



April 4, 2019

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

Regarding: Notice of Exempt Modification – Adding (3) panel antennas, swapping (3) of the existing (9) panel antennas, adding (6) remote radio units (RRUs), and adding (1) DC/Fiber Squid with associated cables.

Property Address: 1927 EAST MAIN STREET, TORRINGTON, CT 06790; also known as 1925-1931 East Main Street (the Property)

Applicant: AT&T Mobility (“AT&T”, Site # CT1118)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 153-foot monopole at the above-referenced address, latitude 41.82327778°, longitude -73.07669722°. Said monopole is owned by SBA Communications LLC and the underlying property owner is TEP Incorporated.

AT&T desires to modify its existing telecommunications facility by Adding (3) panel antennas, swapping (3) of the existing (9) panel antennas, adding (6) remote radio units (RRUs), and adding (1) DC/Fiber Squid with associated cables. The centerline height of the antennas and ancillary tower-mounted equipment is and will remain at 95’ feet.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to the Honorable Elinor Carbone, Mayor of Torrington; David Moraghan, as Chief of Zoning Administration with the Town of Torrington; tower owner, SBA Communications LLC and property owner, TEP Incorporated.

The planned modifications to AT&T’s facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The added antennas and accessory equipment along with equipment to be swapped will be installed at the existing height of 95 feet on the 153-foot monopole.
2. The proposed modifications will not involve any changes to AT&T’s ground-space footprint, and therefore and therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation for AT&T's modified facility is herein provided.
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 AT&T's proposed modifications. Please see enclosed structural analysis completed by Tower Engineering Solutions, 3/20/2019, and stamped by Hamming You.

For the foregoing reasons, AT&T respectfully requests that the proposed installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

*Scott Pike*

Scott Pike  
Site Acquisition Specialist  
Empire Telecom USA, LLC  
[spike@empiretelecomm.com](mailto:spike@empiretelecomm.com)

Enclosures: Exhibit 1 – Field Card and GIS Map  
Exhibit 2 – Construction Drawings  
Exhibit 3 – Structural Analysis  
Exhibit 4 – RF Emissions Analysis Report Evaluation

cc:

The Honorable Elinor Carbone  
Torrington City Hall  
140 Main Street  
Torrington, CT 06790

SBA Communications LLC  
Carla Shorter  
8051 Congress Avenue  
BOCA RATON, FL 33487-1310

Zoning Officer  
David Moraghan  
140 Main Street  
Room 324  
Torrington, CT 06790

TEP Incorporated  
PO BOX 876  
Torrington, CT 06790

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2014.



Information on the Property Records for the Municipality of Torrington was last updated on 4/2/2019.

### Parcel Information

Location:	1927 E MAIN ST	Property Use:	Retail	Primary Use:	Neighborhood Shopping Center
Unique ID:	5571	Map Block Lot:	247/002/024	Acres:	9.39
490 Acres:	0.00	Zone:	LB	Volume / Page:	0697/0859
Developers Map / Lot:	5047/4913	Census:	H		

### Value Information

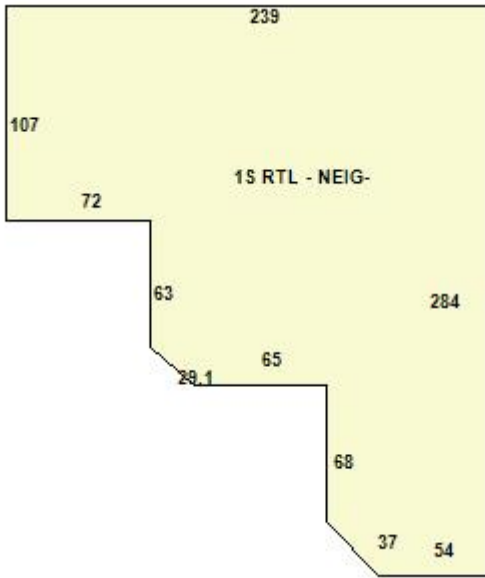
	Appraised Value	Assessed Value
Land	1,257,418	880,190
Buildings	3,073,910	2,151,740
Detached Outbuildings	227,816	159,470
Total	4,559,144	3,191,400

## Owner's Information

### Owner's Data

TEP INCORPORATED  
PO BOX 876  
TORRINGTON CT 06790

## Building 1



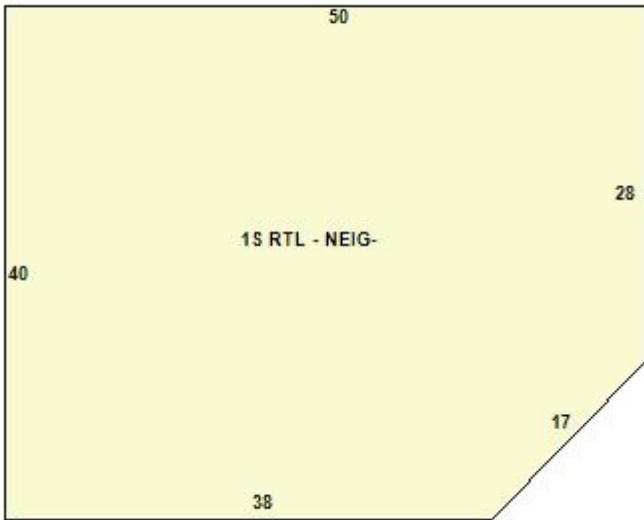
Category:	Retail	Use:	Neighborhood Shopping Center	GLA:	46,307
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	1994
Heating:	FHA Non Duct	Fuel:	Gas	Cooling Percent:	100
Siding:	Concrete Block	Roof Material:	Asphalt	Beds/Units:	0

## Special Features

Mezzanine Finished Area	950
Mezzanine Unfinished Area	950
Wet Sprinklers	46200

## Attached Components

## Building 2



Category:	Retail	Use:	Neighborhood Shopping Center	GLA:	1,926
Stories:	1.00	Construction:	Reinforced Concrete	Year Built:	2006
Heating:	FHA	Fuel:	Gas	Cooling Percent:	100
Siding:	Concrete Block	Roof Material:	Asphalt	Beds/Units:	0

## Special Features

## Attached Components

## Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Canopy	1994	0.00	0.00	1,834
Canopy	2006	0.00	0.00	404
Fencing	1994	0.00	0.00	240
Loading Dock Cov	1994	0.00	0.00	480
Loading Dock Un	1994	0.00	0.00	80
Concrete Patio	1994	0.00	0.00	220
Paving	1994	0.00	0.00	122,022
Poles	1994	0.00	0.00	7
Frame Shed	1994	0.00	0.00	600
Frame Shed	1994	0.00	0.00	200

## Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
TEP INCORPORATED	0697	0859	04/20/1999		No	\$0
PERGOLA HEATHER A	0697	0857	04/20/1999		No	\$0
TEP INCORPORATED	0599	0410	05/27/1994		Yes	\$699,000

## Building Permits



Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
18-1934	Electrical	10/17/2018		Permit Issued	ELECTRICAL
17-1935	Certificate of Completion	10/10/2017		Closed	CERT OF COMPL- REPL ANTENNA PANELS/HEADS-VERIZON
17-1850	Building	09/27/2017		Closed	REMOVE & REPLACE 2 WALL SIGNS/ 1 PYLON FACE
17-1849	Electrical	09/27/2017		Closed	FINAL ELEC FOR SIGNS
17-1082	Certificate of Completion	06/14/2017		Closed	CERT OF COMPL-MODIFY AT&T ANTENNA & REPL 3 RADIO HEADS
17-882	Building	05/23/2017		Closed	AT&T SIGNAGE & 3 LETTER SETS/1 PYLON SIGN =PP
17-441	Commercial	04/07/2017		Closed	VERIZON- REPL PANELS WITH NEW MODELS/REMOTE RADIO HEADS=PP
17-425 Z	Commercial	03/30/2017		Closed	REPL EXISTING ANTENNAS WITH NEW MODELS
17-345	Building	03/16/2017		Closed	MODIFY AT&T ANTENNA SITE- REPL 3 REMOTE RADIO UNITS
17-341 Z	Commercial	03/10/2017		Closed	ANTENNA MODIFICATION ON EXISTING TOWER
16-1966	Electrical	10/14/2016		Closed	DISCONNECT EXHAUST FAN/ADD QUAD OUTLET & REWIRE GFI & LIGHT SWITCH
16-1954	Plumbing	10/13/2016		Closed	REM TOILET & INSTALL 15 X 15 SINK
16-1389	Building	08/01/2016		Closed	REMOVE 1 TOILET & SINK IN RESTROOM/TURN INTO DRAW ROOM/COUNTER & SINK
15-2412	Building	12/23/2015		Closed	REPL ANTENNA PANELS & ADD REMOTE RADIO HEADS= PP
15-1825	Certificate of Completion	10/07/2015		Closed	CERT OF COMPL- MAINTENANCE/NEW FLAT PLATE REINFORCEMENT
15-1353	Building	08/12/2015		Closed	INSTALL NEW FLAT PLATE REINFORCEMENT & MAINTENANCE= PP
15-760	Building	05/22/2015		Closed	ADD 3 NEW ANTENNA/MODUALS/CABLES/ETC=PP
14-1909	Building	09/23/2014		Closed	AWNING FOR OUTER SEATING AREA=PP
14-1752 Z	Residential	08/27/2014		Closed	23 X 20 CANOPY OVER DINING AREA
14-1369	Building	07/11/2014		Closed	ADD 3 CELL ANTENNAS & ASSOC EQUIP= PP

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
13-5588	Building	08/13/2013		Closed	SWAP OUT ANTENNA @CELL TOWER
12-3174	Building	01/04/2013		Closed	INSTALL 3 NEW ANTENNAS & SUPPORT EQUIP/I NEW CABINET IN EXISTING SHELTER
12-3032	Commercial	12/07/2012		Closed	REPL 6 ANTENNA W/3 NEW & EQUIP CABINETS=PP
12-2968	Commercial	11/27/2012		Closed	REPL 6 ANTENNAS W/ NEW
12-1056	Mechanical	04/18/2012		Closed	6 FT HOOD/EXHAUST FAN FOR HIBACHI TABLE
12-470	Commercial	03/13/2012		Closed	ADD 1 NEW HIBACHI GRIDDLE
11-807	Commercial	07/21/2011		Closed	10 PEDICURE CHAIRS/2 MASSAGE ROOMS/1 BATH
11-1174	Certificate of Completion	07/15/2011		Closed	CERT OF COMPL-BLOOD DRAWING OFFICE
11-808	Commercial	06/01/2011		Closed	64' PARTITION WALL
11-771	Commercial	05/26/2011		Closed	OFFICE FITOUT- BLOOD DRAWING OFFICE
11-364	Commercial	04/08/2011		Closed	REPL EXISTING PANEL ANTENNA
10-1094	Certificate of Completion	07/02/2010		Closed	WALK IN COOLER/CHECKOUT COUNTER DRY SPRINKLERS
10-1003	Commercial	06/22/2010		Closed	ADD 3 DRY SPRINKLERS AND RELOCATE 3 SPRINKLERS
10-183	Commercial	03/17/2010		Closed	NEON WALL SIGN & PANEL FACE REPLCMNT
09-1397	Certificate of Completion	08/12/2009		Closed	CHG USE FROM AIG OFFICE TO H&R BLOCK OFFICE
07-000436	Commercial	04/12/2007		Closed	WALL SIGN
06-1133CO	Certificate of Occupancy	11/16/2006		Closed	NEW BLDG
06-1277CO	Certificate of Occupancy	11/16/2006		Closed	CINGULAR WIRELESS IN NEW BLDG
06-1277	Commercial	07/28/2006		Closed	TENANT FIT OUT
06-1133	Commercial	07/13/2006		Closed	CONSTRUCT NEW BLDG
06-458CO	Certificate of Occupancy	05/08/2006		Closed	CO PERMIT #06-458

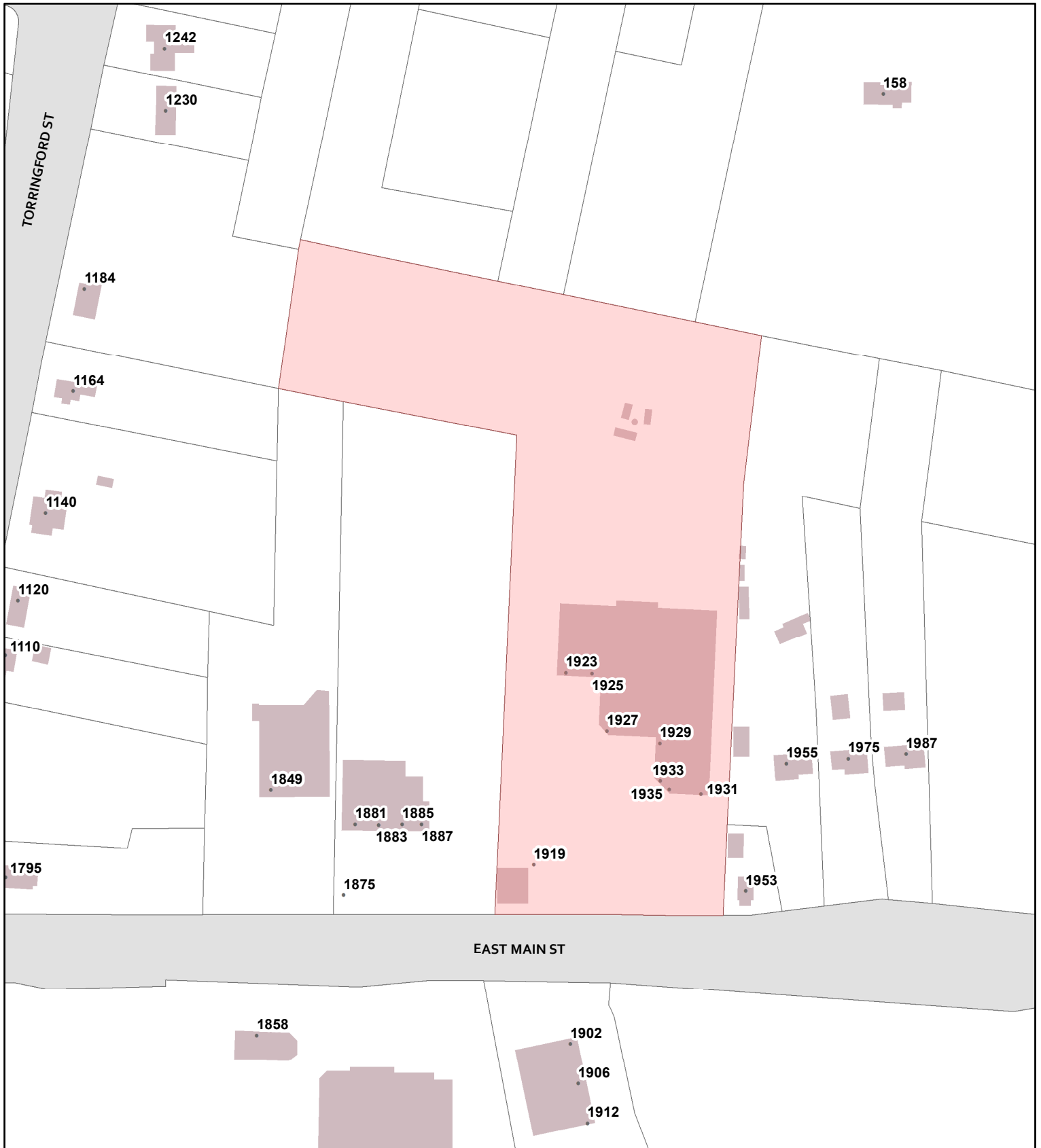
Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
06-458	Commercial	03/31/2006		Closed	INTERIOR ALTERATIONS
05-80	Commercial	04/07/2005		Closed	FREE-STANDING ATM
04-470	Commercial	09/16/2004		Closed	INT PARTITIONS - VERIZON
04-208A	Commercial	05/28/2004		Closed	INTERIOR ALTERATIONS
04-172A	Commercial	05/12/2004		Closed	WORK ON FOUNDATION - CHINESE REST
04-92	Commercial	04/06/2004		Closed	INSTALL PRE-FAB SHELTER & ANTENNAE (1925 E MAIN)
04-37	Commercial	02/10/2004		Closed	INT FRAMING
03-582	Commercial	11/24/2003		Closed	WIRELESS FACILITY
02-300	Commercial	07/18/2002		Closed	TOWER MODIFICATION
02-05	Commercial	01/10/2002		Closed	NEW ANTENNAE
00-416	Commercial	12/14/2000		Closed	CONCRETE PAD FOR TELECOM TOWER
00-402	Commercial	11/29/2000		Closed	ADD ANTENNAE TO TOWER
00-326	Commercial	09/14/2000		Closed	TELECOM TOWER
04-037CO	Certificate of Occupancy			Closed	04-037 CO ISSUED

Information Published With Permission From The Assessor

# City of Torrington, Connecticut - Assessment Parcel Map

Map/Block/Lot 247-002-024

Address: 1927 E MAIN ST



Approximate Scale: 1 inch = 200 feet

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The City of Torrington and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced May 2017

**PROJECT NOTES**

1. SITE INFORMATION OBTAINED FROM THE FOLLOWING:
  - A. PLAN ENTITLED "TORRINGTON EAST MAIN STREET" PREPARED BY DEWBERRY OF PARSIPPANY, NJ LAST REVISED 02/03/2017.
  - B. LIMITED FIELD OBSERVATION BY MASER CONSULTING ON 05/31/2018.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
4. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
6. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY POTENTIALLY DANGEROUS EXPOSURE LEVELS.
10. THE PROPOSED FACILITY WILL CAUSE AN INSIGNIFICANT OR "DE-MINIMUS" INCREASE IN STORM WATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
11. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
12. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
13. THE FACILITY DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
14. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTHS WITH RF ENGINEERING PRIOR TO INSTALLATION.
15. THE TOWER, MOUNTS AND ANTENNAS SHALL BE DESIGNED TO MEET EIA/TIA-222-H AS PER IBC REQUIREMENTS.
16. CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
17. CONSTRUCTION SHALL NOT COMMENCE UNTIL COMPLETION OF A PASSING STRUCTURAL ANALYSIS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER. THE STRUCTURAL ANALYSIS IS TO BE PERFORMED BY OTHERS.

