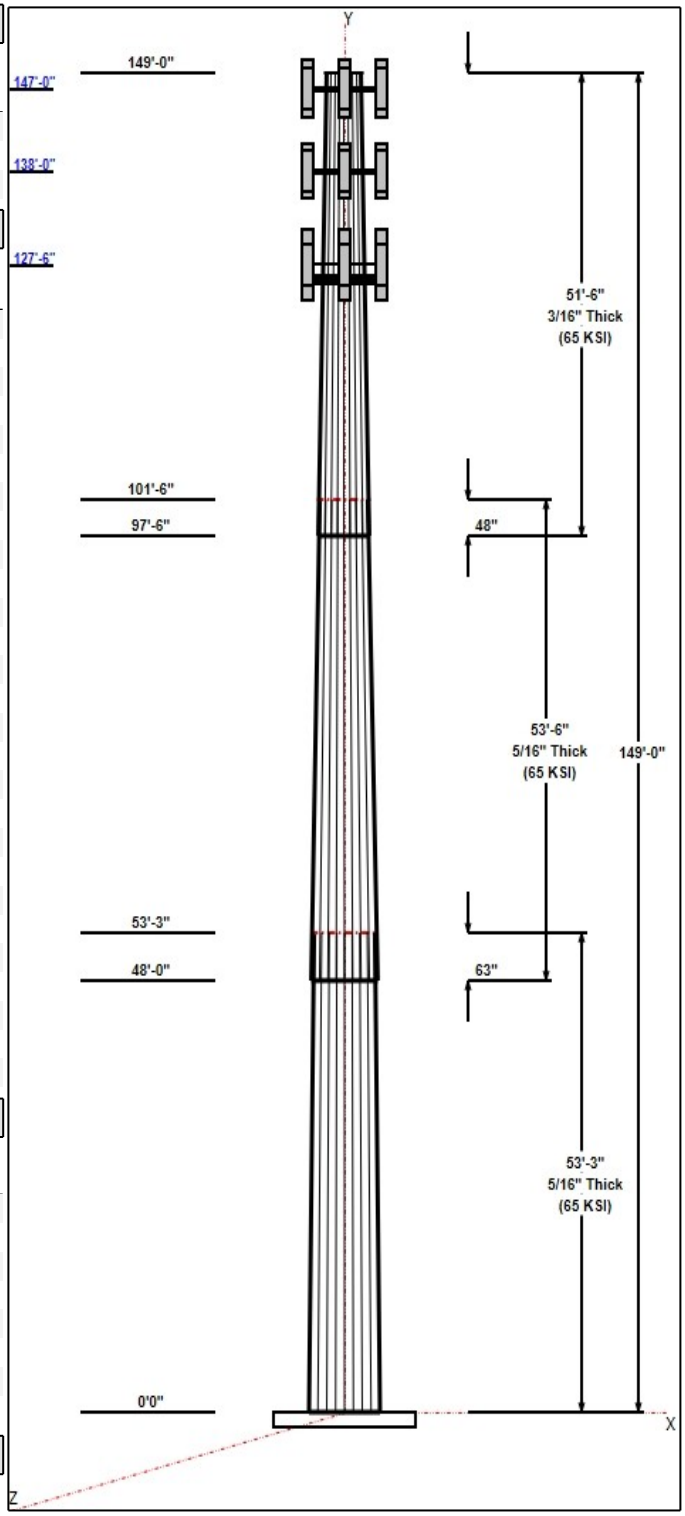
## Linear Appurtenances

| Elev From (ft) | Elev To (ft) | Placement | Description | Carrier |
|---|---|---|---|---|
| 0.00 | 147.00 | Inside | 1 5/8" Coax | AT&T |
| 0.00 | 147.00 | Inside | 1/2" Fiber | AT&T |
| 0.00 | 147.00 | Inside | 2" Conduit | AT&T |
| 0.00 | 147.00 | Inside | 3" Conduit | AT&T |
| 0.00 | 147.00 | Inside | 3/4" DC | AT&T |
| 0.00 | 147.00 | Inside | 3/8" RET | AT&T |
| 0.00 | 138.00 | Inside | 1 1/4" Coax | Sprint |
| 0.00 | 127.50 | Inside | 1 5/8" Coax | T-Mobile |

## Anchor Bolts

| Qty | Specifications | Grade ( si) | Arrangement |
|---|---|---|---|
| 12 | 2.25" 18J | 75.0 | Cluster |

## Base Plate



| Thic ness (in) | Specifications (in) | Grade ( si) | Geometry |
|---|---|---|---|
| 2.7500 | 56.0 | 60.0 | Clipped |

## Reactions

| Load Case | Moment | Shear | Axial |
|---|---|---|---|
| 1.2D + 1.6W 93 mph Wind | 2500.7 | 24.0 | 36.8 |
| 0.9D + 1.6W 93 mph Wind | 2467.4 | 24.0 | 27.6 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | 776.9 | 7.7 | 54.4 |
| 1.2D + 1.0E | 241.9 | 1.9 | 36.8 |
| 0.9D + 1.0E | 238.2 | 1.9 | 27.6 |
| 1.0D + 1.0W 60 mph Wind | 645.6 | 6.2 | 30.7 |

# Shaft Properties

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 5 |

| Sec. No. | Shape | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Overlap (in) | Weight (lb) |
|---|---|---|---|---|---|---|---|
| 1 | 18 | 53.250 | 0.3125 | 65 | | 0.00 | 8,242 |
| 2 | 18 | 53.500 | 0.3125 | 65 | Slip | 63.00 | 6,482 |
| 3 | 18 | 51.500 | 0.1875 | 65 | Slip | 48.00 | 2,683 |
| | | | | | **Total Shaft Weight:** | | **17,407** |

| | 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 | 52.03 | 0.00 | 51.30 | 17334.33 | 27.95 | 166.50 | 40.31 | 53.25 | 39.68 | 8021.50 | 21.34 | 129.0 | 0.220000 |
| 2 | 42.09 | 48.00 | 41.44 | 9140.66 | 22.34 | 134.70 | 30.32 | 101.50 | 29.77 | 3387.67 | 15.70 | 97.04 | 0.220000 |
| 3 | 31.58 | 97.50 | 18.68 | 2326.07 | 28.29 | 168.43 | 20.25 | 149.00 | 11.94 | 607.16 | 17.63 | 108.0 | 0.220000 |

# Load Summary

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 6 |

## Discrete Appurtenances

| No. | Elev (ft) | Description | Qty | No Ice Weight (lb) | No Ice CaAa (sf) | No Ice CaAa Factor | Ice Weight (lb) | Ice CaAa (sf) | Ice CaAa Factor | Hor. Ecc. (ft) | Vert Ecc (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 147.0 | CCI HPA65R-BU6A | 3 | 43.00 | 7.86 | 0.89 | 248.02 | 10.01 | 0.89 | 0.00 | 0.00 |
| 2 | 147.0 | Ericsson RRUS 4449 B5, B12 | 3 | 71.00 | 1.97 | 0.86 | 122.15 | 2.609 | 0.86 | 0.00 | 0.00 |
| 3 | 147.0 | Ericsson RRUS 8843 B2 B66A | 3 | 72.00 | 1.64 | 0.92 | 123.87 | 2.172 | 0.92 | 0.00 | 0.00 |
| 4 | 147.0 | Handrail Kit P/N HRK-12 | 3 | 272.43 | 2.97 | 0.75 | 517.77 | 5.431 | 0.75 | 0.00 | 0.00 |
| 5 | 147.0 | Kathrein 800 10965 | 3 | 108.60 | 13.81 | 0.70 | 397.39 | 15.71 | 0.70 | 0.00 | 0.00 |
| 6 | 147.0 | Low Profile Platform | 1 | 1500.00 | 22.00 | 1.00 | 2850.85 | 40.22 | 1.00 | 0.00 | 0.00 |
| 7 | 147.0 | Powerwave 7770.00 | 3 | 35.00 | 5.50 | 0.73 | 175.52 | 6.602 | 0.73 | 0.00 | 0.00 |
| 8 | 147.0 | Powerwave LGP13519 | 6 | 5.30 | 0.34 | 0.67 | 15.10 | 0.809 | 0.67 | 0.00 | 0.00 |
| 9 | 147.0 | Powerwave LGP21401 | 6 | 14.10 | 1.29 | 0.67 | 39.90 | 2.152 | 0.67 | 0.00 | 0.00 |
| 10 | 147.0 | Raycap DC6-48-60-18-8C | 1 | 20.00 | 1.90 | 1.00 | 60.13 | 2.834 | 1.00 | 0.00 | 0.00 |
| 11 | 147.0 | Raycap DC6-48-60-18-8F | 1 | 32.80 | 2.20 | 1.34 | 98.61 | 3.281 | 1.34 | 0.00 | 0.00 |
| 12 | 138.0 | ALU 1900MHz | 3 | 44.00 | 3.80 | 0.67 | 156.45 | 5.232 | 0.67 | 0.00 | 0.00 |
| 13 | 138.0 | ALU 800MHz | 3 | 8.80 | 0.78 | 0.67 | 26.97 | 1.446 | 0.67 | 0.00 | 0.00 |
| 14 | 138.0 | ALU 800MHz RRH | 3 | 68.30 | 3.46 | 0.67 | 161.47 | 4.814 | 0.67 | 0.00 | 0.00 |
| 15 | 138.0 | ALU TD-RRH8x20-25 | 3 | 70.00 | 4.05 | 0.67 | 95.17 | 4.341 | 0.67 | 0.00 | 0.00 |
| 16 | 138.0 | Low Profile Platform | 1 | 1500.00 | 22.00 | 1.00 | 2848.26 | 40.19 | 1.00 | 0.00 | 0.00 |
| 17 | 138.0 | RFS ACU-A20-N | 4 | 1.00 | 0.14 | 0.67 | 5.43 | 0.446 | 0.67 | 0.00 | 0.00 |
| 18 | 138.0 | RFS APXVSPP18-C-A20 | 3 | 57.00 | 8.02 | 0.83 | 263.89 | 9.356 | 0.83 | 0.00 | 0.00 |
| 19 | 138.0 | RFS APXVTM14-C-120 | 3 | 56.00 | 6.34 | 0.79 | 222.24 | 7.489 | 0.79 | 0.00 | 0.00 |
| 20 | 127.5 | Commscope LNX-6515DS-A1M | 3 | 49.80 | 11.47 | 0.80 | 322.24 | 13.15 | 0.80 | 0.00 | 0.00 |
| 21 | 127.5 | Kathrein 782 11054 | 3 | 2.60 | 0.28 | 0.67 | 9.31 | 0.693 | 0.67 | 0.00 | 0.00 |
| 22 | 127.5 | Platform w/ Hand Rail | 1 | 1600.00 | 35.00 | 1.00 | 3758.51 | 66.39 | 1.00 | 0.00 | 0.00 |
| 23 | 127.5 | Remec S20057A1 | 3 | 11.00 | 0.82 | 0.67 | 30.40 | 1.537 | 0.67 | 0.00 | 0.00 |
| 24 | 127.5 | RFS APX16DWV-16DWVS-C-A20 | 3 | 40.70 | 6.46 | 0.67 | 181.57 | 7.607 | 0.67 | 0.00 | 0.00 |
| 25 | 127.5 | RFS APXV18-209014-C | 3 | 18.70 | 3.58 | 0.74 | 110.64 | 4.540 | 0.74 | 0.00 | 0.00 |
| 26 | 127.5 | RFS ATMAA1412D-1A20 | 3 | 13.00 | 1.17 | 0.67 | 40.32 | 1.974 | 0.67 | 0.00 | 0.00 |
| 27 | 127.5 | RFS ATMPP1412D-1CWA | 3 | 12.50 | 1.17 | 0.67 | 37.66 | 1.992 | 0.67 | 0.00 | 0.00 |
| | | **Totals:** | **78** | **7,936.49** | | | **19,697.24** | | | | |

## Linear Appurtenances

| Bottom Elev. (ft) | Top Elev. (ft) | Description | Exposed Width | Exposed |
|---|---|---|---|---|
| 0.00 | 147.0 | (12) 1 5/8" Coax | 0.00 | Inside |
| 0.00 | 147.0 | (2) 1/2" Fiber | 0.00 | Inside |
| 0.00 | 147.0 | (1) 2" Conduit | 0.00 | Inside |
| 0.00 | 147.0 | (1) 3" Conduit | 0.00 | Inside |
| 0.00 | 147.0 | (4) 3/4" DC | 0.00 | Inside |
| 0.00 | 147.0 | (3) 3/8" RET | 0.00 | Inside |
| 0.00 | 138.0 | (4) 1 1/4" Coax | 0.00 | Inside |
| 0.00 | 127.5 | (18) 1 5/8" Coax | 0.00 | Inside |

# Shaft Section Properties

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 7 |

**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 | | 0.3125 | 52.030 | 51.295 | 17334.3 | 27.95 | 166.50 | 68.5 | 656.2 | 0.0 |
| 5.00 | | 0.3125 | 50.930 | 50.204 | 16251.6 | 27.33 | 162.98 | 69.3 | 628.5 | 863.5 |
| 10.00 | | 0.3125 | 49.830 | 49.113 | 15214.9 | 26.71 | 159.46 | 70.0 | 601.4 | 844.9 |
| 15.00 | | 0.3125 | 48.730 | 48.022 | 14223.3 | 26.09 | 155.94 | 70.7 | 574.9 | 826.3 |
| 20.00 | | 0.3125 | 47.630 | 46.931 | 13275.8 | 25.46 | 152.42 | 71.5 | 549.0 | 807.8 |
| 25.00 | | 0.3125 | 46.530 | 45.840 | 12371.3 | 24.84 | 148.90 | 72.2 | 523.7 | 789.2 |
| 30.00 | | 0.3125 | 45.430 | 44.749 | 11508.8 | 24.22 | 145.38 | 72.9 | 499.0 | 770.6 |
| 35.00 | | 0.3125 | 44.330 | 43.658 | 10687.4 | 23.60 | 141.86 | 73.6 | 474.8 | 752.1 |
| 40.00 | | 0.3125 | 43.230 | 42.567 | 9906.0 | 22.98 | 138.34 | 74.4 | 451.3 | 733.5 |
| 45.00 | | 0.3125 | 42.130 | 41.476 | 9163.7 | 22.36 | 134.82 | 75.1 | 428.4 | 715.0 |
| 48.00 | Bot - Section 2 | 0.3125 | 41.470 | 40.822 | 8736.6 | 21.99 | 132.70 | 75.5 | 414.9 | 420.1 |
| 50.00 | | 0.3125 | 41.030 | 40.385 | 8459.4 | 21.74 | 131.30 | 75.8 | 406.1 | 556.9 |
| 53.25 | Top - Section 1 | 0.3125 | 40.940 | 40.296 | 8403.4 | 21.69 | 131.01 | 0.0 | 0.0 | 892.3 |
| 55.00 | | 0.3125 | 40.555 | 39.914 | 8166.7 | 21.47 | 129.78 | 76.1 | 396.6 | 238.8 |
| 60.00 | | 0.3125 | 39.455 | 38.823 | 7515.2 | 20.85 | 126.26 | 76.9 | 375.2 | 669.8 |
| 65.00 | | 0.3125 | 38.355 | 37.732 | 6899.2 | 20.23 | 122.74 | 77.6 | 354.3 | 651.3 |
| 70.00 | | 0.3125 | 37.255 | 36.641 | 6317.9 | 19.61 | 119.22 | 78.3 | 334.0 | 632.7 |
| 75.00 | | 0.3125 | 36.155 | 35.550 | 5770.2 | 18.99 | 115.70 | 79.1 | 314.3 | 614.1 |
| 80.00 | | 0.3125 | 35.055 | 34.459 | 5255.1 | 18.37 | 112.18 | 79.8 | 295.3 | 595.6 |
| 85.00 | | 0.3125 | 33.955 | 33.368 | 4771.5 | 17.75 | 108.66 | 80.5 | 276.8 | 577.0 |
| 90.00 | | 0.3125 | 32.855 | 32.277 | 4318.6 | 17.13 | 105.14 | 81.3 | 258.9 | 558.4 |
| 95.00 | | 0.3125 | 31.755 | 31.186 | 3895.3 | 16.51 | 101.62 | 82.0 | 241.6 | 539.9 |
| 97.50 | Bot - Section 3 | 0.3125 | 31.205 | 30.640 | 3694.5 | 16.20 | 99.86 | 82.4 | 233.2 | 263.0 |
| 100.00 | | 0.3125 | 30.655 | 30.095 | 3500.6 | 15.89 | 98.10 | 82.5 | 224.9 | 415.9 |
| 101.50 | Top - Section 2 | 0.1875 | 30.700 | 18.158 | 2135.9 | 27.46 | 163.73 | 0.0 | 0.0 | 246.0 |
| 105.00 | | 0.1875 | 29.930 | 17.700 | 1978.2 | 26.74 | 159.63 | 70.0 | 130.2 | 213.5 |
| 110.00 | | 0.1875 | 28.830 | 17.045 | 1766.8 | 25.70 | 153.76 | 71.2 | 120.7 | 295.6 |
| 115.00 | | 0.1875 | 27.730 | 16.391 | 1570.9 | 24.67 | 147.89 | 72.4 | 111.6 | 284.4 |
| 120.00 | | 0.1875 | 26.630 | 15.736 | 1390.1 | 23.63 | 142.03 | 73.6 | 102.8 | 273.3 |
| 125.00 | | 0.1875 | 25.530 | 15.081 | 1223.8 | 22.60 | 136.16 | 74.8 | 94.4 | 262.2 |
| 127.50 | | 0.1875 | 24.980 | 14.754 | 1145.8 | 22.08 | 133.23 | 75.4 | 90.3 | 126.9 |
| 130.00 | | 0.1875 | 24.430 | 14.427 | 1071.2 | 21.56 | 130.29 | 76.0 | 86.4 | 124.1 |
| 135.00 | | 0.1875 | 23.330 | 13.772 | 931.9 | 20.53 | 124.43 | 77.3 | 78.7 | 239.9 |
| 138.00 | | 0.1875 | 22.670 | 13.379 | 854.4 | 19.91 | 120.91 | 78.0 | 74.2 | 138.6 |
| 140.00 | | 0.1875 | 22.230 | 13.118 | 805.2 | 19.49 | 118.56 | 78.5 | 71.3 | 90.2 |
| 145.00 | | 0.1875 | 21.130 | 12.463 | 690.6 | 18.46 | 112.69 | 79.7 | 64.4 | 217.6 |
| 147.00 | | 0.1875 | 20.690 | 12.201 | 648.0 | 18.05 | 110.35 | 80.2 | 61.7 | 83.9 |
| 149.00 | | 0.1875 | 20.250 | 11.939 | 607.2 | 17.63 | 108.00 | 80.7 | 59.1 | 82.1 |
| | | | | | | | | | | **17406.7** |

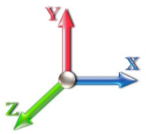
# Wind Loading - Shaft

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 8 | |

**Load Case:** 1.2D + 1.6W 93 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60




**Iterations** 26

| 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 | | 1.92 | 0.70 | 28.326 | 31.16 | 475.15 | 0.650 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.85 | 0.70 | 27.264 | 29.99 | 456.30 | 0.650 | 0.000 | 5.00 | 21.781 | 14.16 | 679.3 | 0.0 | 1036.1 |
| 10.00 | | 1.79 | 0.70 | 26.293 | 28.92 | 438.42 | 0.650 | 0.000 | 5.00 | 21.315 | 13.86 | 641.1 | 0.0 | 1013.9 |
| 15.00 | | 1.73 | 0.70 | 25.403 | 27.94 | 421.43 | 0.650 | 0.000 | 5.00 | 20.850 | 13.55 | 605.9 | 0.0 | 991.6 |
| 20.00 | | 1.67 | 0.70 | 24.587 | 27.05 | 405.25 | 0.650 | 0.000 | 5.00 | 20.385 | 13.25 | 573.4 | 0.0 | 969.3 |
| 25.00 | | 1.62 | 0.70 | 23.839 | 26.22 | 389.82 | 0.650 | 0.000 | 5.00 | 19.919 | 12.95 | 543.2 | 0.0 | 947.0 |
| 30.00 | | 1.57 | 0.70 | 23.171 | 25.49 | 375.24 | 0.650 | 0.000 | 5.00 | 19.454 | 12.65 | 515.7 | 0.0 | 924.8 |
| 35.00 | | 1.53 | 0.73 | 23.554 | 25.91 | 369.16 | 0.650 | 0.000 | 5.00 | 18.988 | 12.34 | 511.7 | 0.0 | 902.5 |
| 40.00 | | 1.49 | 0.76 | 23.839 | 26.22 | 362.17 | 0.650 | 0.000 | 5.00 | 18.523 | 12.04 | 505.2 | 0.0 | 880.2 |
| 45.00 | | 1.45 | 0.79 | 24.054 | 26.46 | 354.55 | 0.650 | 0.000 | 5.00 | 18.058 | 11.74 | 496.9 | 0.0 | 857.9 |
| 48.00 | Bot - Section 2 | 1.43 | 0.80 | 24.158 | 26.57 | 349.75 | 0.650 | 0.000 | 3.00 | 10.611 | 6.90 | 293.3 | 0.0 | 504.1 |
| 50.00 | | 1.42 | 0.81 | 24.219 | 26.64 | 346.47 | 0.650 | 0.000 | 2.00 | 7.087 | 4.61 | 196.4 | 0.0 | 668.3 |
| 53.25 | Top - Section 1 | 1.40 | 0.83 | 24.306 | 26.74 | 341.04 | 0.650 | 0.000 | 3.25 | 11.357 | 7.38 | 315.8 | 0.0 | 1070.7 |
| 55.00 | | 1.39 | 0.83 | 24.348 | 26.78 | 343.37 | 0.650 | 0.000 | 1.75 | 6.034 | 3.92 | 168.1 | 0.0 | 286.6 |
| 60.00 | | 1.36 | 0.85 | 24.450 | 26.89 | 334.75 | 0.650 | 0.000 | 5.00 | 16.926 | 11.00 | 473.4 | 0.0 | 803.8 |
| 65.00 | | 1.33 | 0.87 | 24.533 | 26.99 | 325.97 | 0.650 | 0.000 | 5.00 | 16.460 | 10.70 | 462.0 | 0.0 | 781.5 |
| 70.00 | | 1.31 | 0.89 | 24.603 | 27.06 | 317.08 | 0.650 | 0.000 | 5.00 | 15.995 | 10.40 | 450.2 | 0.0 | 759.2 |
| 75.00 | | 1.29 | 0.91 | 24.664 | 27.13 | 308.10 | 0.650 | 0.000 | 5.00 | 15.530 | 10.09 | 438.2 | 0.0 | 737.0 |
| 80.00 | | 1.27 | 0.93 | 24.720 | 27.19 | 299.06 | 0.650 | 0.000 | 5.00 | 15.064 | 9.79 | 426.0 | 0.0 | 714.7 |
| 85.00 | | 1.25 | 0.94 | 24.772 | 27.25 | 289.98 | 0.650 | 0.000 | 5.00 | 14.599 | 9.49 | 413.7 | 0.0 | 692.4 |
| 90.00 | | 1.23 | 0.96 | 24.823 | 27.30 | 280.87 | 0.650 | 0.000 | 5.00 | 14.133 | 9.19 | 401.3 | 0.0 | 670.1 |
| 95.00 | | 1.21 | 0.97 | 24.873 | 27.36 | 271.75 | 0.650 | 0.000 | 5.00 | 13.668 | 8.88 | 388.9 | 0.0 | 647.8 |
| 97.50 | Bot - Section 3 | 1.21 | 0.98 | 24.899 | 27.39 | 267.18 | 0.650 | 0.000 | 2.50 | 6.660 | 4.33 | 189.7 | 0.0 | 315.6 |
| 100.00 | | 1.20 | 0.99 | 24.925 | 27.42 | 262.60 | 0.650 | 0.000 | 2.50 | 6.622 | 4.30 | 188.8 | 0.0 | 499.0 |
| 101.50 | Top - Section 2 | 1.19 | 0.99 | 24.941 | 27.43 | 259.86 | 0.650 | 0.000 | 1.50 | 3.918 | 2.55 | 111.8 | 0.0 | 295.1 |
| 105.00 | | 1.18 | 1.00 | 24.978 | 27.48 | 256.67 | 0.650 | 0.000 | 3.50 | 8.978 | 5.84 | 256.6 | 0.0 | 256.2 |
| 110.00 | | 1.17 | 1.02 | 25.034 | 27.54 | 247.51 | 0.650 | 0.000 | 5.00 | 12.431 | 8.08 | 356.0 | 0.0 | 354.7 |
| 115.00 | | 1.16 | 1.03 | 25.092 | 27.60 | 238.34 | 0.650 | 0.000 | 5.00 | 11.965 | 7.78 | 343.5 | 0.0 | 341.3 |
| 120.00 | | 1.15 | 1.04 | 25.154 | 27.67 | 229.17 | 0.650 | 0.000 | 5.00 | 11.500 | 7.47 | 330.9 | 0.0 | 328.0 |
| 125.00 | | 1.14 | 1.05 | 25.218 | 27.74 | 219.98 | 0.650 | 0.000 | 5.00 | 11.034 | 7.17 | 318.3 | 0.0 | 314.6 |
| 127.50 | Appurtenance(s) | 1.13 | 1.06 | 25.252 | 27.78 | 215.39 | 0.650 | 0.000 | 2.50 | 5.343 | 3.47 | 154.3 | 0.0 | 152.3 |
| 130.00 | | 1.13 | 1.07 | 25.286 | 27.81 | 210.79 | 0.650 | 0.000 | 2.50 | 5.226 | 3.40 | 151.2 | 0.0 | 148.9 |
| 135.00 | | 1.12 | 1.08 | 25.357 | 27.89 | 201.58 | 0.650 | 0.000 | 5.00 | 10.103 | 6.57 | 293.1 | 0.0 | 287.9 |
| 138.00 | Appurtenance(s) | 1.11 | 1.08 | 25.401 | 27.94 | 196.05 | 0.650 | 0.000 | 3.00 | 5.839 | 3.80 | 169.7 | 0.0 | 166.3 |
| 140.00 | | 1.11 | 1.09 | 25.431 | 27.97 | 192.36 | 0.650 | 0.000 | 2.00 | 3.799 | 2.47 | 110.5 | 0.0 | 108.2 |
| 145.00 | | 1.10 | 1.10 | 25.509 | 28.06 | 183.12 | 0.650 | 0.000 | 5.00 | 9.173 | 5.96 | 267.7 | 0.0 | 261.1 |
| 147.00 | Appurtenance(s) | 1.10 | 1.10 | 25.541 | 28.09 | 179.42 | 0.650 | 0.000 | 2.00 | 3.539 | 2.30 | 103.4 | 0.0 | 100.7 |
| 149.00 | | 1.10 | 1.11 | 25.573 | 28.13 | 175.71 | 0.650 | 0.000 | 2.00 | 3.464 | 2.25 | 101.4 | 0.0 | 98.6 |
| | | | | | | | | **Totals:** | **149.00** | | | **12,946.5** | | **20,888.1** |

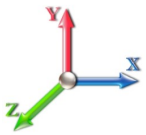
# Discrete Appurtenance Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 9 | |

**Load Case:** 1.2D + 1.6W 93 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60




**Iterations** 26

| 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 | 147.00 | Kathrein 800 10965 | 3 | 25.541 | 28.095 | 0.63 | 0.90 | 26.10 | 390.96 | 0.000 | 0.000 | 1173.28 | 0.00 | 0.00 |
| 2 | 147.00 | CCI HPA65R-BU6A | 3 | 25.541 | 28.095 | 0.80 | 0.90 | 18.89 | 154.80 | 0.000 | 0.000 | 849.03 | 0.00 | 0.00 |
| 3 | 147.00 | Ericsson RRUS 4449 B5, | 3 | 25.541 | 28.095 | 0.69 | 0.80 | 4.07 | 255.60 | 0.000 | 0.000 | 182.78 | 0.00 | 0.00 |
| 4 | 147.00 | Ericsson RRUS 8843 B2 | 3 | 25.541 | 28.095 | 0.74 | 0.80 | 3.62 | 259.20 | 0.000 | 0.000 | 162.78 | 0.00 | 0.00 |
| 5 | 147.00 | Handrail Kit P/N HRK-12 | 3 | 25.541 | 28.095 | 0.56 | 0.75 | 5.01 | 980.75 | 0.000 | 0.000 | 225.29 | 0.00 | 0.00 |
| 6 | 147.00 | Raycap DC6-48-60-18-8F | 1 | 25.541 | 28.095 | 1.07 | 0.80 | 2.36 | 39.36 | 0.000 | 0.000 | 106.01 | 0.00 | 0.00 |
| 7 | 147.00 | Low Profile Platform | 1 | 25.541 | 28.095 | 1.00 | 1.00 | 22.00 | 1800.00 | 0.000 | 0.000 | 988.94 | 0.00 | 0.00 |
| 8 | 147.00 | Powerwave 7770.00 | 3 | 25.541 | 28.095 | 0.66 | 0.90 | 10.84 | 126.00 | 0.000 | 0.000 | 487.30 | 0.00 | 0.00 |
| 9 | 147.00 | Powerwave LGP13519 | 6 | 25.541 | 28.095 | 0.54 | 0.80 | 1.09 | 38.16 | 0.000 | 0.000 | 49.15 | 0.00 | 0.00 |
| 10 | 147.00 | Powerwave LGP21401 | 6 | 25.541 | 28.095 | 0.54 | 0.80 | 4.15 | 101.52 | 0.000 | 0.000 | 186.49 | 0.00 | 0.00 |
| 11 | 147.00 | Raycap DC6-48-60-18-8C | 1 | 25.541 | 28.095 | 0.80 | 0.80 | 1.52 | 24.00 | 0.000 | 0.000 | 68.33 | 0.00 | 0.00 |
| 12 | 138.00 | RFS APXVTM14-C-120 | 3 | 25.401 | 27.941 | 0.63 | 0.80 | 12.02 | 201.60 | 0.000 | 0.000 | 537.40 | 0.00 | 0.00 |
| 13 | 138.00 | RFS APXVSPP18-C-A20 | 3 | 25.401 | 27.941 | 0.66 | 0.80 | 15.98 | 205.20 | 0.000 | 0.000 | 714.22 | 0.00 | 0.00 |
| 14 | 138.00 | RFS ACU-A20-N | 4 | 25.401 | 27.941 | 0.54 | 0.80 | 0.30 | 4.80 | 0.000 | 0.000 | 13.42 | 0.00 | 0.00 |
| 15 | 138.00 | ALU TD-RRH8x20-25 | 3 | 25.401 | 27.941 | 0.54 | 0.80 | 6.51 | 252.00 | 0.000 | 0.000 | 291.14 | 0.00 | 0.00 |
| 16 | 138.00 | ALU 800MHz RRH | 3 | 25.401 | 27.941 | 0.54 | 0.80 | 5.56 | 245.88 | 0.000 | 0.000 | 248.73 | 0.00 | 0.00 |
| 17 | 138.00 | ALU 800MHz | 3 | 25.401 | 27.941 | 0.54 | 0.80 | 1.25 | 31.68 | 0.000 | 0.000 | 56.07 | 0.00 | 0.00 |
| 18 | 138.00 | ALU 1900MHz | 3 | 25.401 | 27.941 | 0.54 | 0.80 | 6.11 | 158.40 | 0.000 | 0.000 | 273.17 | 0.00 | 0.00 |
| 19 | 138.00 | Low Profile Platform | 1 | 25.401 | 27.941 | 1.00 | 1.00 | 22.00 | 1800.00 | 0.000 | 0.000 | 983.54 | 0.00 | 0.00 |
| 20 | 127.50 | Remec S20057A1 | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 1.24 | 39.60 | 0.000 | 0.000 | 54.94 | 0.00 | 0.00 |
| 21 | 127.50 | Commscope | 3 | 25.252 | 27.777 | 0.60 | 0.75 | 20.65 | 179.28 | 0.000 | 0.000 | 917.57 | 0.00 | 0.00 |
| 22 | 127.50 | Kathrein 782 11054 | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 0.42 | 9.36 | 0.000 | 0.000 | 18.76 | 0.00 | 0.00 |
| 23 | 127.50 | Platform w/ Hand Rail | 1 | 25.252 | 27.777 | 1.00 | 1.00 | 35.00 | 1920.00 | 0.000 | 0.000 | 1555.50 | 0.00 | 0.00 |
| 24 | 127.50 | RFS ATMAA1412D-1A20 | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 1.76 | 46.80 | 0.000 | 0.000 | 78.39 | 0.00 | 0.00 |
| 25 | 127.50 | RFS | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 9.74 | 146.52 | 0.000 | 0.000 | 432.80 | 0.00 | 0.00 |
| 26 | 127.50 | RFS APXV18-209014-C | 3 | 25.252 | 27.777 | 0.55 | 0.75 | 5.96 | 67.32 | 0.000 | 0.000 | 264.91 | 0.00 | 0.00 |
| 27 | 127.50 | RFS | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 1.76 | 45.00 | 0.000 | 0.000 | 78.39 | 0.00 | 0.00 |
| | | | | | | | **Totals:** | | **9,523.79** | | | **10,998.32** | | |