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**SITE NAME: TORRINGTON EAST MAIN ST**  
**FA NUMBER: 10042345**  
**SITE NUMBER: CT1118**  
**LTE - 3C/4C/5C/6C**  
**1925 EAST MAIN STREET**  
**TORRINGTON, CT 06790**  
**LITCHFIELD COUNTY**



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16 ESQUIRE ROAD  
 BILLERICA, MA 01862



SCALE: AS SHOWN JOB NUMBER: 18963015A

REV	DATE	DESCRIPTION	DRAWN	CHECKED
3	03/21/19	REVISED CODES	JKL	RA
2	10/08/18	REVISED PER COMMENTS	RA	RA
1	09/27/18	ISSUED FOR PERMITS	AJC	RA



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

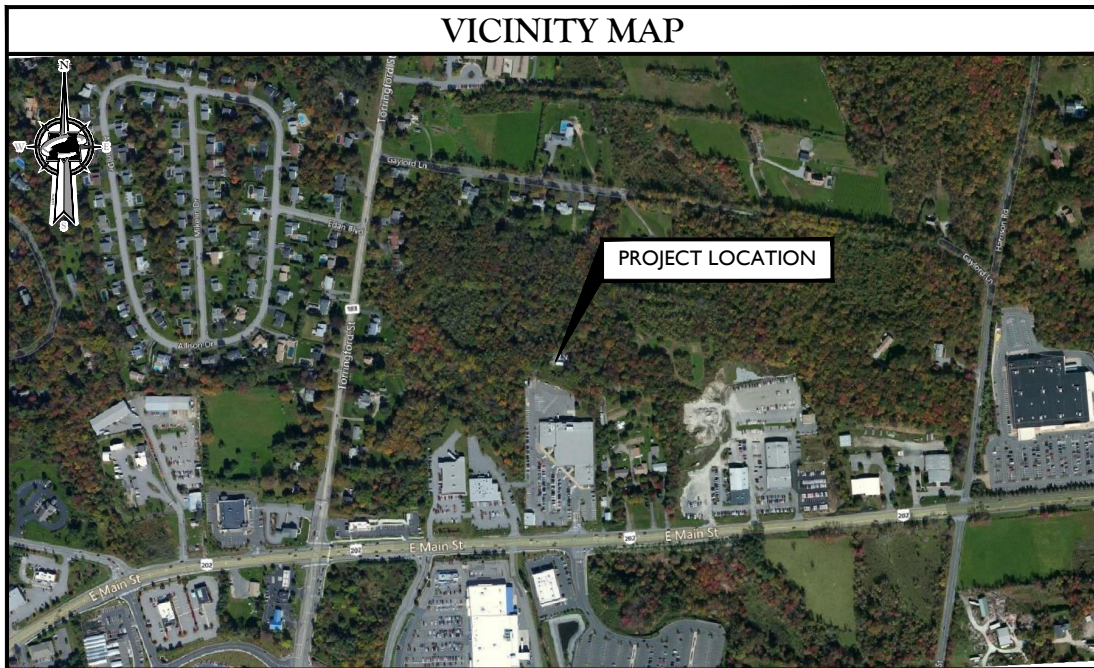
**SITE NAME:**  
**TORRINGTON EAST**  
**MAIN ST**  
**FA# 10042345**  
**SITE# CTL1118**  
**1925 EAST MAIN STREET**  
**TORRINGTON, CT 06790**  
**LITCHFIELD COUNTY**



RED BANK OFFICE  
 331 NEWMAN SPRINGS ROAD  
 Suite 203  
 Red Bank, NJ 07701-5699  
 Phone: 732.383.1950  
 Fax: 856.722.1120  
 email: solutions@maserconsulting.com

SHEET TITLE: **TITLE SHEET**

SHEET NUMBER: **T-I**



**VICINITY MAP**

**CODE COMPLIANCE**

- ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.
- |   |  |
|---|--|
| 1. 2018 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2015 IBC | 8. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81 IEEE C2 LATEST EDITION                                |
| 2. 2017 NATIONAL ELECTRICAL CODE - NFPA 70                          | 9. TELCORDIA GR-1275   |
| 3. 2015 NFPA 101  | 10. ANSI T1.311  |
| 4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION 360-10                  | 11. PROPOSED USE: UNMANNED TELECOM FACILITY  |
| 5. AMERICAN CONCRETE INSTITUTE                                      | 12. HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED. |
| 6. TIA-222-G  | 13. CONSTRUCTION TYPE: IIB   |
| 7. TIA 607 FOR GROUNDING  | 14. USE GROUP: U   |

**PROJECT INFORMATION**

**SITE INFORMATION**

LATITUDE: 41.8232731° N  
 LONGITUDE: 73.0766739° W  
 JURISDICTION: LITCHFIELD COUNTY

**APPLICANT/LESSEE**

COMPANY: NEW CINGULAR WIRELESS PCS, LLC  
 ADDRESS: 550 COCHITUATE ROAD  
 CITY, STATE, ZIP: FRAMINGHAM, MA 01701

**STRUCTURE OWNER**

COMPANY: SBA COMMUNICATIONS CORP.  
 ADDRESS: 8051 CONGRESS AVENUE  
 CITY, STATE, ZIP: BOCA RATON, FL 33487

**CLIENT REPRESENTATIVE**

COMPANY: EMPIRE TELECOM  
 ADDRESS: 16 ESQUIRE ROAD  
 CITY, STATE, ZIP: BILLERICA, MA 01862  
 CONTACT: DAVID COOPER  
 E-MAIL: DCOOPER@EMPIRETELECOM.COM

**SITE ACQUISITION**

COMPANY: EMPIRE TELECOM  
 ADDRESS: 16 ESQUIRE ROAD  
 CITY, STATE, ZIP: BILLERICA, MA 01862  
 CONTACT: DAVID COOPER  
 E-MAIL: DCOOPER@EMPIRETELECOM.COM

**ENGINEER**

COMPANY: MASER CONSULTING CT  
 ADDRESS: 331 NEWMAN SPRINGS ROAD, SUITE 203  
 CITY, STATE, ZIP: RED BANK, NJ 07701-5669  
 CONTACT: ROBERT ANDREWS  
 PHONE: (856) 797-0412  
 E-MAIL: RANDREWS@MASERCONSULTING.COM

**PROJECT DESCRIPTION/  
 SCOPE OF WORK**

- INSTALL (5) NEW RRU'S AT GRADE
- INSTALL (6) NEW RRU'S, (2) PER SECTOR
- INSTALL (6) NEW PANEL ANTENNAS, (2) PER SECTOR
- REMOVE (3) EXISTING PANEL ANTENNAS, (1) PER SECTOR
- RELOCATE (3) EXISTING PANEL ANTENNAS, (1) PER SECTOR
- REMOVE (12) DIPLEXERS, (4) PER SECTOR
- INSTALL (3) LOW BAND COMBINERS AT GRADE
- INSTALL (1) NEW DC-6 SURGE SUPPRESSION DOME
- INSTALL (1) NEW 18-PAIR FIBER TRUNK
- INSTALL (2) NEW 6/C DC CABLES
- REPLACE BBU WITH (2) 5216, (2) XMU+IDLe AND (1) RBS 6630
- REMOVE (1) RETIRED GSM CABINET
- INSTALL (1) RACK MOUNTED DC-12
- INSTALL (1) NEW CABLE PORT

PROPOSED PROJECT SCOPE BASED ON RFDS ID# 2287790, VERSION 3.00, LAST UPDATED 09/10/2018.

**SHEET INDEX**


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A-1	CONSTRUCTION DETAILS
A-2	CONSTRUCTION DETAILS
A-3	CONSTRUCTION DETAILS
A-4	RF PLUMBING DIAGRAM
G-1	GROUNDING DETAILS AND NOTES



**GENERAL NOTES:**

- THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPL 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.
- 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.
- THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 50 HMS OR LESS.
- THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
- METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- 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.
- EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
- APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
- GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
- ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" 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.
- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR - EMPIRE TELECOM  
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER - AT&T (NEW CINGULAR WIRELESS PCS, LLC)
- ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.

- THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
- SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
- IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
- SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
- 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.
- ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
- ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
- 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.
- CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
- 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.
- 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.
- 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 ALERT OF DANGEROUS EXPOSURE LEVELS.



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SCALE:	AS SHOWN	JOB NUMBER:	18963015A
REV	DATE	DESCRIPTION	DRAWN BY
3	03/21/19	REVISED CODES	JKL RA
2	10/08/18	REVISED PER COMMENTS	RA RA
1	09/27/18	ISSUED FOR PERMIT	AJC RA



PETROS TSOUKALAS  
 CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32977

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**SITE NAME:**  
 TORRINGTON EAST  
 MAIN ST  
 FA# 10042345  
 SITE# CTL1118  
 1925 EAST MAIN STREET  
 TORRINGTON, CT 06790  
 LITCHFIELD COUNTY

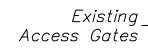
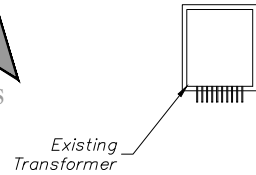
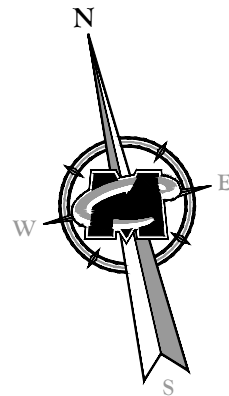


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 Red Bank, NJ 07701-5699  
 Phone: 732.383.1950  
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 email: solutions@maserconsulting.com

SHEET TITLE:  
**GENERAL NOTES**

SHEET NUMBER:  
**GN-1**

3/20/19 10:40:11 AM C:\Users\ASJP\OneDrive\Documents\ASJP\18963015A\_CTL1118\_REV3\_CD.dwg (2/1)



Existing AT&T Equipment Shelter  
(SEE EQUIPMENT LAYOUT ON SHEET C-2)

Existing Equipment on a Concrete Pad with Canopy (By Others)

Existing Equipment Shelter  
(Abandon)

Existing Monopole  
(SEE ELEVATION VIEW ON SHEET C-2)

Existing Cable Bridge (Typ.)

Existing Equipment on Steel Beams with Canopy (By Others)

Existing Verizon Equipment Shelter

**COMPOUND PLAN**



SCALE : 1" = 4' FOR 22"X34"  
(SCALE : 1" = 8' FOR 11"X17")



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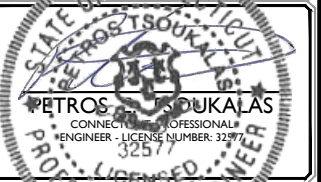
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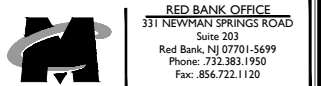
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REV	DATE	DESCRIPTION	DRAWN	CHECKED
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2	10/08/18	REVISED PER COMMENTS	RA	RA
1	09/27/18	ISSUED FOR PERMIT	AJC	RA



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LITCHFIELD COUNTY



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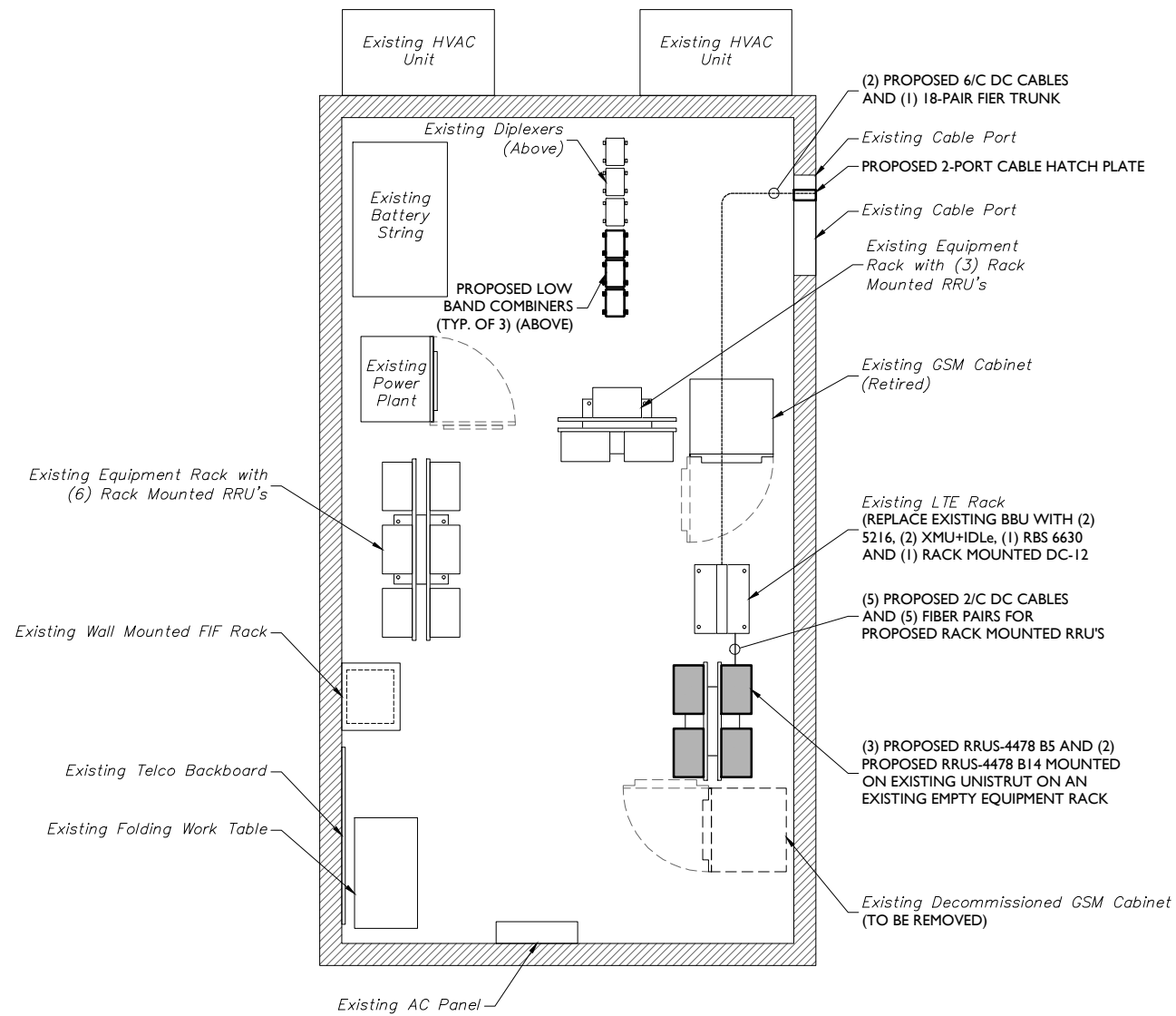
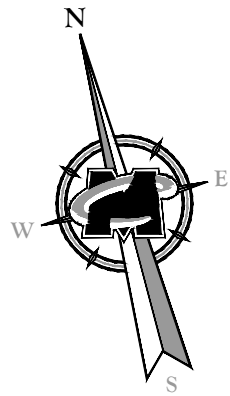
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COMPOUND PLAN

SHEET NUMBER:

C-1

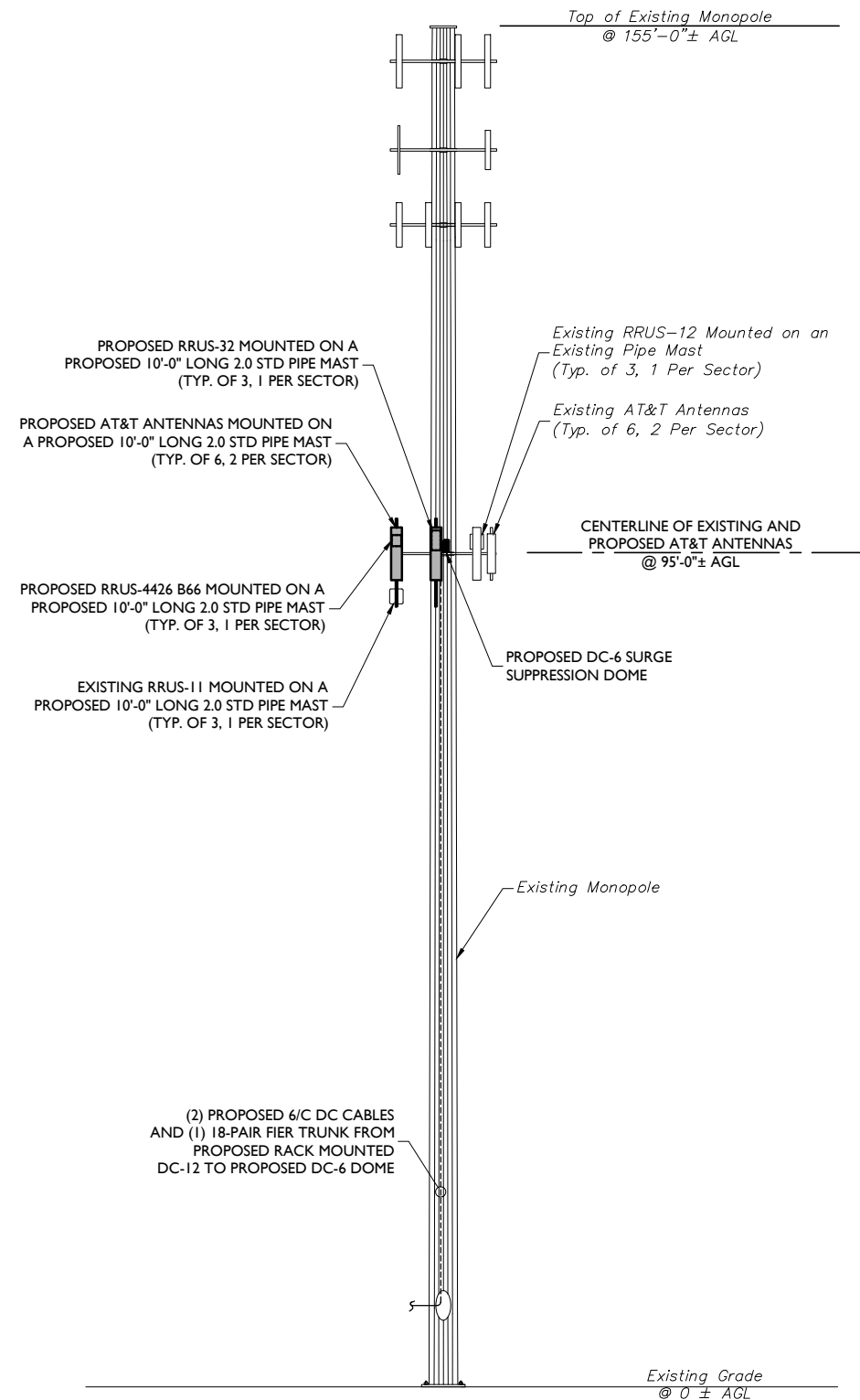
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**EQUIPMENT LAYOUT**



SCALE : 1" = 2' FOR 22"X34"  
(SCALE : 1" = 4' FOR 11"X17")



**ELEVATION VIEW**



SCALE : 1" = 10' FOR 22"X34"  
(SCALE : 1" = 20' FOR 11"X17")



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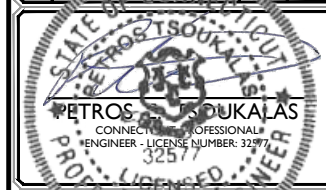


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SCALE:	JOB NUMBER:
AS SHOWN	18963015A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
3	03/21/19	REVISED CODES	JLK	RA
2	10/08/18	REVISED PER COMMENTS	RA	RA
1	09/27/18	ISSUED FOR PERMIT	AJC	RA



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SITE# CTL1118  
1925 EAST MAIN STREET  
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SHEET TITLE:  
**EQUIPMENT LAYOUT AND ELEVATION VIEW**

SHEET NUMBER:  
**C-2**















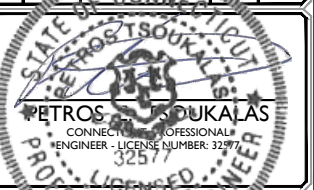
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SCALE: AS SHOWN JOB NUMBER: 18963015A

REV	DATE	DESCRIPTION	DRAWN	CHECKED
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2	10/08/18	REVISED PER COMMENTS	RA	RA
1	09/27/18	ISSUED FOR PERMIT	AJC	RA



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FA# 10042345  
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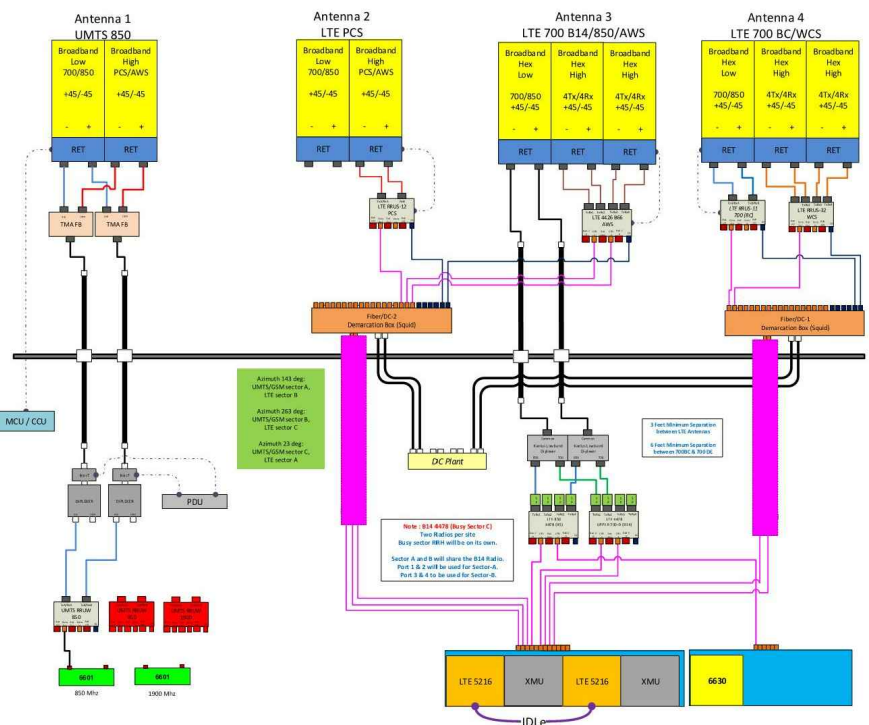
SHEET TITLE:  
**RF PLUMBING DIAGRAM**

SHEET NUMBER:  
**A-4**

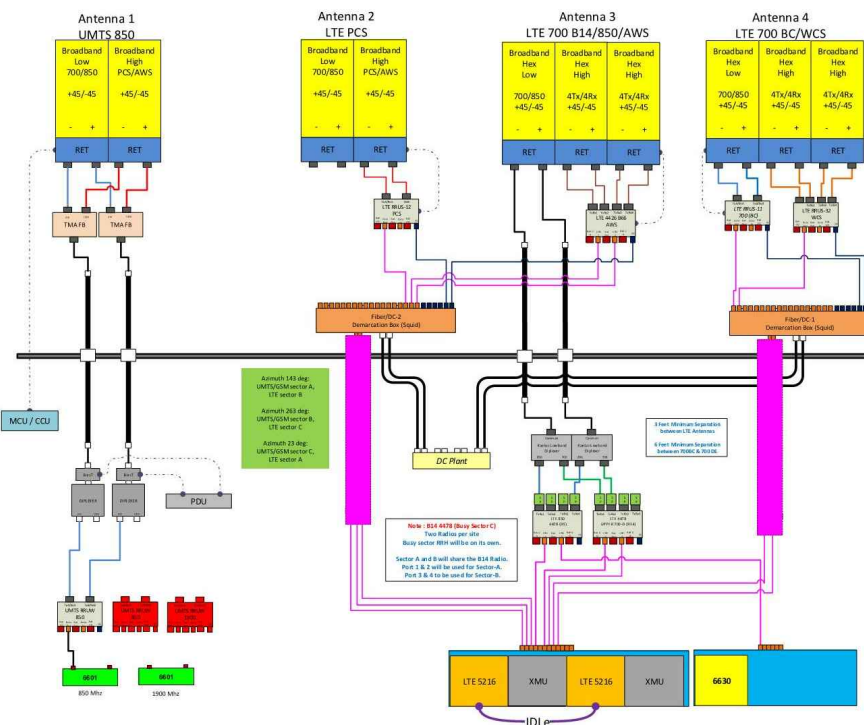
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Asst Site Name - CTL01118 Location Name - TORRINGTON EAST MAIN ST Market - CONNECTICUT Market Cluster - NEW ENGLAND  
Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna - Radio Connection Drawings Playbook v6.0 - Ericsson"

Diagram - Sector B Diagram File Name - CT1118\_A,B,C\_LTE\_Rev2.rvt  
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Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna - Radio Connection Drawings Playbook v6.0 - Ericsson"

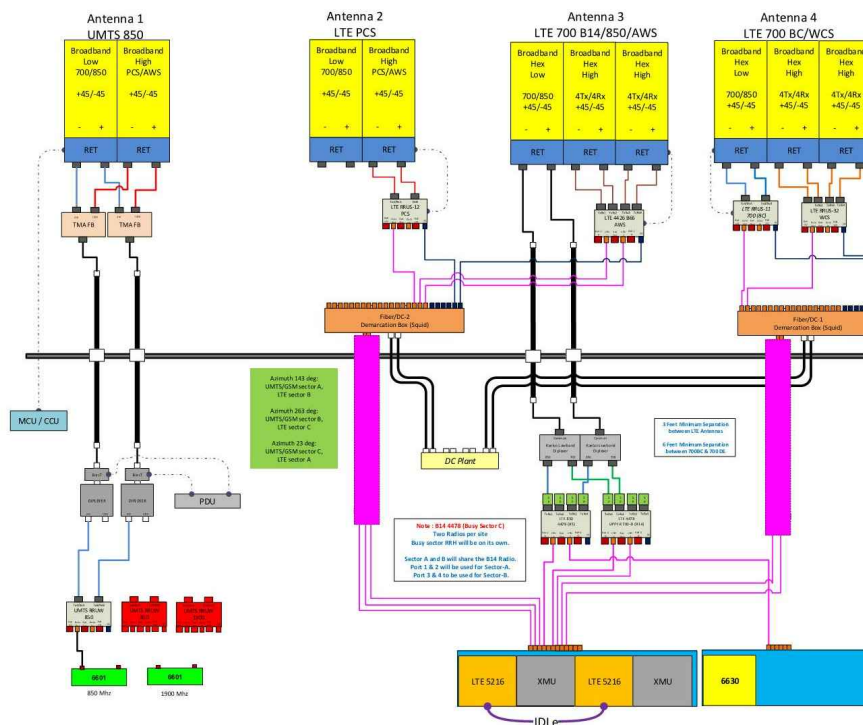
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Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna - Radio Connection Drawings Playbook v6.0 - Ericsson"



**ALPHA SECTOR**



**BETA SECTOR**



**GAMMA SECTOR**

BASED ON: RF ENGINEERING DESIGN ENTITLED "CTL01118\_2018-LTE-Next-Carrier\_LTE\_03-19-2018\_Final-Approved\_v3.00 (2)", LAST REVISED 09/10/2018.

**RF PLUMBING DIAGRAMS**

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1320 Greenway Drive, Suite 600, Irving, Texas 75038

---

**Structural Analysis Report**

**Existing 153 ft Nudd Corporation Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT01499-S-07**

**Customer Site Name: Torrington**

**Carrier Name: AT&T (App#: 1005715, V5)**

**Carrier Site ID / Name: CT1118 / Torrington East Main Street**

**Site Location: 1925-1931 East Main Street**

**Torrington, Connecticut**

**Litchfield County**

**Latitude: 41.822991**

**Longitude: -73.077199**

**Analysis Result:**

**Max Structural Usage: 86.4% [Pass]**

**Max Foundation Usage: 52.0% [Pass]**

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

**Report Prepared By : Dipika Dhungana**



*[Handwritten Signature]*  
*3/20/19*



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**Report Prepared By : Dipika Dhungana**



## Introduction

The purpose of this report is to summarize the analysis results on the 153 ft Nudd Corporation Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Fred A. Nudd Corporation (Project No. 7783) original design drawings dated August 18, 2000
<b>Foundation Drawing</b>	Fred A. Nudd Corporation (Project No. 7783) foundation design drawings dated August 18, 2000
<b>Geotechnical Report</b>	Jaworski Geotech, Inc., Project # 99335G, Dated 11/3/1999
<b>Modification Drawings</b>	Vertical Structures, Inc., Site: Torrington, CT, Dated 9/9/2003 FDH Engineering, Inc. (Project No. 15BFJD1400) Modification Drawings for a 153' Monopole dated March 10, 2015

## Analysis Criteria

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

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 117$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 105.0$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	40 mph (3-Sec. Gust) with 3/4" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_s = 0.181$ , $S_1 = 0.065$

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

## Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	153.0	3	ALU 1900 MHz RRUs	Low Profile Platform	(4) 1 1/4"	Sprint
2		3	ALU 800 MHz Filters			
3		3	ALU 800 MHz RRUs			
4		4	RFS ACU-A20-N RETs			
5		3	RFS APXVSP18-C-A20 - Panel			
6		3	RFS APXV/TM14-C-I20 - Panel			
7		3	TD-RRH8x20-25 RRHs			
8	133.0	6	EMS - RR90-17-02DP - Panel	Low Profile Platform	(12) 1 5/8"	T-Mobile
9	126.0	3	Alcatel Lucent RRH2x60-700	Low Profile Platform	(16) 1 5/8" (2) 1 5/8" Fiber	Verizon
10	123.0	9	Commscope SBNHH-1D65B - Panel			
11		6	Antel LPA-80063/6CF - Panel			
12		3	Alcatel Lucent B66 4X45 AWS			
13		3	Alcatel Lucent RRH2x60-700			
14		3	Alcatel Lucent RRH2X60-PCS			
15		2	RFS DB-T1-6Z-8AB-OZ			
16	110.0	1	10' Omni	(1) Standoff	(1) 1/2"	Torrington PD
-	95.0	3	Polyphaser 1000860	(3) Sector Frame	(12) 1 5/8" (2) 1/2" Fiber (4) 3/4" DC	AT&T
-		3	Powerwave 7770 - Panel			
-		4	CCI/HPA-65R-BUU H6 - Panel			
-		6	Powerwave LGP21401			
-		6	Powerwave LGP21903			
-		3	CCI OPA-65R-LCUU-H6 - Panel			
-		2	Raycap/Squid			
-		6	Ericsson RRUS-11			
-		3	Ericsson RRUS-12			
-		3	Ericsson RRUS-32			
-		3	Ericsson RRUS-A2			
-		3	Ericsson RRUS-E2			
-		2	Andrew SBNH-1D65A - Panel			
32	70.0	1	GPS	(1) Standoff	(1) 1/2"	Unknown

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
17	95.0	3	Powerwave 7770	(3) Sector Frame Commscope P/N MTC3615	(12) 1 5/8" (2) 1/2" Fiber (4) 3/4" DC	AT&T
18		2	KMW AM-X-CW-16-65-00T-RET			
19		1	Kathrein 800 10764 K			
20		4	Cci HPA-65R-BUU-H6			
21		2	Andrew SBNHH-1D65A			
22		6	Powerwave LGP17201 TMA			
23		6	Powerwave LGP21901 Diplexer			
24		3	PolyPhaser 1000860			
25		3	Ericsson RRUS 11			
26		3	Ericsson RRUS 12			
27		3	Ericsson 4426 B66			
28		3	Ericsson RRUS32			
29		3	Ericsson RRUS E2			
30		3	Ericsson RRUS A2			
31	2	Raycap DC6-48-60-18-8F				

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

## **Analysis Results**

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	<b>86.4%</b>	<b>76.0%</b>	<b>79.8%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	4568.2	44.4	78.9

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

## **Operational Condition (Rigidity):**

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.7946 degrees under the operational wind speed as specified in the Analysis Criteria.

## **Conclusions**

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

## Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.
3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

# Usage Diagram - Max Ratio 86.44% at 45.0ft

**Structure:** CT01499-S-SBA  
**Site Name:** Torrington  
**Height:** 153.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Gh:** 1.1

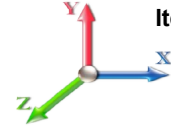
3/20/2019



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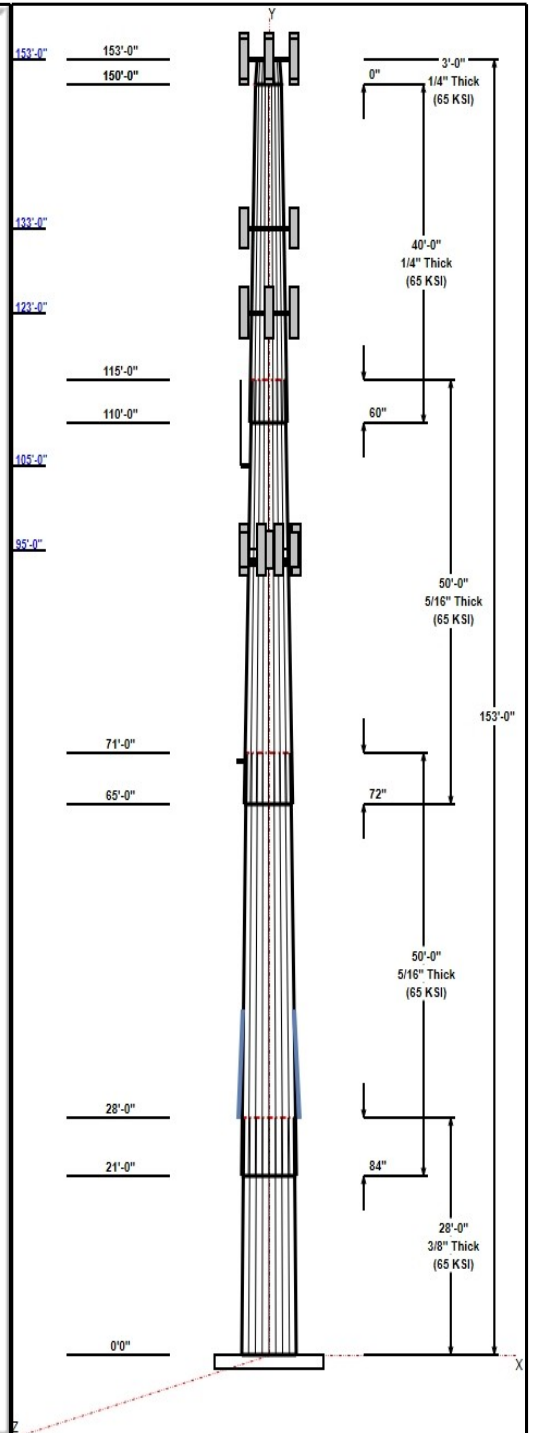
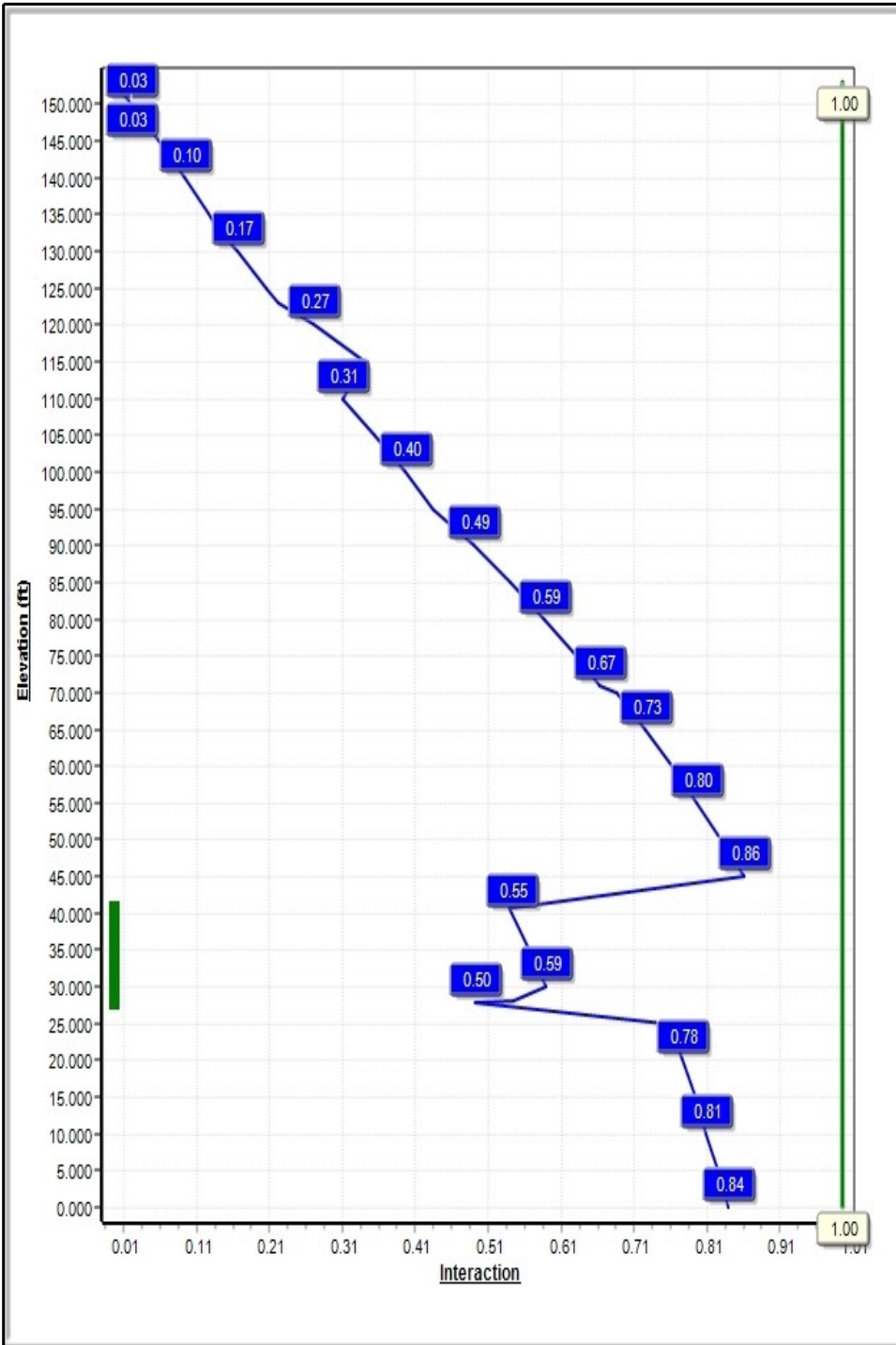
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

**Load Case : 1.2D + 1.6W 105 mph Wind**



**Iterations:** 22

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## Structure: CT01499-S-SBA

**Type:** Tapered  
**Site Name:** Torrington  
**Height:** 153.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.24673

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### Shaft Properties

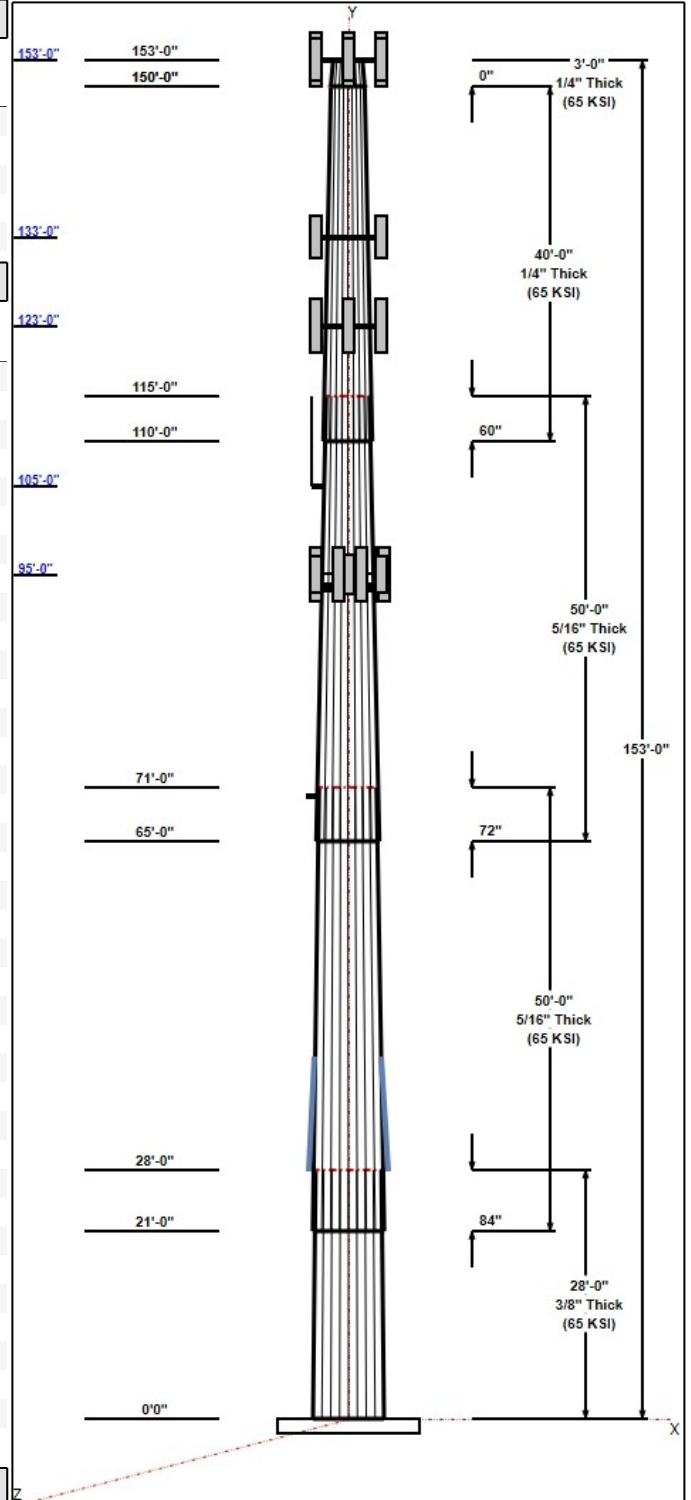
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	28.00	53.09	60.00	0.375		0.24673	65
2	50.00	43.11	55.44	0.313	Slip	0.24673	65
3	50.00	32.88	45.21	0.313	Slip	0.24673	65
4	40.00	24.74	34.61	0.250	Slip	0.24673	65
5	3.00	24.00	24.74	0.250	Butt	0.24673	65

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
153.00	153.00	3	APXVTM14-C-I20	Sprint
153.00	153.00	3	APXVSP18-C-A20	Sprint
153.00	153.00	3	1900 MHz RRUs	Sprint
153.00	153.00	3	800 MHz RRUs	Sprint
153.00	153.00	3	800 MHz Filters	Sprint
153.00	153.00	4	ACU-A20-N	Sprint
153.00	153.00	3	TD-RRH8x20-25	Sprint
153.00	153.00	1	Low Profile Platform	Sprint
153.00	153.00	1	Lightning Rod	
133.00	133.00	6	RR90-17-02DP	T-Mobile
133.00	133.00	1	Low Profile Platform	T-Mobile
123.00	123.00	3	B66 4X45 AWS	Verizon
123.00	123.00	9	SBNHH-1D65B	Verizon
123.00	123.00	6	LPA-80063/6CF	Verizon
123.00	123.00	3	RRH2X60-PCS	Verizon
123.00	126.00	3	RRH2x60-700	Verizon
123.00	123.00	2	DB-T1-6Z-8AB-OZ	Verizon
123.00	123.00	1	Low Profile Platform	Verizon
105.00	110.00	1	10' Omni	Torrington PD
105.00	105.00	1	Standoff	Torrington PD
95.00	95.00	4	HPA-65R-BUU-H6	AT&T
95.00	95.00	3	7770	AT&T
95.00	95.00	2	SBNH-1D65A	AT&T
95.00	95.00	2	AM-X-CW-16-65-00T-RET	AT&T
95.00	95.00	6	LGP17201	AT&T
95.00	95.00	6	LGP21901	AT&T
95.00	95.00	3	RRUS-11	AT&T
95.00	95.00	3	RRUS-12	AT&T
95.00	95.00	3	RRUS-A2	AT&T
95.00	95.00	3	RRUS-32	AT&T
95.00	95.00	3	RRUS-E2	AT&T
95.00	95.00	3	1000860	AT&T
95.00	95.00	2	Raycap/Squid	AT&T
95.00	95.00	3	Sector Frame	AT&T
95.00	95.00	1	800 10764	AT&T
95.00	95.00	3	4426 B66	AT&T
70.00	70.00	1	GPS	Unknown
70.00	70.00	1	Standoff	Unknown

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	153.00	Inside	1 1/4" Coax	Sprint
0.00	153.00	Outside	Safety Cable	
0.00	133.00	Inside	1 5/8" Coax	T-Mobile



**Structure: CT01499-S-SBA**

**Type:** Tapered  
**Site Name:** Torrington  
**Height:** 153.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.24673

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0.00	123.00	Inside	1 5/8" Coax	Verizon
0.00	123.00	Inside	1 5/8" Coax	Verizon
0.00	123.00	Inside	1 5/8" Fiber	Verizon
0.00	105.00	Inside	1/2" Coax	Torrington PD
0.00	95.00	Outside	1 5/8" Coax	AT&T
0.00	95.00	Outside	1/2" Fiber	AT&T
0.00	95.00	Outside	3/4" DC	AT&T
24.25	44.25	Outside	1.25" Reinforcing plate	

**Anchor Bolts**

Qty	Specifications	Grade (ksi)	Arrangement
18	2.00" F1554 105	105.0	Radial

**Base Plate**

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	73.0	50.0	Round

**Reactions**

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	4568.2	44.4	47.2
0.9D + 1.6W 105 mph Wind	4535.8	44.4	35.3
1.2D + 1.0Di + 1.0Wi 40 mph Wind	688.0	6.8	78.9
1.2D + 1.0E	97.1	0.9	47.2
0.9D + 1.0E	96.4	0.9	35.4
1.0D + 1.0W 60 mph Wind	928.8	9.1	39.4



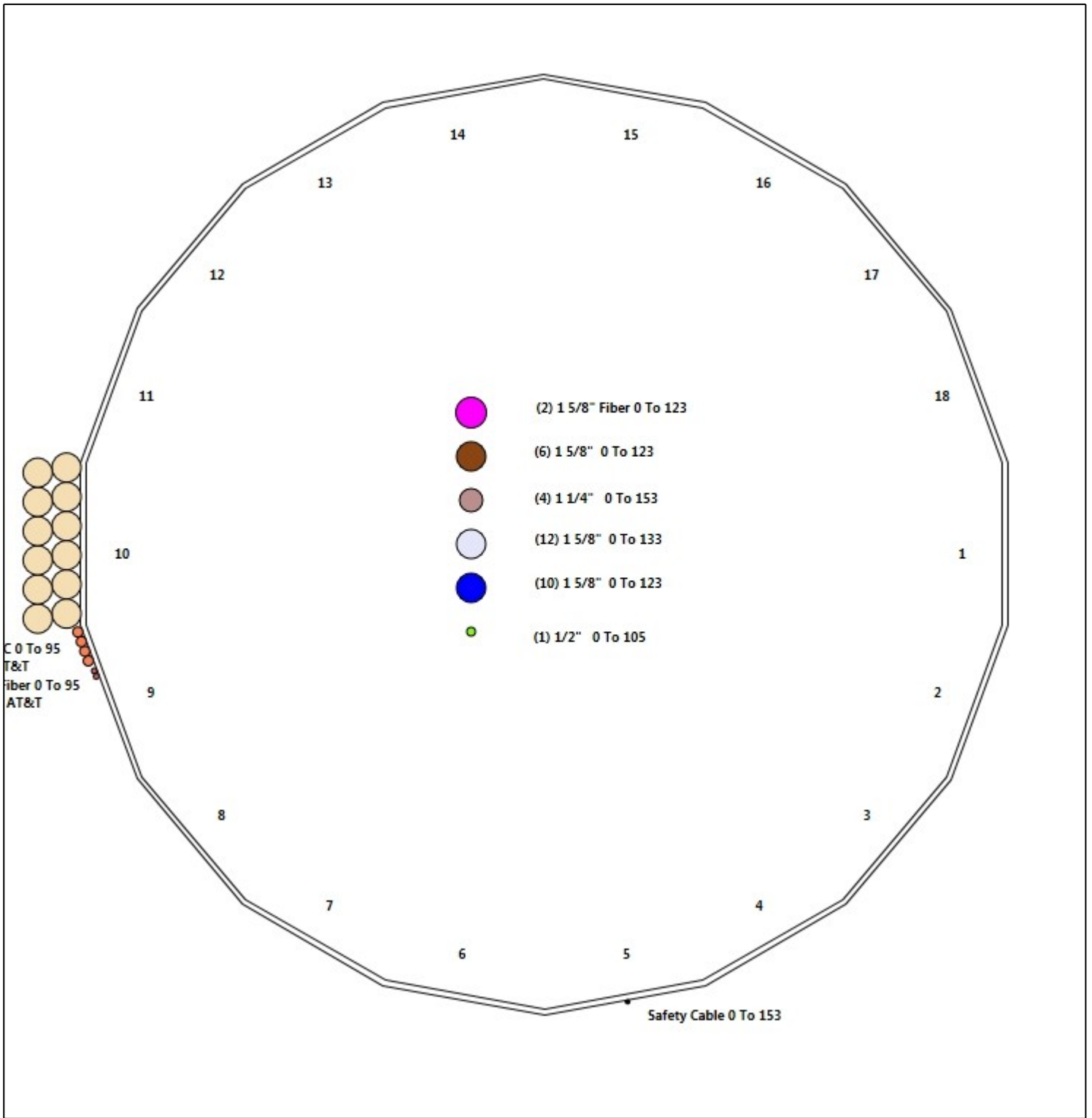
# Structure: CT01499-S-SBA - Coax Line Placement