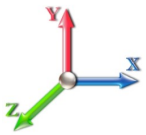
# Total Applied Force Summary

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 10 |

**Load Case:** 1.2D + 1.6W 93 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60




**Iterations** 26

| 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 | | 679.35 | 1269.90 | 0.00 | 0.00 |
| 10.00 | | 641.14 | 1247.63 | 0.00 | 0.00 |
| 15.00 | | 605.92 | 1225.35 | 0.00 | 0.00 |
| 20.00 | | 573.38 | 1203.08 | 0.00 | 0.00 |
| 25.00 | | 543.23 | 1180.80 | 0.00 | 0.00 |
| 30.00 | | 515.68 | 1158.53 | 0.00 | 0.00 |
| 35.00 | | 511.66 | 1136.25 | 0.00 | 0.00 |
| 40.00 | | 505.16 | 1113.98 | 0.00 | 0.00 |
| 45.00 | | 496.91 | 1091.70 | 0.00 | 0.00 |
| 48.00 | | 293.26 | 644.33 | 0.00 | 0.00 |
| 50.00 | | 196.35 | 761.76 | 0.00 | 0.00 |
| 53.25 | | 315.80 | 1222.65 | 0.00 | 0.00 |
| 55.00 | | 168.07 | 368.40 | 0.00 | 0.00 |
| 60.00 | | 473.43 | 1037.54 | 0.00 | 0.00 |
| 65.00 | | 461.98 | 1015.26 | 0.00 | 0.00 |
| 70.00 | | 450.20 | 992.99 | 0.00 | 0.00 |
| 75.00 | | 438.19 | 970.71 | 0.00 | 0.00 |
| 80.00 | | 426.01 | 948.43 | 0.00 | 0.00 |
| 85.00 | | 413.72 | 926.16 | 0.00 | 0.00 |
| 90.00 | | 401.35 | 903.88 | 0.00 | 0.00 |
| 95.00 | | 388.92 | 881.61 | 0.00 | 0.00 |
| 97.50 | | 189.69 | 432.45 | 0.00 | 0.00 |
| 100.00 | | 188.83 | 615.92 | 0.00 | 0.00 |
| 101.50 | | 111.78 | 365.28 | 0.00 | 0.00 |
| 105.00 | | 256.55 | 419.87 | 0.00 | 0.00 |
| 110.00 | | 355.99 | 588.45 | 0.00 | 0.00 |
| 115.00 | | 343.46 | 575.08 | 0.00 | 0.00 |
| 120.00 | | 330.91 | 561.72 | 0.00 | 0.00 |
| 125.00 | | 318.33 | 548.35 | 0.00 | 0.00 |
| 127.50 | (22) attachments | 3555.59 | 2723.05 | 0.00 | 0.00 |
| 130.00 | | 151.18 | 209.66 | 0.00 | 0.00 |
| 135.00 | | 293.09 | 409.30 | 0.00 | 0.00 |
| 138.00 | (23) attachments | 3287.36 | 3138.73 | 0.00 | 0.00 |
| 140.00 | | 110.54 | 150.44 | 0.00 | 0.00 |
| 145.00 | | 267.68 | 366.73 | 0.00 | 0.00 |
| 147.00 | (33) attachments | 4582.77 | 4313.30 | 0.00 | 0.00 |
| 149.00 | | 101.35 | 98.57 | 0.00 | 0.00 |
| | **Totals:** | **23,944.83** | **36,817.87** | **0.00** | **0.00** |

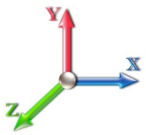
# Calculated Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 11 | |

**Load Case:** 1.2D + 1.6W 93 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60




**Iterations** 26

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | -36.77 | -24.01 | 0.00 | -2500.6 | 0.00 | 2500.66 | 3163.75 | 1581.88 | 6735.38 | 3372.69 | 0.00 | 0.000 | 0.000 | 0.753 |
| 5.00 | -35.42 | -23.45 | 0.00 | -2380.6 | 0.00 | 2380.61 | 3129.45 | 1564.72 | 6519.79 | 3264.74 | 0.11 | -0.200 | 0.000 | 0.741 |
| 10.00 | -34.10 | -22.93 | 0.00 | -2263.3 | 0.00 | 2263.34 | 3093.71 | 1546.85 | 6304.40 | 3156.89 | 0.43 | -0.404 | 0.000 | 0.728 |
| 15.00 | -32.80 | -22.43 | 0.00 | -2148.7 | 0.00 | 2148.70 | 3056.53 | 1528.27 | 6089.41 | 3049.23 | 0.96 | -0.610 | 0.000 | 0.716 |
| 20.00 | -31.52 | -21.96 | 0.00 | -2036.5 | 0.00 | 2036.55 | 3017.92 | 1508.96 | 5875.02 | 2941.88 | 1.71 | -0.819 | 0.000 | 0.703 |
| 25.00 | -30.27 | -21.51 | 0.00 | -1926.7 | 0.00 | 1926.77 | 2977.88 | 1488.94 | 5661.42 | 2834.92 | 2.68 | -1.031 | 0.000 | 0.690 |
| 30.00 | -29.04 | -21.08 | 0.00 | -1819.2 | 0.00 | 1819.22 | 2936.41 | 1468.20 | 5448.81 | 2728.46 | 3.88 | -1.247 | 0.000 | 0.677 |
| 35.00 | -27.84 | -20.65 | 0.00 | -1713.8 | 0.00 | 1713.83 | 2893.50 | 1446.75 | 5237.39 | 2622.59 | 5.30 | -1.465 | 0.000 | 0.663 |
| 40.00 | -26.66 | -20.22 | 0.00 | -1610.5 | 0.00 | 1610.58 | 2849.16 | 1424.58 | 5027.34 | 2517.41 | 6.95 | -1.686 | 0.000 | 0.649 |
| 45.00 | -25.52 | -19.77 | 0.00 | -1509.5 | 0.00 | 1509.50 | 2803.38 | 1401.69 | 4818.87 | 2413.02 | 8.84 | -1.910 | 0.000 | 0.635 |
| 48.00 | -24.85 | -19.50 | 0.00 | -1450.2 | 0.00 | 1450.20 | 2775.23 | 1387.61 | 4694.62 | 2350.80 | 10.09 | -2.048 | 0.000 | 0.626 |
| 50.00 | -24.05 | -19.33 | 0.00 | -1411.2 | 0.00 | 1411.20 | 2756.17 | 1378.09 | 4612.17 | 2309.51 | 10.96 | -2.141 | 0.000 | 0.620 |
| 53.25 | -22.81 | -19.01 | 0.00 | -1348.3 | 0.00 | 1348.39 | 2752.25 | 1376.12 | 4595.34 | 2301.09 | 12.47 | -2.292 | 0.000 | 0.594 |
| 55.00 | -22.39 | -18.89 | 0.00 | -1315.1 | 0.00 | 1315.12 | 2735.34 | 1367.67 | 4523.51 | 2265.12 | 13.33 | -2.375 | 0.000 | 0.589 |
| 60.00 | -21.31 | -18.45 | 0.00 | -1220.6 | 0.00 | 1220.67 | 2686.08 | 1343.04 | 4319.69 | 2163.06 | 15.93 | -2.596 | 0.000 | 0.572 |
| 65.00 | -20.24 | -18.02 | 0.00 | -1128.4 | 0.00 | 1128.41 | 2635.39 | 1317.69 | 4118.12 | 2062.12 | 18.77 | -2.818 | 0.000 | 0.555 |
| 70.00 | -19.21 | -17.60 | 0.00 | -1038.3 | 0.00 | 1038.30 | 2583.26 | 1291.63 | 3918.99 | 1962.41 | 21.84 | -3.041 | 0.000 | 0.537 |
| 75.00 | -18.20 | -17.18 | 0.00 | -950.31 | 0.00 | 950.31 | 2529.69 | 1264.85 | 3722.50 | 1864.02 | 25.15 | -3.265 | 0.000 | 0.517 |
| 80.00 | -17.21 | -16.76 | 0.00 | -864.43 | 0.00 | 864.43 | 2474.70 | 1237.35 | 3528.85 | 1767.05 | 28.68 | -3.489 | 0.000 | 0.496 |
| 85.00 | -16.25 | -16.36 | 0.00 | -780.61 | 0.00 | 780.61 | 2418.27 | 1209.13 | 3338.22 | 1671.59 | 32.46 | -3.712 | 0.000 | 0.474 |
| 90.00 | -15.31 | -15.95 | 0.00 | -698.83 | 0.00 | 698.83 | 2360.40 | 1180.20 | 3150.83 | 1577.76 | 36.46 | -3.932 | 0.000 | 0.450 |
| 95.00 | -14.42 | -15.54 | 0.00 | -619.07 | 0.00 | 619.07 | 2301.11 | 1150.55 | 2966.86 | 1485.64 | 40.69 | -4.149 | 0.000 | 0.423 |
| 97.50 | -13.97 | -15.35 | 0.00 | -580.21 | 0.00 | 580.21 | 2270.92 | 1135.46 | 2876.22 | 1440.25 | 42.89 | -4.259 | 0.000 | 0.409 |
| 100.00 | -13.35 | -15.14 | 0.00 | -541.83 | 0.00 | 541.83 | 2235.90 | 1117.95 | 2780.94 | 1392.54 | 45.15 | -4.367 | 0.000 | 0.395 |
| 101.50 | -12.96 | -15.02 | 0.00 | -519.13 | 0.00 | 519.13 | 1129.30 | 564.65 | 1418.29 | 710.20 | 46.53 | -4.431 | 0.000 | 0.743 |
| 105.00 | -12.51 | -14.78 | 0.00 | -466.56 | 0.00 | 466.56 | 1114.37 | 557.18 | 1364.00 | 683.02 | 49.83 | -4.576 | 0.000 | 0.695 |
| 110.00 | -11.87 | -14.44 | 0.00 | -392.66 | 0.00 | 392.66 | 1091.82 | 545.91 | 1286.67 | 644.29 | 54.79 | -4.885 | 0.000 | 0.621 |
| 115.00 | -11.26 | -14.10 | 0.00 | -320.46 | 0.00 | 320.46 | 1067.84 | 533.92 | 1209.76 | 605.78 | 60.06 | -5.172 | 0.000 | 0.540 |
| 120.00 | -10.68 | -13.76 | 0.00 | -249.95 | 0.00 | 249.95 | 1042.42 | 521.21 | 1133.48 | 567.58 | 65.61 | -5.431 | 0.000 | 0.451 |
| 125.00 | -10.13 | -13.42 | 0.00 | -181.13 | 0.00 | 181.13 | 1015.57 | 507.79 | 1058.03 | 529.80 | 71.41 | -5.651 | 0.000 | 0.353 |
| 127.50 | -7.75 | -9.63 | 0.00 | -147.57 | 0.00 | 147.57 | 1001.61 | 500.80 | 1020.67 | 511.09 | 74.39 | -5.747 | 0.000 | 0.297 |
| 130.00 | -7.54 | -9.47 | 0.00 | -123.51 | 0.00 | 123.51 | 987.29 | 493.64 | 983.59 | 492.52 | 77.42 | -5.831 | 0.000 | 0.259 |
| 135.00 | -7.15 | -9.15 | 0.00 | -76.17 | 0.00 | 76.17 | 957.57 | 478.78 | 910.36 | 455.86 | 83.59 | -5.963 | 0.000 | 0.175 |
| 138.00 | -4.37 | -5.55 | 0.00 | -48.73 | 0.00 | 48.73 | 939.05 | 469.53 | 867.09 | 434.19 | 87.35 | -6.021 | 0.000 | 0.117 |
| 140.00 | -4.23 | -5.43 | 0.00 | -37.62 | 0.00 | 37.62 | 926.42 | 463.21 | 838.55 | 419.90 | 89.88 | -6.049 | 0.000 | 0.094 |
| 145.00 | -3.89 | -5.13 | 0.00 | -10.47 | 0.00 | 10.47 | 893.83 | 446.92 | 768.34 | 384.74 | 96.23 | -6.092 | 0.000 | 0.032 |
| 147.00 | -0.09 | -0.11 | 0.00 | -0.22 | 0.00 | 0.22 | 880.40 | 440.20 | 740.75 | 370.92 | 98.78 | -6.096 | 0.000 | 0.001 |
| 149.00 | 0.00 | -0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 866.73 | 433.37 | 713.46 | 357.26 | 101.33 | -6.096 | 0.000 | 0.000 |

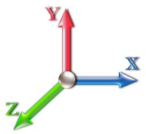
# Wind Loading - Shaft

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 12 | |

**Load Case:** 0.9D + 1.6W 93 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60




**Iterations** 25

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | 1.92 | 0.70 | 28.326 | 31.16 | 475.15 | 0.650 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.85 | 0.70 | 27.264 | 29.99 | 456.30 | 0.650 | 0.000 | 5.00 | 21.781 | 14.16 | 679.3 | 0.0 | 777.1 |
| 10.00 | | 1.79 | 0.70 | 26.293 | 28.92 | 438.42 | 0.650 | 0.000 | 5.00 | 21.315 | 13.86 | 641.1 | 0.0 | 760.4 |
| 15.00 | | 1.73 | 0.70 | 25.403 | 27.94 | 421.43 | 0.650 | 0.000 | 5.00 | 20.850 | 13.55 | 605.9 | 0.0 | 743.7 |
| 20.00 | | 1.67 | 0.70 | 24.587 | 27.05 | 405.25 | 0.650 | 0.000 | 5.00 | 20.385 | 13.25 | 573.4 | 0.0 | 727.0 |
| 25.00 | | 1.62 | 0.70 | 23.839 | 26.22 | 389.82 | 0.650 | 0.000 | 5.00 | 19.919 | 12.95 | 543.2 | 0.0 | 710.3 |
| 30.00 | | 1.57 | 0.70 | 23.171 | 25.49 | 375.24 | 0.650 | 0.000 | 5.00 | 19.454 | 12.65 | 515.7 | 0.0 | 693.6 |
| 35.00 | | 1.53 | 0.73 | 23.554 | 25.91 | 369.16 | 0.650 | 0.000 | 5.00 | 18.988 | 12.34 | 511.7 | 0.0 | 676.9 |
| 40.00 | | 1.49 | 0.76 | 23.839 | 26.22 | 362.17 | 0.650 | 0.000 | 5.00 | 18.523 | 12.04 | 505.2 | 0.0 | 660.2 |
| 45.00 | | 1.45 | 0.79 | 24.054 | 26.46 | 354.55 | 0.650 | 0.000 | 5.00 | 18.058 | 11.74 | 496.9 | 0.0 | 643.5 |
| 48.00 | Bot - Section 2 | 1.43 | 0.80 | 24.158 | 26.57 | 349.75 | 0.650 | 0.000 | 3.00 | 10.611 | 6.90 | 293.3 | 0.0 | 378.1 |
| 50.00 | | 1.42 | 0.81 | 24.219 | 26.64 | 346.47 | 0.650 | 0.000 | 2.00 | 7.087 | 4.61 | 196.4 | 0.0 | 501.2 |
| 53.25 | Top - Section 1 | 1.40 | 0.83 | 24.306 | 26.74 | 341.04 | 0.650 | 0.000 | 3.25 | 11.357 | 7.38 | 315.8 | 0.0 | 803.0 |
| 55.00 | | 1.39 | 0.83 | 24.348 | 26.78 | 343.37 | 0.650 | 0.000 | 1.75 | 6.034 | 3.92 | 168.1 | 0.0 | 214.9 |
| 60.00 | | 1.36 | 0.85 | 24.450 | 26.89 | 334.75 | 0.650 | 0.000 | 5.00 | 16.926 | 11.00 | 473.4 | 0.0 | 602.8 |
| 65.00 | | 1.33 | 0.87 | 24.533 | 26.99 | 325.97 | 0.650 | 0.000 | 5.00 | 16.460 | 10.70 | 462.0 | 0.0 | 586.1 |
| 70.00 | | 1.31 | 0.89 | 24.603 | 27.06 | 317.08 | 0.650 | 0.000 | 5.00 | 15.995 | 10.40 | 450.2 | 0.0 | 569.4 |
| 75.00 | | 1.29 | 0.91 | 24.664 | 27.13 | 308.10 | 0.650 | 0.000 | 5.00 | 15.530 | 10.09 | 438.2 | 0.0 | 552.7 |
| 80.00 | | 1.27 | 0.93 | 24.720 | 27.19 | 299.06 | 0.650 | 0.000 | 5.00 | 15.064 | 9.79 | 426.0 | 0.0 | 536.0 |
| 85.00 | | 1.25 | 0.94 | 24.772 | 27.25 | 289.98 | 0.650 | 0.000 | 5.00 | 14.599 | 9.49 | 413.7 | 0.0 | 519.3 |
| 90.00 | | 1.23 | 0.96 | 24.823 | 27.30 | 280.87 | 0.650 | 0.000 | 5.00 | 14.133 | 9.19 | 401.3 | 0.0 | 502.6 |
| 95.00 | | 1.21 | 0.97 | 24.873 | 27.36 | 271.75 | 0.650 | 0.000 | 5.00 | 13.668 | 8.88 | 388.9 | 0.0 | 485.9 |
| 97.50 | Bot - Section 3 | 1.21 | 0.98 | 24.899 | 27.39 | 267.18 | 0.650 | 0.000 | 2.50 | 6.660 | 4.33 | 189.7 | 0.0 | 236.7 |
| 100.00 | | 1.20 | 0.99 | 24.925 | 27.42 | 262.60 | 0.650 | 0.000 | 2.50 | 6.622 | 4.30 | 188.8 | 0.0 | 374.3 |
| 101.50 | Top - Section 2 | 1.19 | 0.99 | 24.941 | 27.43 | 259.86 | 0.650 | 0.000 | 1.50 | 3.918 | 2.55 | 111.8 | 0.0 | 221.4 |
| 105.00 | | 1.18 | 1.00 | 24.978 | 27.48 | 256.67 | 0.650 | 0.000 | 3.50 | 8.978 | 5.84 | 256.6 | 0.0 | 192.2 |
| 110.00 | | 1.17 | 1.02 | 25.034 | 27.54 | 247.51 | 0.650 | 0.000 | 5.00 | 12.431 | 8.08 | 356.0 | 0.0 | 266.0 |
| 115.00 | | 1.16 | 1.03 | 25.092 | 27.60 | 238.34 | 0.650 | 0.000 | 5.00 | 11.965 | 7.78 | 343.5 | 0.0 | 256.0 |
| 120.00 | | 1.15 | 1.04 | 25.154 | 27.67 | 229.17 | 0.650 | 0.000 | 5.00 | 11.500 | 7.47 | 330.9 | 0.0 | 246.0 |
| 125.00 | | 1.14 | 1.05 | 25.218 | 27.74 | 219.98 | 0.650 | 0.000 | 5.00 | 11.034 | 7.17 | 318.3 | 0.0 | 235.9 |
| 127.50 | Appurtenance(s) | 1.13 | 1.06 | 25.252 | 27.78 | 215.39 | 0.650 | 0.000 | 2.50 | 5.343 | 3.47 | 154.3 | 0.0 | 114.2 |
| 130.00 | | 1.13 | 1.07 | 25.286 | 27.81 | 210.79 | 0.650 | 0.000 | 2.50 | 5.226 | 3.40 | 151.2 | 0.0 | 111.7 |
| 135.00 | | 1.12 | 1.08 | 25.357 | 27.89 | 201.58 | 0.650 | 0.000 | 5.00 | 10.103 | 6.57 | 293.1 | 0.0 | 215.9 |
| 138.00 | Appurtenance(s) | 1.11 | 1.08 | 25.401 | 27.94 | 196.05 | 0.650 | 0.000 | 3.00 | 5.839 | 3.80 | 169.7 | 0.0 | 124.7 |
| 140.00 | | 1.11 | 1.09 | 25.431 | 27.97 | 192.36 | 0.650 | 0.000 | 2.00 | 3.799 | 2.47 | 110.5 | 0.0 | 81.1 |
| 145.00 | | 1.10 | 1.10 | 25.509 | 28.06 | 183.12 | 0.650 | 0.000 | 5.00 | 9.173 | 5.96 | 267.7 | 0.0 | 195.9 |
| 147.00 | Appurtenance(s) | 1.10 | 1.10 | 25.541 | 28.09 | 179.42 | 0.650 | 0.000 | 2.00 | 3.539 | 2.30 | 103.4 | 0.0 | 75.5 |
| 149.00 | | 1.10 | 1.11 | 25.573 | 28.13 | 175.71 | 0.650 | 0.000 | 2.00 | 3.464 | 2.25 | 101.4 | 0.0 | 73.9 |
| | | | | | | | | **Totals:** | **149.00** | | | **12,946.5** | | **15,666.1** |

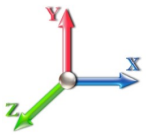
# Discrete Appurtenance Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 13 | |

**Load Case:** 0.9D + 1.6W 93 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60




**Iterations** 25

| 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 | 147.00 | Kathrein 800 10965 | 3 | 25.541 | 28.095 | 0.63 | 0.90 | 26.10 | 293.22 | 0.000 | 0.000 | 1173.28 | 0.00 | 0.00 |
| 2 | 147.00 | CCI HPA65R-BU6A | 3 | 25.541 | 28.095 | 0.80 | 0.90 | 18.89 | 116.10 | 0.000 | 0.000 | 849.03 | 0.00 | 0.00 |
| 3 | 147.00 | Ericsson RRUS 4449 B5, | 3 | 25.541 | 28.095 | 0.69 | 0.80 | 4.07 | 191.70 | 0.000 | 0.000 | 182.78 | 0.00 | 0.00 |
| 4 | 147.00 | Ericsson RRUS 8843 B2 | 3 | 25.541 | 28.095 | 0.74 | 0.80 | 3.62 | 194.40 | 0.000 | 0.000 | 162.78 | 0.00 | 0.00 |
| 5 | 147.00 | Handrail Kit P/N HRK-12 | 3 | 25.541 | 28.095 | 0.56 | 0.75 | 5.01 | 735.56 | 0.000 | 0.000 | 225.29 | 0.00 | 0.00 |
| 6 | 147.00 | Raycap DC6-48-60-18-8F | 1 | 25.541 | 28.095 | 1.07 | 0.80 | 2.36 | 29.52 | 0.000 | 0.000 | 106.01 | 0.00 | 0.00 |
| 7 | 147.00 | Low Profile Platform | 1 | 25.541 | 28.095 | 1.00 | 1.00 | 22.00 | 1350.00 | 0.000 | 0.000 | 988.94 | 0.00 | 0.00 |
| 8 | 147.00 | Powerwave 7770.00 | 3 | 25.541 | 28.095 | 0.66 | 0.90 | 10.84 | 94.50 | 0.000 | 0.000 | 487.30 | 0.00 | 0.00 |
| 9 | 147.00 | Powerwave LGP13519 | 6 | 25.541 | 28.095 | 0.54 | 0.80 | 1.09 | 28.62 | 0.000 | 0.000 | 49.15 | 0.00 | 0.00 |
| 10 | 147.00 | Powerwave LGP21401 | 6 | 25.541 | 28.095 | 0.54 | 0.80 | 4.15 | 76.14 | 0.000 | 0.000 | 186.49 | 0.00 | 0.00 |
| 11 | 147.00 | Raycap DC6-48-60-18-8C | 1 | 25.541 | 28.095 | 0.80 | 0.80 | 1.52 | 18.00 | 0.000 | 0.000 | 68.33 | 0.00 | 0.00 |
| 12 | 138.00 | RFS APXVTM14-C-120 | 3 | 25.401 | 27.941 | 0.63 | 0.80 | 12.02 | 151.20 | 0.000 | 0.000 | 537.40 | 0.00 | 0.00 |
| 13 | 138.00 | RFS APXVSPP18-C-A20 | 3 | 25.401 | 27.941 | 0.66 | 0.80 | 15.98 | 153.90 | 0.000 | 0.000 | 714.22 | 0.00 | 0.00 |
| 14 | 138.00 | RFS ACU-A20-N | 4 | 25.401 | 27.941 | 0.54 | 0.80 | 0.30 | 3.60 | 0.000 | 0.000 | 13.42 | 0.00 | 0.00 |
| 15 | 138.00 | ALU TD-RRH8x20-25 | 3 | 25.401 | 27.941 | 0.54 | 0.80 | 6.51 | 189.00 | 0.000 | 0.000 | 291.14 | 0.00 | 0.00 |
| 16 | 138.00 | ALU 800MHz RRH | 3 | 25.401 | 27.941 | 0.54 | 0.80 | 5.56 | 184.41 | 0.000 | 0.000 | 248.73 | 0.00 | 0.00 |
| 17 | 138.00 | ALU 800MHz | 3 | 25.401 | 27.941 | 0.54 | 0.80 | 1.25 | 23.76 | 0.000 | 0.000 | 56.07 | 0.00 | 0.00 |
| 18 | 138.00 | ALU 1900MHz | 3 | 25.401 | 27.941 | 0.54 | 0.80 | 6.11 | 118.80 | 0.000 | 0.000 | 273.17 | 0.00 | 0.00 |
| 19 | 138.00 | Low Profile Platform | 1 | 25.401 | 27.941 | 1.00 | 1.00 | 22.00 | 1350.00 | 0.000 | 0.000 | 983.54 | 0.00 | 0.00 |
| 20 | 127.50 | Remec S20057A1 | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 1.24 | 29.70 | 0.000 | 0.000 | 54.94 | 0.00 | 0.00 |
| 21 | 127.50 | Commscope | 3 | 25.252 | 27.777 | 0.60 | 0.75 | 20.65 | 134.46 | 0.000 | 0.000 | 917.57 | 0.00 | 0.00 |
| 22 | 127.50 | Kathrein 782 11054 | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 0.42 | 7.02 | 0.000 | 0.000 | 18.76 | 0.00 | 0.00 |
| 23 | 127.50 | Platform w/ Hand Rail | 1 | 25.252 | 27.777 | 1.00 | 1.00 | 35.00 | 1440.00 | 0.000 | 0.000 | 1555.50 | 0.00 | 0.00 |
| 24 | 127.50 | RFS ATMAA1412D-1A20 | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 1.76 | 35.10 | 0.000 | 0.000 | 78.39 | 0.00 | 0.00 |
| 25 | 127.50 | RFS | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 9.74 | 109.89 | 0.000 | 0.000 | 432.80 | 0.00 | 0.00 |
| 26 | 127.50 | RFS APXV18-209014-C | 3 | 25.252 | 27.777 | 0.55 | 0.75 | 5.96 | 50.49 | 0.000 | 0.000 | 264.91 | 0.00 | 0.00 |
| 27 | 127.50 | RFS | 3 | 25.252 | 27.777 | 0.50 | 0.75 | 1.76 | 33.75 | 0.000 | 0.000 | 78.39 | 0.00 | 0.00 |
| | | | | | | | **Totals:** | | **7,142.84** | | | **10,998.32** | | |

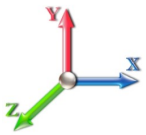
# Total Applied Force Summary

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 14 |

**Load Case:** 0.9D + 1.6W 93 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60




**Iterations** 25

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|---|---|---|---|---|---|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 679.35 | 952.43 | 0.00 | 0.00 |
| 10.00 | | 641.14 | 935.72 | 0.00 | 0.00 |
| 15.00 | | 605.92 | 919.02 | 0.00 | 0.00 |
| 20.00 | | 573.38 | 902.31 | 0.00 | 0.00 |
| 25.00 | | 543.23 | 885.60 | 0.00 | 0.00 |
| 30.00 | | 515.68 | 868.90 | 0.00 | 0.00 |
| 35.00 | | 511.66 | 852.19 | 0.00 | 0.00 |
| 40.00 | | 505.16 | 835.48 | 0.00 | 0.00 |
| 45.00 | | 496.91 | 818.78 | 0.00 | 0.00 |
| 48.00 | | 293.26 | 483.25 | 0.00 | 0.00 |
| 50.00 | | 196.35 | 571.32 | 0.00 | 0.00 |
| 53.25 | | 315.80 | 916.99 | 0.00 | 0.00 |
| 55.00 | | 168.07 | 276.30 | 0.00 | 0.00 |
| 60.00 | | 473.43 | 778.15 | 0.00 | 0.00 |
| 65.00 | | 461.98 | 761.45 | 0.00 | 0.00 |
| 70.00 | | 450.20 | 744.74 | 0.00 | 0.00 |
| 75.00 | | 438.19 | 728.03 | 0.00 | 0.00 |
| 80.00 | | 426.01 | 711.33 | 0.00 | 0.00 |
| 85.00 | | 413.72 | 694.62 | 0.00 | 0.00 |
| 90.00 | | 401.35 | 677.91 | 0.00 | 0.00 |
| 95.00 | | 388.92 | 661.21 | 0.00 | 0.00 |
| 97.50 | | 189.69 | 324.34 | 0.00 | 0.00 |
| 100.00 | | 188.83 | 461.94 | 0.00 | 0.00 |
| 101.50 | | 111.78 | 273.96 | 0.00 | 0.00 |
| 105.00 | | 256.55 | 314.90 | 0.00 | 0.00 |
| 110.00 | | 355.99 | 441.34 | 0.00 | 0.00 |
| 115.00 | | 343.46 | 431.31 | 0.00 | 0.00 |
| 120.00 | | 330.91 | 421.29 | 0.00 | 0.00 |
| 125.00 | | 318.33 | 411.27 | 0.00 | 0.00 |
| 127.50 | (22) attachments | 3555.59 | 2042.28 | 0.00 | 0.00 |
| 130.00 | | 151.18 | 157.25 | 0.00 | 0.00 |
| 135.00 | | 293.09 | 306.98 | 0.00 | 0.00 |
| 138.00 | (23) attachments | 3287.36 | 2354.05 | 0.00 | 0.00 |
| 140.00 | | 110.54 | 112.83 | 0.00 | 0.00 |
| 145.00 | | 267.68 | 275.05 | 0.00 | 0.00 |
| 147.00 | (33) attachments | 4582.77 | 3234.97 | 0.00 | 0.00 |
| 149.00 | | 101.35 | 73.93 | 0.00 | 0.00 |
| | **Totals:** | **23,944.83** | **27,613.40** | **0.00** | **0.00** |

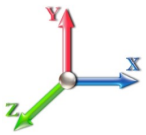
# Calculated Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 15 | |