Type: Monopole  
Site Name: Torrington  
Height: 153.00 (ft)

3/20/2019



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## Shaft Properties

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	28.000	0.3750	65		0.00	6,370
2	18	50.000	0.3125	65	Slip	84.00	8,262
3	18	50.000	0.3125	65	Slip	72.00	6,536
4	18	40.000	0.2500	65	Slip	60.00	3,178
5	18	3.000	0.2500	65	Flange	0.00	195
<b>Total Shaft Weight:</b>							<b>24,542</b>

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	60.00	0.00	70.97	31875.78	26.80	160.00	53.09	28.00	62.74	22030.0	23.55	141.5	0.246732
2	55.44	21.00	54.68	20998.34	29.87	177.42	43.11	71.00	42.45	9821.08	22.91	137.9	0.246732
3	45.21	65.00	44.53	11343.08	24.10	144.68	32.88	115.00	32.30	4326.93	17.14	105.2	0.246732
4	34.61	110.0	27.26	4066.53	23.00	138.44	24.74	150.00	19.43	1472.52	16.04	98.96	0.246732
5	24.74	150.0	19.43	1472.52	16.04	98.96	24.00	153.00	18.84	1343.00	15.52	96.00	0.246732

### Additional Steel

Elev From (ft)		Elev To (ft)		Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Intermediate Connectors		Termination Connectors		
		Spacing (in)	Description						Spacing (in)	Lower Qty	Upper Qty		
27.75	40.75	3	PLT 8"x1.25"(1.25Hole)		65	80	0.00	AJM20&sleeve	18.00	AJM20&sleeve	3.00	14	14

## Load Summary

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	153.00	APXVTM14-C-I20	3	56.00	6.34	0.79	216.79	7.456	0.79	0.00	0.00
2	153.00	APXVSP18-C-A20	3	57.00	8.02	0.83	230.19	10.819	0.83	0.00	0.00
3	153.00	1900 MHz RRUUs	3	44.00	3.80	0.88	153.38	5.193	0.88	0.00	0.00
4	153.00	800 MHz RRUUs	3	53.00	2.49	0.92	127.11	3.636	0.92	0.00	0.00
5	153.00	800 MHz Filters	3	8.80	0.78	0.69	26.48	1.428	0.69	0.00	0.00
6	153.00	ACU-A20-N	4	1.00	0.14	0.90	5.30	0.437	0.90	0.00	0.00
7	153.00	TD-RRH8x20-25	3	70.00	4.05	0.69	180.73	4.865	0.69	0.00	0.00
8	153.00	Low Profile Platform	1	1200.00	25.00	1.00	2249.20	45.984	1.00	0.00	0.00
9	153.00	Lightning Rod	1	5.00	0.50	1.00	25.98	2.249	1.00	0.00	0.00
10	133.00	RR90-17-02DP	6	13.50	4.36	0.68	110.67	5.333	0.68	0.00	0.00
11	133.00	Low Profile Platform	1	1200.00	25.00	1.00	2234.61	45.692	1.00	0.00	0.00
12	123.00	B66 4X45 AWS	3	64.00	2.60	0.80	145.55	3.289	0.80	0.00	0.00
13	123.00	SBNHH-1D65B	9	40.60	8.08	0.83	237.50	9.345	0.83	0.00	0.00
14	123.00	LPA-80063/6CF	6	27.00	9.60	0.94	308.59	10.924	0.94	0.00	0.00
15	123.00	RRH2X60-PCS	3	55.00	2.20	0.89	137.48	2.822	0.89	0.00	0.00
16	123.00	RRH2x60-700	3	60.00	3.50	0.76	145.57	4.274	0.76	0.00	3.00
17	123.00	DB-T1-6Z-8AB-0Z	2	18.90	4.80	0.90	159.31	5.655	0.90	0.00	0.00
18	123.00	Low Profile Platform	1	1200.00	25.00	1.00	2226.55	45.531	1.00	0.00	0.00
19	105.00	10' Omni	1	25.00	3.00	1.00	98.39	6.480	1.00	0.00	5.00
20	105.00	Standoff	1	40.00	2.63	1.00	117.47	8.389	1.00	0.00	0.00
21	95.00	HPA-65R-BUU-H6	4	51.00	9.66	0.90	286.30	10.962	0.90	0.00	0.00
22	95.00	7770	3	35.00	5.50	0.73	162.83	6.515	0.73	0.00	0.00
23	95.00	SBNH-1D65A	2	38.40	5.38	0.90	159.53	7.274	0.90	0.00	0.00
24	95.00	AM-X-CW-16-65-00T-RET	2	41.80	8.02	0.75	196.85	10.689	0.75	0.00	0.00
25	95.00	LGP17201	6	31.00	1.95	1.00	67.51	2.902	1.00	0.00	0.00
26	95.00	LGP21901	6	5.50	0.23	0.75	12.85	0.582	0.75	0.00	0.00
27	95.00	RRUS-11	3	55.00	4.42	0.68	140.94	5.853	0.68	0.00	0.00
28	95.00	RRUS-12	3	60.00	3.15	0.67	130.99	4.350	0.67	0.00	0.00
29	95.00	RRUS-A2	3	21.20	1.86	0.62	55.70	2.790	0.62	0.00	0.00
30	95.00	RRUS-32	3	77.00	3.87	0.87	184.52	4.068	0.87	0.00	0.00
31	95.00	RRUS-E2	3	57.30	2.81	0.70	139.69	3.455	0.70	0.00	0.00
32	95.00	1000860	3	2.00	0.06	1.00	4.59	0.260	1.00	0.00	0.00
33	95.00	Raycap/Squid	2	31.80	1.47	0.90	90.86	2.139	0.90	0.00	0.00
34	95.00	Sector Frame	3	500.00	17.50	0.75	1166.92	30.805	0.75	0.00	0.00
35	95.00	800 10764	1	40.80	5.88	0.75	162.62	7.927	0.75	0.00	0.00
36	95.00	4426 B66	3	48.50	1.15	0.73	85.30	1.601	0.73	0.00	0.00
37	70.00	GPS	1	10.00	1.00	1.00	37.17	1.660	1.00	0.00	0.00
38	70.00	Standoff	1	40.00	2.63	1.00	114.39	8.161	1.00	0.00	0.00
<b>Totals:</b>			<b>112</b>	<b>9,029.40</b>			<b>25,085.44</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	153.00	(4) 1 1/4" Coax	0.00	Inside
0.00	153.00	(1) Safety Cable	0.38	Outside
0.00	133.00	(12) 1 5/8" Coax	0.00	Inside

## Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
0.00	123.00	(6) 1 5/8" Coax		0.00							
0.00	123.00	(10) 1 5/8" Coax		0.00							
0.00	123.00	(2) 1 5/8" Fiber		0.00							
0.00	105.00	(1) 1/2" Coax		0.00							
0.00	95.00	(12) 1 5/8" Coax		3.96							
0.00	95.00	(2) 1/2" Fiber		0.38							
0.00	95.00	(4) 3/4" DC		0.75							
24.25	44.25	(3) 1.25" Reinforcing plate		1.25							

## Shaft Section Properties

**Structure:** CT01499-S-SBA

**Code:** EIA/TIA-222-G

3/20/2019

**Site Name:** Torrington

**Exposure:** C

**Height:** 153.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** B - Competent Rock

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

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**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing			
											Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00		0.3750	60.000	70.966	31875.8	26.80	160.00	65	70	0.0				
5.00		0.3750	58.766	69.498	29937.9	26.22	156.71	65	71	1194.9				
10.00		0.3750	57.533	68.029	28080.1	25.64	153.42	65	71	1169.9				
15.00		0.3750	56.299	66.561	26300.9	25.06	150.13	65	72	1145.0				
20.00		0.3750	55.065	65.093	24598.5	24.48	146.84	65	73	1120.0				
21.00	Bot - Section 2	0.3750	54.819	64.799	24267.0	24.37	146.18	65	73	221.0				
25.00		0.3750	53.832	63.625	22971.1	23.90	143.55	65	73	1611.6				
27.75	RB1	0.3750	53.153	62.817	22107.5	23.58	141.74	65	74	1091.0	30.00	11437.3	11437.3	280.7
28.00	Top - Section 1	0.3125	53.717	52.968	19086.0	28.90	171.89	65	67	98.5	30.00	11411.9	11411.9	25.5
30.00		0.3125	53.223	52.479	18561.8	28.62	170.31	65	68	358.8	30.00	11209.4	11209.4	204.2
35.00		0.3125	51.989	51.255	17293.5	27.92	166.37	65	69	882.5	30.00	10711.1	10711.1	510.5
40.00		0.3125	50.756	50.032	16084.3	27.23	162.42	65	69	861.6	30.00	10224.2	10224.2	510.5
40.75	RT1	0.3125	50.571	49.848	15908.0	27.12	161.83	65	69	127.5	30.00	10152.1	10152.1	76.6
45.00		0.3125	49.522	48.808	14932.9	26.53	158.47	65	70	713.4				
50.00		0.3125	48.288	47.584	13837.7	25.84	154.52	65	71	820.0				
55.00		0.3125	47.055	46.361	12797.4	25.14	150.58	65	72	799.2				
60.00		0.3125	45.821	45.137	11810.7	24.44	146.63	65	73	778.4				
65.00	Bot - Section 3	0.3125	44.587	43.914	10876.0	23.75	142.68	65	73	757.6				
70.00		0.3125	43.354	42.690	9991.9	23.05	138.73	65	74	1484.0				
71.00	Top - Section 2	0.3125	43.732	43.065	10257.7	23.27	139.94	65	74	291.8				
75.00		0.3125	42.745	42.086	9574.0	22.71	136.78	65	75	579.5				
80.00		0.3125	41.511	40.863	8763.0	22.01	132.84	65	76	705.6				
85.00		0.3125	40.278	39.639	7999.1	21.32	128.89	65	76	684.8				
90.00		0.3125	39.044	38.416	7281.0	20.62	124.94	65	77	664.0				
95.00		0.3125	37.810	37.192	6607.2	19.92	120.99	65	78	643.2				
100.00		0.3125	36.577	35.968	5976.3	19.23	117.05	65	79	622.4				
105.00		0.3125	35.343	34.745	5386.9	18.53	113.10	65	80	601.6				
110.00	Bot - Section 4	0.3125	34.109	33.521	4837.6	17.84	109.15	65	80	580.7				
115.00	Top - Section 3	0.2500	33.376	26.284	3644.0	22.13	133.50	65	75	1015.4				
120.00		0.2500	32.142	25.306	3251.9	21.26	128.57	65	76	438.9				
123.00		0.2500	31.402	24.718	3030.7	20.74	125.61	65	77	255.3				
125.00		0.2500	30.908	24.327	2888.9	20.39	123.63	65	77	166.9				
130.00		0.2500	29.675	23.348	2554.0	19.52	118.70	65	78	405.6				
133.00		0.2500	28.935	22.760	2366.1	19.00	115.74	65	79	235.3				
135.00		0.2500	28.441	22.369	2246.1	18.65	113.76	65	79	153.6				
140.00		0.2500	27.208	21.390	1963.9	17.78	108.83	65	80	372.3				
145.00		0.2500	25.974	20.411	1706.4	16.91	103.90	65	82	355.6				
150.00	Top - Section 4	0.2500	24.740	19.432	1472.5	16.04	98.96	65	83	338.9				
150.00	Bot - Section 5	0.2500	24.740	19.432	1472.5	16.04	98.96	65	83					
153.00		0.2500	24.000	18.845	1343.0	15.52	96.00	65	83	195.4				
<b>Total Weight</b>										<b>24541.5</b>				
											<b>1607.9</b>			

## Wind Loading - Shaft

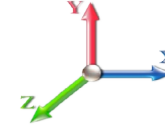
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 105 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	22.791	25.07	491.49	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	481.39	0.650	0.000	5.00	25.125	16.33	655.1	0.0	1433.9
10.00		1.00	0.85	22.791	25.07	471.28	0.650	0.000	5.00	24.603	15.99	641.5	0.0	1403.9
15.00		1.00	0.85	22.791	25.07	461.18	0.650	0.000	5.00	24.081	15.65	627.9	0.0	1373.9
20.00		1.00	0.90	24.182	26.60	464.63	0.650	0.000	5.00	23.559	15.31	651.7	0.0	1344.0
21.00	Bot - Section 2	1.00	0.91	24.432	26.87	464.93	0.650	0.000	1.00	4.649	3.02	129.9	0.0	265.2
25.00		1.00	0.95	25.345	27.88	465.02	0.657 *	0.000	4.00	18.599	12.21	544.8	0.0	1933.9
27.75	RB1	1.00	0.97	25.908	28.50	464.23	0.696 *	0.000	2.75	12.593	8.77	399.8	0.0	1309.2
28.00	Top - Section 1	1.00	0.97	25.957	28.55	464.13	0.698 *	0.000	0.25	1.137	0.79	36.3	0.0	118.2
30.00		1.00	0.98	26.337	28.97	468.67	0.696 *	0.000	2.00	9.049	6.30	292.1	0.0	430.6
35.00		1.00	1.01	27.206	29.93	465.30	0.700 *	0.000	5.00	22.257	15.59	746.3	0.0	1059.0
40.00		1.00	1.04	27.981	30.78	460.69	0.706 *	0.000	5.00	21.735	15.35	755.9	0.0	1034.0
40.75	RT1	1.00	1.05	28.091	30.90	459.90	0.710 *	0.000	0.75	3.215	2.28	112.8	0.0	152.9
45.00		1.00	1.07	28.684	31.55	455.10	0.704 *	0.000	4.25	17.998	12.68	640.0	0.0	856.0
50.00		1.00	1.09	29.327	32.26	448.71	0.670 *	0.000	5.00	20.692	13.86	715.3	0.0	984.0
55.00		1.00	1.12	29.922	32.91	441.65	0.675 *	0.000	5.00	20.170	13.62	717.3	0.0	959.0
60.00		1.00	1.14	30.475	33.52	434.03	0.681 *	0.000	5.00	19.648	13.38	717.9	0.0	934.0
65.00	Bot - Section 3	1.00	1.16	30.993	34.09	425.92	0.687 *	0.000	5.00	19.126	13.15	717.1	0.0	909.1
70.00	Appurtenance(s)	1.00	1.17	31.480	34.63	417.38	0.694 *	0.000	5.00	18.868	13.09	725.4	0.0	1780.8
71.00	Top - Section 2	1.00	1.18	31.574	34.73	415.62	0.698 *	0.000	1.00	3.711	2.59	143.9	0.0	350.2
75.00		1.00	1.19	31.941	35.13	414.52	0.698 *	0.000	4.00	14.635	10.21	574.2	0.0	695.4
80.00		1.00	1.21	32.377	35.62	405.30	0.704 *	0.000	5.00	17.824	12.55	715.4	0.0	846.8
85.00		1.00	1.22	32.793	36.07	395.77	0.712 *	0.000	5.00	17.302	12.32	710.9	0.0	821.8
90.00		1.00	1.24	33.190	36.51	385.96	0.720 *	0.000	5.00	16.780	12.08	705.6	0.0	796.8
95.00	Appurtenance(s)	1.00	1.25	33.570	36.93	375.90	0.728 *	0.000	5.00	16.258	11.84	699.7	0.0	771.8
100.00		1.00	1.27	33.935	37.33	365.61	0.650	0.000	5.00	15.736	10.23	610.9	0.0	746.8
105.00	Appurtenance(s)	1.00	1.28	34.285	37.71	355.09	0.650	0.000	5.00	15.214	9.89	596.7	0.0	721.9
110.00	Bot - Section 4	1.00	1.29	34.623	38.08	344.38	0.650	0.000	5.00	14.693	9.55	581.9	0.0	696.9
115.00	Top - Section 3	1.00	1.30	34.948	38.44	333.48	0.650	0.000	5.00	14.382	9.35	575.0	0.0	1218.5
120.00		1.00	1.32	35.263	38.79	327.50	0.650	0.000	5.00	13.860	9.01	559.1	0.0	526.6
123.00	Appurtenance(s)	1.00	1.32	35.446	38.99	320.80	0.650	0.000	3.00	8.066	5.24	327.1	0.0	306.4
125.00		1.00	1.33	35.567	39.12	316.29	0.650	0.000	2.00	5.273	3.43	214.5	0.0	200.3
130.00		1.00	1.34	35.862	39.45	304.92	0.650	0.000	5.00	12.816	8.33	525.8	0.0	486.7
133.00	Appurtenance(s)	1.00	1.34	36.035	39.64	298.03	0.650	0.000	3.00	7.439	4.84	306.7	0.0	282.4
135.00		1.00	1.35	36.148	39.76	293.41	0.650	0.000	2.00	4.855	3.16	200.8	0.0	184.3
140.00		1.00	1.36	36.426	40.07	281.76	0.650	0.000	5.00	11.772	7.65	490.6	0.0	446.7
145.00		1.00	1.37	36.696	40.37	269.98	0.650	0.000	5.00	11.250	7.31	472.3	0.0	426.7
150.00	Top - Section 4	1.00	1.38	36.959	40.65	258.08	0.650	0.000	5.00	10.728	6.97	453.6	0.0	406.7
153.00	Appurtenance(s)	1.00	1.38	37.113	40.82	250.88	0.650	0.000	3.00	6.187	4.02	262.7	0.0	234.4
<b>Totals:</b>									<b>153.00</b>			<b>19,554.6</b>		<b>29,449.8</b>