**Load Case:** 0.9D + 1.6W 93 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60




**Iterations** 25

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | -27.57 | -23.99 | 0.00 | -2467.4 | 0.00 | 2467.45 | 3163.75 | 1581.88 | 6735.38 | 3372.69 | 0.00 | 0.000 | 0.000 | 0.741 |
| 5.00 | -26.54 | -23.40 | 0.00 | -2347.4 | 0.00 | 2347.49 | 3129.45 | 1564.72 | 6519.79 | 3264.74 | 0.11 | -0.198 | 0.000 | 0.728 |
| 10.00 | -25.53 | -22.85 | 0.00 | -2230.4 | 0.00 | 2230.47 | 3093.71 | 1546.85 | 6304.40 | 3156.89 | 0.42 | -0.398 | 0.000 | 0.715 |
| 15.00 | -24.53 | -22.32 | 0.00 | -2116.2 | 0.00 | 2116.24 | 3056.53 | 1528.27 | 6089.41 | 3049.23 | 0.95 | -0.601 | 0.000 | 0.702 |
| 20.00 | -23.56 | -21.82 | 0.00 | -2004.6 | 0.00 | 2004.63 | 3017.92 | 1508.96 | 5875.02 | 2941.88 | 1.69 | -0.807 | 0.000 | 0.689 |
| 25.00 | -22.60 | -21.35 | 0.00 | -1895.5 | 0.00 | 1895.52 | 2977.88 | 1488.94 | 5661.42 | 2834.92 | 2.64 | -1.016 | 0.000 | 0.676 |
| 30.00 | -21.67 | -20.90 | 0.00 | -1788.7 | 0.00 | 1788.78 | 2936.41 | 1468.20 | 5448.81 | 2728.46 | 3.82 | -1.228 | 0.000 | 0.663 |
| 35.00 | -20.75 | -20.44 | 0.00 | -1684.3 | 0.00 | 1684.30 | 2893.50 | 1446.75 | 5237.39 | 2622.59 | 5.22 | -1.443 | 0.000 | 0.650 |
| 40.00 | -19.85 | -19.99 | 0.00 | -1582.0 | 0.00 | 1582.08 | 2849.16 | 1424.58 | 5027.34 | 2517.41 | 6.85 | -1.660 | 0.000 | 0.636 |
| 45.00 | -18.99 | -19.53 | 0.00 | -1482.1 | 0.00 | 1482.12 | 2803.38 | 1401.69 | 4818.87 | 2413.02 | 8.71 | -1.880 | 0.000 | 0.621 |
| 48.00 | -18.48 | -19.26 | 0.00 | -1423.5 | 0.00 | 1423.54 | 2775.23 | 1387.61 | 4694.62 | 2350.80 | 9.93 | -2.015 | 0.000 | 0.612 |
| 50.00 | -17.87 | -19.08 | 0.00 | -1385.0 | 0.00 | 1385.03 | 2756.17 | 1378.09 | 4612.17 | 2309.51 | 10.80 | -2.107 | 0.000 | 0.606 |
| 53.25 | -16.93 | -18.76 | 0.00 | -1323.0 | 0.00 | 1323.03 | 2752.25 | 1376.12 | 4595.34 | 2301.09 | 12.28 | -2.255 | 0.000 | 0.581 |
| 55.00 | -16.62 | -18.62 | 0.00 | -1290.2 | 0.00 | 1290.20 | 2735.34 | 1367.67 | 4523.51 | 2265.12 | 13.12 | -2.336 | 0.000 | 0.576 |
| 60.00 | -15.79 | -18.18 | 0.00 | -1197.0 | 0.00 | 1197.08 | 2686.08 | 1343.04 | 4319.69 | 2163.06 | 15.69 | -2.552 | 0.000 | 0.559 |
| 65.00 | -14.98 | -17.74 | 0.00 | -1106.1 | 0.00 | 1106.19 | 2635.39 | 1317.69 | 4118.12 | 2062.12 | 18.48 | -2.770 | 0.000 | 0.542 |
| 70.00 | -14.19 | -17.31 | 0.00 | -1017.5 | 0.00 | 1017.50 | 2583.26 | 1291.63 | 3918.99 | 1962.41 | 21.49 | -2.989 | 0.000 | 0.524 |
| 75.00 | -13.43 | -16.88 | 0.00 | -930.97 | 0.00 | 930.97 | 2529.69 | 1264.85 | 3722.50 | 1864.02 | 24.74 | -3.209 | 0.000 | 0.505 |
| 80.00 | -12.68 | -16.46 | 0.00 | -846.57 | 0.00 | 846.57 | 2474.70 | 1237.35 | 3528.85 | 1767.05 | 28.22 | -3.428 | 0.000 | 0.484 |
| 85.00 | -11.95 | -16.05 | 0.00 | -764.26 | 0.00 | 764.26 | 2418.27 | 1209.13 | 3338.22 | 1671.59 | 31.92 | -3.646 | 0.000 | 0.462 |
| 90.00 | -11.24 | -15.65 | 0.00 | -684.00 | 0.00 | 684.00 | 2360.40 | 1180.20 | 3150.83 | 1577.76 | 35.86 | -3.862 | 0.000 | 0.438 |
| 95.00 | -10.57 | -15.24 | 0.00 | -605.76 | 0.00 | 605.76 | 2301.11 | 1150.55 | 2966.86 | 1485.64 | 40.01 | -4.074 | 0.000 | 0.413 |
| 97.50 | -10.23 | -15.05 | 0.00 | -567.65 | 0.00 | 567.65 | 2270.92 | 1135.46 | 2876.22 | 1440.25 | 42.17 | -4.181 | 0.000 | 0.399 |
| 100.00 | -9.76 | -14.84 | 0.00 | -530.02 | 0.00 | 530.02 | 2235.90 | 1117.95 | 2780.94 | 1392.54 | 44.39 | -4.287 | 0.000 | 0.385 |
| 101.50 | -9.47 | -14.73 | 0.00 | -507.75 | 0.00 | 507.75 | 1129.30 | 564.65 | 1418.29 | 710.20 | 45.74 | -4.350 | 0.000 | 0.724 |
| 105.00 | -9.12 | -14.48 | 0.00 | -456.20 | 0.00 | 456.20 | 1114.37 | 557.18 | 1364.00 | 683.02 | 48.98 | -4.492 | 0.000 | 0.677 |
| 110.00 | -8.64 | -14.14 | 0.00 | -383.78 | 0.00 | 383.78 | 1091.82 | 545.91 | 1286.67 | 644.29 | 53.85 | -4.794 | 0.000 | 0.604 |
| 115.00 | -8.17 | -13.80 | 0.00 | -313.10 | 0.00 | 313.10 | 1067.84 | 533.92 | 1209.76 | 605.78 | 59.02 | -5.074 | 0.000 | 0.525 |
| 120.00 | -7.73 | -13.46 | 0.00 | -244.11 | 0.00 | 244.11 | 1042.42 | 521.21 | 1133.48 | 567.58 | 64.47 | -5.327 | 0.000 | 0.438 |
| 125.00 | -7.31 | -13.12 | 0.00 | -176.81 | 0.00 | 176.81 | 1015.57 | 507.79 | 1058.03 | 529.80 | 70.16 | -5.542 | 0.000 | 0.342 |
| 127.50 | -5.61 | -9.40 | 0.00 | -144.00 | 0.00 | 144.00 | 1001.61 | 500.80 | 1020.67 | 511.09 | 73.08 | -5.635 | 0.000 | 0.288 |
| 130.00 | -5.45 | -9.24 | 0.00 | -120.51 | 0.00 | 120.51 | 987.29 | 493.64 | 983.59 | 492.52 | 76.05 | -5.717 | 0.000 | 0.251 |
| 135.00 | -5.16 | -8.93 | 0.00 | -74.31 | 0.00 | 74.31 | 957.57 | 478.78 | 910.36 | 455.86 | 82.10 | -5.847 | 0.000 | 0.169 |
| 138.00 | -3.16 | -5.42 | 0.00 | -47.54 | 0.00 | 47.54 | 939.05 | 469.53 | 867.09 | 434.19 | 85.79 | -5.903 | 0.000 | 0.113 |
| 140.00 | -3.05 | -5.30 | 0.00 | -36.71 | 0.00 | 36.71 | 926.42 | 463.21 | 838.55 | 419.90 | 88.27 | -5.931 | 0.000 | 0.091 |
| 145.00 | -2.80 | -5.00 | 0.00 | -10.22 | 0.00 | 10.22 | 893.83 | 446.92 | 768.34 | 384.74 | 94.49 | -5.972 | 0.000 | 0.030 |
| 147.00 | -0.06 | -0.11 | 0.00 | -0.22 | 0.00 | 0.22 | 880.40 | 440.20 | 740.75 | 370.92 | 96.99 | -5.976 | 0.000 | 0.001 |
| 149.00 | 0.00 | -0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 866.73 | 433.37 | 713.46 | 357.26 | 99.49 | -5.977 | 0.000 | 0.000 |

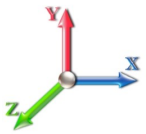
# Wind Loading - Shaft

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 16 | |

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

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00




**Iterations** 25

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | 1.92 | 0.70 | 8.188 | 9.01 | 0.00 | 1.200 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.85 | 0.70 | 7.881 | 8.67 | 0.00 | 1.200 | 1.541 | 5.00 | 23.065 | 27.68 | 239.9 | 506.5 | 1542.6 |
| 10.00 | | 1.79 | 0.70 | 7.600 | 8.36 | 0.00 | 1.200 | 1.631 | 5.00 | 22.674 | 27.21 | 227.5 | 525.6 | 1539.5 |
| 15.00 | | 1.73 | 0.70 | 7.343 | 8.08 | 0.00 | 1.200 | 1.678 | 5.00 | 22.248 | 26.70 | 215.6 | 529.7 | 1521.3 |
| 20.00 | | 1.67 | 0.70 | 7.107 | 7.82 | 0.00 | 1.200 | 1.707 | 5.00 | 21.807 | 26.17 | 204.6 | 527.5 | 1496.9 |
| 25.00 | | 1.62 | 0.70 | 6.891 | 7.58 | 0.00 | 1.200 | 1.727 | 5.00 | 21.358 | 25.63 | 194.3 | 522.0 | 1469.0 |
| 30.00 | | 1.57 | 0.70 | 6.698 | 7.37 | 0.00 | 1.200 | 1.741 | 5.00 | 20.905 | 25.09 | 184.8 | 514.3 | 1439.1 |
| 35.00 | | 1.53 | 0.73 | 6.808 | 7.49 | 0.00 | 1.200 | 1.751 | 5.00 | 20.447 | 24.54 | 183.8 | 505.3 | 1407.8 |
| 40.00 | | 1.49 | 0.76 | 6.891 | 7.58 | 0.00 | 1.200 | 1.758 | 5.00 | 19.988 | 23.99 | 181.8 | 495.4 | 1375.6 |
| 45.00 | | 1.45 | 0.79 | 6.953 | 7.65 | 0.00 | 1.200 | 1.764 | 5.00 | 19.527 | 23.43 | 179.2 | 484.8 | 1342.8 |
| 48.00 | Bot - Section 2 | 1.43 | 0.80 | 6.983 | 7.68 | 0.00 | 1.200 | 1.766 | 3.00 | 11.494 | 13.79 | 105.9 | 287.0 | 791.1 |
| 50.00 | | 1.42 | 0.81 | 7.001 | 7.70 | 0.00 | 1.200 | 1.768 | 2.00 | 7.676 | 9.21 | 70.9 | 192.3 | 860.6 |
| 53.25 | Top - Section 1 | 1.40 | 0.83 | 7.026 | 7.73 | 0.00 | 1.200 | 1.770 | 3.25 | 12.316 | 14.78 | 114.2 | 307.8 | 1378.5 |
| 55.00 | | 1.39 | 0.83 | 7.038 | 7.74 | 0.00 | 1.200 | 1.771 | 1.75 | 6.551 | 7.86 | 60.9 | 164.3 | 450.9 |
| 60.00 | | 1.36 | 0.85 | 7.067 | 7.77 | 0.00 | 1.200 | 1.774 | 5.00 | 18.404 | 22.08 | 171.7 | 458.0 | 1261.8 |
| 65.00 | | 1.33 | 0.87 | 7.091 | 7.80 | 0.00 | 1.200 | 1.776 | 5.00 | 17.940 | 21.53 | 167.9 | 446.3 | 1227.8 |
| 70.00 | | 1.31 | 0.89 | 7.112 | 7.82 | 0.00 | 1.200 | 1.778 | 5.00 | 17.477 | 20.97 | 164.1 | 434.5 | 1193.8 |
| 75.00 | | 1.29 | 0.91 | 7.129 | 7.84 | 0.00 | 1.200 | 1.779 | 5.00 | 17.012 | 20.41 | 160.1 | 422.7 | 1159.6 |
| 80.00 | | 1.27 | 0.93 | 7.145 | 7.86 | 0.00 | 1.200 | 1.781 | 5.00 | 16.548 | 19.86 | 156.1 | 410.7 | 1125.4 |
| 85.00 | | 1.25 | 0.94 | 7.160 | 7.88 | 0.00 | 1.200 | 1.782 | 5.00 | 16.084 | 19.30 | 152.0 | 398.8 | 1091.2 |
| 90.00 | | 1.23 | 0.96 | 7.175 | 7.89 | 0.00 | 1.200 | 1.783 | 5.00 | 15.620 | 18.74 | 147.9 | 386.8 | 1056.9 |
| 95.00 | | 1.21 | 0.97 | 7.190 | 7.91 | 0.00 | 1.200 | 1.785 | 5.00 | 15.155 | 18.19 | 143.8 | 374.8 | 1022.6 |
| 97.50 | Bot - Section 3 | 1.21 | 0.98 | 7.197 | 7.92 | 0.00 | 1.200 | 1.785 | 2.50 | 7.403 | 8.88 | 70.3 | 184.4 | 499.9 |
| 100.00 | | 1.20 | 0.99 | 7.205 | 7.92 | 0.00 | 1.200 | 1.786 | 2.50 | 7.367 | 8.84 | 70.1 | 183.5 | 682.5 |
| 101.50 | Top - Section 2 | 1.19 | 0.99 | 7.209 | 7.93 | 0.00 | 1.200 | 1.786 | 1.50 | 4.364 | 5.24 | 41.5 | 109.0 | 404.1 |
| 105.00 | | 1.18 | 1.00 | 7.220 | 7.94 | 0.00 | 1.200 | 1.787 | 3.50 | 10.021 | 12.02 | 95.5 | 248.4 | 504.7 |
| 110.00 | | 1.17 | 1.02 | 7.236 | 7.96 | 0.00 | 1.200 | 1.789 | 5.00 | 13.921 | 16.71 | 133.0 | 342.9 | 697.6 |
| 115.00 | | 1.16 | 1.03 | 7.253 | 7.98 | 0.00 | 1.200 | 1.790 | 5.00 | 13.457 | 16.15 | 128.8 | 330.8 | 672.2 |
| 120.00 | | 1.15 | 1.04 | 7.271 | 8.00 | 0.00 | 1.200 | 1.792 | 5.00 | 12.993 | 15.59 | 124.7 | 318.8 | 646.7 |
| 125.00 | | 1.14 | 1.05 | 7.289 | 8.02 | 0.00 | 1.200 | 1.793 | 5.00 | 12.529 | 15.03 | 120.5 | 306.7 | 621.3 |
| 127.50 | Appurtenance(s) | 1.13 | 1.06 | 7.299 | 8.03 | 0.00 | 1.200 | 1.794 | 2.50 | 6.090 | 7.31 | 58.7 | 150.3 | 302.6 |
| 130.00 | | 1.13 | 1.07 | 7.309 | 8.04 | 0.00 | 1.200 | 1.795 | 2.50 | 5.974 | 7.17 | 57.6 | 147.3 | 296.3 |
| 135.00 | | 1.12 | 1.08 | 7.329 | 8.06 | 0.00 | 1.200 | 1.797 | 5.00 | 11.601 | 13.92 | 112.2 | 282.6 | 570.4 |
| 138.00 | Appurtenance(s) | 1.11 | 1.08 | 7.342 | 8.08 | 0.00 | 1.200 | 1.798 | 3.00 | 6.738 | 8.09 | 65.3 | 165.2 | 331.5 |
| 140.00 | | 1.11 | 1.09 | 7.351 | 8.09 | 0.00 | 1.200 | 1.798 | 2.00 | 4.399 | 5.28 | 42.7 | 108.2 | 216.4 |
| 145.00 | | 1.10 | 1.10 | 7.373 | 8.11 | 0.00 | 1.200 | 1.800 | 5.00 | 10.673 | 12.81 | 103.9 | 258.4 | 519.5 |
| 147.00 | Appurtenance(s) | 1.10 | 1.10 | 7.383 | 8.12 | 0.00 | 1.200 | 1.801 | 2.00 | 4.139 | 4.97 | 40.3 | 101.4 | 202.1 |
| 149.00 | | 1.10 | 1.11 | 7.392 | 8.13 | 0.00 | 1.200 | 1.802 | 2.00 | 4.065 | 4.88 | 39.7 | 99.5 | 198.1 |
| | | | | | | | | **Totals:** | **149.00** | | | **4,731.9** | | **33,120.6** |

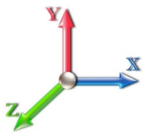
# Discrete Appurtenance Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 17 | |

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

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00




**Iterations** 25

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | 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 | 147.00 | Kathrein 800 10965 | 3 | 7.383 | 8.121 | 0.63 | 0.90 | 29.69 | 1234.53 | 0.000 | 0.000 | 241.13 | 0.00 | 0.00 |
| 2 | 147.00 | CCI HPA65R-BU6A | 3 | 7.383 | 8.121 | 0.80 | 0.90 | 24.07 | 573.67 | 0.000 | 0.000 | 195.49 | 0.00 | 0.00 |
| 3 | 147.00 | Ericsson RRUS 4449 B5, | 3 | 7.383 | 8.121 | 0.69 | 0.80 | 5.38 | 415.66 | 0.000 | 0.000 | 43.73 | 0.00 | 0.00 |
| 4 | 147.00 | Ericsson RRUS 8843 B2 | 3 | 7.383 | 8.121 | 0.74 | 0.80 | 4.80 | 424.42 | 0.000 | 0.000 | 38.94 | 0.00 | 0.00 |
| 5 | 147.00 | Handrail Kit P/N HRK-12 | 3 | 7.383 | 8.121 | 0.56 | 0.75 | 9.16 | -2865.94 | 0.000 | 0.000 | 74.42 | 0.00 | 0.00 |
| 6 | 147.00 | Raycap DC6-48-60-18-8F | 1 | 7.383 | 8.121 | 1.07 | 0.80 | 3.52 | 88.47 | 0.000 | 0.000 | 28.56 | 0.00 | 0.00 |
| 7 | 147.00 | Low Profile Platform | 1 | 7.383 | 8.121 | 1.00 | 1.00 | 40.23 | 2850.85 | 0.000 | 0.000 | 326.68 | 0.00 | 0.00 |
| 8 | 147.00 | Powerwave 7770.00 | 3 | 7.383 | 8.121 | 0.66 | 0.90 | 13.01 | 547.57 | 0.000 | 0.000 | 105.67 | 0.00 | 0.00 |
| 9 | 147.00 | Powerwave LGP13519 | 6 | 7.383 | 8.121 | 0.54 | 0.80 | 2.60 | 80.77 | 0.000 | 0.000 | 21.12 | 0.00 | 0.00 |
| 10 | 147.00 | Powerwave LGP21401 | 6 | 7.383 | 8.121 | 0.54 | 0.80 | 6.92 | 213.73 | 0.000 | 0.000 | 56.22 | 0.00 | 0.00 |
| 11 | 147.00 | Raycap DC6-48-60-18-8C | 1 | 7.383 | 8.121 | 0.80 | 0.80 | 2.27 | 34.63 | 0.000 | 0.000 | 18.41 | 0.00 | 0.00 |
| 12 | 138.00 | RFS APXVTM14-C-120 | 3 | 7.342 | 8.076 | 0.63 | 0.80 | 14.20 | 700.32 | 0.000 | 0.000 | 114.68 | 0.00 | 0.00 |
| 13 | 138.00 | RFS APXVSPP18-C-A20 | 3 | 7.342 | 8.076 | 0.66 | 0.80 | 18.64 | 825.86 | 0.000 | 0.000 | 150.53 | 0.00 | 0.00 |
| 14 | 138.00 | RFS ACU-A20-N | 4 | 7.342 | 8.076 | 0.54 | 0.80 | 0.96 | 17.30 | 0.000 | 0.000 | 7.72 | 0.00 | 0.00 |
| 15 | 138.00 | ALU TD-RRH8x20-25 | 3 | 7.342 | 8.076 | 0.54 | 0.80 | 6.98 | 261.50 | 0.000 | 0.000 | 56.38 | 0.00 | 0.00 |
| 16 | 138.00 | ALU 800MHz RRH | 3 | 7.342 | 8.076 | 0.54 | 0.80 | 7.74 | 447.68 | 0.000 | 0.000 | 62.51 | 0.00 | 0.00 |
| 17 | 138.00 | ALU 800MHz | 3 | 7.342 | 8.076 | 0.54 | 0.80 | 2.33 | 71.20 | 0.000 | 0.000 | 18.78 | 0.00 | 0.00 |
| 18 | 138.00 | ALU 1900MHz | 3 | 7.342 | 8.076 | 0.54 | 0.80 | 8.41 | 402.14 | 0.000 | 0.000 | 67.95 | 0.00 | 0.00 |
| 19 | 138.00 | Low Profile Platform | 1 | 7.342 | 8.076 | 1.00 | 1.00 | 40.19 | 2848.26 | 0.000 | 0.000 | 324.61 | 0.00 | 0.00 |
| 20 | 127.50 | Remec S20057A1 | 3 | 7.299 | 8.029 | 0.50 | 0.75 | 2.32 | 81.61 | 0.000 | 0.000 | 18.61 | 0.00 | 0.00 |
| 21 | 127.50 | Commscope | 3 | 7.299 | 8.029 | 0.60 | 0.75 | 23.68 | 996.59 | 0.000 | 0.000 | 190.14 | 0.00 | 0.00 |
| 22 | 127.50 | Kathrein 782 11054 | 3 | 7.299 | 8.029 | 0.50 | 0.75 | 1.04 | 23.80 | 0.000 | 0.000 | 8.38 | 0.00 | 0.00 |
| 23 | 127.50 | Platform w/ Hand Rail | 1 | 7.299 | 8.029 | 1.00 | 1.00 | 66.39 | 3478.51 | 0.000 | 0.000 | 533.07 | 0.00 | 0.00 |
| 24 | 127.50 | RFS ATMAA1412D-1A20 | 3 | 7.299 | 8.029 | 0.50 | 0.75 | 2.98 | 105.97 | 0.000 | 0.000 | 23.90 | 0.00 | 0.00 |
| 25 | 127.50 | RFS | 3 | 7.299 | 8.029 | 0.50 | 0.75 | 11.47 | 569.12 | 0.000 | 0.000 | 92.08 | 0.00 | 0.00 |
| 26 | 127.50 | RFS APXV18-209014-C | 3 | 7.299 | 8.029 | 0.55 | 0.75 | 7.56 | 343.13 | 0.000 | 0.000 | 60.69 | 0.00 | 0.00 |
| 27 | 127.50 | RFS | 3 | 7.299 | 8.029 | 0.50 | 0.75 | 3.00 | 99.48 | 0.000 | 0.000 | 24.11 | 0.00 | 0.00 |
| | | | | | | | **Totals:** | | **14,870.82** | | | **2,904.49** | | |

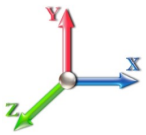
# Total Applied Force Summary

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **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** 25

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|---|---|---|---|---|---|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 239.93 | 1776.36 | 0.00 | 0.00 |
| 10.00 | | 227.47 | 1773.25 | 0.00 | 0.00 |
| 15.00 | | 215.64 | 1755.09 | 0.00 | 0.00 |
| 20.00 | | 204.58 | 1730.63 | 0.00 | 0.00 |
| 25.00 | | 194.27 | 1702.76 | 0.00 | 0.00 |
| 30.00 | | 184.82 | 1672.82 | 0.00 | 0.00 |
| 35.00 | | 183.76 | 1641.55 | 0.00 | 0.00 |
| 40.00 | | 181.81 | 1609.36 | 0.00 | 0.00 |
| 45.00 | | 179.22 | 1576.55 | 0.00 | 0.00 |
| 48.00 | | 105.95 | 931.31 | 0.00 | 0.00 |
| 50.00 | | 70.93 | 954.07 | 0.00 | 0.00 |
| 53.25 | | 114.22 | 1530.42 | 0.00 | 0.00 |
| 55.00 | | 60.85 | 532.73 | 0.00 | 0.00 |
| 60.00 | | 171.69 | 1495.53 | 0.00 | 0.00 |
| 65.00 | | 167.93 | 1461.58 | 0.00 | 0.00 |
| 70.00 | | 164.06 | 1427.52 | 0.00 | 0.00 |
| 75.00 | | 160.10 | 1393.38 | 0.00 | 0.00 |
| 80.00 | | 156.08 | 1359.17 | 0.00 | 0.00 |
| 85.00 | | 152.02 | 1324.93 | 0.00 | 0.00 |
| 90.00 | | 147.93 | 1290.66 | 0.00 | 0.00 |
| 95.00 | | 143.83 | 1256.38 | 0.00 | 0.00 |
| 97.50 | | 70.33 | 616.83 | 0.00 | 0.00 |
| 100.00 | | 70.06 | 799.39 | 0.00 | 0.00 |
| 101.50 | | 41.53 | 474.28 | 0.00 | 0.00 |
| 105.00 | | 95.50 | 668.30 | 0.00 | 0.00 |
| 110.00 | | 132.97 | 931.32 | 0.00 | 0.00 |
| 115.00 | | 128.83 | 905.91 | 0.00 | 0.00 |
| 120.00 | | 124.69 | 880.50 | 0.00 | 0.00 |
| 125.00 | | 120.55 | 855.08 | 0.00 | 0.00 |
| 127.50 | (22) attachments | 1009.66 | 6117.72 | 0.00 | 0.00 |
| 130.00 | | 57.64 | 356.99 | 0.00 | 0.00 |
| 135.00 | | 112.24 | 691.89 | 0.00 | 0.00 |
| 138.00 | (23) attachments | 868.46 | 5978.63 | 0.00 | 0.00 |
| 140.00 | | 42.68 | 258.63 | 0.00 | 0.00 |
| 145.00 | | 103.88 | 625.13 | 0.00 | 0.00 |
| 147.00 | (33) attachments | 1190.69 | 3842.73 | 0.00 | 0.00 |
| 149.00 | | 39.66 | 198.05 | 0.00 | 0.00 |
| | **Totals:** | **7,636.44** | **54,397.45** | **0.00** | **0.00** |

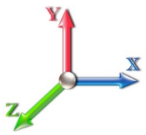
# Calculated Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 19 | |

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

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00




**Iterations** 25

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | -54.39 | -7.67 | 0.00 | -776.85 | 0.00 | 776.85 | 3163.75 | 1581.88 | 6735.38 | 3372.69 | 0.00 | 0.000 | 0.000 | 0.248 |
| 5.00 | -52.61 | -7.48 | 0.00 | -738.52 | 0.00 | 738.52 | 3129.45 | 1564.72 | 6519.79 | 3264.74 | 0.03 | -0.062 | 0.000 | 0.243 |
| 10.00 | -50.83 | -7.31 | 0.00 | -701.11 | 0.00 | 701.11 | 3093.71 | 1546.85 | 6304.40 | 3156.89 | 0.13 | -0.125 | 0.000 | 0.239 |
| 15.00 | -49.07 | -7.14 | 0.00 | -664.57 | 0.00 | 664.57 | 3056.53 | 1528.27 | 6089.41 | 3049.23 | 0.30 | -0.189 | 0.000 | 0.234 |
| 20.00 | -47.33 | -6.99 | 0.00 | -628.85 | 0.00 | 628.85 | 3017.92 | 1508.96 | 5875.02 | 2941.88 | 0.53 | -0.254 | 0.000 | 0.229 |
| 25.00 | -45.62 | -6.84 | 0.00 | -593.92 | 0.00 | 593.92 | 2977.88 | 1488.94 | 5661.42 | 2834.92 | 0.83 | -0.319 | 0.000 | 0.225 |
| 30.00 | -43.94 | -6.69 | 0.00 | -559.75 | 0.00 | 559.75 | 2936.41 | 1468.20 | 5448.81 | 2728.46 | 1.20 | -0.386 | 0.000 | 0.220 |
| 35.00 | -42.29 | -6.55 | 0.00 | -526.29 | 0.00 | 526.29 | 2893.50 | 1446.75 | 5237.39 | 2622.59 | 1.64 | -0.453 | 0.000 | 0.215 |
| 40.00 | -40.68 | -6.40 | 0.00 | -493.56 | 0.00 | 493.56 | 2849.16 | 1424.58 | 5027.34 | 2517.41 | 2.15 | -0.521 | 0.000 | 0.210 |
| 45.00 | -39.09 | -6.24 | 0.00 | -461.57 | 0.00 | 461.57 | 2803.38 | 1401.69 | 4818.87 | 2413.02 | 2.73 | -0.589 | 0.000 | 0.205 |
| 48.00 | -38.16 | -6.15 | 0.00 | -442.85 | 0.00 | 442.85 | 2775.23 | 1387.61 | 4694.62 | 2350.80 | 3.12 | -0.631 | 0.000 | 0.202 |
| 50.00 | -37.20 | -6.09 | 0.00 | -430.55 | 0.00 | 430.55 | 2756.17 | 1378.09 | 4612.17 | 2309.51 | 3.39 | -0.660 | 0.000 | 0.200 |
| 53.25 | -35.67 | -5.98 | 0.00 | -410.75 | 0.00 | 410.75 | 2752.25 | 1376.12 | 4595.34 | 2301.09 | 3.85 | -0.706 | 0.000 | 0.191 |
| 55.00 | -35.13 | -5.94 | 0.00 | -400.28 | 0.00 | 400.28 | 2735.34 | 1367.67 | 4523.51 | 2265.12 | 4.12 | -0.731 | 0.000 | 0.190 |
| 60.00 | -33.63 | -5.79 | 0.00 | -370.57 | 0.00 | 370.57 | 2686.08 | 1343.04 | 4319.69 | 2163.06 | 4.92 | -0.798 | 0.000 | 0.184 |
| 65.00 | -32.17 | -5.64 | 0.00 | -341.62 | 0.00 | 341.62 | 2635.39 | 1317.69 | 4118.12 | 2062.12 | 5.79 | -0.865 | 0.000 | 0.178 |
| 70.00 | -30.74 | -5.49 | 0.00 | -313.43 | 0.00 | 313.43 | 2583.26 | 1291.63 | 3918.99 | 1962.41 | 6.73 | -0.933 | 0.000 | 0.172 |
| 75.00 | -29.34 | -5.34 | 0.00 | -285.98 | 0.00 | 285.98 | 2529.69 | 1264.85 | 3722.50 | 1864.02 | 7.75 | -1.000 | 0.000 | 0.165 |
| 80.00 | -27.98 | -5.19 | 0.00 | -259.29 | 0.00 | 259.29 | 2474.70 | 1237.35 | 3528.85 | 1767.05 | 8.83 | -1.068 | 0.000 | 0.158 |
| 85.00 | -26.65 | -5.05 | 0.00 | -233.33 | 0.00 | 233.33 | 2418.27 | 1209.13 | 3338.22 | 1671.59 | 9.98 | -1.134 | 0.000 | 0.151 |
| 90.00 | -25.36 | -4.90 | 0.00 | -208.10 | 0.00 | 208.10 | 2360.40 | 1180.20 | 3150.83 | 1577.76 | 11.21 | -1.200 | 0.000 | 0.143 |
| 95.00 | -24.10 | -4.75 | 0.00 | -183.60 | 0.00 | 183.60 | 2301.11 | 1150.55 | 2966.86 | 1485.64 | 12.50 | -1.265 | 0.000 | 0.134 |
| 97.50 | -23.48 | -4.68 | 0.00 | -171.73 | 0.00 | 171.73 | 2270.92 | 1135.46 | 2876.22 | 1440.25 | 13.17 | -1.297 | 0.000 | 0.130 |
| 100.00 | -22.68 | -4.60 | 0.00 | -160.04 | 0.00 | 160.04 | 2235.90 | 1117.95 | 2780.94 | 1392.54 | 13.86 | -1.329 | 0.000 | 0.125 |
| 101.50 | -22.21 | -4.56 | 0.00 | -153.14 | 0.00 | 153.14 | 1129.30 | 564.65 | 1418.29 | 710.20 | 14.28 | -1.348 | 0.000 | 0.235 |
| 105.00 | -21.54 | -4.47 | 0.00 | -137.18 | 0.00 | 137.18 | 1114.37 | 557.18 | 1364.00 | 683.02 | 15.28 | -1.391 | 0.000 | 0.220 |
| 110.00 | -20.60 | -4.35 | 0.00 | -114.81 | 0.00 | 114.81 | 1091.82 | 545.91 | 1286.67 | 644.29 | 16.79 | -1.481 | 0.000 | 0.197 |
| 115.00 | -19.69 | -4.22 | 0.00 | -93.07 | 0.00 | 93.07 | 1067.84 | 533.92 | 1209.76 | 605.78 | 18.39 | -1.565 | 0.000 | 0.172 |
| 120.00 | -18.81 | -4.10 | 0.00 | -71.95 | 0.00 | 71.95 | 1042.42 | 521.21 | 1133.48 | 567.58 | 20.07 | -1.640 | 0.000 | 0.145 |
| 125.00 | -17.96 | -3.96 | 0.00 | -51.47 | 0.00 | 51.47 | 1015.57 | 507.79 | 1058.03 | 529.80 | 21.82 | -1.703 | 0.000 | 0.115 |
| 127.50 | -11.87 | -2.78 | 0.00 | -41.56 | 0.00 | 41.56 | 1001.61 | 500.80 | 1020.67 | 511.09 | 22.72 | -1.730 | 0.000 | 0.093 |
| 130.00 | -11.52 | -2.72 | 0.00 | -34.62 | 0.00 | 34.62 | 987.29 | 493.64 | 983.59 | 492.52 | 23.63 | -1.754 | 0.000 | 0.082 |
| 135.00 | -10.83 | -2.59 | 0.00 | -21.04 | 0.00 | 21.04 | 957.57 | 478.78 | 910.36 | 455.86 | 25.49 | -1.790 | 0.000 | 0.057 |
| 138.00 | -4.88 | -1.53 | 0.00 | -13.28 | 0.00 | 13.28 | 939.05 | 469.53 | 867.09 | 434.19 | 26.62 | -1.806 | 0.000 | 0.036 |
| 140.00 | -4.62 | -1.48 | 0.00 | -10.22 | 0.00 | 10.22 | 926.42 | 463.21 | 838.55 | 419.90 | 27.38 | -1.814 | 0.000 | 0.029 |
| 145.00 | -4.00 | -1.36 | 0.00 | -2.81 | 0.00 | 2.81 | 893.83 | 446.92 | 768.34 | 384.74 | 29.28 | -1.826 | 0.000 | 0.012 |
| 147.00 | -0.20 | -0.05 | 0.00 | -0.09 | 0.00 | 0.09 | 880.40 | 440.20 | 740.75 | 370.92 | 30.05 | -1.827 | 0.000 | 0.000 |
| 149.00 | 0.00 | -0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 866.73 | 433.37 | 713.46 | 357.26 | 30.82 | -1.827 | 0.000 | 0.000 |

# Seismic Segment Forces (Factored)

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 20 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Load Case:** | 1.2D + 1.0E | | | | | | | **Iterations** | 24 |
| **Gust Response Factor** | 1.10 | | | | **Sds** | 0.21 | | **Ss** | 0.20 |
| **Dead Load Factor** | 1.20 | **Seismic Load Factor** | 1.00 | | **Sd1** | 0.10 | | **S1** | 0.07 |
| **Wind Load Factor** | 0.00 | **Structure Frequency** | 0.33 | | **SA** | 0.03 | **Seismic Importance Factor** | | 1.00 |

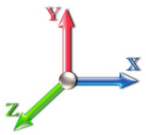
| Top Elev (ft) | Description | Wz (lb) | a | b | c | Lateral Fs (lb) | R: 1.50 |
|---|---|---|---|---|---|---|---|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5.00 | | 863.45 | 0.00 | 0.03 | 0.02 | 18.68 | |
| 10.00 | | 844.89 | 0.01 | 0.05 | 0.03 | 26.10 | |
| 15.00 | | 826.33 | 0.02 | 0.06 | 0.04 | 29.20 | |
| 20.00 | | 807.77 | 0.03 | 0.07 | 0.04 | 30.36 | |
| 25.00 | | 789.20 | 0.05 | 0.07 | 0.04 | 30.70 | |
| 30.00 | | 770.64 | 0.08 | 0.07 | 0.04 | 30.75 | |
| 35.00 | | 752.08 | 0.10 | 0.07 | 0.04 | 30.74 | |
| 40.00 | | 733.52 | 0.14 | 0.07 | 0.03 | 30.69 | |
| 45.00 | | 714.95 | 0.17 | 0.07 | 0.03 | 30.41 | |
| 48.00 | Bot - Section 2 | 420.06 | 0.20 | 0.06 | 0.02 | 17.91 | |
| 50.00 | | 556.88 | 0.21 | 0.06 | 0.02 | 23.67 | |
| 53.25 | Top - Section 1 | 892.26 | 0.24 | 0.06 | 0.02 | 37.25 | |
| 55.00 | | 238.82 | 0.26 | 0.05 | 0.02 | 9.79 | |
| 60.00 | | 669.81 | 0.31 | 0.04 | 0.01 | 24.84 | |
| 65.00 | | 651.25 | 0.36 | 0.03 | 0.01 | 19.38 | |
| 70.00 | | 632.69 | 0.42 | 0.01 | 0.01 | 11.63 | |
| 75.00 | | 614.13 | 0.48 | -0.01 | 0.01 | 2.08 | |
| 80.00 | | 595.56 | 0.54 | -0.03 | 0.01 | -7.82 | |
| 85.00 | | 577.00 | 0.62 | -0.06 | 0.02 | -16.22 | |
| 90.00 | | 558.44 | 0.69 | -0.08 | 0.03 | -21.72 | |
| 95.00 | | 539.87 | 0.77 | -0.11 | 0.05 | -23.80 | |
| 97.50 | Bot - Section 3 | 262.98 | 0.81 | -0.11 | 0.06 | -11.69 | |
| 100.00 | | 415.87 | 0.85 | -0.12 | 0.07 | -18.03 | |
| 101.50 | Top - Section 2 | 245.96 | 0.88 | -0.12 | 0.08 | -10.33 | |
| 105.00 | | 213.53 | 0.94 | -0.12 | 0.10 | -7.86 | |
| 110.00 | | 295.57 | 1.03 | -0.10 | 0.15 | -7.28 | |
| 115.00 | | 284.44 | 1.13 | -0.05 | 0.20 | -1.98 | |
| 120.00 | | 273.30 | 1.23 | 0.03 | 0.27 | 4.43 | |
| 125.00 | | 262.16 | 1.33 | 0.16 | 0.36 | 11.78 | |
| 127.50 | Appurtenance(s) | 2171.8 | 1.38 | 0.25 | 0.42 | 133.33 | |
| 130.00 | | 124.12 | 1.44 | 0.36 | 0.47 | 9.84 | |
| 135.00 | | 239.89 | 1.55 | 0.64 | 0.61 | 28.63 | |
| 138.00 | Appurtenance(s) | 2554.8 | 1.62 | 0.85 | 0.70 | 373.58 | |
| 140.00 | | 90.16 | 1.67 | 1.01 | 0.77 | 14.91 | |
| 145.00 | | 217.61 | 1.79 | 1.49 | 0.96 | 47.29 | |
| 147.00 | Appurtenance(s) | 3559.2 | 1.84 | 1.72 | 1.05 | 853.71 | |
| 149.00 | | 82.14 | 1.89 | 1.98 | 1.14 | 21.64 | |
| | **Totals:** | **25,343.2** | | | | **1,776.6** | **Total Wind:** **23,944.8** |

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

# Calculated Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 21 | |

**Load Case:** 1.2D + 1.0E




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Gust Response Factor** | 1.10 | | | **Sds** | 0.21 | **Iterations** | 24 | | |
| **Dead Load Factor** | 1.20 | **Seismic Load Factor** | 1.00 | **Sd1** | 0.10 | **Ss** | 0.20 | | |
| **Wind Load Factor** | 0.00 | **Structure Frequency** | 0.33 | **SA** | 0.03 | **S1** | 0.07 | **Seismic Importance Factor** | 1.00 |

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | -36.82 | -1.91 | 0.00 | -241.85 | 0.00 | 241.85 | 3163.75 | 1581.88 | 6735.38 | 3372.69 | | 0.00 | 0.00 | 0.083 |
| 5.00 | -35.55 | -1.90 | 0.00 | -232.31 | 0.00 | 232.31 | 3129.45 | 1564.72 | 6519.79 | 3264.74 | | 0.01 | -0.02 | 0.083 |
| 10.00 | -34.30 | -1.89 | 0.00 | -222.79 | 0.00 | 222.79 | 3093.71 | 1546.85 | 6304.40 | 3156.89 | | 0.04 | -0.04 | 0.082 |
| 15.00 | -33.07 | -1.87 | 0.00 | -213.35 | 0.00 | 213.35 | 3056.53 | 1528.27 | 6089.41 | 3049.23 | | 0.09 | -0.06 | 0.081 |
| 20.00 | -31.87 | -1.85 | 0.00 | -204.01 | 0.00 | 204.01 | 3017.92 | 1508.96 | 5875.02 | 2941.88 | | 0.17 | -0.08 | 0.080 |
| 25.00 | -30.69 | -1.83 | 0.00 | -194.76 | 0.00 | 194.76 | 2977.88 | 1488.94 | 5661.42 | 2834.92 | | 0.26 | -0.10 | 0.079 |
| 30.00 | -29.53 | -1.81 | 0.00 | -185.62 | 0.00 | 185.62 | 2936.41 | 1468.20 | 5448.81 | 2728.46 | | 0.38 | -0.12 | 0.078 |
| 35.00 | -28.39 | -1.78 | 0.00 | -176.58 | 0.00 | 176.58 | 2893.50 | 1446.75 | 5237.39 | 2622.59 | | 0.52 | -0.15 | 0.077 |
| 40.00 | -27.28 | -1.76 | 0.00 | -167.66 | 0.00 | 167.66 | 2849.16 | 1424.58 | 5027.34 | 2517.41 | | 0.69 | -0.17 | 0.076 |
| 45.00 | -26.18 | -1.74 | 0.00 | -158.85 | 0.00 | 158.85 | 2803.38 | 1401.69 | 4818.87 | 2413.02 | | 0.88 | -0.19 | 0.075 |
| 48.00 | -25.54 | -1.72 | 0.00 | -153.64 | 0.00 | 153.64 | 2775.23 | 1387.61 | 4694.62 | 2350.80 | | 1.00 | -0.21 | 0.075 |
| 50.00 | -24.78 | -1.70 | 0.00 | -150.20 | 0.00 | 150.20 | 2756.17 | 1378.09 | 4612.17 | 2309.51 | | 1.09 | -0.22 | 0.074 |
| 53.25 | -23.56 | -1.66 | 0.00 | -144.67 | 0.00 | 144.67 | 2752.25 | 1376.12 | 4595.34 | 2301.09 | | 1.25 | -0.23 | 0.071 |
| 55.00 | -23.19 | -1.66 | 0.00 | -141.76 | 0.00 | 141.76 | 2735.34 | 1367.67 | 4523.51 | 2265.12 | | 1.33 | -0.24 | 0.071 |
| 60.00 | -22.15 | -1.64 | 0.00 | -133.46 | 0.00 | 133.46 | 2686.08 | 1343.04 | 4319.69 | 2163.06 | | 1.60 | -0.27 | 0.070 |
| 65.00 | -21.13 | -1.62 | 0.00 | -125.26 | 0.00 | 125.26 | 2635.39 | 1317.69 | 4118.12 | 2062.12 | | 1.89 | -0.29 | 0.069 |
| 70.00 | -20.14 | -1.62 | 0.00 | -117.14 | 0.00 | 117.14 | 2583.26 | 1291.63 | 3918.99 | 1962.41 | | 2.21 | -0.32 | 0.067 |
| 75.00 | -19.17 | -1.62 | 0.00 | -109.06 | 0.00 | 109.06 | 2529.69 | 1264.85 | 3722.50 | 1864.02 | | 2.55 | -0.34 | 0.066 |
| 80.00 | -18.22 | -1.62 | 0.00 | -100.97 | 0.00 | 100.97 | 2474.70 | 1237.35 | 3528.85 | 1767.05 | | 2.92 | -0.37 | 0.065 |
| 85.00 | -17.29 | -1.62 | 0.00 | -92.87 | 0.00 | 92.87 | 2418.27 | 1209.13 | 3338.22 | 1671.59 | | 3.32 | -0.39 | 0.063 |
| 90.00 | -16.39 | -1.62 | 0.00 | -84.77 | 0.00 | 84.77 | 2360.40 | 1180.20 | 3150.83 | 1577.76 | | 3.75 | -0.42 | 0.061 |
| 95.00 | -15.50 | -1.62 | 0.00 | -76.65 | 0.00 | 76.65 | 2301.11 | 1150.55 | 2966.86 | 1485.64 | | 4.20 | -0.45 | 0.058 |
| 97.50 | -15.07 | -1.62 | 0.00 | -72.60 | 0.00 | 72.60 | 2270.92 | 1135.46 | 2876.22 | 1440.25 | | 4.44 | -0.46 | 0.057 |
| 100.00 | -14.46 | -1.62 | 0.00 | -68.55 | 0.00 | 68.55 | 2235.90 | 1117.95 | 2780.94 | 1392.54 | | 4.68 | -0.47 | 0.056 |
| 101.50 | -14.09 | -1.62 | 0.00 | -66.12 | 0.00 | 66.12 | 1129.30 | 564.65 | 1418.29 | 710.20 | | 4.83 | -0.48 | 0.106 |
| 105.00 | -13.67 | -1.62 | 0.00 | -60.45 | 0.00 | 60.45 | 1114.37 | 557.18 | 1364.00 | 683.02 | | 5.19 | -0.50 | 0.101 |
| 110.00 | -13.08 | -1.63 | 0.00 | -52.33 | 0.00 | 52.33 | 1091.82 | 545.91 | 1286.67 | 644.29 | | 5.74 | -0.54 | 0.093 |
| 115.00 | -12.50 | -1.63 | 0.00 | -44.20 | 0.00 | 44.20 | 1067.84 | 533.92 | 1209.76 | 605.78 | | 6.33 | -0.58 | 0.085 |
| 120.00 | -11.94 | -1.63 | 0.00 | -36.05 | 0.00 | 36.05 | 1042.42 | 521.21 | 1133.48 | 567.58 | | 6.95 | -0.62 | 0.075 |
| 125.00 | -11.39 | -1.61 | 0.00 | -27.92 | 0.00 | 27.92 | 1015.57 | 507.79 | 1058.03 | 529.80 | | 7.62 | -0.65 | 0.064 |
| 127.50 | -8.67 | -1.45 | 0.00 | -23.88 | 0.00 | 23.88 | 1001.61 | 500.80 | 1020.67 | 511.09 | | 7.96 | -0.66 | 0.055 |
| 130.00 | -8.46 | -1.44 | 0.00 | -20.26 | 0.00 | 20.26 | 987.29 | 493.64 | 983.59 | 492.52 | | 8.31 | -0.68 | 0.050 |
| 135.00 | -8.05 | -1.41 | 0.00 | -13.05 | 0.00 | 13.05 | 957.57 | 478.78 | 910.36 | 455.86 | | 9.04 | -0.70 | 0.037 |
| 138.00 | -4.92 | -1.00 | 0.00 | -8.82 | 0.00 | 8.82 | 939.05 | 469.53 | 867.09 | 434.19 | | 9.48 | -0.71 | 0.026 |
| 140.00 | -4.77 | -0.98 | 0.00 | -6.82 | 0.00 | 6.82 | 926.42 | 463.21 | 838.55 | 419.90 | | 9.78 | -0.71 | 0.021 |
| 145.00 | -4.40 | -0.93 | 0.00 | -1.91 | 0.00 | 1.91 | 893.83 | 446.92 | 768.34 | 384.74 | | 10.53 | -0.72 | 0.010 |
| 147.00 | -0.10 | -0.02 | 0.00 | -0.05 | 0.00 | 0.05 | 880.40 | 440.20 | 740.75 | 370.92 | | 10.83 | -0.72 | 0.000 |
| 149.00 | 0.00 | -0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 866.73 | 433.37 | 713.46 | 357.26 | | 11.14 | -0.72 | 0.000 |

# Seismic Segment Forces (Factored)

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 22 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Load Case:** | 0.9D + 1.0E | | | | | | | **Iterations** | 23 |
| **Gust Response Factor** | 1.10 | | | | **Sds** | 0.21 | | **Ss** | 0.20 |
| **Dead Load Factor** | 0.90 | **Seismic Load Factor** | 1.00 | | **Sd1** | 0.10 | | **S1** | 0.07 |
| **Wind Load Factor** | 0.00 | **Structure Frequency** | 0.33 | | **SA** | 0.03 | **Seismic Importance Factor** | | 1.00 |

| Top Elev (ft) | Description | Wz (lb) | a | b | c | Lateral Fs (lb) | R: 1.50 |
|---|---|---|---|---|---|---|---|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5.00 | | 863.45 | 0.00 | 0.03 | 0.02 | 18.68 | |
| 10.00 | | 844.89 | 0.01 | 0.05 | 0.03 | 26.10 | |
| 15.00 | | 826.33 | 0.02 | 0.06 | 0.04 | 29.20 | |
| 20.00 | | 807.77 | 0.03 | 0.07 | 0.04 | 30.36 | |
| 25.00 | | 789.20 | 0.05 | 0.07 | 0.04 | 30.70 | |
| 30.00 | | 770.64 | 0.08 | 0.07 | 0.04 | 30.75 | |
| 35.00 | | 752.08 | 0.10 | 0.07 | 0.04 | 30.74 | |
| 40.00 | | 733.52 | 0.14 | 0.07 | 0.03 | 30.69 | |
| 45.00 | | 714.95 | 0.17 | 0.07 | 0.03 | 30.41 | |
| 48.00 | Bot - Section 2 | 420.06 | 0.20 | 0.06 | 0.02 | 17.91 | |
| 50.00 | | 556.88 | 0.21 | 0.06 | 0.02 | 23.67 | |
| 53.25 | Top - Section 1 | 892.26 | 0.24 | 0.06 | 0.02 | 37.25 | |
| 55.00 | | 238.82 | 0.26 | 0.05 | 0.02 | 9.79 | |
| 60.00 | | 669.81 | 0.31 | 0.04 | 0.01 | 24.84 | |
| 65.00 | | 651.25 | 0.36 | 0.03 | 0.01 | 19.38 | |
| 70.00 | | 632.69 | 0.42 | 0.01 | 0.01 | 11.63 | |
| 75.00 | | 614.13 | 0.48 | -0.01 | 0.01 | 2.08 | |
| 80.00 | | 595.56 | 0.54 | -0.03 | 0.01 | -7.82 | |
| 85.00 | | 577.00 | 0.62 | -0.06 | 0.02 | -16.22 | |
| 90.00 | | 558.44 | 0.69 | -0.08 | 0.03 | -21.72 | |
| 95.00 | | 539.87 | 0.77 | -0.11 | 0.05 | -23.80 | |
| 97.50 | Bot - Section 3 | 262.98 | 0.81 | -0.11 | 0.06 | -11.69 | |
| 100.00 | | 415.87 | 0.85 | -0.12 | 0.07 | -18.03 | |
| 101.50 | Top - Section 2 | 245.96 | 0.88 | -0.12 | 0.08 | -10.33 | |
| 105.00 | | 213.53 | 0.94 | -0.12 | 0.10 | -7.86 | |
| 110.00 | | 295.57 | 1.03 | -0.10 | 0.15 | -7.28 | |
| 115.00 | | 284.44 | 1.13 | -0.05 | 0.20 | -1.98 | |
| 120.00 | | 273.30 | 1.23 | 0.03 | 0.27 | 4.43 | |
| 125.00 | | 262.16 | 1.33 | 0.16 | 0.36 | 11.78 | |
| 127.50 | Appurtenance(s) | 2171.8 | 1.38 | 0.25 | 0.42 | 133.33 | |
| 130.00 | | 124.12 | 1.44 | 0.36 | 0.47 | 9.84 | |
| 135.00 | | 239.89 | 1.55 | 0.64 | 0.61 | 28.63 | |
| 138.00 | Appurtenance(s) | 2554.8 | 1.62 | 0.85 | 0.70 | 373.58 | |
| 140.00 | | 90.16 | 1.67 | 1.01 | 0.77 | 14.91 | |
| 145.00 | | 217.61 | 1.79 | 1.49 | 0.96 | 47.29 | |
| 147.00 | Appurtenance(s) | 3559.2 | 1.84 | 1.72 | 1.05 | 853.71 | |
| 149.00 | | 82.14 | 1.89 | 1.98 | 1.14 | 21.64 | |
| | **Totals:** | **25,343.2** | | | | **1,776.6** | **Total Wind:** **23,944.8** |

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

# Calculated Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 23 | |

**Load Case:** 0.9D + 1.0E

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Gust Response Factor** | 1.10 | | | **Sds** | 0.21 | | | **Iterations** | 23 |
| **Dead Load Factor** | 0.90 | **Seismic Load Factor** | 1.00 | **Sd1** | 0.10 | | | **Ss** | 0.20 |
| **Wind Load Factor** | 0.00 | **Structure Frequency** | 0.33 | **SA** | 0.03 | | | **S1** | 0.07 |
| | | | | | | | | **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 | -27.61 | -1.91 | 0.00 | -238.20 | 0.00 | 238.20 | 3163.75 | 1581.88 | 6735.38 | 3372.69 | | 0.00 | 0.00 | 0.079 |
| 5.00 | -26.66 | -1.90 | 0.00 | -228.67 | 0.00 | 228.67 | 3129.45 | 1564.72 | 6519.79 | 3264.74 | | 0.01 | -0.02 | 0.079 |
| 10.00 | -25.72 | -1.88 | 0.00 | -219.18 | 0.00 | 219.18 | 3093.71 | 1546.85 | 6304.40 | 3156.89 | | 0.04 | -0.04 | 0.078 |
| 15.00 | -24.80 | -1.86 | 0.00 | -209.79 | 0.00 | 209.79 | 3056.53 | 1528.27 | 6089.41 | 3049.23 | | 0.09 | -0.06 | 0.077 |
| 20.00 | -23.90 | -1.84 | 0.00 | -200.50 | 0.00 | 200.50 | 3017.92 | 1508.96 | 5875.02 | 2941.88 | | 0.16 | -0.08 | 0.076 |
| 25.00 | -23.01 | -1.81 | 0.00 | -191.32 | 0.00 | 191.32 | 2977.88 | 1488.94 | 5661.42 | 2834.92 | | 0.26 | -0.10 | 0.075 |
| 30.00 | -22.15 | -1.79 | 0.00 | -182.26 | 0.00 | 182.26 | 2936.41 | 1468.20 | 5448.81 | 2728.46 | | 0.38 | -0.12 | 0.074 |
| 35.00 | -21.29 | -1.76 | 0.00 | -173.32 | 0.00 | 173.32 | 2893.50 | 1446.75 | 5237.39 | 2622.59 | | 0.51 | -0.14 | 0.073 |
| 40.00 | -20.46 | -1.74 | 0.00 | -164.51 | 0.00 | 164.51 | 2849.16 | 1424.58 | 5027.34 | 2517.41 | | 0.68 | -0.17 | 0.073 |
| 45.00 | -19.64 | -1.71 | 0.00 | -155.81 | 0.00 | 155.81 | 2803.38 | 1401.69 | 4818.87 | 2413.02 | | 0.86 | -0.19 | 0.072 |
| 48.00 | -19.15 | -1.70 | 0.00 | -150.68 | 0.00 | 150.68 | 2775.23 | 1387.61 | 4694.62 | 2350.80 | | 0.99 | -0.20 | 0.071 |
| 50.00 | -18.58 | -1.67 | 0.00 | -147.29 | 0.00 | 147.29 | 2756.17 | 1378.09 | 4612.17 | 2309.51 | | 1.07 | -0.21 | 0.071 |
| 53.25 | -17.66 | -1.64 | 0.00 | -141.84 | 0.00 | 141.84 | 2752.25 | 1376.12 | 4595.34 | 2301.09 | | 1.23 | -0.23 | 0.068 |
| 55.00 | -17.39 | -1.63 | 0.00 | -138.98 | 0.00 | 138.98 | 2735.34 | 1367.67 | 4523.51 | 2265.12 | | 1.31 | -0.24 | 0.068 |
| 60.00 | -16.61 | -1.61 | 0.00 | -130.82 | 0.00 | 130.82 | 2686.08 | 1343.04 | 4319.69 | 2163.06 | | 1.57 | -0.26 | 0.067 |
| 65.00 | -15.85 | -1.59 | 0.00 | -122.77 | 0.00 | 122.77 | 2635.39 | 1317.69 | 4118.12 | 2062.12 | | 1.86 | -0.29 | 0.066 |
| 70.00 | -15.10 | -1.59 | 0.00 | -114.80 | 0.00 | 114.80 | 2583.26 | 1291.63 | 3918.99 | 1962.41 | | 2.17 | -0.31 | 0.064 |
| 75.00 | -14.37 | -1.59 | 0.00 | -106.87 | 0.00 | 106.87 | 2529.69 | 1264.85 | 3722.50 | 1864.02 | | 2.51 | -0.33 | 0.063 |
| 80.00 | -13.66 | -1.59 | 0.00 | -98.94 | 0.00 | 98.94 | 2474.70 | 1237.35 | 3528.85 | 1767.05 | | 2.87 | -0.36 | 0.062 |
| 85.00 | -12.97 | -1.59 | 0.00 | -91.01 | 0.00 | 91.01 | 2418.27 | 1209.13 | 3338.22 | 1671.59 | | 3.26 | -0.39 | 0.060 |
| 90.00 | -12.29 | -1.59 | 0.00 | -83.07 | 0.00 | 83.07 | 2360.40 | 1180.20 | 3150.83 | 1577.76 | | 3.68 | -0.41 | 0.058 |
| 95.00 | -11.63 | -1.59 | 0.00 | -75.12 | 0.00 | 75.12 | 2301.11 | 1150.55 | 2966.86 | 1485.64 | | 4.13 | -0.44 | 0.056 |
| 97.50 | -11.30 | -1.59 | 0.00 | -71.15 | 0.00 | 71.15 | 2270.92 | 1135.46 | 2876.22 | 1440.25 | | 4.36 | -0.45 | 0.054 |
| 100.00 | -10.84 | -1.59 | 0.00 | -67.18 | 0.00 | 67.18 | 2235.90 | 1117.95 | 2780.94 | 1392.54 | | 4.60 | -0.46 | 0.053 |
| 101.50 | -10.56 | -1.59 | 0.00 | -64.80 | 0.00 | 64.80 | 1129.30 | 564.65 | 1418.29 | 710.20 | | 4.75 | -0.47 | 0.101 |
| 105.00 | -10.25 | -1.59 | 0.00 | -59.24 | 0.00 | 59.24 | 1114.37 | 557.18 | 1364.00 | 683.02 | | 5.10 | -0.49 | 0.096 |
| 110.00 | -9.81 | -1.59 | 0.00 | -51.29 | 0.00 | 51.29 | 1091.82 | 545.91 | 1286.67 | 644.29 | | 5.64 | -0.53 | 0.089 |
| 115.00 | -9.37 | -1.59 | 0.00 | -43.33 | 0.00 | 43.33 | 1067.84 | 533.92 | 1209.76 | 605.78 | | 6.21 | -0.57 | 0.080 |
| 120.00 | -8.95 | -1.59 | 0.00 | -35.36 | 0.00 | 35.36 | 1042.42 | 521.21 | 1133.48 | 567.58 | | 6.83 | -0.60 | 0.071 |
| 125.00 | -8.54 | -1.58 | 0.00 | -27.40 | 0.00 | 27.40 | 1015.57 | 507.79 | 1058.03 | 529.80 | | 7.48 | -0.64 | 0.060 |
| 127.50 | -6.50 | -1.42 | 0.00 | -23.46 | 0.00 | 23.46 | 1001.61 | 500.80 | 1020.67 | 511.09 | | 7.81 | -0.65 | 0.052 |
| 130.00 | -6.34 | -1.41 | 0.00 | -19.90 | 0.00 | 19.90 | 987.29 | 493.64 | 983.59 | 492.52 | | 8.16 | -0.66 | 0.047 |
| 135.00 | -6.03 | -1.38 | 0.00 | -12.82 | 0.00 | 12.82 | 957.57 | 478.78 | 910.36 | 455.86 | | 8.87 | -0.69 | 0.034 |
| 138.00 | -3.69 | -0.98 | 0.00 | -8.67 | 0.00 | 8.67 | 939.05 | 469.53 | 867.09 | 434.19 | | 9.30 | -0.70 | 0.024 |
| 140.00 | -3.57 | -0.97 | 0.00 | -6.71 | 0.00 | 6.71 | 926.42 | 463.21 | 838.55 | 419.90 | | 9.60 | -0.70 | 0.020 |
| 145.00 | -3.30 | -0.92 | 0.00 | -1.88 | 0.00 | 1.88 | 893.83 | 446.92 | 768.34 | 384.74 | | 10.33 | -0.71 | 0.009 |
| 147.00 | -0.07 | -0.02 | 0.00 | -0.04 | 0.00 | 0.04 | 880.40 | 440.20 | 740.75 | 370.92 | | 10.63 | -0.71 | 0.000 |
| 149.00 | 0.00 | -0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 866.73 | 433.37 | 713.46 | 357.26 | | 10.93 | -0.71 | 0.000 |

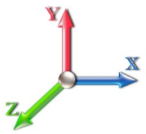
# Wind Loading - Shaft

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 24 | |

**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00




**Iterations** 24

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | 1.92 | 0.70 | 11.790 | 12.97 | 306.55 | 0.650 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.85 | 0.70 | 11.348 | 12.48 | 294.39 | 0.650 | 0.000 | 5.00 | 21.781 | 14.16 | 176.7 | 0.0 | 863.5 |
| 10.00 | | 1.79 | 0.70 | 10.944 | 12.04 | 282.85 | 0.650 | 0.000 | 5.00 | 21.315 | 13.86 | 166.8 | 0.0 | 844.9 |
| 15.00 | | 1.73 | 0.70 | 10.573 | 11.63 | 271.89 | 0.650 | 0.000 | 5.00 | 20.850 | 13.55 | 157.6 | 0.0 | 826.3 |
| 20.00 | | 1.67 | 0.70 | 10.234 | 11.26 | 261.45 | 0.650 | 0.000 | 5.00 | 20.385 | 13.25 | 149.2 | 0.0 | 807.8 |
| 25.00 | | 1.62 | 0.70 | 9.923 | 10.91 | 251.50 | 0.650 | 0.000 | 5.00 | 19.919 | 12.95 | 141.3 | 0.0 | 789.2 |
| 30.00 | | 1.57 | 0.70 | 9.645 | 10.61 | 242.09 | 0.650 | 0.000 | 5.00 | 19.454 | 12.65 | 134.2 | 0.0 | 770.6 |
| 35.00 | | 1.53 | 0.73 | 9.804 | 10.78 | 238.17 | 0.650 | 0.000 | 5.00 | 18.988 | 12.34 | 133.1 | 0.0 | 752.1 |
| 40.00 | | 1.49 | 0.76 | 9.923 | 10.91 | 233.66 | 0.650 | 0.000 | 5.00 | 18.523 | 12.04 | 131.4 | 0.0 | 733.5 |
| 45.00 | | 1.45 | 0.79 | 10.012 | 11.01 | 228.74 | 0.650 | 0.000 | 5.00 | 18.058 | 11.74 | 129.3 | 0.0 | 715.0 |
| 48.00 | Bot - Section 2 | 1.43 | 0.80 | 10.055 | 11.06 | 225.64 | 0.650 | 0.000 | 3.00 | 10.611 | 6.90 | 76.3 | 0.0 | 420.1 |
| 50.00 | | 1.42 | 0.81 | 10.081 | 11.09 | 223.53 | 0.650 | 0.000 | 2.00 | 7.087 | 4.61 | 51.1 | 0.0 | 556.9 |
| 53.25 | Top - Section 1 | 1.40 | 0.83 | 10.117 | 11.13 | 220.03 | 0.650 | 0.000 | 3.25 | 11.357 | 7.38 | 82.2 | 0.0 | 892.3 |
| 55.00 | | 1.39 | 0.83 | 10.134 | 11.15 | 221.53 | 0.650 | 0.000 | 1.75 | 6.034 | 3.92 | 43.7 | 0.0 | 238.8 |
| 60.00 | | 1.36 | 0.85 | 10.177 | 11.19 | 215.97 | 0.650 | 0.000 | 5.00 | 16.926 | 11.00 | 123.2 | 0.0 | 669.8 |
| 65.00 | | 1.33 | 0.87 | 10.211 | 11.23 | 210.31 | 0.650 | 0.000 | 5.00 | 16.460 | 10.70 | 120.2 | 0.0 | 651.3 |
| 70.00 | | 1.31 | 0.89 | 10.241 | 11.26 | 204.57 | 0.650 | 0.000 | 5.00 | 15.995 | 10.40 | 117.1 | 0.0 | 632.7 |
| 75.00 | | 1.29 | 0.91 | 10.266 | 11.29 | 198.77 | 0.650 | 0.000 | 5.00 | 15.530 | 10.09 | 114.0 | 0.0 | 614.1 |
| 80.00 | | 1.27 | 0.93 | 10.289 | 11.32 | 192.94 | 0.650 | 0.000 | 5.00 | 15.064 | 9.79 | 110.8 | 0.0 | 595.6 |
| 85.00 | | 1.25 | 0.94 | 10.311 | 11.34 | 187.08 | 0.650 | 0.000 | 5.00 | 14.599 | 9.49 | 107.6 | 0.0 | 577.0 |
| 90.00 | | 1.23 | 0.96 | 10.332 | 11.37 | 181.21 | 0.650 | 0.000 | 5.00 | 14.133 | 9.19 | 104.4 | 0.0 | 558.4 |
| 95.00 | | 1.21 | 0.97 | 10.353 | 11.39 | 175.32 | 0.650 | 0.000 | 5.00 | 13.668 | 8.88 | 101.2 | 0.0 | 539.9 |
| 97.50 | Bot - Section 3 | 1.21 | 0.98 | 10.364 | 11.40 | 172.37 | 0.650 | 0.000 | 2.50 | 6.660 | 4.33 | 49.3 | 0.0 | 263.0 |
| 100.00 | | 1.20 | 0.99 | 10.375 | 11.41 | 169.42 | 0.650 | 0.000 | 2.50 | 6.622 | 4.30 | 49.1 | 0.0 | 415.9 |
| 101.50 | Top - Section 2 | 1.19 | 0.99 | 10.381 | 11.42 | 167.65 | 0.650 | 0.000 | 1.50 | 3.918 | 2.55 | 29.1 | 0.0 | 246.0 |
| 105.00 | | 1.18 | 1.00 | 10.397 | 11.44 | 165.59 | 0.650 | 0.000 | 3.50 | 8.978 | 5.84 | 66.7 | 0.0 | 213.5 |
| 110.00 | | 1.17 | 1.02 | 10.420 | 11.46 | 159.68 | 0.650 | 0.000 | 5.00 | 12.431 | 8.08 | 92.6 | 0.0 | 295.6 |
| 115.00 | | 1.16 | 1.03 | 10.444 | 11.49 | 153.77 | 0.650 | 0.000 | 5.00 | 11.965 | 7.78 | 89.4 | 0.0 | 284.4 |
| 120.00 | | 1.15 | 1.04 | 10.470 | 11.52 | 147.85 | 0.650 | 0.000 | 5.00 | 11.500 | 7.47 | 86.1 | 0.0 | 273.3 |
| 125.00 | | 1.14 | 1.05 | 10.497 | 11.55 | 141.93 | 0.650 | 0.000 | 5.00 | 11.034 | 7.17 | 82.8 | 0.0 | 262.2 |
| 127.50 | Appurtenance(s) | 1.13 | 1.06 | 10.511 | 11.56 | 138.96 | 0.650 | 0.000 | 2.50 | 5.343 | 3.47 | 40.2 | 0.0 | 126.9 |
| 130.00 | | 1.13 | 1.07 | 10.525 | 11.58 | 135.99 | 0.650 | 0.000 | 2.50 | 5.226 | 3.40 | 39.3 | 0.0 | 124.1 |
| 135.00 | | 1.12 | 1.08 | 10.554 | 11.61 | 130.05 | 0.650 | 0.000 | 5.00 | 10.103 | 6.57 | 76.2 | 0.0 | 239.9 |
| 138.00 | Appurtenance(s) | 1.11 | 1.08 | 10.573 | 11.63 | 126.48 | 0.650 | 0.000 | 3.00 | 5.839 | 3.80 | 44.1 | 0.0 | 138.6 |
| 140.00 | | 1.11 | 1.09 | 10.585 | 11.64 | 124.10 | 0.650 | 0.000 | 2.00 | 3.799 | 2.47 | 28.8 | 0.0 | 90.2 |
| 145.00 | | 1.10 | 1.10 | 10.618 | 11.68 | 118.14 | 0.650 | 0.000 | 5.00 | 9.173 | 5.96 | 69.6 | 0.0 | 217.6 |
| 147.00 | Appurtenance(s) | 1.10 | 1.10 | 10.631 | 11.69 | 115.75 | 0.650 | 0.000 | 2.00 | 3.539 | 2.30 | 26.9 | 0.0 | 83.9 |
| 149.00 | | 1.10 | 1.11 | 10.644 | 11.71 | 113.36 | 0.650 | 0.000 | 2.00 | 3.464 | 2.25 | 26.4 | 0.0 | 82.1 |
| | | | | | | | | **Totals:** | **149.00** | | | **3,368.0** | | **17,406.7** |