\* Cf Adjusted by Linear Load Ra Effect

## Discrete Appurtenance Forces

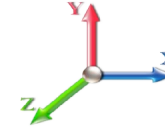
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 105 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	153.00	Low Profile Platform	1	37.113	40.824	1.00	1.00	25.00	1440.00	0.000	0.000	1632.98	0.00	0.00
2	153.00	TD-RRH8x20-25	3	37.113	40.824	0.62	0.90	7.55	252.00	0.000	0.000	492.84	0.00	0.00
3	153.00	ACU-A20-N	4	37.113	40.824	0.81	0.90	0.45	4.80	0.000	0.000	29.63	0.00	0.00
4	153.00	800 MHz Filters	3	37.113	40.824	0.62	0.90	1.45	31.68	0.000	0.000	94.92	0.00	0.00
5	153.00	800 MHz RRUs	3	37.113	40.824	0.83	0.90	6.19	190.80	0.000	0.000	404.01	0.00	0.00
6	153.00	1900 MHz RRUs	3	37.113	40.824	0.79	0.90	9.03	158.40	0.000	0.000	589.75	0.00	0.00
7	153.00	APXVSP18-C-A20	3	37.113	40.824	0.75	0.90	17.97	205.20	0.000	0.000	1173.97	0.00	0.00
8	153.00	APXVTM14-C-I20	3	37.113	40.824	0.71	0.90	13.52	201.60	0.000	0.000	883.32	0.00	0.00
9	153.00	Lightning Rod	1	37.113	40.824	1.00	1.00	0.50	6.00	0.000	0.000	32.66	0.00	0.00
10	133.00	RR90-17-02DP	6	36.035	39.638	0.54	0.80	14.23	97.20	0.000	0.000	902.54	0.00	0.00
11	133.00	Low Profile Platform	1	36.035	39.638	1.00	1.00	25.00	1440.00	0.000	0.000	1585.52	0.00	0.00
12	123.00	Low Profile Platform	1	35.446	38.991	1.00	1.00	25.00	1440.00	0.000	0.000	1559.64	0.00	0.00
13	123.00	DB-T1-6Z-8AB-OZ	2	35.446	38.991	0.72	0.80	6.91	45.36	0.000	0.000	431.21	0.00	0.00
14	123.00	RRH2x60-700	3	35.627	39.189	0.61	0.80	6.38	216.00	0.000	3.000	400.30	0.00	1200.89
15	123.00	RRH2X60-PCS	3	35.446	38.991	0.71	0.80	4.70	198.00	0.000	0.000	293.16	0.00	0.00
16	123.00	LPA-80063/6CF	6	35.446	38.991	0.75	0.80	43.32	194.40	0.000	0.000	2702.25	0.00	0.00
17	123.00	SBNHH-1D65B	9	35.446	38.991	0.66	0.80	48.29	438.48	0.000	0.000	3012.36	0.00	0.00
18	123.00	B66 4X45 AWS	3	35.446	38.991	0.64	0.80	4.99	230.40	0.000	0.000	311.43	0.00	0.00
19	105.00	Standoff	1	34.285	37.714	1.00	1.00	2.63	48.00	0.000	0.000	158.70	0.00	0.00
20	105.00	10' Omni	1	34.623	38.085	1.00	1.00	3.00	30.00	0.000	5.000	182.81	0.00	914.04
21	95.00	RRUS-12	3	33.570	36.927	0.54	0.80	5.07	216.00	0.000	0.000	299.27	0.00	0.00
22	95.00	HPA-65R-BUJ-H6	4	33.570	36.927	0.72	0.80	27.82	244.80	0.000	0.000	1643.76	0.00	0.00
23	95.00	7770	3	33.570	36.927	0.58	0.80	9.64	126.00	0.000	0.000	569.33	0.00	0.00
24	95.00	SBNH-1D65A	2	33.570	36.927	0.72	0.80	7.75	92.16	0.000	0.000	457.73	0.00	0.00
25	95.00	AM-X-CW-16-65-00T-RET	2	33.570	36.927	0.60	0.80	9.62	100.32	0.000	0.000	568.62	0.00	0.00
26	95.00	LGP17201	6	33.570	36.927	0.80	0.80	9.36	223.20	0.000	0.000	553.02	0.00	0.00
27	95.00	LGP21901	6	33.570	36.927	0.60	0.80	0.83	39.60	0.000	0.000	48.92	0.00	0.00
28	95.00	RRUS-11	3	33.570	36.927	0.54	0.80	7.21	198.00	0.000	0.000	426.20	0.00	0.00
29	95.00	4426 B66	3	33.570	36.927	0.58	0.80	2.01	174.60	0.000	0.000	119.04	0.00	0.00
30	95.00	RRUS-A2	3	33.570	36.927	0.50	0.80	2.77	76.32	0.000	0.000	163.52	0.00	0.00
31	95.00	RRUS-32	3	33.570	36.927	0.70	0.80	8.08	277.20	0.000	0.000	477.43	0.00	0.00
32	95.00	RRUS-E2	3	33.570	36.927	0.56	0.80	4.72	206.28	0.000	0.000	278.92	0.00	0.00
33	95.00	1000860	3	33.570	36.927	1.00	1.00	0.18	7.20	0.000	0.000	10.64	0.00	0.00
34	95.00	Raycap/Squid	2	33.570	36.927	0.72	0.80	2.12	76.32	0.000	0.000	125.07	0.00	0.00
35	95.00	Sector Frame	3	33.570	36.927	0.56	0.75	29.53	1800.00	0.000	0.000	1744.82	0.00	0.00
36	95.00	800 10764	1	33.570	36.927	0.60	0.80	3.53	48.96	0.000	0.000	208.45	0.00	0.00
37	70.00	Standoff	1	31.480	34.628	1.00	1.00	2.63	48.00	0.000	0.000	145.71	0.00	0.00
38	70.00	GPS	1	31.480	34.628	1.00	1.00	1.00	12.00	0.000	0.000	55.40	0.00	0.00

**Totals:** 10,835.28

24,769.87

## Total Applied Force Summary

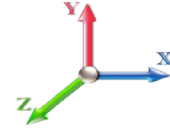
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 105 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		655.07	1725.46	0.00	0.00
10.00		641.46	1695.48	0.00	0.00
15.00		627.85	1665.50	0.00	0.00
20.00		651.74	1635.53	0.00	0.00
21.00		129.94	323.51	0.00	0.00
25.00		544.80	2167.17	0.00	0.00
27.75		399.81	1469.53	0.00	0.00
28.00		36.25	132.77	0.00	0.00
30.00		292.09	547.20	0.00	0.00
35.00		746.34	1350.51	0.00	0.00
40.00		755.92	1325.53	0.00	0.00
40.75		112.82	196.67	0.00	0.00
45.00		640.02	1103.87	0.00	0.00
50.00		715.35	1275.56	0.00	0.00
55.00		717.34	1250.58	0.00	0.00
60.00		717.86	1225.60	0.00	0.00
65.00		717.11	1200.62	0.00	0.00
70.00	(2) attachments	926.51	2132.37	0.00	0.00
71.00		143.94	408.48	0.00	0.00
75.00		574.21	928.65	0.00	0.00
80.00		715.40	1138.33	0.00	0.00
85.00		710.89	1113.35	0.00	0.00
90.00		705.62	1088.37	0.00	0.00
95.00	(50) attachments	8394.41	4970.34	0.00	0.00
100.00		610.91	953.20	0.00	0.00
105.00	(2) attachments	938.25	1006.22	0.00	914.04
110.00		581.94	902.28	0.00	0.00
115.00		575.01	1423.93	0.00	0.00
120.00		559.12	732.04	0.00	0.00
123.00	(27) attachments	9037.42	3192.27	0.00	1200.89
125.00		214.54	237.21	0.00	0.00
130.00		525.80	579.03	0.00	0.00
133.00	(7) attachments	2794.73	1875.03	0.00	0.00
135.00		200.77	191.27	0.00	0.00
140.00		490.57	464.18	0.00	0.00
145.00		472.29	444.20	0.00	0.00
150.00		453.61	424.21	0.00	0.00
153.00	(24) attachments	5596.74	2735.41	0.00	0.00
<b>Totals:</b>		<b>44,324.45</b>	<b>47,231.48</b>	<b>0.00</b>	<b>2,114.92</b>



## Linear Appurtenance Segment Forces (Factored)

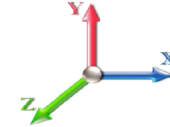
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 105 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.091	0.000	22.791	0.00	1.64
5.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.091	0.000	22.791	0.00	74.88
5.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.091	0.000	22.791	0.00	0.72
5.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.091	0.000	22.791	0.00	9.60
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.093	0.000	22.791	0.00	1.64
10.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.093	0.000	22.791	0.00	74.88
10.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.093	0.000	22.791	0.00	0.72
10.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.093	0.000	22.791	0.00	9.60
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.095	0.000	22.791	0.00	1.64
15.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.095	0.000	22.791	0.00	74.88
15.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.095	0.000	22.791	0.00	0.72
15.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.095	0.000	22.791	0.00	9.60
20.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.097	0.000	24.182	0.00	1.64
20.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.097	0.000	24.182	0.00	74.88
20.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.097	0.000	24.182	0.00	0.72
20.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.097	0.000	24.182	0.00	9.60
21.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.098	0.000	24.432	0.00	0.33
21.00	1 5/8" Coax	Yes	1.00	0.000	3.96	0.33	0.00	0.098	0.000	24.432	0.00	14.98
21.00	1/2" Fiber	Yes	1.00	0.000	0.38	0.03	0.00	0.098	0.000	24.432	0.00	0.14
21.00	3/4" DC	Yes	1.00	0.000	0.75	0.06	0.00	0.098	0.000	24.432	0.00	1.92
25.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.103	1.010	25.345	0.00	1.31
25.00	1 5/8" Coax	Yes	4.00	0.000	3.96	1.32	0.00	0.103	1.010	25.345	0.00	59.90
25.00	1/2" Fiber	Yes	4.00	0.000	0.38	0.13	0.00	0.103	1.010	25.345	0.00	0.58
25.00	3/4" DC	Yes	4.00	0.000	0.75	0.25	0.00	0.103	1.010	25.345	0.00	7.68
25.00	1.25" Reinforcing	Yes	0.75	0.000	1.25	0.08	0.00	0.103	1.010	25.345	0.00	0.00
27.75	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.124	1.071	25.908	0.00	0.90
27.75	1 5/8" Coax	Yes	2.75	0.000	3.96	0.91	0.00	0.124	1.071	25.908	0.00	41.18
27.75	1/2" Fiber	Yes	2.75	0.000	0.38	0.09	0.00	0.124	1.071	25.908	0.00	0.40
27.75	3/4" DC	Yes	2.75	0.000	0.75	0.17	0.00	0.124	1.071	25.908	0.00	5.28
27.75	1.25" Reinforcing	Yes	2.75	0.000	1.25	0.29	0.00	0.124	1.071	25.908	0.00	0.00
28.00	Safety Cable	Yes	0.25	0.000	0.38	0.01	0.00	0.125	1.074	25.957	0.00	0.08
28.00	1 5/8" Coax	Yes	0.25	0.000	3.96	0.08	0.00	0.125	1.074	25.957	0.00	3.74
28.00	1/2" Fiber	Yes	0.25	0.000	0.38	0.01	0.00	0.125	1.074	25.957	0.00	0.04
28.00	3/4" DC	Yes	0.25	0.000	0.75	0.02	0.00	0.125	1.074	25.957	0.00	0.48
28.00	1.25" Reinforcing	Yes	0.25	0.000	1.25	0.03	0.00	0.125	1.074	25.957	0.00	0.00
30.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.124	1.071	26.337	0.00	0.66
30.00	1 5/8" Coax	Yes	2.00	0.000	3.96	0.66	0.00	0.124	1.071	26.337	0.00	29.95
30.00	1/2" Fiber	Yes	2.00	0.000	0.38	0.06	0.00	0.124	1.071	26.337	0.00	0.29
30.00	3/4" DC	Yes	2.00	0.000	0.75	0.13	0.00	0.124	1.071	26.337	0.00	3.84
30.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.124	1.071	26.337	0.00	0.00
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.126	1.077	27.206	0.00	1.64
35.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.126	1.077	27.206	0.00	74.88
35.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.126	1.077	27.206	0.00	0.72
35.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.126	1.077	27.206	0.00	9.60
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.126	1.077	27.206	0.00	0.00
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.129	1.086	27.981	0.00	1.64
40.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.129	1.086	27.981	0.00	74.88

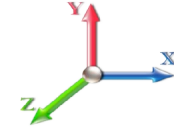
## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



**Load Case:** 1.2D + 1.6W 105 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
40.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.129	1.086	27.981	0.00	0.72
40.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.129	1.086	27.981	0.00	9.60
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.129	1.086	27.981	0.00	0.00
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.131	1.092	28.091	0.00	0.25
40.75	1 5/8" Coax	Yes	0.75	0.000	3.96	0.25	0.00	0.131	1.092	28.091	0.00	11.23
40.75	1/2" Fiber	Yes	0.75	0.000	0.38	0.02	0.00	0.131	1.092	28.091	0.00	0.11
40.75	3/4" DC	Yes	0.75	0.000	0.75	0.05	0.00	0.131	1.092	28.091	0.00	1.44
40.75	1.25" Reinforcing	Yes	0.75	0.000	1.25	0.08	0.00	0.131	1.092	28.091	0.00	0.00
45.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.128	1.084	28.684	0.00	1.39
45.00	1 5/8" Coax	Yes	4.25	0.000	3.96	1.40	0.00	0.128	1.084	28.684	0.00	63.65
45.00	1/2" Fiber	Yes	4.25	0.000	0.38	0.13	0.00	0.128	1.084	28.684	0.00	0.61
45.00	3/4" DC	Yes	4.25	0.000	0.75	0.27	0.00	0.128	1.084	28.684	0.00	8.16
45.00	1.25" Reinforcing	Yes	3.50	0.000	1.25	0.36	0.00	0.128	1.084	28.684	0.00	0.00
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.110	1.030	29.327	0.00	1.64
50.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.110	1.030	29.327	0.00	74.88
50.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.110	1.030	29.327	0.00	0.72
50.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.110	1.030	29.327	0.00	9.60
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.113	1.039	29.922	0.00	1.64
55.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.113	1.039	29.922	0.00	74.88
55.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.113	1.039	29.922	0.00	0.72
55.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.113	1.039	29.922	0.00	9.60
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.116	1.048	30.475	0.00	1.64
60.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.116	1.048	30.475	0.00	74.88
60.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.116	1.048	30.475	0.00	0.72
60.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.116	1.048	30.475	0.00	9.60
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.119	1.058	30.993	0.00	1.64
65.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.119	1.058	30.993	0.00	74.88
65.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.119	1.058	30.993	0.00	0.72
65.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.119	1.058	30.993	0.00	9.60
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.123	1.068	31.480	0.00	1.64
70.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.123	1.068	31.480	0.00	74.88
70.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.123	1.068	31.480	0.00	0.72
70.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.123	1.068	31.480	0.00	9.60
71.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.125	1.074	31.574	0.00	0.33
71.00	1 5/8" Coax	Yes	1.00	0.000	3.96	0.33	0.00	0.125	1.074	31.574	0.00	14.98
71.00	1/2" Fiber	Yes	1.00	0.000	0.38	0.03	0.00	0.125	1.074	31.574	0.00	0.14
71.00	3/4" DC	Yes	1.00	0.000	0.75	0.06	0.00	0.125	1.074	31.574	0.00	1.92
75.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.125	1.074	31.941	0.00	1.31
75.00	1 5/8" Coax	Yes	4.00	0.000	3.96	1.32	0.00	0.125	1.074	31.941	0.00	59.90
75.00	1/2" Fiber	Yes	4.00	0.000	0.38	0.13	0.00	0.125	1.074	31.941	0.00	0.58
75.00	3/4" DC	Yes	4.00	0.000	0.75	0.25	0.00	0.125	1.074	31.941	0.00	7.68
80.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.128	1.084	32.377	0.00	1.64
80.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.128	1.084	32.377	0.00	74.88
80.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.128	1.084	32.377	0.00	0.72
80.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.128	1.084	32.377	0.00	9.60
85.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.132	1.095	32.793	0.00	1.64
85.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.132	1.095	32.793	0.00	74.88