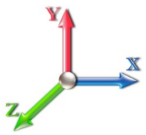
# Discrete Appurtenance Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **Struct Class:** | II | Page: 25 | |

**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00




**Iterations** 24

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | 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 | 147.00 | Kathrein 800 10965 | 3 | 10.631 | 11.694 | 0.63 | 0.90 | 26.10 | 325.80 | 0.000 | 0.000 | 305.22 | 0.00 | 0.00 |
| 2 | 147.00 | CCI HPA65R-BU6A | 3 | 10.631 | 11.694 | 0.80 | 0.90 | 18.89 | 129.00 | 0.000 | 0.000 | 220.87 | 0.00 | 0.00 |
| 3 | 147.00 | Ericsson RRUS 4449 B5, | 3 | 10.631 | 11.694 | 0.69 | 0.80 | 4.07 | 213.00 | 0.000 | 0.000 | 47.55 | 0.00 | 0.00 |
| 4 | 147.00 | Ericsson RRUS 8843 B2 | 3 | 10.631 | 11.694 | 0.74 | 0.80 | 3.62 | 216.00 | 0.000 | 0.000 | 42.35 | 0.00 | 0.00 |
| 5 | 147.00 | Handrail Kit P/N HRK-12 | 3 | 10.631 | 11.694 | 0.56 | 0.75 | 5.01 | 817.29 | 0.000 | 0.000 | 58.61 | 0.00 | 0.00 |
| 6 | 147.00 | Raycap DC6-48-60-18-8F | 1 | 10.631 | 11.694 | 1.07 | 0.80 | 2.36 | 32.80 | 0.000 | 0.000 | 27.58 | 0.00 | 0.00 |
| 7 | 147.00 | Low Profile Platform | 1 | 10.631 | 11.694 | 1.00 | 1.00 | 22.00 | 1500.00 | 0.000 | 0.000 | 257.27 | 0.00 | 0.00 |
| 8 | 147.00 | Powerwave 7770.00 | 3 | 10.631 | 11.694 | 0.66 | 0.90 | 10.84 | 105.00 | 0.000 | 0.000 | 126.77 | 0.00 | 0.00 |
| 9 | 147.00 | Powerwave LGP13519 | 6 | 10.631 | 11.694 | 0.54 | 0.80 | 1.09 | 31.80 | 0.000 | 0.000 | 12.79 | 0.00 | 0.00 |
| 10 | 147.00 | Powerwave LGP21401 | 6 | 10.631 | 11.694 | 0.54 | 0.80 | 4.15 | 84.60 | 0.000 | 0.000 | 48.51 | 0.00 | 0.00 |
| 11 | 147.00 | Raycap DC6-48-60-18-8C | 1 | 10.631 | 11.694 | 0.80 | 0.80 | 1.52 | 20.00 | 0.000 | 0.000 | 17.77 | 0.00 | 0.00 |
| 12 | 138.00 | RFS APXVTM14-C-120 | 3 | 10.573 | 11.630 | 0.63 | 0.80 | 12.02 | 168.00 | 0.000 | 0.000 | 139.80 | 0.00 | 0.00 |
| 13 | 138.00 | RFS APXVSPP18-C-A20 | 3 | 10.573 | 11.630 | 0.66 | 0.80 | 15.98 | 171.00 | 0.000 | 0.000 | 185.80 | 0.00 | 0.00 |
| 14 | 138.00 | RFS ACU-A20-N | 4 | 10.573 | 11.630 | 0.54 | 0.80 | 0.30 | 4.00 | 0.000 | 0.000 | 3.49 | 0.00 | 0.00 |
| 15 | 138.00 | ALU TD-RRH8x20-25 | 3 | 10.573 | 11.630 | 0.54 | 0.80 | 6.51 | 210.00 | 0.000 | 0.000 | 75.74 | 0.00 | 0.00 |
| 16 | 138.00 | ALU 800MHz RRH | 3 | 10.573 | 11.630 | 0.54 | 0.80 | 5.56 | 204.90 | 0.000 | 0.000 | 64.71 | 0.00 | 0.00 |
| 17 | 138.00 | ALU 800MHz | 3 | 10.573 | 11.630 | 0.54 | 0.80 | 1.25 | 26.40 | 0.000 | 0.000 | 14.59 | 0.00 | 0.00 |
| 18 | 138.00 | ALU 1900MHz | 3 | 10.573 | 11.630 | 0.54 | 0.80 | 6.11 | 132.00 | 0.000 | 0.000 | 71.06 | 0.00 | 0.00 |
| 19 | 138.00 | Low Profile Platform | 1 | 10.573 | 11.630 | 1.00 | 1.00 | 22.00 | 1500.00 | 0.000 | 0.000 | 255.86 | 0.00 | 0.00 |
| 20 | 127.50 | Remec S20057A1 | 3 | 10.511 | 11.562 | 0.50 | 0.75 | 1.24 | 33.00 | 0.000 | 0.000 | 14.29 | 0.00 | 0.00 |
| 21 | 127.50 | Commscope | 3 | 10.511 | 11.562 | 0.60 | 0.75 | 20.65 | 149.40 | 0.000 | 0.000 | 238.70 | 0.00 | 0.00 |
| 22 | 127.50 | Kathrein 782 11054 | 3 | 10.511 | 11.562 | 0.50 | 0.75 | 0.42 | 7.80 | 0.000 | 0.000 | 4.88 | 0.00 | 0.00 |
| 23 | 127.50 | Platform w/ Hand Rail | 1 | 10.511 | 11.562 | 1.00 | 1.00 | 35.00 | 1600.00 | 0.000 | 0.000 | 404.66 | 0.00 | 0.00 |
| 24 | 127.50 | RFS ATMAA1412D-1A20 | 3 | 10.511 | 11.562 | 0.50 | 0.75 | 1.76 | 39.00 | 0.000 | 0.000 | 20.39 | 0.00 | 0.00 |
| 25 | 127.50 | RFS | 3 | 10.511 | 11.562 | 0.50 | 0.75 | 9.74 | 122.10 | 0.000 | 0.000 | 112.59 | 0.00 | 0.00 |
| 26 | 127.50 | RFS APXV18-209014-C | 3 | 10.511 | 11.562 | 0.55 | 0.75 | 5.96 | 56.10 | 0.000 | 0.000 | 68.92 | 0.00 | 0.00 |
| 27 | 127.50 | RFS | 3 | 10.511 | 11.562 | 0.50 | 0.75 | 1.76 | 37.50 | 0.000 | 0.000 | 20.39 | 0.00 | 0.00 |
| | | | | | | | **Totals:** | | **7,936.49** | | | **2,861.16** | | |

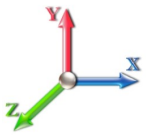
# Total Applied Force Summary

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 26 |

**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00




**Iterations** 24

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|---|---|---|---|---|---|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 176.73 | 1058.25 | 0.00 | 0.00 |
| 10.00 | | 166.79 | 1039.69 | 0.00 | 0.00 |
| 15.00 | | 157.63 | 1021.13 | 0.00 | 0.00 |
| 20.00 | | 149.16 | 1002.57 | 0.00 | 0.00 |
| 25.00 | | 141.32 | 984.00 | 0.00 | 0.00 |
| 30.00 | | 134.15 | 965.44 | 0.00 | 0.00 |
| 35.00 | | 133.11 | 946.88 | 0.00 | 0.00 |
| 40.00 | | 131.42 | 928.32 | 0.00 | 0.00 |
| 45.00 | | 129.27 | 909.75 | 0.00 | 0.00 |
| 48.00 | | 76.29 | 536.94 | 0.00 | 0.00 |
| 50.00 | | 51.08 | 634.80 | 0.00 | 0.00 |
| 53.25 | | 82.15 | 1018.88 | 0.00 | 0.00 |
| 55.00 | | 43.72 | 307.00 | 0.00 | 0.00 |
| 60.00 | | 123.16 | 864.61 | 0.00 | 0.00 |
| 65.00 | | 120.18 | 846.05 | 0.00 | 0.00 |
| 70.00 | | 117.12 | 827.49 | 0.00 | 0.00 |
| 75.00 | | 113.99 | 808.93 | 0.00 | 0.00 |
| 80.00 | | 110.82 | 790.36 | 0.00 | 0.00 |
| 85.00 | | 107.63 | 771.80 | 0.00 | 0.00 |
| 90.00 | | 104.41 | 753.24 | 0.00 | 0.00 |
| 95.00 | | 101.18 | 734.67 | 0.00 | 0.00 |
| 97.50 | | 49.35 | 360.38 | 0.00 | 0.00 |
| 100.00 | | 49.12 | 513.27 | 0.00 | 0.00 |
| 101.50 | | 29.08 | 304.40 | 0.00 | 0.00 |
| 105.00 | | 66.74 | 349.89 | 0.00 | 0.00 |
| 110.00 | | 92.61 | 490.37 | 0.00 | 0.00 |
| 115.00 | | 89.35 | 479.24 | 0.00 | 0.00 |
| 120.00 | | 86.09 | 468.10 | 0.00 | 0.00 |
| 125.00 | | 82.81 | 456.96 | 0.00 | 0.00 |
| 127.50 | (22) attachments | 924.97 | 2269.20 | 0.00 | 0.00 |
| 130.00 | | 39.33 | 174.72 | 0.00 | 0.00 |
| 135.00 | | 76.25 | 341.09 | 0.00 | 0.00 |
| 138.00 | (23) attachments | 855.19 | 2615.61 | 0.00 | 0.00 |
| 140.00 | | 28.76 | 125.36 | 0.00 | 0.00 |
| 145.00 | | 69.64 | 305.61 | 0.00 | 0.00 |
| 147.00 | (33) attachments | 1192.19 | 3594.42 | 0.00 | 0.00 |
| 149.00 | | 26.37 | 82.14 | 0.00 | 0.00 |
| | **Totals:** | **6,229.14** | **30,681.56** | **0.00** | **0.00** |

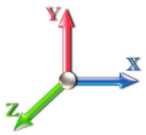
# Calculated Forces

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | **Code:** | EIA/TIA-222-G | 1/24/2019 | |
| **Site Name:** | Southbury | **Exposure:** | B | | |
| **Height:** | 149.00 (ft) | **Crest Height:** | 89.00 | | |
| **Base Elev:** | 0.000 (ft) | **Site Class:** | D - Stiff Soil | | |
| **Gh:** | 1.1 **Topography:** 2 | **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** 24

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | -30.68 | -6.24 | 0.00 | -645.61 | 0.00 | 645.61 | 3163.75 | 1581.88 | 6735.38 | 3372.69 | 0.00 | 0.000 | 0.000 | 0.201 |
| 5.00 | -29.61 | -6.09 | 0.00 | -614.40 | 0.00 | 614.40 | 3129.45 | 1564.72 | 6519.79 | 3264.74 | 0.03 | -0.052 | 0.000 | 0.198 |
| 10.00 | -28.57 | -5.95 | 0.00 | -583.94 | 0.00 | 583.94 | 3093.71 | 1546.85 | 6304.40 | 3156.89 | 0.11 | -0.104 | 0.000 | 0.194 |
| 15.00 | -27.54 | -5.82 | 0.00 | -554.19 | 0.00 | 554.19 | 3056.53 | 1528.27 | 6089.41 | 3049.23 | 0.25 | -0.157 | 0.000 | 0.191 |
| 20.00 | -26.54 | -5.69 | 0.00 | -525.11 | 0.00 | 525.11 | 3017.92 | 1508.96 | 5875.02 | 2941.88 | 0.44 | -0.211 | 0.000 | 0.187 |
| 25.00 | -25.55 | -5.57 | 0.00 | -496.67 | 0.00 | 496.67 | 2977.88 | 1488.94 | 5661.42 | 2834.92 | 0.69 | -0.266 | 0.000 | 0.184 |
| 30.00 | -24.58 | -5.45 | 0.00 | -468.83 | 0.00 | 468.83 | 2936.41 | 1468.20 | 5448.81 | 2728.46 | 1.00 | -0.322 | 0.000 | 0.180 |
| 35.00 | -23.63 | -5.34 | 0.00 | -441.57 | 0.00 | 441.57 | 2893.50 | 1446.75 | 5237.39 | 2622.59 | 1.37 | -0.378 | 0.000 | 0.177 |
| 40.00 | -22.69 | -5.22 | 0.00 | -414.88 | 0.00 | 414.88 | 2849.16 | 1424.58 | 5027.34 | 2517.41 | 1.79 | -0.435 | 0.000 | 0.173 |
| 45.00 | -21.78 | -5.10 | 0.00 | -388.77 | 0.00 | 388.77 | 2803.38 | 1401.69 | 4818.87 | 2413.02 | 2.28 | -0.493 | 0.000 | 0.169 |
| 48.00 | -21.24 | -5.03 | 0.00 | -373.46 | 0.00 | 373.46 | 2775.23 | 1387.61 | 4694.62 | 2350.80 | 2.60 | -0.528 | 0.000 | 0.167 |
| 50.00 | -20.61 | -4.99 | 0.00 | -363.40 | 0.00 | 363.40 | 2756.17 | 1378.09 | 4612.17 | 2309.51 | 2.83 | -0.552 | 0.000 | 0.165 |
| 53.25 | -19.58 | -4.91 | 0.00 | -347.19 | 0.00 | 347.19 | 2752.25 | 1376.12 | 4595.34 | 2301.09 | 3.22 | -0.591 | 0.000 | 0.158 |
| 55.00 | -19.27 | -4.87 | 0.00 | -338.61 | 0.00 | 338.61 | 2735.34 | 1367.67 | 4523.51 | 2265.12 | 3.44 | -0.612 | 0.000 | 0.157 |
| 60.00 | -18.41 | -4.76 | 0.00 | -314.25 | 0.00 | 314.25 | 2686.08 | 1343.04 | 4319.69 | 2163.06 | 4.11 | -0.669 | 0.000 | 0.152 |
| 65.00 | -17.56 | -4.64 | 0.00 | -290.46 | 0.00 | 290.46 | 2635.39 | 1317.69 | 4118.12 | 2062.12 | 4.84 | -0.726 | 0.000 | 0.148 |
| 70.00 | -16.73 | -4.53 | 0.00 | -267.24 | 0.00 | 267.24 | 2583.26 | 1291.63 | 3918.99 | 1962.41 | 5.63 | -0.784 | 0.000 | 0.143 |
| 75.00 | -15.92 | -4.42 | 0.00 | -244.58 | 0.00 | 244.58 | 2529.69 | 1264.85 | 3722.50 | 1864.02 | 6.48 | -0.841 | 0.000 | 0.138 |
| 80.00 | -15.12 | -4.32 | 0.00 | -222.46 | 0.00 | 222.46 | 2474.70 | 1237.35 | 3528.85 | 1767.05 | 7.40 | -0.899 | 0.000 | 0.132 |
| 85.00 | -14.35 | -4.21 | 0.00 | -200.88 | 0.00 | 200.88 | 2418.27 | 1209.13 | 3338.22 | 1671.59 | 8.37 | -0.956 | 0.000 | 0.126 |
| 90.00 | -13.59 | -4.11 | 0.00 | -179.84 | 0.00 | 179.84 | 2360.40 | 1180.20 | 3150.83 | 1577.76 | 9.40 | -1.013 | 0.000 | 0.120 |
| 95.00 | -12.86 | -4.00 | 0.00 | -159.31 | 0.00 | 159.31 | 2301.11 | 1150.55 | 2966.86 | 1485.64 | 10.49 | -1.069 | 0.000 | 0.113 |
| 97.50 | -12.50 | -3.95 | 0.00 | -149.30 | 0.00 | 149.30 | 2270.92 | 1135.46 | 2876.22 | 1440.25 | 11.06 | -1.097 | 0.000 | 0.109 |
| 100.00 | -11.98 | -3.90 | 0.00 | -139.43 | 0.00 | 139.43 | 2235.90 | 1117.95 | 2780.94 | 1392.54 | 11.64 | -1.125 | 0.000 | 0.105 |
| 101.50 | -11.68 | -3.87 | 0.00 | -133.58 | 0.00 | 133.58 | 1129.30 | 564.65 | 1418.29 | 710.20 | 12.00 | -1.141 | 0.000 | 0.198 |
| 105.00 | -11.32 | -3.80 | 0.00 | -120.05 | 0.00 | 120.05 | 1114.37 | 557.18 | 1364.00 | 683.02 | 12.85 | -1.179 | 0.000 | 0.186 |
| 110.00 | -10.83 | -3.72 | 0.00 | -101.02 | 0.00 | 101.02 | 1091.82 | 545.91 | 1286.67 | 644.29 | 14.13 | -1.258 | 0.000 | 0.167 |
| 115.00 | -10.35 | -3.63 | 0.00 | -82.44 | 0.00 | 82.44 | 1067.84 | 533.92 | 1209.76 | 605.78 | 15.48 | -1.332 | 0.000 | 0.146 |
| 120.00 | -9.88 | -3.54 | 0.00 | -64.30 | 0.00 | 64.30 | 1042.42 | 521.21 | 1133.48 | 567.58 | 16.92 | -1.398 | 0.000 | 0.123 |
| 125.00 | -9.42 | -3.45 | 0.00 | -46.58 | 0.00 | 46.58 | 1015.57 | 507.79 | 1058.03 | 529.80 | 18.41 | -1.455 | 0.000 | 0.097 |
| 127.50 | -7.18 | -2.47 | 0.00 | -37.95 | 0.00 | 37.95 | 1001.61 | 500.80 | 1020.67 | 511.09 | 19.18 | -1.480 | 0.000 | 0.081 |
| 130.00 | -7.00 | -2.43 | 0.00 | -31.76 | 0.00 | 31.76 | 987.29 | 493.64 | 983.59 | 492.52 | 19.96 | -1.501 | 0.000 | 0.072 |
| 135.00 | -6.66 | -2.35 | 0.00 | -19.59 | 0.00 | 19.59 | 957.57 | 478.78 | 910.36 | 455.86 | 21.55 | -1.536 | 0.000 | 0.050 |
| 138.00 | -4.07 | -1.43 | 0.00 | -12.53 | 0.00 | 12.53 | 939.05 | 469.53 | 867.09 | 434.19 | 22.52 | -1.550 | 0.000 | 0.033 |
| 140.00 | -3.95 | -1.40 | 0.00 | -9.68 | 0.00 | 9.68 | 926.42 | 463.21 | 838.55 | 419.90 | 23.18 | -1.558 | 0.000 | 0.027 |
| 145.00 | -3.64 | -1.32 | 0.00 | -2.69 | 0.00 | 2.69 | 893.83 | 446.92 | 768.34 | 384.74 | 24.81 | -1.569 | 0.000 | 0.011 |
| 147.00 | -0.08 | -0.03 | 0.00 | -0.06 | 0.00 | 0.06 | 880.40 | 440.20 | 740.75 | 370.92 | 25.47 | -1.570 | 0.000 | 0.000 |
| 149.00 | 0.00 | -0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 866.73 | 433.37 | 713.46 | 357.26 | 26.13 | -1.570 | 0.000 | 0.000 |

# Final Analysis Summary

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 28 |

## 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 93 mph Wind | 24.0 | 0.00 | 36.77 | 0.00 | 0.00 | 2500.66 |
| 0.9D + 1.6W 93 mph Wind | 24.0 | 0.00 | 27.57 | 0.00 | 0.00 | 2467.45 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | 7.7 | 0.00 | 54.39 | 0.00 | 0.00 | 776.85 |
| 1.2D + 1.0E | 1.9 | 0.00 | 36.82 | 0.00 | 0.00 | 241.85 |
| 0.9D + 1.0E | 1.9 | 0.00 | 27.61 | 0.00 | 0.00 | 238.20 |
| 1.0D + 1.0W 60 mph Wind | 6.2 | 0.00 | 30.68 | 0.00 | 0.00 | 645.61 |

## 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 93 mph Wind | -36.77 | -24.01 | 0.00 | -2500.6 | 0.00 | -2500.6 | 3163.75 | 1581.8 | 6735.38 | 3372.69 | 0.00 | 0.753 |
| 0.9D + 1.6W 93 mph Wind | -27.57 | -23.99 | 0.00 | -2467.4 | 0.00 | -2467.4 | 3163.75 | 1581.8 | 6735.38 | 3372.69 | 0.00 | 0.741 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | -54.39 | -7.67 | 0.00 | -776.85 | 0.00 | -776.85 | 3163.75 | 1581.8 | 6735.38 | 3372.69 | 0.00 | 0.248 |
| 1.2D + 1.0E | -14.09 | -1.62 | 0.00 | -66.12 | 0.00 | -66.12 | 1129.30 | 564.65 | 1418.29 | 710.20 | 101.50 | 0.106 |
| 0.9D + 1.0E | -10.56 | -1.59 | 0.00 | -64.80 | 0.00 | -64.80 | 1129.30 | 564.65 | 1418.29 | 710.20 | 101.50 | 0.101 |
| 1.0D + 1.0W 60 mph Wind | -30.68 | -6.24 | 0.00 | -645.61 | 0.00 | -645.61 | 3163.75 | 1581.8 | 6735.38 | 3372.69 | 0.00 | 0.201 |

# Base Plate Summary

| | | | | | |
|---|---|---|---|---|---|
| **Structure:** | CT13058-A | | **Code:** | EIA/TIA-222-G | 1/24/2019 |
| **Site Name:** | Southbury | | **Exposure:** | B | |
| **Height:** | 149.00 (ft) | | **Crest Height:** | 89.00 | |
| **Base Elev:** | 0.000 (ft) | | **Site Class:** | D - Stiff Soil | |
| **Gh:** | 1.1 | **Topography:** 2 | **Struct Class:** | II | Page: 29 |

## Reactions

### Original Design

| | |
|---|---|
| **Moment (kip-ft):** | 2497.00 |
| **Axial (kip):** | 29.00 |
| **Shear (kip):** | 23.00 |

### Analysis

| | |
|---|---|
| **Moment (kip-ft):** | 2500.66 |
| **Axial (kip):** | 54.39 |
| **Shear (kip):** | 24.01 |
| **Moment Design %:** | 100.15 |

## Base Plate

| | |
|---|---|
| **Yield (ksi):** | 60.00 |
| **Width (in):** | 56.00 |
| **Style:** | Clipped |
| **Polygon Sides:** | 4.00 |
| **Clip Length (in):** | 8.00 |
| **Effective Len (in):** | 10.38 |
| **Moment (kip-in):** | 548.14 |
| **Allow Stress (ksi):** | 81.00 |
| **Applied Stress (ksi):** | 0.00 |
| **Stress Ratio:** | 0.52 |

## Anchor Bolts

| | |
|---|---|
| **Bolt Circle:** | 58.25 |
| **Number Bolts:** | 12.00 |
| **Bolt Type:** | 2.25" 18J |
| **Bolt Diameter (in):** | 2.25 |
| **Yield (ksi):** | 75.00 |
| **Ultimate (ksi):** | 100.00 |
| **Arrangement:** | Clustered |
| **Cluster Dist (in):** | 6.00 |
| **Start Angle (deg):** | 45.00 |

### Compression

| | |
|---|---|
| **Force (kip):** | 176.25 |
| **Allowable (kip):** | 260.00 |
| **Ratio:** | 0.69 |

### Tension

| | |
|---|---|
| **Force (kip):** | 167.19 |
| **Allowable (kip):** | 260.00 |
| **Ratio:** | 0.66 |

# Monopole Mat Foundation Design

| | | | |
|---|---|---|---|
| | | | *Date* *1/23/2019* |
| **Customer Name:** | AT&T | **EIA/TIA Standard:** | EIA-222-G |
| **Site Name:** | | **Structure Height (Ft.):** | 149 |
| **Site Number:** | CT13058-A | **Engineer Name:** | S. Berthomieu |
| **Engr. Number:** | | **Engineer Login ID:** | |

**Foundation Info Obtained from:** Drawings/Calculations

**Structure Type:** Monopole

**Analysis or Design?** Analysis

**Base Reactions (Factored):**

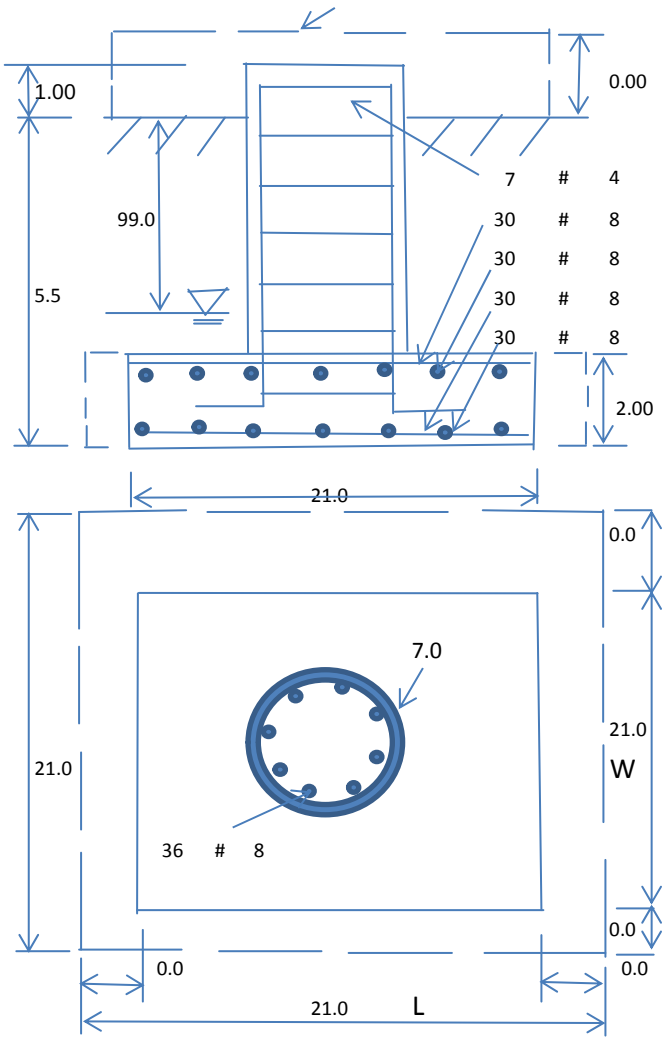
| | | | |
|---|---|---|---|
| Axial Load (Kips): | 36.8 | Shear Force (Kips): | 24.0 |
| Uplift Force (Kips): | 0.0 | Moment (Kips-ft): | 2500.7 |
| Allowable overstress %: | 5.0% | | |

**Foundation Geometries:**

| | | | |
|---|---|---|---|
| | | Mods required -Yes/No ?: | No |
| Diameter of Pier (ft.): | 7.0 | Depth of Base BG (ft.): | 5.5 |
| Pier Height A. G. (ft.): | 1.00 | Thickness of Pad (ft): | 2.00 |
| Length of Pad (ft.): | 21 | Width of Pad (ft.): | 21 |
| Final Length of pad (ft) | 21.0 | Final width of pad (ft): | 21.0 |
| 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 #: | 8 | Tie / Stirrup Size #: | 4 | |
| Qty. of Vertical Rebars: | 36 | Tie Spacing (in): | 12.0 | |
| Pad Rebar Yield (Ksi): | 60 | Pad Steel Rebar Size (#): | 8 | |
| Concrete Cover (in.): | 3 | Unit Weight of Concrete: | 150.0 | pcf |
| Rebar at the bottom of the concrete pad: | | | | |
| Qty. of Rebar in Pad (L): | 30 | Qty. of Rebar in Pad (W): | 30 | |
| Rebar at the top of the concrete pad: | | | | |
| Qty. of Rebar in Pad (L): | 30 | Qty. of Rebar in Pad (W): | 30 | |
| Apply 1.35 factor for e/w Per G: | 1.35 | | | |




**Soil Design Parameters:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Soil Unit Weight (pcf): | 125.0 | Soil Buoyant Weight: | 62.6 | 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): | 12000 | 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.): | 1408.80 | Total Dry Soil Weight (Kips): | 176.10 |
| Total Buoyant Soil Volume (cu. Ft.): | 0.00 | Total Buoyant Soil Weight (Kips): | 0.00 |
| Total Effective Soil Weight (Kips): | 176.10 | Weight from the Concrete Block at Top (K): | 0.00 |
| Total Dry Concrete Volume (cu. Ft.): | 1055.18 | Total Dry Concrete Weight (Kips): | 158.28 |
| Total Buoyant Concrete Volume (cu. Ft.): | 0.00 | Total Buoyant Concrete Weight (Kips): | 0.00 |
| Total Effective Concrete Weight (Kips): | 158.28 | Total Vertical Load on Base (Kips): | 371.15 |

**Check Soil Capacities:**

| | | | | Load/ Capacity Ratio | |
|---|---|---|---|---|---|
| Calculated Maxium Net Soil Pressure under the base (psf): | 3278 | < | Allowable Factored Soil Bearing (psf): 9000 | 0.36 | OK! |
| Allowable Foundation Overturning Resistance (kips-ft.): | 3546.0 | > | Design Factored Momont (kips-ft): 2657 | 0.75 | OK! |
| Factor of Safety Against Overturning (O. R. Moment/Design Moment): | 1.33 | 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): | 0.79 | | Tie / Stirrup Area (sq. in./each): | 0.20 | | |
| Calculated Moment Capacity (Mn,Kips-Ft): | 4845.7 | > | Design Factored Moment (Mu, Kips-Ft | 2608.7 | 0.54 | OK! |
| Calculated Shear Capacity (Kips): | 660.1 | > | Design Factored Shear (Kips): | 24.0 | 0.04 | OK! |
| Calculated Tension Capacity (Tn, Kips): | 1535.8 | > | Design Factored Tension (Tu Kips): | 0.0 | 0.00 | OK! |
| Calculated Compression Capacity (Pn, Kips): | 9747.6 | > | Design Factored Axial Load (Pu Kips): | 36.8 | 0.00 | OK! |
| Moment & Axial Strength Combination: | 0.54 | OK! | Check Tie Spacing (Design/Required): | | 1 | OK! |
| Pier Reinforcement Ratio: | 0.005 | Reinforcement Ratio is satisfied per ACI | | | | |
| (2).Concrete Pad: | | | | | | |
| One-Way Design Shear Capacity (L-Direction, Kips): | 490.1 | > | One-Way Factored Shear (L-D. Kips): | 184.0 | 0.38 | OK! |
| One-Way Design Shear Capacity (W-Direction, Kips): | 490.1 | > | One-Way Factored Shear (W-D., Kips): | 184.0 | 0.38 | OK! |
| One-Way Design Shear Capacity (Corner-Corner. Kips): | 450.0 | > | One-Way Factored Shear (C-C, Kips): | 185.1 | 0.41 | OK! |
| Lower Steel Pad Reinforcement Ratio (L-Direct. ): | 0.0046 | OK! | Lower Steel Pad Reinf. Ratio (W-Direct | 0.0046 | | |
| Lower Steel Pad Moment Capacity (L-Direction. Kips-ft): | 2097.8 | > | Moment at Bottom ( L-Direct. K-Ft): | 486.7 | 0.23 | OK! |
| Lower Steel Pad Moment Capacity (W-Direction. Kips-ft): | 2097.8 | > | Moment at Bottom ( W-Direct. K-Ft): | 486.7 | 0.23 | OK! |
| Lower Steel Pad Moment Capacity (Corner-Corner,K-ft): | 2928.2 | > | Moment at Bottom ( C-C Dir. K-Ft): | 688.3 | 0.24 | OK! |
| Upper Steel Pad Reinforcement Ratio (L-Direct. ): | 0.0046 | OK! | Upper Steel Reinf. Ratio (W-Direct. ): | 0.0046 | | |
| Upper Steel Pad Moment Capacity (L-Direction. Kips-ft): | 2097.8 | > | Moment at the top (L-Dir Kips-Ft): | 138.2 | 0.07 | OK! |
| Upper Steel Pad Moment Capacity (W-Direction. Kips-ft): | 2097.8 | > | Moment at the top (W-Dir Kips-Ft): | 138.2 | 0.07 | OK! |
| Upper Steel Pad Moment Capacity (Corner-Corner. K-ft): | 2928.2 | > | Moment at the top (C-C Direc. K-Ft): | 269.2 | 0.09 | OK! |

December 21, 2018

SAI Communications
12 Industrial Way
Salem NH, 03079

| RE: | | |
|---|---|---|
| | Site Number: | CT2298 (LTE 2C/3C) |
| | FA Number: | 10128248 |
| | PACE Number: | MRCTB035226 |
| | PT Number: | 2051A0KPJA |
| | Site Name: | SOUTHBURY BURR RD |
| | Site Address: | 459 Burr Road<br>Southbury, CT 06488 |

To Whom It May Concern:

Hudson Design Engineering PLLC (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:

- (3) 7770 Antenna (55.0"x11.0"x5.0" – Wt. = 35 lbs. /each)
- (6) LPG21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.) (Tower Mounted)
- **(3) 800-10965 Antennas (78.7"x20.0"x6.9" – Wt. = 109 lbs. /each)**
- **(3) HPA65R-BU6A Antennas (71.1"x11.7"x7.6" – Wt. = 42 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 71 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.) (Tower Mounted)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on December 5, 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, the International Building Code 2015 with 2018 Connecticut State Building Code Amendments and AT&T Mount Technical Directive – R11.
- 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 115 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 0.75 in. Per the AT&T Mount Technical Directive and Appendix N of the Connecticut State Building Code, an ultimate wind speed of 120 mph was converted to a nominal wind speed of 93 mph. The minimum design wind speed value of 95 mph and an escalated ice thickness of 1.92 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban and wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- The mount has been analyzed with load combinations consisting of 250 lbs. live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs. live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with a ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mount **IS CAPABLE** of supporting the proposed installation. HDG recommends the following modification:

- **Install new handrail kit, SitePro1 P/N HRK-12 (or approved equal). Handrail kit is required per AT&T Technical Directive to stabilize existing antennas.**

| | Component | Controlling Load Case | Stress Ratio | Pass/Fail |
|---|---|---|---|---|
| **Existing (LTE 2C/3C) Mount Rating** | 73 | LC2 | 89% | **PASS** |
| **Proposed (LTE 2C/3C) Mount Rating** | 104 | LC4 | 88% | **PASS** |

**Reference Documents:**

- Mount mapping report prepared by ProVertic dated December 7, 2018.

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 Drive, 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 Drive, 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:** 12/21/2018
**Project Name:** SOUTHBURY BURR RD
**Project Number:** CT2298
**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= | 147 (ft) |
| $z_g$= | 1200 (ft) |
| α= | 7.0 |

**$K_z$= 1.103**

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 |

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

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

**$K_{zt}$= 1.319183887**

| | |
|---|---|
| $K_h$= | 3.2108821 |
| $K_e$= | 0.9 (from Table 2-4) |
| $K_t$= | 0.53 (from Table 2-5) |
| f= | 2 (from Table 2-5) |
| z= | 147 |
| H= | 252 (Ht. of the crest above surrounding terrain) |
| $K_{zt}$= | 1.32 |
| $K_{iz}$ = | 1.16 (from Sec. 2.6.8) |

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

Category= **3**

## 2.6.8 Design Ice Thickness

Max Ice Thickness = $t_i$ = 0.75 in

$t_{iz} = 2.0*t_i*I*K_{iz}*(Kzt)^{0.35}$ $t_{iz}$ = 1.92 in

Date: 12/21/2018
Project Name: SOUTHBURY BURR RD
Project Number: CT2298
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: $V_{ult}$ = 120 mph

Nomial Design Wind Speed, $V_{asd} = V_{ult}\sqrt{(0.6)}$ $V_{asd}$ = 93 mph

$V_{asd}$ per the AT&T Mount Technical Directive and Connecticut Supplement, Latest Addition.
Per TIA-222-G, $V_{min}$ = 95 mph $V_{max}$ = 115 mph

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

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

| | | | |
|---|---|---|---|
| | | $K_z$= | 1.103 |
| | | $K_{zt}$= | 1.3 |
| **$q_z$=** | **31.94** | $K_d$= | 0.95 |
| **$q_{z\,(ice)}$=** | **8.85** | $V_{asd}$= | 95 mph |
| **$q_{z\,(30)}$=** | **3.19** | $V_{max\,(ice)}$= | 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: 12/21/2018
Project Name: SOUTHBURY BURR RD
Project Number: CT2298
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 =** 1.92 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

| Appurtenances | Height | Width | Depth | Flat Area | Aspect Ratio | Ca | Force (lbs) | Force (lbs) (w/ Ice) | Force (lbs) (30 mph) |
|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 5.00 | 1.31 | 176 | 70 | 18 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 6.08 | 1.36 | 251 | 97 | 25 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.94 | 1.26 | 441 | 153 | 44 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.36 | 1.20 | 63 | 27 | 6 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 0.0 | 9.4 | 0.00 | 0.00 | 1.20 | 0 | 0 | 0 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.20 | 52 | 24 | 5 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 1.5 | 10.9 | 0.16 | 9.93 | 1.50 | 7 | 9 | 1 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 1.60 | 1.20 | 34 | 17 | 3 |
| Surge Arrestor | 24.0 | 9.7 | 9.7 | 1.62 | 2.47 | 0.70 | 36 | 16 | 4 |
| 2" Pipe | 2.4 | 12.0 | 2.4 | 0.20 | 0.20 | 1.20 | 8 | 7 | 1 |
| 3" Pipe | 3.5 | 12.0 | 3.5 | 0.29 | 0.29 | 1.20 | 11 | 9 | 1 |
| L 2x2x3/16 Angle | 2.0 | 12.0 | 2.0 | 0.17 | 0.17 | 2.00 | 11 | 11 | 1 |
| HSS 4x4 | 4.0 | 12.0 | 4.0 | 0.33 | 0.33 | 2.00 | 21 | 15 | 2 |
| PL 6x1/2 | 6.0 | 12.0 | 0.5 | 0.50 | 0.50 | 2.00 | 32 | 19 | 3 |

Date: 12/21/2018
Project Name: SOUTHBURY BURR RD
Project Number: CT2298
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

## WIND LOADS

| Angle = | 30 | (deg) | Ice Thickness = | 1.92 | in. | Equivalent Angle = | 210 | (deg) |
|---|---|---|---|---|---|---|---|---|

**WIND LOADS WITH NO ICE:**

| Appurtenances | Height | Width | Depth | Flat Area (normal) | Flat Area (side) | Aspect Ratio | Aspect Ratio | Ca (normal) | Ca (side) | Force (lbs) (normal) | Force (lbs) (side) | Force (lbs) (angle) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 176 | 94 | 155 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 251 | 177 | 232 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 441 | 186 | 378 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 63 | 45 | 58 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 6.6 | 9.4 | 0.82 | 1.17 | 2.71 | 1.90 | 1.21 | 1.20 | 32 | 45 | 35 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 52 | 43 | 50 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 6.6 | 10.9 | 0.68 | 1.13 | 2.26 | 1.37 | 1.20 | 1.20 | 26 | 43 | 30 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 34 | 11 | 29 |

**WIND LOADS WITH ICE:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 58.8 | 14.8 | 8.8 | 6.06 | 3.61 | 3.97 | 6.66 | 1.27 | 1.38 | 68 | 44 | 62 |
| HPA65R-BU6A Antenna | 74.9 | 15.5 | 11.4 | 8.09 | 5.95 | 4.82 | 6.55 | 1.30 | 1.38 | 93 | 73 | 88 |
| 800-10965 Antenna | 82.5 | 23.8 | 10.7 | 13.66 | 6.15 | 3.46 | 7.69 | 1.24 | 1.42 | 150 | 77 | 132 |
| B5/B12 4449 RRH | 21.7 | 17.0 | 13.2 | 2.57 | 2.00 | 1.28 | 1.64 | 1.20 | 1.20 | 27 | 21 | 26 |
| B5/B12 4449 RRH (Shielded) | 21.7 | 8.5 | 13.2 | 1.29 | 2.00 | 2.55 | 1.64 | 1.20 | 1.20 | 14 | 21 | 16 |
| B2/B66A 8843 RRH | 18.7 | 17.0 | 14.7 | 2.22 | 1.92 | 1.10 | 1.27 | 1.20 | 1.20 | 24 | 20 | 23 |
| B2/B66A 8843 RRH (Shielded) | 18.7 | 8.5 | 14.7 | 1.11 | 1.92 | 2.20 | 1.27 | 1.20 | 1.20 | 12 | 20 | 14 |
| LPG21401 TMA | 18.2 | 12.8 | 6.5 | 1.63 | 0.83 | 1.42 | 2.79 | 1.20 | 1.21 | 17 | 9 | 15 |

**WIND LOADS AT 30 MPH:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 18 | 9 | 15 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 25 | 18 | 23 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 44 | 19 | 38 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 6 | 4 | 6 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 6.6 | 9.4 | 0.82 | 1.17 | 2.71 | 1.90 | 1.21 | 1.20 | 3 | 4 | 3 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 5 | 4 | 5 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 6.6 | 10.9 | 0.68 | 1.13 | 2.26 | 1.37 | 1.20 | 1.20 | 3 | 4 | 3 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 3 | 1 | 3 |

Date: 12/21/2018
Project Name: SOUTHBURY BURR RD
Project Number: CT2298
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

## WIND LOADS

| Angle = | 60 | (deg) | Ice Thickness = | 1.92 | in. | Equivalent Angle = | 240 | (deg) |
|---|---|---|---|---|---|---|---|---|

**WIND LOADS WITH NO ICE:**

| Appurtenances | Height | Width | Depth | Flat Area (normal) | Flat Area (side) | Ratio (normal) | Ratio (side) | Ca (normal) | Ca (side) | Force (lbs) (normal) | Force (lbs) (side) | Force (lbs) (angle) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 176 | 94 | 114 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 251 | 177 | 196 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 441 | 186 | 250 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 63 | 45 | 49 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 9.9 | 9.4 | 1.23 | 1.17 | 1.81 | 1.90 | 1.20 | 1.20 | 47 | 45 | 45 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 52 | 43 | 46 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 9.9 | 10.9 | 1.02 | 1.13 | 1.51 | 1.37 | 1.20 | 1.20 | 39 | 43 | 42 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 34 | 11 | 17 |

**WIND LOADS WITH ICE:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 58.8 | 14.8 | 8.8 | 6.06 | 3.61 | 3.97 | 6.66 | 1.27 | 1.38 | 68 | 44 | 50 |
| HPA65R-BU6A Antenna | 74.9 | 15.5 | 11.4 | 8.09 | 5.95 | 4.82 | 6.55 | 1.30 | 1.38 | 93 | 73 | 78 |
| 800-10965 Antenna | 82.5 | 23.8 | 10.7 | 13.66 | 6.15 | 3.46 | 7.69 | 1.24 | 1.42 | 150 | 77 | 96 |
| B5/B12 4449 RRH | 21.7 | 17.0 | 13.2 | 2.57 | 2.00 | 1.28 | 1.64 | 1.20 | 1.20 | 27 | 21 | 23 |
| B5/B12 4449 RRH (Shielded) | 21.7 | 12.8 | 13.2 | 1.93 | 2.00 | 1.70 | 1.64 | 1.20 | 1.20 | 20 | 21 | 21 |
| B2/B66A 8843 RRH | 18.7 | 17.0 | 14.7 | 2.22 | 1.92 | 1.10 | 1.27 | 1.20 | 1.20 | 24 | 20 | 21 |
| B2/B66A 8843 RRH (Shielded) | 18.7 | 12.8 | 14.7 | 1.66 | 1.92 | 1.47 | 1.27 | 1.20 | 1.20 | 18 | 20 | 20 |
| LPG21401 TMA | 18.2 | 12.8 | 6.5 | 1.63 | 0.83 | 1.42 | 2.79 | 1.20 | 1.21 | 17 | 9 | 11 |

**WIND LOADS AT 30 MPH:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 18 | 9 | 11 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 25 | 18 | 20 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 44 | 19 | 25 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 6 | 4 | 5 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 9.9 | 9.4 | 1.23 | 1.17 | 1.81 | 1.90 | 1.20 | 1.20 | 5 | 4 | 5 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 5 | 4 | 5 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 9.9 | 10.9 | 1.02 | 1.13 | 1.51 | 1.37 | 1.20 | 1.20 | 4 | 4 | 4 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 3 | 1 | 2 |

Date: 12/21/2018

Project Name: SOUTHBURY BURR RD

Project Number: CT2298

Designed By: BD Checked By: MSC

HUDSON Design Group LLC

## WIND LOADS

| Angle = | 90 | (deg) | Ice Thickness = | 1.92 | in. | Equivalent Angle = | 270 | (deg) |
|---|---|---|---|---|---|---|---|---|

**WIND LOADS WITH NO ICE:**

| Appurtenances | Height | Width | Depth | Flat Area (normal) | Flat Area (side) | Ratio (normal) | Ratio (side) | Ca (normal) | Ca (side) | Force (lbs) (normal) | Force (lbs) (side) | Force (lbs) (angle) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 176 | 94 | 94 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 251 | 177 | 177 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 441 | 186 | 186 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 63 | 45 | 45 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 0.0 | 9.4 | 0.00 | 1.17 | 0.00 | 1.90 | 1.20 | 1.20 | 0 | 45 | 45 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 52 | 43 | 43 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 1.5 | 10.9 | 0.16 | 1.13 | 0.00 | 1.37 | 1.20 | 1.20 | 6 | 43 | 43 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 34 | 11 | 11 |

**WIND LOADS WITH ICE:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 58.8 | 14.8 | 8.8 | 6.06 | 3.61 | 3.97 | 6.66 | 1.27 | 1.38 | 68 | 44 | 44 |
| HPA65R-BU6A Antenna | 74.9 | 15.5 | 11.4 | 8.09 | 5.95 | 4.82 | 6.55 | 1.30 | 1.38 | 93 | 73 | 73 |
| 800-10965 Antenna | 82.5 | 23.8 | 10.7 | 13.66 | 6.15 | 3.46 | 7.69 | 1.24 | 1.42 | 150 | 77 | 77 |
| B5/B12 4449 RRH | 21.7 | 17.0 | 13.2 | 2.57 | 2.00 | 1.28 | 1.64 | 1.20 | 1.20 | 27 | 21 | 21 |
| B5/B12 4449 RRH (Shielded) | 21.7 | 3.8 | 13.2 | 0.58 | 2.00 | 5.66 | 1.64 | 1.34 | 1.20 | 7 | 21 | 21 |
| B2/B66A 8843 RRH | 18.7 | 17.0 | 14.7 | 2.22 | 1.92 | 1.10 | 1.27 | 1.20 | 1.20 | 24 | 20 | 20 |
| B2/B66A 8843 RRH (Shielded) | 18.7 | 5.3 | 14.7 | 0.69 | 1.92 | 3.51 | 1.27 | 1.24 | 1.20 | 8 | 20 | 20 |
| LPG21401 TMA | 18.2 | 12.8 | 6.5 | 1.63 | 0.83 | 1.42 | 2.79 | 1.20 | 1.21 | 17 | 9 | 9 |

**WIND LOADS AT 30 MPH:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 18 | 9 | 9 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 25 | 18 | 18 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 44 | 19 | 19 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 6 | 4 | 4 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 0.0 | 9.4 | 0.00 | 1.17 | 0.00 | 1.90 | 1.20 | 1.20 | 0 | 4 | 4 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 5 | 4 | 4 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 1.5 | 10.9 | 0.16 | 1.13 | 0.00 | 1.37 | 1.20 | 1.20 | 1 | 4 | 4 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 3 | 1 | 1 |

Date: 12/21/2018

Project Name: SOUTHBURY BURR RD

Project Number: CT2298

Designed By: BD Checked By: MSC

HUDSON Design Group LLC

## WIND LOADS

| Angle = | 120 | (deg) | Ice Thickness = | 1.92 | in. | Equivalent Angle = | 300 | (deg) |
|---|---|---|---|---|---|---|---|---|

**WIND LOADS WITH NO ICE:**

| Appurtenances | Height | Width | Depth | Flat Area (normal) | Flat Area (side) | Ratio (normal) | Ratio (side) | Ca (normal) | Ca (side) | Force (lbs) (normal) | Force (lbs) (side) | Force (lbs) (angle) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 176 | 94 | 114 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 251 | 177 | 196 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 441 | 186 | 250 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 63 | 45 | 49 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 9.9 | 9.4 | 1.23 | 1.17 | 1.81 | 1.90 | 1.20 | 1.20 | 47 | 45 | 45 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 52 | 43 | 46 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 9.9 | 10.9 | 1.02 | 1.13 | 1.51 | 1.37 | 1.20 | 1.20 | 39 | 43 | 42 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 34 | 11 | 17 |

**WIND LOADS WITH ICE:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 58.8 | 14.8 | 8.8 | 6.06 | 3.61 | 3.97 | 6.66 | 1.27 | 1.38 | 68 | 44 | 50 |
| HPA65R-BU6A Antenna | 74.9 | 15.5 | 11.4 | 8.09 | 5.95 | 4.82 | 6.55 | 1.30 | 1.38 | 93 | 73 | 78 |
| 800-10965 Antenna | 82.5 | 23.8 | 10.7 | 13.66 | 6.15 | 3.46 | 7.69 | 1.24 | 1.42 | 150 | 77 | 96 |
| B5/B12 4449 RRH | 21.7 | 17.0 | 13.2 | 2.57 | 2.00 | 1.28 | 1.64 | 1.20 | 1.20 | 27 | 21 | 23 |
| B5/B12 4449 RRH (Shielded) | 21.7 | 12.8 | 13.2 | 1.93 | 2.00 | 1.70 | 1.64 | 1.20 | 1.20 | 20 | 21 | 21 |
| B2/B66A 8843 RRH | 18.7 | 17.0 | 14.7 | 2.22 | 1.92 | 1.10 | 1.27 | 1.20 | 1.20 | 24 | 20 | 21 |
| B2/B66A 8843 RRH (Shielded) | 18.7 | 12.8 | 14.7 | 1.66 | 1.92 | 1.47 | 1.27 | 1.20 | 1.20 | 18 | 20 | 20 |
| LPG21401 TMA | 18.2 | 12.8 | 6.5 | 1.63 | 0.83 | 1.42 | 2.79 | 1.20 | 1.21 | 17 | 9 | 11 |

**WIND LOADS AT 30 MPH:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 18 | 9 | 11 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 25 | 18 | 20 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 44 | 19 | 25 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 6 | 4 | 5 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 9.9 | 9.4 | 1.23 | 1.17 | 1.81 | 1.90 | 1.20 | 1.20 | 5 | 4 | 5 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 5 | 4 | 5 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 9.9 | 10.9 | 1.02 | 1.13 | 1.51 | 1.37 | 1.20 | 1.20 | 4 | 4 | 4 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 3 | 1 | 2 |

Date: 12/21/2018
Project Name: SOUTHBURY BURR RD
Project Number: CT2298
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

## WIND LOADS

| Angle = | 150 | (deg) | Ice Thickness = | 1.92 | in. | Equivalent Angle = | 330 | (deg) |
|---|---|---|---|---|---|---|---|---|

**WIND LOADS WITH NO ICE:**

| Appurtenances | Height | Width | Depth | Flat Area (normal) | Flat Area (side) | Ratio (normal) | Ratio (side) | Ca (normal) | Ca (side) | Force (lbs) (normal) | Force (lbs) (side) | Force (lbs) (angle) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 176 | 94 | 155 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 251 | 177 | 232 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 441 | 186 | 378 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 63 | 45 | 58 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 6.6 | 9.4 | 0.82 | 1.17 | 2.71 | 1.90 | 1.21 | 1.20 | 32 | 45 | 35 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 52 | 43 | 50 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 6.6 | 10.9 | 0.68 | 1.13 | 2.26 | 1.37 | 1.20 | 1.20 | 26 | 43 | 30 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 34 | 11 | 29 |

**WIND LOADS WITH ICE:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 58.8 | 14.8 | 8.8 | 6.06 | 3.61 | 3.97 | 6.66 | 1.27 | 1.38 | 68 | 44 | 62 |
| HPA65R-BU6A Antenna | 74.9 | 15.5 | 11.4 | 8.09 | 5.95 | 4.82 | 6.55 | 1.30 | 1.38 | 93 | 73 | 88 |
| 800-10965 Antenna | 82.5 | 23.8 | 10.7 | 13.66 | 6.15 | 3.46 | 7.69 | 1.24 | 1.42 | 150 | 77 | 132 |
| B5/B12 4449 RRH | 21.7 | 17.0 | 13.2 | 2.57 | 2.00 | 1.28 | 1.64 | 1.20 | 1.20 | 27 | 21 | 26 |
| B5/B12 4449 RRH (Shielded) | 21.7 | 8.5 | 13.2 | 1.29 | 2.00 | 2.55 | 1.64 | 1.20 | 1.20 | 14 | 21 | 16 |
| B2/B66A 8843 RRH | 18.7 | 17.0 | 14.7 | 2.22 | 1.92 | 1.10 | 1.27 | 1.20 | 1.20 | 24 | 20 | 23 |
| B2/B66A 8843 RRH (Shielded) | 18.7 | 8.5 | 14.7 | 1.11 | 1.92 | 2.20 | 1.27 | 1.20 | 1.20 | 12 | 20 | 14 |
| LPG21401 TMA | 18.2 | 12.8 | 6.5 | 1.63 | 0.83 | 1.42 | 2.79 | 1.20 | 1.21 | 17 | 9 | 15 |

**WIND LOADS AT 30 MPH:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7770 Antenna | 55.0 | 11.0 | 5.0 | 4.20 | 1.91 | 5.00 | 11.00 | 1.31 | 1.53 | 18 | 9 | 15 |
| HPA65R-BU6A Antenna | 71.1 | 11.7 | 7.6 | 5.78 | 3.75 | 6.08 | 9.36 | 1.36 | 1.48 | 25 | 18 | 23 |
| 800-10965 Antenna | 78.7 | 20.0 | 6.9 | 10.93 | 3.77 | 3.94 | 11.41 | 1.26 | 1.55 | 44 | 19 | 38 |
| B5/B12 4449 RRH | 17.9 | 13.2 | 9.4 | 1.64 | 1.17 | 1.36 | 1.90 | 1.20 | 1.20 | 6 | 4 | 6 |
| B5/B12 4449 RRH (Shielded) | 17.9 | 6.6 | 9.4 | 0.82 | 1.17 | 2.71 | 1.90 | 1.21 | 1.20 | 3 | 4 | 3 |
| B2/B66A 8843 RRH | 14.9 | 13.2 | 10.9 | 1.37 | 1.13 | 1.13 | 1.37 | 1.20 | 1.20 | 5 | 4 | 5 |
| B2/B66A 8843 RRH (Shielded) | 14.9 | 6.6 | 10.9 | 0.68 | 1.13 | 2.26 | 1.37 | 1.20 | 1.20 | 3 | 4 | 3 |
| LPG21401 TMA | 14.4 | 9.0 | 2.7 | 0.90 | 0.27 | 1.60 | 5.33 | 1.20 | 1.33 | 3 | 1 | 3 |

**Date:** 12/21/2018
**Project Name:** SOUTHBURY BURR RD
**Project Number:** CT2298
**Designed By:** BD **Checked By:** MSC

HUDSON Design Group LLC

## ICE WEIGHT CALCULATIONS

Thickness of ice: 1.92 in.
Density of ice: 56 pcf

### 7770 Antenna
Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Height (in): | 55.0 | |
| Width (in): | 11.0 | |
| Depth (in): | 5.0 | |
| Total weight of ice on object: | | 151 lbs |
| Weight of object: | 35 lbs | |
| Combined weight of ice and object: | | 186 lbs |

### HPA65R-BU6A Antenna
Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Height (in): | 71.1 | |
| Width (in): | 11.7 | |
| Depth (in): | 7.6 | |
| Total weight of ice on object: | | 221 lbs |
| Weight of object: | 42 lbs | |
| Combined weight of ice and object: | | 263 lbs |

### 800-10965 Antenna
Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Height (in): | 78.7 | |
| Width (in): | 20.0 | |
| Depth (in): | 6.9 | |
| Total weight of ice on object: | | 355 lbs |
| Weight of object: | 109 lbs | |
| Combined weight of ice and object: | | 464 lbs |

### B5/B12 4449 RRH
Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Height (in): | 17.9 | |
| Width (in): | 13.2 | |
| Depth (in): | 9.4 | |
| Total weight of ice on object: | | 63 lbs |
| Weight of object: | 71 lbs | |
| Combined weight of ice and object: | | 134 lbs |

### B2/B66A 8843 RRH
Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Height (in): | 14.9 | |
| Width (in): | 13.2 | |
| Depth (in): | 10.9 | |
| Total weight of ice on object: | | 55 lbs |
| Weight of object: | 72 lbs | |
| Combined weight of ice and object: | | 127 lbs |

### LPG21401 TMA
Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Height (in): | 14.4 | |
| Width (in): | 9.0 | |
| Depth (in): | 2.7 | |
| Total weight of ice on object: | | 32 lbs |
| Weight of object: | 19 lbs | |
| Combined weight of ice and object: | | 51 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: | | 55 lbs |
| Weight of object: | 33 lbs | |
| Combined weight of ice and object: | | 88 lbs |

### 2" pipe
Per foot weight of ice:

| | | |
|---|---|---|
| diameter (in): | 2.38 | |
| Per foot weight of ice on object: | | 10 plf |

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

| | | |
|---|---|---|
| Height (in): | 6 | |
| Width (in): | 0.5 | |
| Per foot weight of ice on object: | | 19 plf |

### 3" pipe
Per foot weight of ice:

| | | |
|---|---|---|
| diameter (in): | 3.5 | |
| Per foot weight of ice on object: | | 13 plf |

### HSS 4x4
Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Height (in): | 4 | |
| Width (in): | 4 | |
| Per foot weight of ice on object: | | 18 plf |

### L 2x2x3/16 Angles
Weight of ice based on total radial SF area:

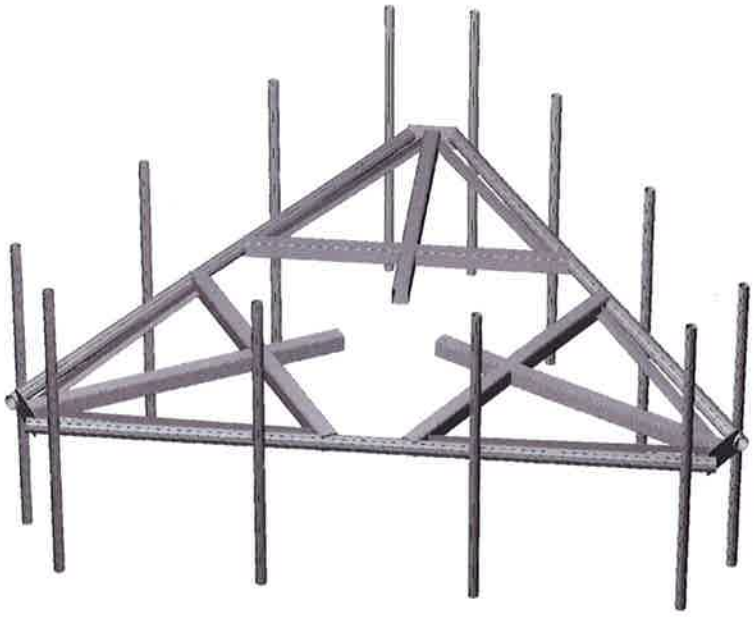
| | | |
|---|---|---|
| Height (in): | 2 | |
| Width (in): | 2 | |
| Per foot weight of ice on object: | | 11 plf |

HUDSON
Design Group LLC

# Mount Calculations
# (Existing Conditions)

Bentley

**Current Date:** 12/21/2018 1:53 PM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2298\CT2298 (LTE 2C-3C).etz\



Bentley

**Current Date:** 12/21/2018 1:53 PM
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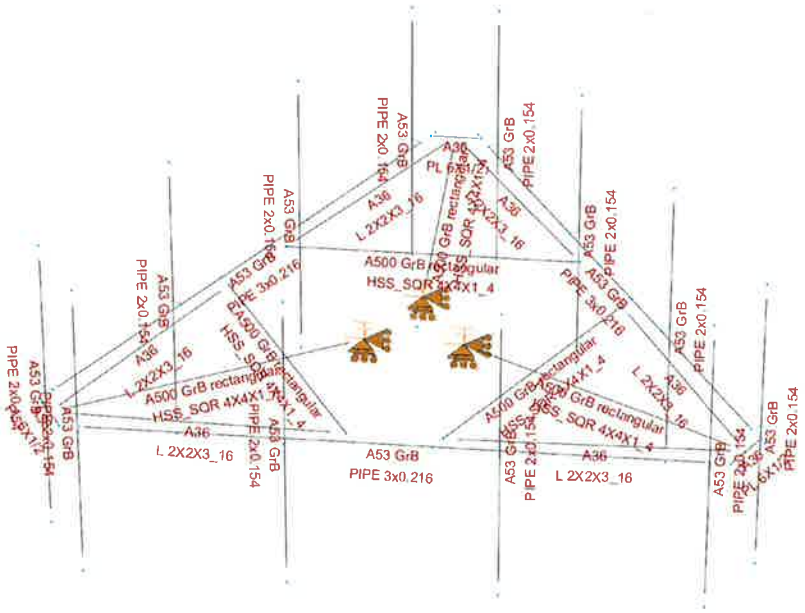

Bentley

**Current Date:** 12/21/2018 1:54 PM
**Units system:** English
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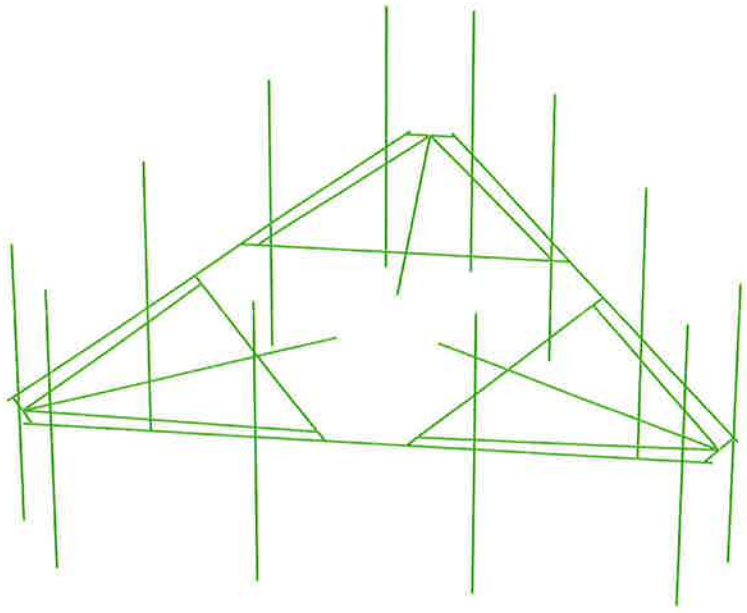
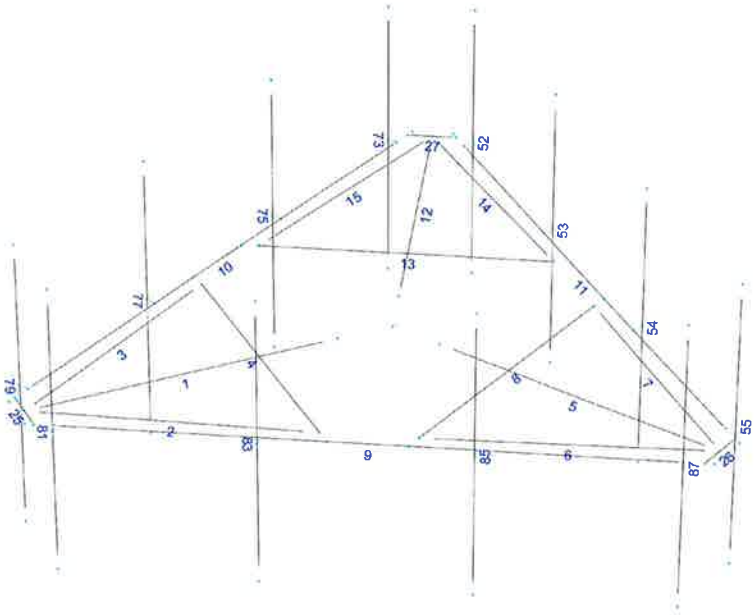
Design status

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

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**Current Date:** 12/21/2018 1:54 PM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2298\CT2298 (LTE 2C-3C).etz\

# Load data

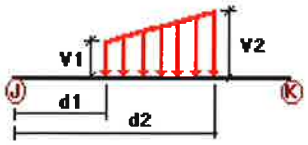
GLOSSARY

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 | 250 lb Live Load on Antenna 1 | No | LL |
| LLa2 | 250 lb Live Load on Antenna 2 | No | LL |
| LLa3 | 250 lb Live Load on Antenna 3 | No | LL |