## Linear Appurtenance Segment Forces (Factored)

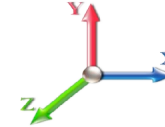
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 105 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
85.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.132	1.095	32.793	0.00	0.72
85.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.132	1.095	32.793	0.00	9.60
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.136	1.107	33.190	0.00	1.64
90.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.136	1.107	33.190	0.00	74.88
90.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.136	1.107	33.190	0.00	0.72
90.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.136	1.107	33.190	0.00	9.60
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.140	1.121	33.570	0.00	1.64
95.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.140	1.121	33.570	0.00	74.88
95.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.140	1.121	33.570	0.00	0.72
95.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.140	1.121	33.570	0.00	9.60
100.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	33.935	0.00	1.64
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	34.285	0.00	1.64
110.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	34.623	0.00	1.64
115.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	34.948	0.00	1.64
120.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	35.263	0.00	1.64
123.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.012	0.000	35.446	0.00	0.98
125.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.012	0.000	35.567	0.00	0.66
130.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	35.862	0.00	1.64
133.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.013	0.000	36.035	0.00	0.98
135.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.013	0.000	36.148	0.00	0.66
140.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	36.426	0.00	1.64
145.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	36.696	0.00	1.64
150.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	36.959	0.00	1.64
153.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.015	0.000	37.113	0.00	0.98
<b>Totals:</b>											<b>0.0</b>	<b>1,668.9</b>

## Calculated Forces

**Structure:** CT01499-S-SBA  
**Site Name:** Torrington  
**Height:** 153.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** B - Competent Rock  
**Struct Class:** II

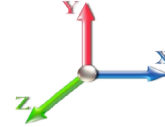
3/20/2019  
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**Load Case:** 1.2D + 1.6W 105 mph Wind

**Iterations** 22

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.15	-44.41	0.00	-4568.2	0.00	4568.21	4463.02	2231.51	10951.4	5483.88	0.00	0.000	0.000	0.844
5.00	-45.27	-43.91	0.00	-4346.1	0.00	4346.17	4413.36	2206.68	10604.1	5309.95	0.11	-0.199	0.000	0.829
10.00	-43.43	-43.41	0.00	-4126.6	0.00	4126.63	4361.89	2180.94	10257.6	5136.44	0.42	-0.400	0.000	0.814
15.00	-41.62	-42.92	0.00	-3909.5	0.00	3909.58	4308.61	2154.31	9912.23	4963.48	0.95	-0.604	0.000	0.798
20.00	-39.90	-42.33	0.00	-3695.0	0.00	3695.00	4253.53	2126.77	9568.22	4791.22	1.70	-0.809	0.000	0.781
21.00	-39.50	-42.27	0.00	-3652.6	0.00	3652.66	4242.30	2121.15	9499.61	4756.87	1.87	-0.852	0.000	0.778
25.00	-37.24	-41.78	0.00	-3483.5	0.00	3483.59	4196.65	2098.33	9225.87	4619.79	2.66	-1.019	0.000	0.763
27.75	-35.73	-41.39	0.00	-3368.6	0.00	3368.69	4164.60	2082.30	9038.39	4525.91	3.28	-1.136	0.000	0.497
28.00	-35.58	-41.37	0.00	-3358.3	0.00	3358.34	4213.57	1606.78	7065.87	3538.19	3.34	-1.143	0.000	0.549
30.00	-34.96	-41.13	0.00	-3275.5	0.00	3275.59	3199.34	1599.67	6969.21	3489.78	3.83	-1.199	0.000	0.593
35.00	-33.52	-40.45	0.00	-3069.9	0.00	3069.93	3162.51	1581.26	6727.41	3368.71	5.17	-1.351	0.000	0.570
40.00	-32.15	-39.71	0.00	-2867.6	0.00	2867.69	3123.88	1561.94	6485.64	3247.64	6.67	-1.502	0.000	0.547
40.75	-31.91	-39.63	0.00	-2837.9	0.00	2837.92	3117.93	1558.96	6449.39	3229.49	6.90	-1.525	0.000	0.543
40.75	-31.91	-39.63	0.00	-2837.9	0.00	2837.92	3117.93	1558.96	6449.39	3229.49	6.90	-1.525	0.000	0.543
45.00	-30.69	-39.06	0.00	-2669.4	0.00	2669.49	3083.44	1541.72	6244.17	3126.72	8.32	-1.653	0.000	0.864
50.00	-29.28	-38.43	0.00	-2474.1	0.00	2474.18	3041.20	1520.60	6003.26	3006.09	10.19	-1.898	0.000	0.833
55.00	-27.89	-37.79	0.00	-2282.0	0.00	2282.02	2997.16	1498.58	5763.21	2885.89	12.30	-2.142	0.000	0.801
60.00	-26.54	-37.14	0.00	-2093.0	0.00	2093.08	2951.32	1475.66	5524.28	2766.24	14.68	-2.385	0.000	0.766
65.00	-25.22	-36.47	0.00	-1907.3	0.00	1907.39	2903.67	1451.83	5286.75	2647.30	17.31	-2.626	0.000	0.730
70.00	-23.05	-35.50	0.00	-1725.0	0.00	1725.03	2854.22	1427.11	5050.90	2529.20	20.19	-2.864	0.000	0.691
71.00	-22.57	-35.39	0.00	-1689.5	0.00	1689.53	2869.57	1434.79	5123.02	2565.32	20.79	-2.913	0.000	0.667
75.00	-21.55	-34.84	0.00	-1547.9	0.00	1547.99	2829.16	1414.58	4935.24	2471.29	23.31	-3.100	0.000	0.635
80.00	-20.33	-34.14	0.00	-1373.7	0.00	1373.79	2777.01	1388.51	4702.41	2354.70	26.68	-3.317	0.000	0.591
85.00	-19.14	-33.43	0.00	-1203.1	0.00	1203.10	2723.06	1361.53	4471.94	2239.29	30.27	-3.526	0.000	0.545
90.00	-17.99	-32.72	0.00	-1035.9	0.00	1035.95	2667.31	1333.66	4244.12	2125.22	34.07	-3.725	0.000	0.495
95.00	-13.51	-24.05	0.00	-872.36	0.00	872.36	2609.76	1304.88	4019.22	2012.60	38.07	-3.912	0.000	0.439
100.00	-12.54	-23.41	0.00	-752.10	0.00	752.10	2550.40	1275.20	3797.52	1901.58	42.26	-4.087	0.000	0.401
105.00	-11.54	-22.44	0.00	-634.11	0.00	634.11	2489.24	1244.62	3579.29	1792.30	46.62	-4.252	0.000	0.359
110.00	-10.63	-21.82	0.00	-521.93	0.00	521.93	2426.28	1213.14	3364.80	1684.90	51.16	-4.404	0.000	0.314
115.00	-9.21	-21.15	0.00	-412.85	0.00	412.85	1783.00	891.50	2427.68	1215.65	55.84	-4.542	0.000	0.345
120.00	-8.49	-20.55	0.00	-307.08	0.00	307.08	1739.91	869.95	2280.12	1141.75	60.66	-4.660	0.000	0.274
123.00	-6.04	-11.29	0.00	-244.23	0.00	244.23	1713.19	856.59	2192.59	1097.92	63.61	-4.733	0.000	0.226
125.00	-5.80	-11.06	0.00	-221.66	0.00	221.66	1695.01	847.51	2134.69	1068.93	65.60	-4.776	0.000	0.211
130.00	-5.26	-10.50	0.00	-166.35	0.00	166.35	1648.31	824.16	1991.67	997.31	70.65	-4.872	0.000	0.170
133.00	-3.62	-7.55	0.00	-134.86	0.00	134.86	1619.42	809.71	1907.13	954.98	73.73	-4.922	0.000	0.144
135.00	-3.44	-7.34	0.00	-119.75	0.00	119.75	1599.81	799.90	1851.33	927.04	75.79	-4.953	0.000	0.131
140.00	-3.02	-6.81	0.00	-83.05	0.00	83.05	1549.50	774.75	1713.96	858.25	81.01	-5.017	0.000	0.099
145.00	-2.61	-6.31	0.00	-48.98	0.00	48.98	1497.39	748.69	1579.82	791.09	86.29	-5.065	0.000	0.064
150.00	-2.23	-5.82	0.00	-17.45	0.00	17.45	1443.48	721.74	1449.20	725.68	91.60	-5.093	0.000	0.026
150.00	-2.23	-5.82	0.00	-17.45	0.00	17.45	1443.48	721.74	1449.20	725.68	91.60	-5.093	0.000	0.026
153.00	0.00	-5.60	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	94.80	-5.098	0.000	0.000

## Wind Loading - Shaft

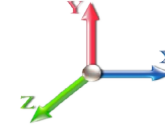
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	22.791	25.07	491.49	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	481.39	0.650	0.000	5.00	25.125	16.33	655.1	0.0	1075.4
10.00		1.00	0.85	22.791	25.07	471.28	0.650	0.000	5.00	24.603	15.99	641.5	0.0	1052.9
15.00		1.00	0.85	22.791	25.07	461.18	0.650	0.000	5.00	24.081	15.65	627.9	0.0	1030.5
20.00		1.00	0.90	24.182	26.60	464.63	0.650	0.000	5.00	23.559	15.31	651.7	0.0	1008.0
21.00	Bot - Section 2	1.00	0.91	24.432	26.87	464.93	0.650	0.000	1.00	4.649	3.02	129.9	0.0	198.9
25.00		1.00	0.95	25.345	27.88	465.02	0.657 *	0.000	4.00	18.599	12.21	544.8	0.0	1450.4
27.75	RB1	1.00	0.97	25.908	28.50	464.23	0.696 *	0.000	2.75	12.593	8.77	399.8	0.0	981.9
28.00	Top - Section 1	1.00	0.97	25.957	28.55	464.13	0.698 *	0.000	0.25	1.137	0.79	36.3	0.0	88.6
30.00		1.00	0.98	26.337	28.97	468.67	0.696 *	0.000	2.00	9.049	6.30	292.1	0.0	322.9
35.00		1.00	1.01	27.206	29.93	465.30	0.700 *	0.000	5.00	22.257	15.59	746.3	0.0	794.2
40.00		1.00	1.04	27.981	30.78	460.69	0.706 *	0.000	5.00	21.735	15.35	755.9	0.0	775.5
40.75	RT1	1.00	1.05	28.091	30.90	459.90	0.710 *	0.000	0.75	3.215	2.28	112.8	0.0	114.7
45.00		1.00	1.07	28.684	31.55	455.10	0.704 *	0.000	4.25	17.998	12.68	640.0	0.0	642.0
50.00		1.00	1.09	29.327	32.26	448.71	0.670 *	0.000	5.00	20.692	13.86	715.3	0.0	738.0
55.00		1.00	1.12	29.922	32.91	441.65	0.675 *	0.000	5.00	20.170	13.62	717.3	0.0	719.3
60.00		1.00	1.14	30.475	33.52	434.03	0.681 *	0.000	5.00	19.648	13.38	717.9	0.0	700.5
65.00	Bot - Section 3	1.00	1.16	30.993	34.09	425.92	0.687 *	0.000	5.00	19.126	13.15	717.1	0.0	681.8
70.00	Appurtenance(s)	1.00	1.17	31.480	34.63	417.38	0.694 *	0.000	5.00	18.868	13.09	725.4	0.0	1335.6
71.00	Top - Section 2	1.00	1.18	31.574	34.73	415.62	0.698 *	0.000	1.00	3.711	2.59	143.9	0.0	262.6
75.00		1.00	1.19	31.941	35.13	414.52	0.698 *	0.000	4.00	14.635	10.21	574.2	0.0	521.6
80.00		1.00	1.21	32.377	35.62	405.30	0.704 *	0.000	5.00	17.824	12.55	715.4	0.0	635.1
85.00		1.00	1.22	32.793	36.07	395.77	0.712 *	0.000	5.00	17.302	12.32	710.9	0.0	616.3
90.00		1.00	1.24	33.190	36.51	385.96	0.720 *	0.000	5.00	16.780	12.08	705.6	0.0	597.6
95.00	Appurtenance(s)	1.00	1.25	33.570	36.93	375.90	0.728 *	0.000	5.00	16.258	11.84	699.7	0.0	578.9
100.00		1.00	1.27	33.935	37.33	365.61	0.650	0.000	5.00	15.736	10.23	610.9	0.0	560.1
105.00	Appurtenance(s)	1.00	1.28	34.285	37.71	355.09	0.650	0.000	5.00	15.214	9.89	596.7	0.0	541.4
110.00	Bot - Section 4	1.00	1.29	34.623	38.08	344.38	0.650	0.000	5.00	14.693	9.55	581.9	0.0	522.7
115.00	Top - Section 3	1.00	1.30	34.948	38.44	333.48	0.650	0.000	5.00	14.382	9.35	575.0	0.0	913.9
120.00		1.00	1.32	35.263	38.79	327.50	0.650	0.000	5.00	13.860	9.01	559.1	0.0	395.0
123.00	Appurtenance(s)	1.00	1.32	35.446	38.99	320.80	0.650	0.000	3.00	8.066	5.24	327.1	0.0	229.8
125.00		1.00	1.33	35.567	39.12	316.29	0.650	0.000	2.00	5.273	3.43	214.5	0.0	150.2
130.00		1.00	1.34	35.862	39.45	304.92	0.650	0.000	5.00	12.816	8.33	525.8	0.0	365.0
133.00	Appurtenance(s)	1.00	1.34	36.035	39.64	298.03	0.650	0.000	3.00	7.439	4.84	306.7	0.0	211.8
135.00		1.00	1.35	36.148	39.76	293.41	0.650	0.000	2.00	4.855	3.16	200.8	0.0	138.2
140.00		1.00	1.36	36.426	40.07	281.76	0.650	0.000	5.00	11.772	7.65	490.6	0.0	335.0
145.00		1.00	1.37	36.696	40.37	269.98	0.650	0.000	5.00	11.250	7.31	472.3	0.0	320.0
150.00	Top - Section 4	1.00	1.38	36.959	40.65	258.08	0.650	0.000	5.00	10.728	6.97	453.6	0.0	305.1
153.00	Appurtenance(s)	1.00	1.38	37.113	40.82	250.88	0.650	0.000	3.00	6.187	4.02	262.7	0.0	175.8
<b>Totals:</b>									<b>153.00</b>			<b>19,554.6</b>		<b>22,087.4</b>