## Distributed force on members

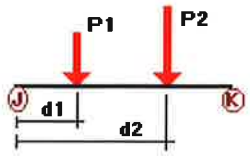



| Condition | Member | Dir1 | Val1 [Kip/ft] | Val2 [Kip/ft] | Dist1 [ft] | % | Dist2 [ft] | % |
|---|---|---|---|---|---|---|---|---|
| DL | 2 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| | 3 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| | 4 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| | 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 | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 2 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 3 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 4 | Z | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 5 | Z | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 6 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 7 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 8 | Z | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 9 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 10 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 11 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 13 | Z | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 14 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 15 | Z | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 52 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 53 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 54 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 55 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 73 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 75 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 77 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 79 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 85 | Z | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| W30 | 1 | X | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 3 | X | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 4 | X | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 5 | X | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 7 | X | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 8 | X | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 10 | X | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 11 | X | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 12 | X | -0.021 | -0.021 | 0.00 | Yes | 100.00 | Yes |
| | 14 | X | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 15 | X | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 52 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 53 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 54 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 55 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 73 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 75 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 77 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 79 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 81 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 85 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 87 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| | 83 | X | -0.008 | -0.008 | 0.00 | Yes | 100.00 | Yes |
| Di | 1 | Y | -0.018 | -0.018 | 0.00 | Yes | 100.00 | Yes |
| | 2 | Y | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 3 | Y | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 4 | Y | -0.018 | -0.018 | 0.00 | Yes | 100.00 | Yes |
| | 5 | Y | -0.018 | -0.018 | 0.00 | Yes | 100.00 | Yes |
| | 6 | Y | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 7 | Y | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 8 | Y | -0.018 | -0.018 | 0.00 | Yes | 100.00 | Yes |
| | 9 | Y | -0.013 | -0.013 | 0.00 | Yes | 100.00 | Yes |
| | 10 | Y | -0.013 | -0.013 | 0.00 | Yes | 100.00 | Yes |
| | 11 | Y | -0.013 | -0.013 | 0.00 | Yes | 100.00 | Yes |
| | 12 | Y | -0.018 | -0.018 | 0.00 | Yes | 100.00 | Yes |
| | 13 | Y | -0.018 | -0.018 | 0.00 | Yes | 100.00 | Yes |
| | 14 | Y | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 15 | Y | -0.011 | -0.011 | 0.00 | Yes | 100.00 | Yes |
| | 25 | Y | -0.019 | -0.019 | 0.00 | Yes | 100.00 | Yes |
| | 26 | Y | -0.019 | -0.019 | 0.00 | Yes | 100.00 | Yes |
| | 27 | Y | -0.019 | -0.019 | 0.00 | Yes | 100.00 | Yes |
| | 52 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| | 53 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| | 54 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 55 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| 73 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| 75 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| 77 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| 79 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| 81 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| 85 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| 87 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |
| 83 | Y | -0.01 | -0.01 | 0.00 | Yes | 100.00 | Yes |

## Concentrated forces on members




| Condition | Member | Dir1 | Value1 [Kip] | Dist1 [ft] | % |
|---|---|---|---|---|---|
| DL | 52 | y | -0.018 | 0.50 | No |
| | | y | -0.018 | 5.08 | No |
| | | y | -0.038 | 2.00 | No |
| | 54 | y | -0.021 | 0.50 | No |
| | | y | -0.021 | 5.50 | No |
| | | y | -0.072 | 2.00 | No |
| | 55 | y | -0.055 | 0.50 | No |
| | | y | -0.055 | 5.50 | No |
| | | y | -0.071 | 2.00 | No |
| | 73 | y | -0.055 | 0.50 | No |
| | | y | -0.055 | 5.50 | No |
| | | y | -0.071 | 2.00 | No |
| | 75 | y | -0.021 | 0.50 | No |
| | | y | -0.021 | 5.50 | No |
| | | y | -0.072 | 2.00 | No |
| | 79 | y | -0.018 | 0.50 | No |
| | | y | -0.018 | 5.08 | No |
| | | y | -0.038 | 2.00 | No |
| | 81 | y | -0.055 | 0.50 | No |
| | | y | -0.055 | 5.50 | No |
| | | y | -0.071 | 2.00 | No |
| | 87 | y | -0.018 | 0.50 | No |
| | | y | -0.018 | 5.08 | No |
| | | y | -0.038 | 2.00 | No |
| | 83 | y | -0.021 | 0.50 | No |
| | | y | -0.021 | 5.50 | No |
| | | y | -0.072 | 2.00 | No |
| W0 | 52 | z | -0.057 | 0.50 | No |
| | | z | -0.057 | 5.08 | No |
| | 54 | z | -0.098 | 0.50 | No |
| | | z | -0.098 | 5.50 | No |
| | | z | -0.042 | 2.00 | No |
| | 55 | z | -0.125 | 0.50 | No |
| | | z | -0.125 | 5.50 | No |
| | 73 | z | -0.125 | 0.50 | No |
| | | z | -0.125 | 5.50 | No |

| | | | | | |
|---|---|---|---|---|---|
| | 75 | z | -0.098 | 0.50 | No |
| | | z | -0.098 | 5.50 | No |
| | | z | -0.042 | 2.00 | No |
| | 79 | z | -0.057 | 0.50 | No |
| | | z | -0.057 | 5.08 | No |
| | 81 | z | -0.221 | 0.50 | No |
| | | z | -0.221 | 5.50 | No |
| | 87 | z | -0.088 | 0.50 | No |
| | | z | -0.088 | 5.08 | No |
| | 83 | z | -0.126 | 0.50 | No |
| | | z | -0.126 | 5.50 | No |
| | | z | -0.007 | 2.00 | No |
| W30 | 52 | x | -0.078 | 0.50 | No |
| | | x | -0.078 | 5.08 | No |
| | | x | -0.029 | 2.00 | No |
| | 54 | x | -0.116 | 0.50 | No |
| | | x | -0.116 | 5.50 | No |
| | | x | -0.03 | 2.00 | No |
| | 55 | x | -0.189 | 0.50 | No |
| | | x | -0.189 | 5.50 | No |
| | | x | -0.035 | 2.00 | No |
| | 73 | x | -0.189 | 0.50 | No |
| | | x | -0.189 | 5.50 | No |
| | | x | -0.035 | 2.00 | No |
| | 75 | x | -0.116 | 0.50 | No |
| | | x | -0.116 | 5.50 | No |
| | | x | -0.03 | 2.00 | No |
| | 79 | x | -0.078 | 0.50 | No |
| | | x | -0.078 | 5.08 | No |
| | | x | -0.029 | 2.00 | No |
| | 81 | x | -0.093 | 0.50 | No |
| | | x | -0.093 | 5.50 | No |
| | | x | -0.045 | 2.00 | No |
| | 87 | x | -0.047 | 0.50 | No |
| | | x | -0.047 | 5.08 | No |
| | | x | -0.011 | 2.00 | No |
| | 83 | x | -0.089 | 0.50 | No |
| | | x | -0.089 | 5.50 | No |
| | | x | -0.043 | 2.00 | No |
| Di | 52 | y | -0.076 | 0.50 | No |
| | | y | -0.076 | 5.08 | No |
| | | y | -0.064 | 2.00 | No |
| | 54 | y | -0.111 | 0.50 | No |
| | | y | -0.111 | 5.50 | No |
| | | y | -0.055 | 2.00 | No |
| | 55 | y | -0.178 | 0.50 | No |
| | | y | -0.178 | 5.50 | No |
| | | y | -0.063 | 2.00 | No |
| | 73 | y | -0.178 | 0.50 | No |
| | | y | -0.178 | 5.50 | No |
| | | y | -0.063 | 2.00 | No |
| | 75 | y | -0.111 | 0.50 | No |
| | | y | -0.111 | 5.50 | No |
| | | y | -0.055 | 2.00 | No |
| | 79 | y | -0.076 | 0.50 | No |
| | | y | -0.076 | 5.08 | No |
| | | y | -0.064 | 2.00 | No |
| | 81 | y | -0.178 | 0.50 | No |
| | | y | -0.178 | 5.50 | No |
| | | y | -0.063 | 2.00 | No |

| | | | | | |
|---|---|---|---|---|---|
| | 87 | y | -0.076 | 0.50 | No |
| | | y | -0.076 | 5.08 | No |
| | | y | -0.064 | 2.00 | No |
| | 83 | y | -0.111 | 0.50 | No |
| | | y | -0.111 | 5.50 | No |
| | | y | -0.055 | 2.00 | No |
| Wi0 | 52 | z | -0.025 | 0.50 | No |
| | | z | -0.025 | 5.08 | No |
| | 54 | z | -0.039 | 0.50 | No |
| | | z | -0.039 | 5.50 | No |
| | | z | -0.02 | 2.00 | No |
| | 55 | z | -0.048 | 0.50 | No |
| | | z | -0.048 | 5.50 | No |
| | 73 | z | -0.048 | 0.50 | No |
| | | z | -0.048 | 5.50 | No |
| | 75 | z | -0.039 | 0.50 | No |
| | | z | -0.039 | 5.50 | No |
| | | z | -0.02 | 2.00 | No |
| | 79 | z | -0.025 | 0.50 | No |
| | | z | -0.025 | 5.08 | No |
| | 81 | z | -0.077 | 0.50 | No |
| | | z | -0.077 | 5.50 | No |
| | 87 | z | -0.035 | 0.50 | No |
| | | z | -0.035 | 5.08 | No |
| | 83 | z | -0.049 | 0.50 | No |
| | | z | -0.049 | 5.50 | No |
| | | z | -0.009 | 2.00 | No |
| Wi30 | 52 | x | -0.031 | 0.50 | No |
| | | x | -0.031 | 5.08 | No |
| | | x | -0.015 | 2.00 | No |
| | 54 | x | -0.044 | 0.50 | No |
| | | x | -0.044 | 5.50 | No |
| | | x | -0.014 | 2.00 | No |
| | 55 | x | -0.066 | 0.50 | No |
| | | x | -0.066 | 5.50 | No |
| | | x | -0.016 | 2.00 | No |
| | 73 | x | -0.066 | 0.50 | No |
| | | x | -0.066 | 5.50 | No |
| | | x | -0.016 | 2.00 | No |
| | 75 | x | -0.044 | 0.50 | No |
| | | x | -0.044 | 5.50 | No |
| | | x | -0.014 | 2.00 | No |
| | 79 | x | -0.031 | 0.50 | No |
| | | x | -0.031 | 5.08 | No |
| | | x | -0.015 | 2.00 | No |
| | 81 | x | -0.039 | 0.50 | No |
| | | x | -0.039 | 5.50 | No |
| | | x | -0.021 | 2.00 | No |
| | 87 | x | -0.022 | 0.50 | No |
| | | x | -0.022 | 5.08 | No |
| | | x | -0.009 | 2.00 | No |
| | 83 | x | -0.037 | 0.50 | No |
| | | x | -0.037 | 5.50 | No |
| | | x | -0.02 | 2.00 | No |
| WL0 | 52 | z | -0.006 | 0.50 | No |
| | | z | -0.006 | 5.08 | No |
| | 54 | z | -0.01 | 0.50 | No |
| | | z | -0.01 | 5.50 | No |
| | | z | -0.004 | 2.00 | No |
| | 55 | z | -0.013 | 0.50 | No |

| | | | | | |
|---|---|---|---|---|---|
| | | z | -0.013 | 5.50 | No |
| | 73 | z | -0.013 | 0.50 | No |
| | | z | -0.013 | 5.50 | No |
| | 75 | z | -0.01 | 0.50 | No |
| | | z | -0.01 | 5.50 | No |
| | | z | -0.004 | 2.00 | No |
| | 79 | z | -0.006 | 0.50 | No |
| | | z | -0.006 | 5.08 | No |
| | 81 | z | -0.022 | 0.50 | No |
| | | z | -0.022 | 5.50 | No |
| | 87 | z | -0.009 | 0.50 | No |
| | | z | -0.009 | 5.08 | No |
| | 83 | z | -0.013 | 0.50 | No |
| | | z | -0.013 | 5.50 | No |
| | | z | -0.001 | 2.00 | No |
| WL30 | 52 | x | -0.008 | 0.50 | No |
| | | x | -0.008 | 5.08 | No |
| | | x | -0.003 | 2.00 | No |
| | 54 | x | -0.012 | 0.50 | No |
| | | x | -0.012 | 5.50 | No |
| | | x | -0.003 | 2.00 | No |
| | 55 | x | -0.019 | 0.50 | No |
| | | x | -0.019 | 5.50 | No |
| | | x | -0.003 | 2.00 | No |
| | 73 | x | -0.019 | 0.50 | No |
| | | x | -0.019 | 5.50 | No |
| | | x | -0.003 | 2.00 | No |
| | 75 | x | -0.012 | 0.50 | No |
| | | x | -0.012 | 5.50 | No |
| | | x | -0.003 | 2.00 | No |
| | 79 | x | -0.008 | 0.50 | No |
| | | x | -0.008 | 5.08 | No |
| | | x | -0.003 | 2.00 | No |
| | 81 | x | -0.01 | 0.50 | No |
| | | x | -0.01 | 5.50 | No |
| | | x | -0.004 | 2.00 | No |
| | 87 | x | -0.005 | 0.50 | No |
| | | x | -0.005 | 5.08 | No |
| | | x | -0.001 | 2.00 | No |
| | 83 | x | -0.009 | 0.50 | No |
| | | x | -0.009 | 5.50 | No |
| | | x | -0.004 | 2.00 | No |
| LL1 | 9 | y | -0.25 | 6.25 | No |
| LL2 | 9 | y | -0.25 | 0.00 | No |
| LLa1 | 87 | y | -0.25 | 3.00 | No |
| LLa2 | 83 | y | -0.25 | 3.00 | No |
| LLa3 | 81 | y | -0.25 | 3.00 | 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 | 250 lb Live Load on Antenna 1 | No | 0.00 | 0.00 | 0.00 |
| LLa2 | 250 lb Live Load on Antenna 2 | No | 0.00 | 0.00 | 0.00 |
| LLa3 | 250 lb Live Load on Antenna 3 | No | 0.00 | 0.00 | 0.00 |

## Earthquake (Dynamic analysis only)

| Condition | a/g | Ang. [Deg] | Damp. [%] |
|---|---|---|---|
| DL | 0.00 | 0.00 | 0.00 |
| W0 | 0.00 | 0.00 | 0.00 |
| W30 | 0.00 | 0.00 | 0.00 |
| Di | 0.00 | 0.00 | 0.00 |
| Wi0 | 0.00 | 0.00 | 0.00 |
| Wi30 | 0.00 | 0.00 | 0.00 |
| WL0 | 0.00 | 0.00 | 0.00 |
| WL30 | 0.00 | 0.00 | 0.00 |
| LL1 | 0.00 | 0.00 | 0.00 |
| LL2 | 0.00 | 0.00 | 0.00 |
| LLa1 | 0.00 | 0.00 | 0.00 |
| LLa2 | 0.00 | 0.00 | 0.00 |
| LLa3 | 0.00 | 0.00 | 0.00 |

Bentley

**Current Date:** 12/21/2018 1:54 PM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2298\CT2298 (LTE 2C-3C).etz\

# Steel Code Check

**Report: Summary - Group by member**

**Load conditions to be included in design :**

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

| Description | Section | Member | Ctrl Eq. | Ratio | Status | Reference |
|---|---|---|---|---|---|---|
| | ***HSS_SQR 4X4X1_4*** | **1** | LC11 at 100.00% | 0.74 | OK | Eq. H1-1b |
| | | **4** | LC9 at 50.00% | 0.26 | OK | Eq. H1-1b |
| | | **5** | LC12 at 100.00% | 0.73 | OK | Eq. H1-1b |
| | | **8** | LC9 at 50.00% | 0.26 | OK | Eq. H1-1b |
| | | **12** | LC12 at 0.00% | **0.74** | **OK** | Eq. H1-1b |
| | | **13** | LC10 at 50.00% | 0.26 | OK | Eq. H1-1b |
| | ***L 2X2X3_16*** | **2** | LC3 at 100.00% | 0.53 | OK | Eq. H2-1 |
| | | **3** | LC10 at 100.00% | 0.51 | OK | Eq. H2-1 |
| | | **6** | LC11 at 100.00% | 0.50 | OK | Eq. H2-1 |
| | | **7** | LC4 at 100.00% | **0.56** | **OK** | Eq. H2-1 |
| | | **14** | LC12 at 0.00% | 0.50 | OK | Eq. H2-1 |
| | | **15** | LC10 at 0.00% | 0.47 | OK | Eq. H2-1 |
| | ***PIPE 2x0.154*** | **52** | LC2 at 46.88% | 0.42 | OK | Eq. H1-1b |
| | | **53** | LC3 at 50.00% | 0.06 | OK | Eq. H1-1b |
| | | **54** | LC2 at 46.88% | 0.57 | OK | Eq. H1-1b |
| | | **55** | LC4 at 50.00% | 0.89 | OK | Eq. H1-1b |
| | | **73** | LC2 at 50.00% | **0.89** | **OK** | Eq. H1-1b |
| | | **75** | LC4 at 46.88% | 0.57 | OK | Eq. H1-1b |
| | | **77** | LC2 at 50.00% | 0.06 | OK | Eq. H1-1b |

| | | | | | |
|---|---|---|---|---|---|
| | **79** | LC2 at 46.88% | 0.42 | OK | Eq. H1-1b |
| | **81** | LC1 at 50.00% | 0.71 | OK | Eq. H1-1b |
| | **83** | LC1 at 50.00% | 0.41 | OK | Eq. H1-1b |
| | **85** | LC4 at 50.00% | 0.05 | OK | Eq. H1-1b |
| | **87** | LC1 at 46.88% | 0.26 | OK | Eq. H1-1b |
| ***PIPE 3x0.216*** | **9** | LC12 at 55.56% | 0.61 | OK | Eq. H1-1b |
| | **10** | LC10 at 44.44% | **0.62** | **OK** | Eq. H1-1b |
| | **11** | LC10 at 44.44% | 0.62 | OK | Eq. H1-1b |
| ***PL 6X1/2*** | **25** | LC1 at 50.00% | 0.16 | OK | Eq. H1-1b |
| | **26** | LC4 at 50.00% | **0.19** | **OK** | Eq. H1-1b |
| | **27** | LC1 at 50.00% | 0.16 | OK | Eq. H1-1b |

Bentley

**Current Date:** 12/21/2018 1:54 PM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2298\CT2298 (LTE 2C-3C).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 | 4.0896 | 0 |
| 3 | -6.0833 | 0.00 | 4.0896 | 0 |
| 4 | -6.25 | 0.00 | 4.0896 | 0 |
| 5 | -6.3333 | 0.00 | 3.6566 | 0 |
| 6 | -6.5833 | 0.00 | 3.2236 | 0 |
| 7 | -3.7376 | 0.00 | -1.128 | 0 |
| 8 | -3.9043 | 0.00 | -1.4166 | 0 |
| 9 | -0.892 | 0.00 | 3.8009 | 0 |
| 10 | -6.6667 | 0.00 | 3.3679 | 0 |
| 11 | -3.179 | 0.00 | -2.6729 | 0 |
| 12 | -2.8457 | 0.00 | -2.6729 | 0 |
| 13 | -0.50 | 0.00 | -7.3131 | 0 |
| 14 | -0.4167 | 0.00 | -7.4574 | 0 |
| 17 | 0.7253 | 0.00 | 4.0896 | 0 |
| 18 | 6.0833 | 0.00 | 4.0896 | 0 |
| 19 | 6.25 | 0.00 | 4.0896 | 0 |
| 20 | 6.3333 | 0.00 | 3.6566 | 0 |
| 21 | 6.5833 | 0.00 | 3.2236 | 0 |
| 22 | 3.7376 | 0.00 | -1.128 | 0 |
| 23 | 3.9043 | 0.00 | -1.4166 | 0 |
| 24 | 0.892 | 0.00 | 3.8009 | 0 |
| 25 | 6.6667 | 0.00 | 3.3679 | 0 |

| | | | | |
|---|---|---|---|---|
| 26 | 3.179 | 0.00 | -2.6729 | 0 |
| 27 | 2.8457 | 0.00 | -2.6729 | 0 |
| 28 | 0.50 | 0.00 | -7.3131 | 0 |
| 29 | 0.4167 | 0.00 | -7.4574 | 0 |
| 32 | 0.00 | 0.00 | -7.3131 | 0 |
| 69 | 0.9427 | 0.00 | 0.5443 | 0 |
| 70 | 0.00 | 0.00 | -1.0885 | 0 |
| 71 | -0.9427 | 0.00 | 0.5443 | 0 |
| 108 | 0.8609 | 3.00 | -7.0881 | 0 |
| 109 | 6.5689 | 3.00 | 2.7985 | 0 |
| 110 | 0.8609 | -3.00 | -7.0881 | 0 |
| 111 | 6.5689 | -3.00 | 2.7985 | 0 |
| 112 | 2.7359 | 3.00 | -3.8405 | 0 |
| 113 | 4.6939 | 3.00 | -0.4491 | 0 |
| 114 | 2.7359 | -3.00 | -3.8405 | 0 |
| 115 | 4.6939 | -3.00 | -0.4491 | 0 |
| 116 | 0.6877 | 0.00 | -6.9881 | 0 |
| 117 | 6.3957 | 0.00 | 2.8985 | 0 |
| 118 | 2.5627 | 0.00 | -3.7405 | 0 |
| 119 | 4.5207 | 0.00 | -0.3491 | 0 |
| 120 | 0.8609 | 0.00 | -7.0881 | 0 |
| 121 | 6.5689 | 0.00 | 2.7985 | 0 |
| 122 | 2.7359 | 0.00 | -3.8405 | 0 |
| 123 | 4.6939 | 0.00 | -0.4491 | 0 |
| 127 | 0.00 | 0.00 | 0.00 | 0 |
| 160 | -0.8609 | 3.00 | -7.0881 | 0 |
| 161 | -0.8609 | -3.00 | -7.0881 | 0 |
| 162 | -0.6877 | 0.00 | -6.9881 | 0 |
| 163 | -0.8609 | 0.00 | -7.0881 | 0 |
| 164 | -2.7359 | 3.00 | -3.8405 | 0 |
| 165 | -2.7359 | -3.00 | -3.8405 | 0 |
| 166 | -2.5627 | 0.00 | -3.7405 | 0 |
| 167 | -2.7359 | 0.00 | -3.8405 | 0 |
| 168 | -4.6939 | 3.00 | -0.4491 | 0 |
| 169 | -4.6939 | -3.00 | -0.4491 | 0 |
| 170 | -4.5207 | 0.00 | -0.3491 | 0 |
| 171 | -4.6939 | 0.00 | -0.4491 | 0 |
| 172 | -6.5689 | 3.00 | 2.7985 | 0 |
| 173 | -6.5689 | -3.00 | 2.7985 | 0 |
| 174 | -6.3957 | 0.00 | 2.8985 | 0 |
| 175 | -6.5689 | 0.00 | 2.7985 | 0 |
| 176 | -5.708 | 3.00 | 4.2896 | 0 |
| 177 | -5.708 | -3.00 | 4.2896 | 0 |
| 178 | -5.708 | 0.00 | 4.0896 | 0 |
| 179 | -5.708 | 0.00 | 4.2896 | 0 |
| 180 | -1.958 | 3.00 | 4.2896 | 0 |
| 181 | -1.958 | -3.00 | 4.2896 | 0 |
| 182 | -1.958 | 0.00 | 4.0896 | 0 |
| 183 | -1.958 | 0.00 | 4.2896 | 0 |
| 184 | 1.958 | 3.00 | 4.2896 | 0 |
| 185 | 1.958 | -3.00 | 4.2896 | 0 |
| 186 | 1.958 | 0.00 | 4.0896 | 0 |
| 187 | 1.958 | 0.00 | 4.2896 | 0 |
| 188 | 5.708 | 3.00 | 4.2896 | 0 |
| 189 | 5.708 | -3.00 | 4.2896 | 0 |
| 190 | 5.708 | 0.00 | 4.0896 | 0 |
| 191 | 5.708 | 0.00 | 4.2896 | 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 |

## Members

| Member | NJ | NK | Description | Section | Material | d0 [in] | dL [in] | lg factor |
|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 71 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 2 | 5 | 9 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 3 | 5 | 7 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 4 | 8 | 2 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 5 | 20 | 69 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 6 | 20 | 24 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 7 | 20 | 22 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 8 | 23 | 17 | | HSS_SQR 4X4X1_4 | 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 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 13 | 11 | 26 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 14 | 27 | 32 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 15 | 12 | 32 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 25 | 6 | 3 | | PL 6X1/2 | A36 | 0.00 | 0.00 | 0.00 |
| 26 | 18 | 21 | | PL 6X1/2 | A36 | 0.00 | 0.00 | 0.00 |
| 27 | 28 | 13 | | PL 6X1/2 | A36 | 0.00 | 0.00 | 0.00 |
| 52 | 108 | 110 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 53 | 112 | 114 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 54 | 113 | 115 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 55 | 109 | 111 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 73 | 160 | 161 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 75 | 164 | 165 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 77 | 168 | 169 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 79 | 172 | 173 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 81 | 176 | 177 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 85 | 184 | 185 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 87 | 188 | 189 | | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 83 | 180 | 181 | | PIPE 2x0.154 | 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 |
| 4 | 180.00 | 0 | 0.00 | 0.00 | 0.00 |
| 7 | 270.00 | 0 | 0.00 | 0.00 | 0.00 |
| 8 | 90.00 | 0 | 0.00 | 0.00 | 0.00 |
| 13 | 90.00 | 0 | 0.00 | 0.00 | 0.00 |
| 14 | 270.00 | 0 | 0.00 | 0.00 | 0.00 |
| 52 | 0.00 | 2 | -0.50 | 0.00 | -0.866 |
| 53 | 0.00 | 2 | -0.50 | 0.00 | -0.866 |
| 54 | 0.00 | 2 | -0.50 | 0.00 | -0.866 |

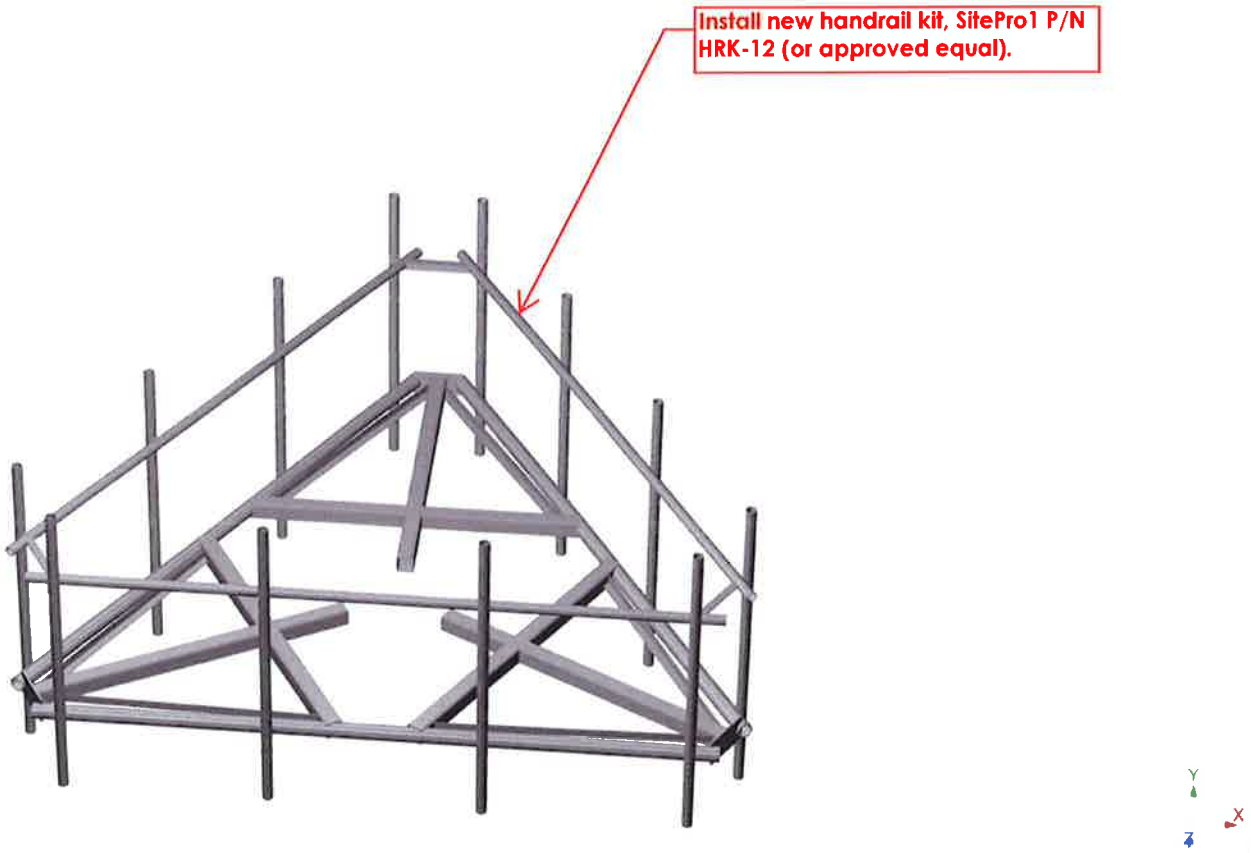
| | | | | | |
|---|---|---|---|---|---|
| 55 | 0.00 | 2 | -0.50 | 0.00 | -0.866 |
| 73 | 0.00 | 2 | -0.50 | 0.00 | 0.866 |
| 75 | 0.00 | 2 | -0.50 | 0.00 | 0.866 |
| 77 | 0.00 | 2 | -0.50 | 0.00 | 0.866 |
| 79 | 0.00 | 2 | -0.50 | 0.00 | 0.866 |

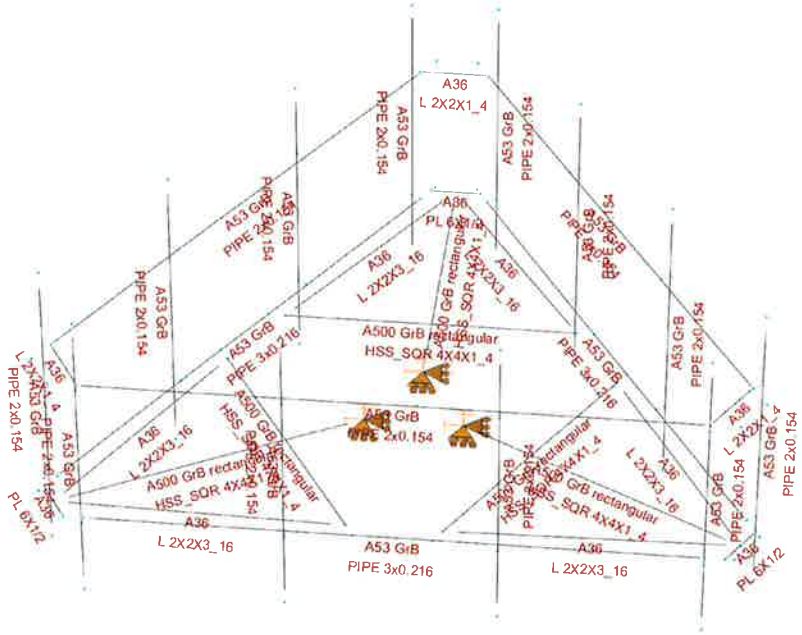
HUDSON
Design Group LLC

# Mount Calculations
# (Proposed Conditions)

Bentley

**Current Date:** 12/21/2018 1:55 PM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2298\CT2298 (LTE 2C-3C) (MOD.).etz\



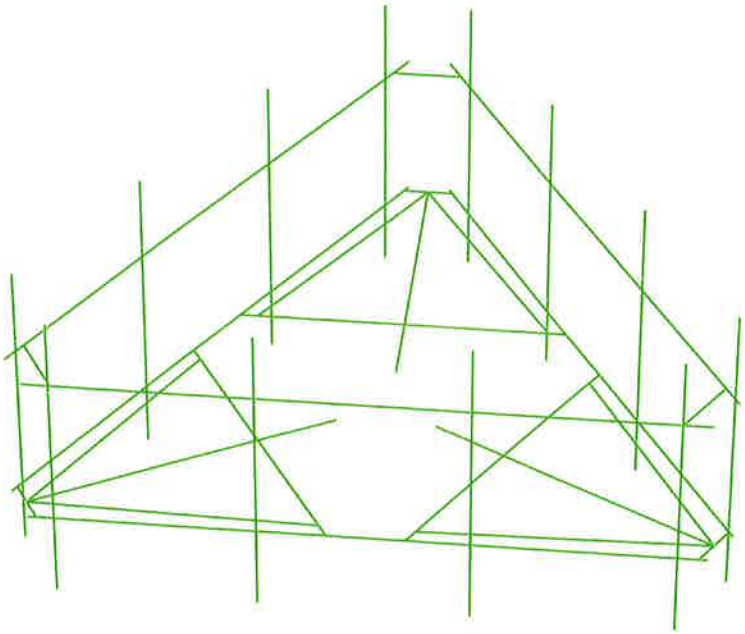

A36
L 2X2X1_4
A53 GrB
PIPE 2x0.154
A36
PL 6x1/2
A36
L 2X2X3_16
A500 GrB rectangular
HSS_SQR 4X4X1_4
A53 GrB
PIPE 3x0.216
A36
L 2X2X3_16
A53 GrB
PIPE 2x0.154
A36
PL 6X1/2
Y
X

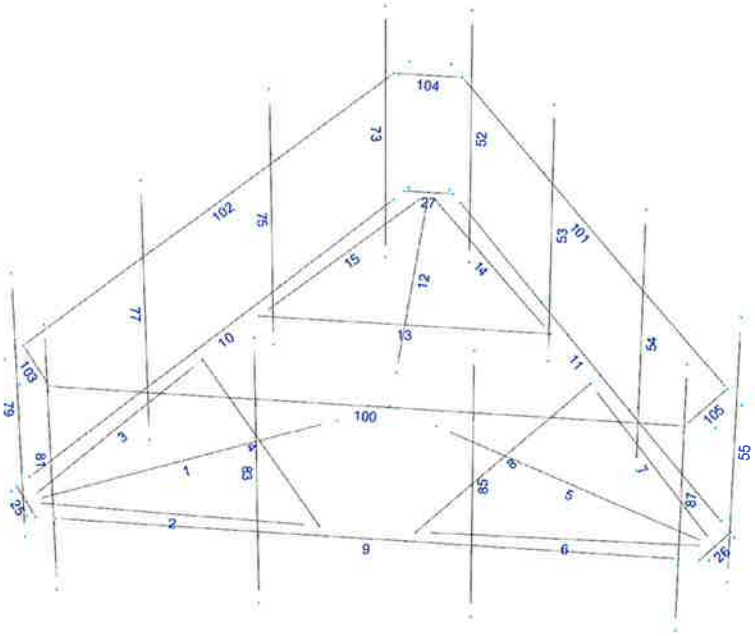
Bentley

**Current Date:** 12/21/2018 1:56 PM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2298\CT2298 (LTE 2C-3C) (MOD.).etz\

Design status

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




104
73
52
102
75
27
53
101
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12
14
77
10
13
54
11
103
79
100
105
3
18
1
83
85
8
7
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95
2
9
6
26


Y
X
Z

Bentley

**Current Date:** 12/21/2018 1:57 PM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2298\CT2298 (LTE 2C-3C) (MOD.).e

# Steel Code Check

**Report: Summary - Group by member**

**Load conditions to be included in design :**

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

| Description | Section | Member | Ctrl Eq. | Ratio | Status | Reference |
|---|---|---|---|---|---|---|
| | ***HSS_SQR 4X4X1_4*** | **1** | LC10 at 100.00% | 0.62 | OK | Eq. H1-1b |
| | | **4** | LC10 at 50.00% | 0.30 | OK | Eq. H1-1b |
| | | **5** | LC12 at 100.00% | **0.62** | **OK** | Eq. H1-1b |
| | | **8** | LC12 at 50.00% | 0.30 | OK | Eq. H1-1b |
| | | **12** | LC9 at 0.00% | 0.62 | OK | Eq. H1-1b |
| | | **13** | LC9 at 50.00% | 0.30 | OK | Eq. H1-1b |
| | ***L 2X2X1_4*** | **103** | LC1 at 0.00% | 0.83 | OK | Sec. F1 |
| | | **104** | LC4 at 0.00% | **0.88** | **OK** | Sec. F1 |
| | | **105** | LC2 at 0.00% | 0.59 | OK | Sec. F1 |
| | ***L 2X2X3_16*** | **2** | LC3 at 100.00% | 0.47 | OK | Eq. H2-1 |
| | | **3** | LC2 at 100.00% | 0.49 | OK | Eq. H2-1 |
| | | **6** | LC3 at 100.00% | 0.44 | OK | Eq. H2-1 |
| | | **7** | LC4 at 100.00% | **0.53** | **OK** | Eq. H2-1 |
| | | **14** | LC1 at 0.00% | 0.42 | OK | Eq. H2-1 |
| | | **15** | LC1 at 0.00% | 0.43 | OK | Eq. H2-1 |
| | ***PIPE 2x0.154*** | **52** | LC11 at 72.92% | 0.58 | OK | Eq. H1-1b |
| | | **53** | LC4 at 72.92% | 0.62 | OK | Eq. H1-1b |
| | | **54** | LC2 at 72.92% | **0.77** | **OK** | Eq. H1-1b |

| | | | | | |
|---|---|---|---|---|---|
| | **55** | LC10 at 72.92% | 0.63 | OK | Eq. H1-1b |
| | **73** | LC11 at 72.92% | 0.62 | OK | Eq. H1-1b |
| | **75** | LC2 at 72.92% | 0.72 | OK | Eq. H1-1b |
| | **77** | LC1 at 72.92% | 0.56 | OK | Eq. H1-1b |
| | **79** | LC12 at 72.92% | 0.58 | OK | Eq. H1-1b |
| | **81** | LC12 at 72.92% | 0.62 | OK | Eq. H1-1b |
| | **83** | LC4 at 72.92% | 0.60 | OK | Eq. H1-1b |
| | **85** | LC2 at 72.92% | 0.49 | OK | Eq. H1-1b |
| | **87** | LC10 at 72.92% | 0.59 | OK | Eq. H1-1b |
| | **100** | LC12 at 5.00% | 0.43 | OK | Eq. H1-1b |
| | **101** | LC9 at 33.75% | 0.43 | OK | Eq. H1-1b |
| | **102** | LC10 at 33.75% | 0.43 | OK | Eq. H1-1b |
| ***PIPE 3x0.216*** | **9** | LC12 at 55.56% | 0.41 | OK | Eq. H1-1b |
| | **10** | LC10 at 44.44% | **0.42** | **OK** | Eq. H1-1b |
| | **11** | LC9 at 44.44% | 0.42 | OK | Eq. H1-1b |
| ***PL 6X1/2*** | **25** | LC11 at 0.00% | 0.16 | OK | Eq. H3-1 |
| | **26** | LC4 at 50.00% | **0.17** | **OK** | Eq. H1-1b |
| | **27** | LC10 at 0.00% | 0.16 | OK | Eq. H3-1 |

Bentley

**Current Date:** 12/21/2018 1:57 PM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2298\CT2298 (LTE 2C-3C) (MOD.).e

# 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 | 4.0896 | 0 |
| 3 | -6.0833 | 0.00 | 4.0896 | 0 |
| 4 | -6.25 | 0.00 | 4.0896 | 0 |
| 5 | -6.3333 | 0.00 | 3.6566 | 0 |
| 6 | -6.5833 | 0.00 | 3.2236 | 0 |
| 7 | -3.7376 | 0.00 | -1.128 | 0 |
| 8 | -3.9043 | 0.00 | -1.4166 | 0 |
| 9 | -0.892 | 0.00 | 3.8009 | 0 |
| 10 | -6.6667 | 0.00 | 3.3679 | 0 |
| 11 | -3.179 | 0.00 | -2.6729 | 0 |
| 12 | -2.8457 | 0.00 | -2.6729 | 0 |
| 13 | -0.50 | 0.00 | -7.3131 | 0 |
| 14 | -0.4167 | 0.00 | -7.4574 | 0 |
| 17 | 0.7253 | 0.00 | 4.0896 | 0 |
| 18 | 6.0833 | 0.00 | 4.0896 | 0 |
| 19 | 6.25 | 0.00 | 4.0896 | 0 |
| 20 | 6.3333 | 0.00 | 3.6566 | 0 |
| 21 | 6.5833 | 0.00 | 3.2236 | 0 |
| 22 | 3.7376 | 0.00 | -1.128 | 0 |
| 23 | 3.9043 | 0.00 | -1.4166 | 0 |
| 24 | 0.892 | 0.00 | 3.8009 | 0 |
| 25 | 6.6667 | 0.00 | 3.3679 | 0 |

| | | | | |
|---|---|---|---|---|
| 26 | 3.179 | 0.00 | -2.6729 | 0 |
| 27 | 2.8457 | 0.00 | -2.6729 | 0 |
| 28 | 0.50 | 0.00 | -7.3131 | 0 |
| 29 | 0.4167 | 0.00 | -7.4574 | 0 |
| 32 | 0.00 | 0.00 | -7.3131 | 0 |
| 69 | 0.9427 | 0.00 | 0.5443 | 0 |
| 70 | 0.00 | 0.00 | -1.0885 | 0 |
| 71 | -0.9427 | 0.00 | 0.5443 | 0 |
| 108 | 0.8609 | 4.50 | -7.0881 | 0 |
| 109 | 6.5689 | 4.50 | 2.7985 | 0 |
| 110 | 0.8609 | -1.50 | -7.0881 | 0 |
| 111 | 6.5689 | -1.50 | 2.7985 | 0 |
| 112 | 2.7359 | 4.50 | -3.8405 | 0 |
| 113 | 4.6939 | 4.50 | -0.4491 | 0 |
| 114 | 2.7359 | -1.50 | -3.8405 | 0 |
| 115 | 4.6939 | -1.50 | -0.4491 | 0 |
| 116 | 0.6877 | 0.00 | -6.9881 | 0 |
| 117 | 6.3957 | 0.00 | 2.8985 | 0 |
| 118 | 2.5627 | 0.00 | -3.7405 | 0 |
| 119 | 4.5207 | 0.00 | -0.3491 | 0 |
| 120 | 0.8609 | 0.00 | -7.0881 | 0 |
| 121 | 6.5689 | 0.00 | 2.7985 | 0 |
| 122 | 2.7359 | 0.00 | -3.8405 | 0 |
| 123 | 4.6939 | 0.00 | -0.4491 | 0 |
| 127 | 0.00 | 0.00 | 0.00 | 0 |
| 160 | -0.8609 | 4.50 | -7.0881 | 0 |
| 161 | -0.8609 | -1.50 | -7.0881 | 0 |
| 162 | -0.6877 | 0.00 | -6.9881 | 0 |
| 163 | -0.8609 | 0.00 | -7.0881 | 0 |
| 164 | -2.7359 | 4.50 | -3.8405 | 0 |
| 165 | -2.7359 | -1.50 | -3.8405 | 0 |
| 166 | -2.5627 | 0.00 | -3.7405 | 0 |
| 167 | -2.7359 | 0.00 | -3.8405 | 0 |
| 168 | -4.6939 | 4.50 | -0.4491 | 0 |
| 169 | -4.6939 | -1.50 | -0.4491 | 0 |
| 170 | -4.5207 | 0.00 | -0.3491 | 0 |
| 171 | -4.6939 | 0.00 | -0.4491 | 0 |
| 172 | -6.5689 | 4.50 | 2.7985 | 0 |
| 173 | -6.5689 | -1.50 | 2.7985 | 0 |
| 174 | -6.3957 | 0.00 | 2.8985 | 0 |
| 175 | -6.5689 | 0.00 | 2.7985 | 0 |
| 176 | -5.708 | 4.50 | 4.2896 | 0 |
| 177 | -5.708 | -1.50 | 4.2896 | 0 |
| 178 | -5.708 | 0.00 | 4.0896 | 0 |
| 179 | -5.708 | 0.00 | 4.2896 | 0 |
| 180 | -1.958 | 4.50 | 4.2896 | 0 |
| 181 | -1.958 | -1.50 | 4.2896 | 0 |
| 182 | -1.958 | 0.00 | 4.0896 | 0 |
| 183 | -1.958 | 0.00 | 4.2896 | 0 |
| 184 | 1.958 | 4.50 | 4.2896 | 0 |
| 185 | 1.958 | -1.50 | 4.2896 | 0 |
| 186 | 1.958 | 0.00 | 4.0896 | 0 |
| 187 | 1.958 | 0.00 | 4.2896 | 0 |
| 188 | 5.708 | 4.50 | 4.2896 | 0 |
| 189 | 5.708 | -1.50 | 4.2896 | 0 |
| 190 | 5.708 | 0.00 | 4.0896 | 0 |
| 191 | 5.708 | 0.00 | 4.2896 | 0 |
| 192 | -5.708 | 3.00 | 4.0896 | 0 |
| 193 | -5.708 | 3.00 | 4.2896 | 0 |
| 194 | -6.3957 | 3.00 | 2.8985 | 0 |

| | | | | |
|---|---|---|---|---|
| 195 | -6.5689 | 3.00 | 2.7985 | 0 |
| 196 | -4.5207 | 3.00 | -0.3491 | 0 |
| 197 | -4.6939 | 3.00 | -0.4491 | 0 |
| 198 | -2.5627 | 3.00 | -3.7405 | 0 |
| 199 | -2.7359 | 3.00 | -3.8405 | 0 |
| 200 | -0.6877 | 3.00 | -6.9881 | 0 |
| 201 | -0.8609 | 3.00 | -7.0881 | 0 |
| 202 | 0.6877 | 3.00 | -6.9881 | 0 |
| 203 | 0.8609 | 3.00 | -7.0881 | 0 |
| 204 | 2.5627 | 3.00 | -3.7405 | 0 |
| 205 | 2.7359 | 3.00 | -3.8405 | 0 |
| 206 | 4.5207 | 3.00 | -0.3491 | 0 |
| 207 | 4.6939 | 3.00 | -0.4491 | 0 |
| 208 | 6.3957 | 3.00 | 2.8985 | 0 |
| 209 | 6.5689 | 3.00 | 2.7985 | 0 |
| 210 | 5.708 | 3.00 | 4.0896 | 0 |
| 211 | 5.708 | 3.00 | 4.2896 | 0 |
| 212 | 1.958 | 3.00 | 4.0896 | 0 |
| 213 | 1.958 | 3.00 | 4.2896 | 0 |
| 214 | -1.958 | 3.00 | 4.0896 | 0 |
| 215 | -1.958 | 3.00 | 4.2896 | 0 |
| 216 | -6.25 | 3.00 | 4.0896 | 0 |
| 217 | -6.6667 | 3.00 | 3.3679 | 0 |
| 218 | -0.4167 | 3.00 | -7.4574 | 0 |
| 219 | 0.4167 | 3.00 | -7.4574 | 0 |
| 220 | 6.6667 | 3.00 | 3.3679 | 0 |
| 221 | 6.25 | 3.00 | 4.0896 | 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 |

## Members

| Member | NJ | NK | Description | Section | Material | d0 [in] | dL [in] | lg factor |
|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 71 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 2 | 5 | 9 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 3 | 5 | 7 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 4 | 8 | 2 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 5 | 20 | 69 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 6 | 20 | 24 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 7 | 20 | 22 | | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 8 | 23 | 17 | | HSS_SQR 4X4X1_4 | 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 | | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13 | 11 | 26 | HSS_SQR 4X4X1_4 | A500 GrB rectangular | 0.00 | 0.00 | 0.00 |
| 14 | 27 | 32 | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 15 | 12 | 32 | L 2X2X3_16 | A36 | 0.00 | 0.00 | 0.00 |
| 25 | 6 | 3 | PL 6X1/2 | A36 | 0.00 | 0.00 | 0.00 |
| 26 | 18 | 21 | PL 6X1/2 | A36 | 0.00 | 0.00 | 0.00 |
| 27 | 28 | 13 | PL 6X1/2 | A36 | 0.00 | 0.00 | 0.00 |
| 52 | 108 | 110 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 53 | 112 | 114 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 54 | 113 | 115 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 55 | 109 | 111 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 73 | 160 | 161 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 75 | 164 | 165 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 77 | 168 | 169 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 79 | 172 | 173 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 81 | 176 | 177 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 83 | 180 | 181 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 85 | 184 | 185 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 87 | 188 | 189 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 100 | 216 | 221 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 101 | 220 | 219 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 102 | 218 | 217 | PIPE 2x0.154 | A53 GrB | 0.00 | 0.00 | 0.00 |
| 103 | 192 | 194 | L 2X2X1_4 | A36 | 0.00 | 0.00 | 0.00 |
| 104 | 200 | 202 | L 2X2X1_4 | A36 | 0.00 | 0.00 | 0.00 |
| 105 | 208 | 210 | L 2X2X1_4 | A36 | 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 |
| 4 | 180.00 | 0 | 0.00 | 0.00 | 0.00 |
| 7 | 270.00 | 0 | 0.00 | 0.00 | 0.00 |
| 8 | 90.00 | 0 | 0.00 | 0.00 | 0.00 |
| 13 | 90.00 | 0 | 0.00 | 0.00 | 0.00 |
| 14 | 270.00 | 0 | 0.00 | 0.00 | 0.00 |
| 52 | 0.00 | 2 | -0.50 | 0.00 | -0.866 |
| 53 | 0.00 | 2 | -0.50 | 0.00 | -0.866 |
| 54 | 0.00 | 2 | -0.50 | 0.00 | -0.866 |
| 55 | 0.00 | 2 | -0.50 | 0.00 | -0.866 |
| 73 | 0.00 | 2 | -0.50 | 0.00 | 0.866 |
| 75 | 0.00 | 2 | -0.50 | 0.00 | 0.866 |
| 77 | 0.00 | 2 | -0.50 | 0.00 | 0.866 |
| 79 | 0.00 | 2 | -0.50 | 0.00 | 0.866 |
| 103 | 180.00 | 0 | 0.00 | 0.00 | 0.00 |
| 104 | 180.00 | 0 | 0.00 | 0.00 | 0.00 |
| 105 | 180.00 | 0 | 0.00 | 0.00 | 0.00 |

# 459 BURR ROAD

| | | | |
|---|---|---|---|
| **Location** | 459 BURR ROAD | **Mblu** | 43/ 18/ 16/ / |
| **Acct#** | 00503100 | **Owner** | HAGEMAN HOLLY E |
| **Assessment** | $337,130 | **Appraisal** | $702,510 |
| **PID** | 5914 | **Building Count** | 1 |

## Current Value

| Appraisal | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2017 | $264,680 | $437,830 | $702,510 |
| **Assessment** | | | |
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2017 | $185,280 | $151,850 | $337,130 |

## Owner of Record

| | | | |
|---|---|---|---|
| **Owner** | HAGEMAN HOLLY E | **Sale Price** | $0 |
| **Co-Owner** | | **Certificate** | |
| **Address** | 459 BURR ROAD<br>SOUTHBURY, CT 06488 | **Book & Page** | 642/1023 |
| | | **Sale Date** | 06/02/2015 |
| | | **Instrument** | 25 |

## Ownership History

| Ownership History | | | | | |
|---|---|---|---|---|---|
| **Owner** | **Sale Price** | **Certificate** | **Book & Page** | **Instrument** | **Sale Date** |
| HAGEMAN HOLLY E | $0 | | 642/1023 | 25 | 06/02/2015 |
| CUSATO SUSAN & HAGEMAN HOLLY | $0 | | 571/ 213 | 25 | 03/04/2010 |
| CUSATO SUSAN & HOLLY | $0 | | 571/ 212 | 25 | 03/04/2010 |
| HAGEMAN SUSAN & HOLLY | $125,000 | | 315/ 264 | 00 | 12/31/1996 |

## Building Information

### Building 1 : Section 1

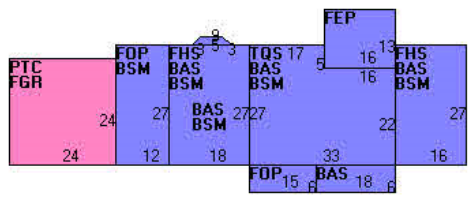
| | |
|---|---|
| **Year Built:** | 1972 |
| **Living Area:** | 2,878 |
| **Replacement Cost:** | $346,775 |
| **Building Percent Good:** | 76 |
| **Replacement Cost Less Depreciation:** | $263,550 |

| Building Attributes | |
|---|---|
| **Field** | **Description** |
| Style | Cape |
| Model | Residential |
| Grade: | B |
| Stories | 1.65 |
| Occupancy | 1 |
| Exterior Wall 1 | Clapboard |
| Exterior Wall 2 | |
| Roof Structure | Gable |
| Roof Cover | Arch Shingles |
| Interior Wall 1 | Drywall |
| Interior Wall 2 | |
| Interior Flr 1 | Hardwood |
| Interior Flr 2 | Carpet |
| Heat Fuel | Oil |
| Heat Type: | Hot Water |
| AC Percent | 0 |
| Total Bedrooms: | 3 Bedrooms |
| Full Bthrms: | 2 |
| Half Baths: | 1 |
| Extra Fixtures | 0 |
| Total Rooms: | 7 |
| Bath Style: | Average |
| Kitchen Style: | Average |
| Num Kitchens | 1 |
| Pln FPL: | 0 |
| Det FPL: | 3 |

### Building Photo

(http://images.vgsi.com/photos/SouthburyCTPhotos//\00\00\40/77.JPG)

### Building Layout




(http://images.vgsi.com/photos/SouthburyCTPhotos//Sketches

| Building Sub-Areas (sq ft) | | | Legend |
|---|---|---|---|
| **Code** | **Description** | **Gross Area** | **Living Area** |
| BAS | First Floor | 1,851 | 1,851 |
| TQS | Three Quarter Story | 811 | 568 |
| FHS | Finished Half Story | 918 | 459 |
| BSM | Basement | 2,067 | 0 |
| FEP | Finished Enclosed Porch | 208 | 0 |
| FGR | Garage | 576 | 0 |

| | |
|---|---|
| Gas Fireplace(s) | 0 |
| % Attic Fin | 0 |
| LF Dormer | 35 |
| Foundation | Stone/Brick |
| Bsmt Gar(s) | 0 |
| Bsmt % | 0 |
| SF FBM | 0 |
| Fin Bsmt Qual | |
| Bsmt Access | Walkout |

| | | | |
|---|---|---|---|
| FOP | Open Porch | 414 | 0 |
| PTC | Concrete Patio | 576 | 0 |
| | | 7,421 | 2,878 |

## Extra Features

| Extra Features | | | | Legend |
|---|---|---|---|---|
| **Code** | **Description** | **Size** | **Value** | **Bldg #** |
| | CELL TOWER | 1 UNITS | $0 | 1 |

## Land

### Land Use

| | |
|---|---|
| **Use Code** | 101 |
| **Description** | Res Dwelling |
| **Zone** | R-60 |
| **Neighborhood** | 75 |
| **Alt Land Appr** | No |
| **Category** | |

### Land Line Valuation

| | |
|---|---|
| **Size (Acres)** | 37.3 |
| **Frontage** | 0 |
| **Depth** | 0 |
| **Assessed Value** | $151,850 |
| **Appraised Value** | $437,830 |

## Outbuildings

| Outbuildings | | | | | | Legend |
|---|---|---|---|---|---|---|
| **Code** | **Description** | **Sub Code** | **Sub Description** | **Size** | **Value** | **Bldg #** |
| SHD1 | Shed | FR | Frame | 240 S.F. | $900 | 1 |
| SHD1 | Shed | FR | Frame | 192 S.F. | $230 | 1 |

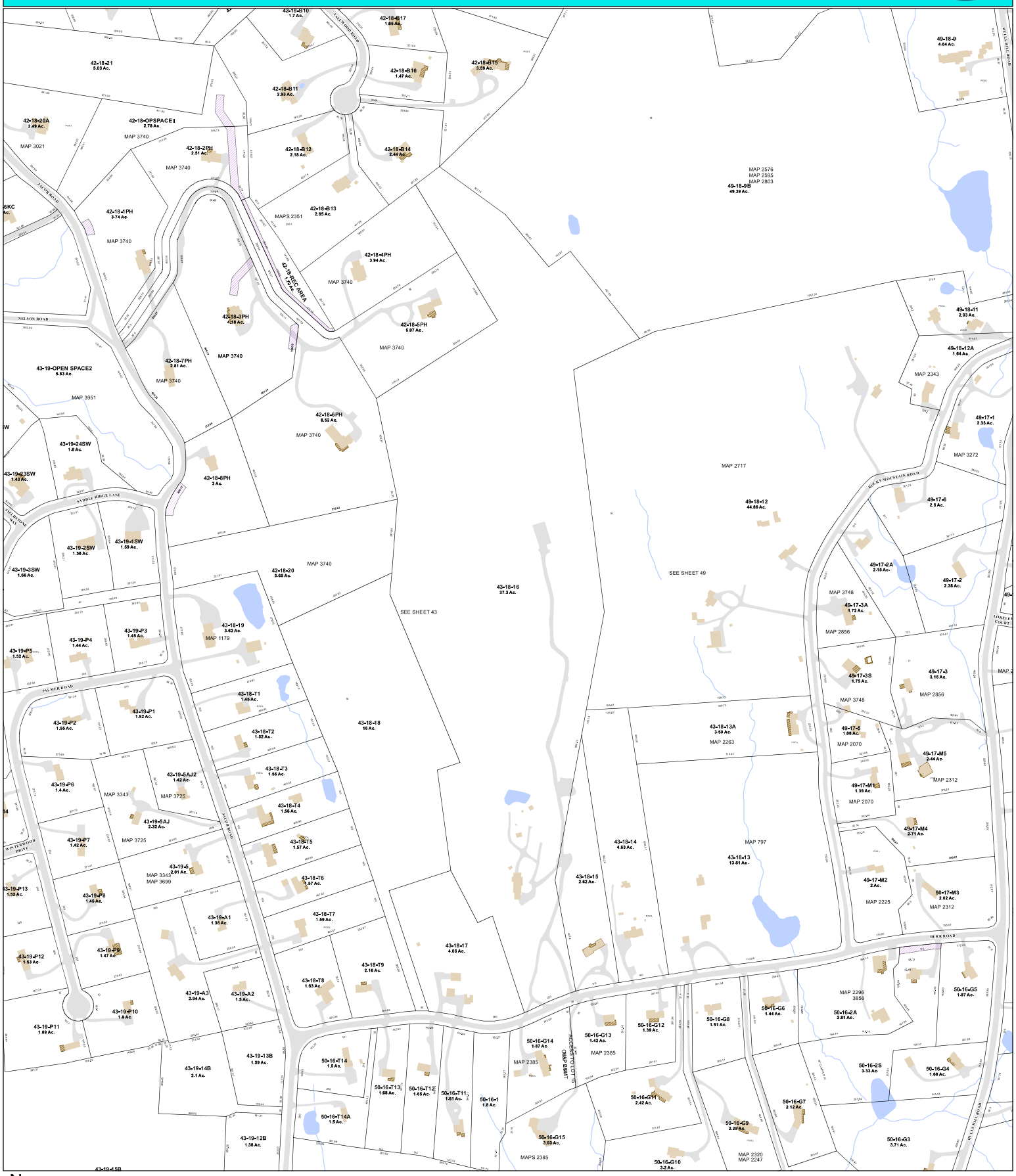
## Valuation History

| Appraisal | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2017 | $264,680 | $437,830 | $702,510 |
| 2016 | $247,130 | $453,550 | $700,680 |
| 2012 | $247,130 | $455,800 | $702,930 |

| Assessment | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2017 | $185,280 | $151,850 | $337,130 |
| 2016 | $172,990 | $160,330 | $333,320 |
| 2012 | $172,990 | $166,280 | $339,270 |

# Town of Southbury Connecticut - Assessment Parcel Map

**Parcel:** 43-18-16 **Location:** 459 BURR ROAD



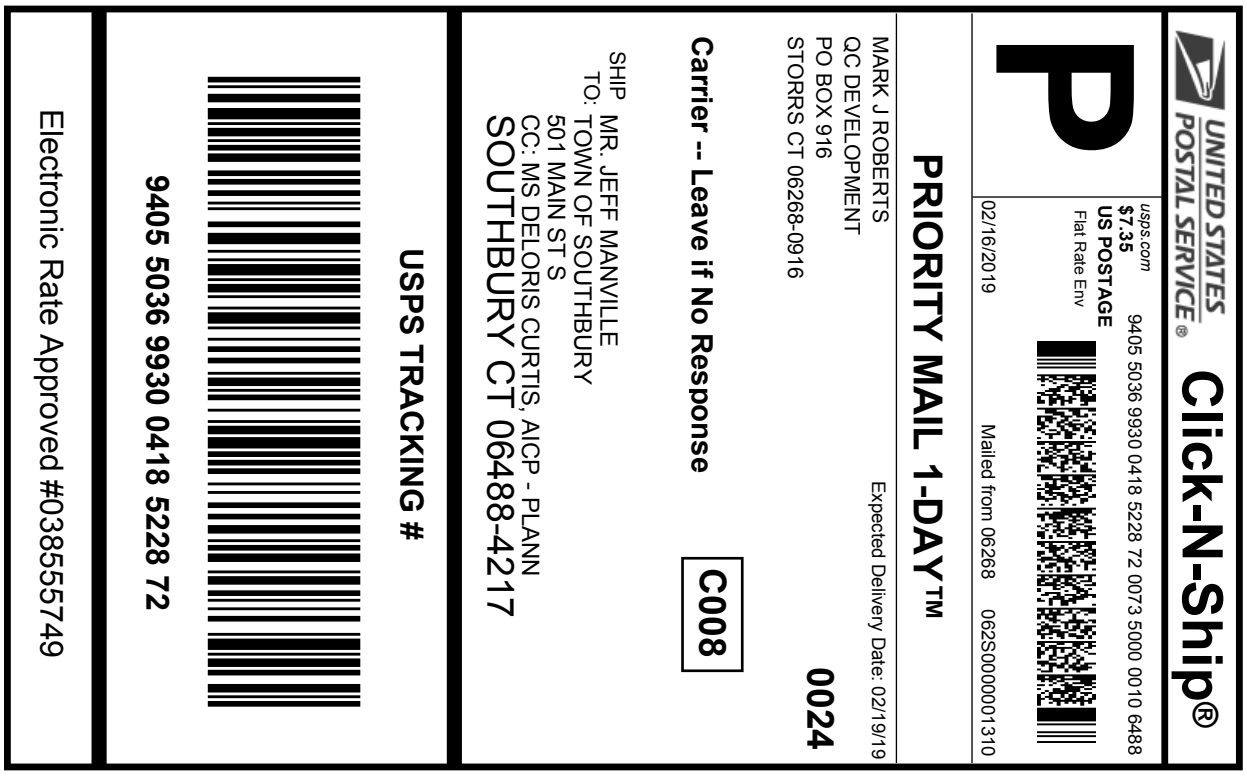

N

**Approximate Scale:** 1 inch = 500 feet

0 140 280 420 560

Feet

**Map Produced April 2018**




*Cut on dotted line.*

## Instructions

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

## Click-N-Ship® Label Record

**USPS TRACKING # :**
**9405 5036 9930 0418 5228 72**

| | |
|---|---|
| Trans. #: | 456810187 |
| Print Date: | 02/14/2019 |
| Ship Date: | 02/16/2019 |
| Expected Delivery Date: | 02/19/2019 |

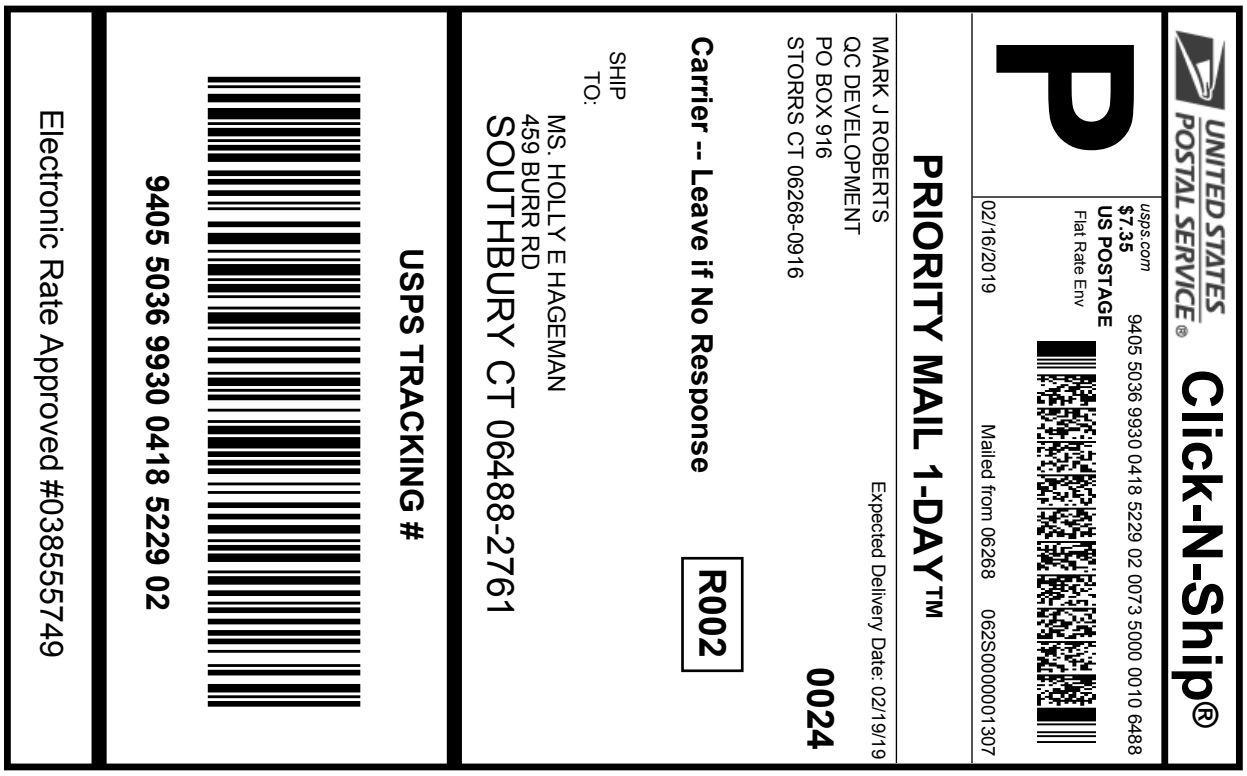
| | |
|---|---|
| Priority Mail® Postage: | **$7.35** |
| Total | **$7.35** |

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

**To:** MR. JEFF MANVILLE
TOWN OF SOUTHBURY
501 MAIN ST S
CC: MS DELORIS CURTIS, AICP - PLANN
SOUTHBURY CT 06488-4217

* 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.*

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5. **Mail your package on the "Ship Date" you selected when creating this label.**

## Click-N-Ship® Label Record

**USPS TRACKING # :**
**9405 5036 9930 0418 5229 02**

| | |
|---|---|
| Trans. #: | 456810187 |
| Print Date: | 02/14/2019 |
| Ship Date: | 02/16/2019 |
| Expected Delivery Date: | 02/19/2019 |

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

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

**To:** MS. HOLLY E HAGEMAN
459 BURR RD
SOUTHBURY CT 06488-2761

* 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*