\* Cf Adjusted by Linear Load Ra Effect

## Discrete Appurtenance Forces

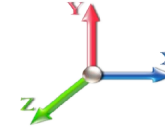
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	153.00	Low Profile Platform	1	37.113	40.824	1.00	1.00	25.00	1080.00	0.000	0.000	1632.98	0.00	0.00
2	153.00	TD-RRH8x20-25	3	37.113	40.824	0.62	0.90	7.55	189.00	0.000	0.000	492.84	0.00	0.00
3	153.00	ACU-A20-N	4	37.113	40.824	0.81	0.90	0.45	3.60	0.000	0.000	29.63	0.00	0.00
4	153.00	800 MHz Filters	3	37.113	40.824	0.62	0.90	1.45	23.76	0.000	0.000	94.92	0.00	0.00
5	153.00	800 MHz RRUs	3	37.113	40.824	0.83	0.90	6.19	143.10	0.000	0.000	404.01	0.00	0.00
6	153.00	1900 MHz RRUs	3	37.113	40.824	0.79	0.90	9.03	118.80	0.000	0.000	589.75	0.00	0.00
7	153.00	APXVSP18-C-A20	3	37.113	40.824	0.75	0.90	17.97	153.90	0.000	0.000	1173.97	0.00	0.00
8	153.00	APXVTM14-C-I20	3	37.113	40.824	0.71	0.90	13.52	151.20	0.000	0.000	883.32	0.00	0.00
9	153.00	Lightning Rod	1	37.113	40.824	1.00	1.00	0.50	4.50	0.000	0.000	32.66	0.00	0.00
10	133.00	RR90-17-02DP	6	36.035	39.638	0.54	0.80	14.23	72.90	0.000	0.000	902.54	0.00	0.00
11	133.00	Low Profile Platform	1	36.035	39.638	1.00	1.00	25.00	1080.00	0.000	0.000	1585.52	0.00	0.00
12	123.00	Low Profile Platform	1	35.446	38.991	1.00	1.00	25.00	1080.00	0.000	0.000	1559.64	0.00	0.00
13	123.00	DB-T1-6Z-8AB-OZ	2	35.446	38.991	0.72	0.80	6.91	34.02	0.000	0.000	431.21	0.00	0.00
14	123.00	RRH2x60-700	3	35.627	39.189	0.61	0.80	6.38	162.00	0.000	3.000	400.30	0.00	1200.89
15	123.00	RRH2X60-PCS	3	35.446	38.991	0.71	0.80	4.70	148.50	0.000	0.000	293.16	0.00	0.00
16	123.00	LPA-80063/6CF	6	35.446	38.991	0.75	0.80	43.32	145.80	0.000	0.000	2702.25	0.00	0.00
17	123.00	SBNHH-1D65B	9	35.446	38.991	0.66	0.80	48.29	328.86	0.000	0.000	3012.36	0.00	0.00
18	123.00	B66 4X45 AWS	3	35.446	38.991	0.64	0.80	4.99	172.80	0.000	0.000	311.43	0.00	0.00
19	105.00	Standoff	1	34.285	37.714	1.00	1.00	2.63	36.00	0.000	0.000	158.70	0.00	0.00
20	105.00	10' Omni	1	34.623	38.085	1.00	1.00	3.00	22.50	0.000	5.000	182.81	0.00	914.04
21	95.00	RRUS-12	3	33.570	36.927	0.54	0.80	5.07	162.00	0.000	0.000	299.27	0.00	0.00
22	95.00	HPA-65R-BUJ-H6	4	33.570	36.927	0.72	0.80	27.82	183.60	0.000	0.000	1643.76	0.00	0.00
23	95.00	7770	3	33.570	36.927	0.58	0.80	9.64	94.50	0.000	0.000	569.33	0.00	0.00
24	95.00	SBNH-1D65A	2	33.570	36.927	0.72	0.80	7.75	69.12	0.000	0.000	457.73	0.00	0.00
25	95.00	AM-X-CW-16-65-00T-RET	2	33.570	36.927	0.60	0.80	9.62	75.24	0.000	0.000	568.62	0.00	0.00
26	95.00	LGP17201	6	33.570	36.927	0.80	0.80	9.36	167.40	0.000	0.000	553.02	0.00	0.00
27	95.00	LGP21901	6	33.570	36.927	0.60	0.80	0.83	29.70	0.000	0.000	48.92	0.00	0.00
28	95.00	RRUS-11	3	33.570	36.927	0.54	0.80	7.21	148.50	0.000	0.000	426.20	0.00	0.00
29	95.00	4426 B66	3	33.570	36.927	0.58	0.80	2.01	130.95	0.000	0.000	119.04	0.00	0.00
30	95.00	RRUS-A2	3	33.570	36.927	0.50	0.80	2.77	57.24	0.000	0.000	163.52	0.00	0.00
31	95.00	RRUS-32	3	33.570	36.927	0.70	0.80	8.08	207.90	0.000	0.000	477.43	0.00	0.00
32	95.00	RRUS-E2	3	33.570	36.927	0.56	0.80	4.72	154.71	0.000	0.000	278.92	0.00	0.00
33	95.00	1000860	3	33.570	36.927	1.00	1.00	0.18	5.40	0.000	0.000	10.64	0.00	0.00
34	95.00	Raycap/Squid	2	33.570	36.927	0.72	0.80	2.12	57.24	0.000	0.000	125.07	0.00	0.00
35	95.00	Sector Frame	3	33.570	36.927	0.56	0.75	29.53	1350.00	0.000	0.000	1744.82	0.00	0.00
36	95.00	800 10764	1	33.570	36.927	0.60	0.80	3.53	36.72	0.000	0.000	208.45	0.00	0.00
37	70.00	Standoff	1	31.480	34.628	1.00	1.00	2.63	36.00	0.000	0.000	145.71	0.00	0.00
38	70.00	GPS	1	31.480	34.628	1.00	1.00	1.00	9.00	0.000	0.000	55.40	0.00	0.00

**Totals: 8,126.46 24,769.87**



## Total Applied Force Summary

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

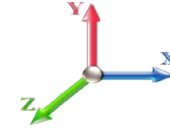


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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		655.07	1294.10	0.00	0.00
10.00		641.46	1271.61	0.00	0.00
15.00		627.85	1249.13	0.00	0.00
20.00		651.74	1226.64	0.00	0.00
21.00		129.94	242.63	0.00	0.00
25.00		544.80	1625.38	0.00	0.00
27.75		399.81	1102.15	0.00	0.00
28.00		36.25	99.58	0.00	0.00
30.00		292.09	410.40	0.00	0.00
35.00		746.34	1012.88	0.00	0.00
40.00		755.92	994.14	0.00	0.00
40.75		112.82	147.51	0.00	0.00
45.00		640.02	827.90	0.00	0.00
50.00		715.35	956.67	0.00	0.00
55.00		717.34	937.94	0.00	0.00
60.00		717.86	919.20	0.00	0.00
65.00		717.11	900.46	0.00	0.00
70.00	(2) attachments	926.51	1599.28	0.00	0.00
71.00		143.94	306.36	0.00	0.00
75.00		574.21	696.49	0.00	0.00
80.00		715.40	853.75	0.00	0.00
85.00		710.89	835.01	0.00	0.00
90.00		705.62	816.27	0.00	0.00
95.00	(50) attachments	8394.41	3727.76	0.00	0.00
100.00		610.91	714.90	0.00	0.00
105.00	(2) attachments	938.25	754.67	0.00	914.04
110.00		581.94	676.71	0.00	0.00
115.00		575.01	1067.95	0.00	0.00
120.00		559.12	549.03	0.00	0.00
123.00	(27) attachments	9037.42	2394.21	0.00	1200.89
125.00		214.54	177.91	0.00	0.00
130.00		525.80	434.28	0.00	0.00
133.00	(7) attachments	2794.73	1406.27	0.00	0.00
135.00		200.77	143.45	0.00	0.00
140.00		490.57	348.14	0.00	0.00
145.00		472.29	333.15	0.00	0.00
150.00		453.61	318.16	0.00	0.00
153.00	(24) attachments	5596.74	2051.56	0.00	0.00
Totals:		44,324.45	35,423.61	0.00	2,114.92

## Linear Appurtenance Segment Forces (Factored)

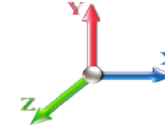
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.091	0.000	22.791	0.00	1.23
5.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.091	0.000	22.791	0.00	56.16
5.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.091	0.000	22.791	0.00	0.54
5.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.091	0.000	22.791	0.00	7.20
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.093	0.000	22.791	0.00	1.23
10.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.093	0.000	22.791	0.00	56.16
10.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.093	0.000	22.791	0.00	0.54
10.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.093	0.000	22.791	0.00	7.20
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.095	0.000	22.791	0.00	1.23
15.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.095	0.000	22.791	0.00	56.16
15.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.095	0.000	22.791	0.00	0.54
15.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.095	0.000	22.791	0.00	7.20
20.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.097	0.000	24.182	0.00	1.23
20.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.097	0.000	24.182	0.00	56.16
20.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.097	0.000	24.182	0.00	0.54
20.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.097	0.000	24.182	0.00	7.20
21.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.098	0.000	24.432	0.00	0.25
21.00	1 5/8" Coax	Yes	1.00	0.000	3.96	0.33	0.00	0.098	0.000	24.432	0.00	11.23
21.00	1/2" Fiber	Yes	1.00	0.000	0.38	0.03	0.00	0.098	0.000	24.432	0.00	0.11
21.00	3/4" DC	Yes	1.00	0.000	0.75	0.06	0.00	0.098	0.000	24.432	0.00	1.44
25.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.103	1.010	25.345	0.00	0.98
25.00	1 5/8" Coax	Yes	4.00	0.000	3.96	1.32	0.00	0.103	1.010	25.345	0.00	44.93
25.00	1/2" Fiber	Yes	4.00	0.000	0.38	0.13	0.00	0.103	1.010	25.345	0.00	0.43
25.00	3/4" DC	Yes	4.00	0.000	0.75	0.25	0.00	0.103	1.010	25.345	0.00	5.76
25.00	1.25" Reinforcing	Yes	0.75	0.000	1.25	0.08	0.00	0.103	1.010	25.345	0.00	0.00
27.75	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.124	1.071	25.908	0.00	0.68
27.75	1 5/8" Coax	Yes	2.75	0.000	3.96	0.91	0.00	0.124	1.071	25.908	0.00	30.89
27.75	1/2" Fiber	Yes	2.75	0.000	0.38	0.09	0.00	0.124	1.071	25.908	0.00	0.30
27.75	3/4" DC	Yes	2.75	0.000	0.75	0.17	0.00	0.124	1.071	25.908	0.00	3.96
27.75	1.25" Reinforcing	Yes	2.75	0.000	1.25	0.29	0.00	0.124	1.071	25.908	0.00	0.00
28.00	Safety Cable	Yes	0.25	0.000	0.38	0.01	0.00	0.125	1.074	25.957	0.00	0.06
28.00	1 5/8" Coax	Yes	0.25	0.000	3.96	0.08	0.00	0.125	1.074	25.957	0.00	2.81
28.00	1/2" Fiber	Yes	0.25	0.000	0.38	0.01	0.00	0.125	1.074	25.957	0.00	0.03
28.00	3/4" DC	Yes	0.25	0.000	0.75	0.02	0.00	0.125	1.074	25.957	0.00	0.36
28.00	1.25" Reinforcing	Yes	0.25	0.000	1.25	0.03	0.00	0.125	1.074	25.957	0.00	0.00
30.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.124	1.071	26.337	0.00	0.49
30.00	1 5/8" Coax	Yes	2.00	0.000	3.96	0.66	0.00	0.124	1.071	26.337	0.00	22.46
30.00	1/2" Fiber	Yes	2.00	0.000	0.38	0.06	0.00	0.124	1.071	26.337	0.00	0.22
30.00	3/4" DC	Yes	2.00	0.000	0.75	0.13	0.00	0.124	1.071	26.337	0.00	2.88
30.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.124	1.071	26.337	0.00	0.00
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.126	1.077	27.206	0.00	1.23
35.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.126	1.077	27.206	0.00	56.16
35.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.126	1.077	27.206	0.00	0.54
35.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.126	1.077	27.206	0.00	7.20
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.126	1.077	27.206	0.00	0.00
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.129	1.086	27.981	0.00	1.23
40.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.129	1.086	27.981	0.00	56.16



## Linear Appurtenance Segment Forces (Factored)

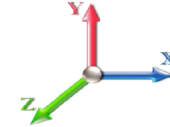
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
40.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.129	1.086	27.981	0.00	0.54
40.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.129	1.086	27.981	0.00	7.20
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.129	1.086	27.981	0.00	0.00
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.131	1.092	28.091	0.00	0.18
40.75	1 5/8" Coax	Yes	0.75	0.000	3.96	0.25	0.00	0.131	1.092	28.091	0.00	8.42
40.75	1/2" Fiber	Yes	0.75	0.000	0.38	0.02	0.00	0.131	1.092	28.091	0.00	0.08
40.75	3/4" DC	Yes	0.75	0.000	0.75	0.05	0.00	0.131	1.092	28.091	0.00	1.08
40.75	1.25" Reinforcing	Yes	0.75	0.000	1.25	0.08	0.00	0.131	1.092	28.091	0.00	0.00
45.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.128	1.084	28.684	0.00	1.04
45.00	1 5/8" Coax	Yes	4.25	0.000	3.96	1.40	0.00	0.128	1.084	28.684	0.00	47.74
45.00	1/2" Fiber	Yes	4.25	0.000	0.38	0.13	0.00	0.128	1.084	28.684	0.00	0.46
45.00	3/4" DC	Yes	4.25	0.000	0.75	0.27	0.00	0.128	1.084	28.684	0.00	6.12
45.00	1.25" Reinforcing	Yes	3.50	0.000	1.25	0.36	0.00	0.128	1.084	28.684	0.00	0.00
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.110	1.030	29.327	0.00	1.23
50.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.110	1.030	29.327	0.00	56.16
50.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.110	1.030	29.327	0.00	0.54
50.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.110	1.030	29.327	0.00	7.20
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.113	1.039	29.922	0.00	1.23
55.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.113	1.039	29.922	0.00	56.16
55.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.113	1.039	29.922	0.00	0.54
55.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.113	1.039	29.922	0.00	7.20
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.116	1.048	30.475	0.00	1.23
60.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.116	1.048	30.475	0.00	56.16
60.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.116	1.048	30.475	0.00	0.54
60.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.116	1.048	30.475	0.00	7.20
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.119	1.058	30.993	0.00	1.23
65.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.119	1.058	30.993	0.00	56.16
65.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.119	1.058	30.993	0.00	0.54
65.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.119	1.058	30.993	0.00	7.20
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.123	1.068	31.480	0.00	1.23
70.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.123	1.068	31.480	0.00	56.16
70.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.123	1.068	31.480	0.00	0.54
70.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.123	1.068	31.480	0.00	7.20
71.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.125	1.074	31.574	0.00	0.25
71.00	1 5/8" Coax	Yes	1.00	0.000	3.96	0.33	0.00	0.125	1.074	31.574	0.00	11.23
71.00	1/2" Fiber	Yes	1.00	0.000	0.38	0.03	0.00	0.125	1.074	31.574	0.00	0.11
71.00	3/4" DC	Yes	1.00	0.000	0.75	0.06	0.00	0.125	1.074	31.574	0.00	1.44
75.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.125	1.074	31.941	0.00	0.98
75.00	1 5/8" Coax	Yes	4.00	0.000	3.96	1.32	0.00	0.125	1.074	31.941	0.00	44.93
75.00	1/2" Fiber	Yes	4.00	0.000	0.38	0.13	0.00	0.125	1.074	31.941	0.00	0.43
75.00	3/4" DC	Yes	4.00	0.000	0.75	0.25	0.00	0.125	1.074	31.941	0.00	5.76
80.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.128	1.084	32.377	0.00	1.23
80.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.128	1.084	32.377	0.00	56.16
80.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.128	1.084	32.377	0.00	0.54
80.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.128	1.084	32.377	0.00	7.20
85.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.132	1.095	32.793	0.00	1.23
85.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.132	1.095	32.793	0.00	56.16

## Linear Appurtenance Segment Forces (Factored)

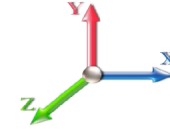
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
85.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.132	1.095	32.793	0.00	0.54
85.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.132	1.095	32.793	0.00	7.20
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.136	1.107	33.190	0.00	1.23
90.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.136	1.107	33.190	0.00	56.16
90.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.136	1.107	33.190	0.00	0.54
90.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.136	1.107	33.190	0.00	7.20
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.140	1.121	33.570	0.00	1.23
95.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.140	1.121	33.570	0.00	56.16
95.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.140	1.121	33.570	0.00	0.54
95.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.140	1.121	33.570	0.00	7.20
100.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	33.935	0.00	1.23
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	34.285	0.00	1.23
110.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	34.623	0.00	1.23
115.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	34.948	0.00	1.23
120.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	35.263	0.00	1.23
123.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.012	0.000	35.446	0.00	0.74
125.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.012	0.000	35.567	0.00	0.49
130.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	35.862	0.00	1.23
133.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.013	0.000	36.035	0.00	0.74
135.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.013	0.000	36.148	0.00	0.49
140.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	36.426	0.00	1.23
145.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	36.696	0.00	1.23
150.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	36.959	0.00	1.23
153.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.015	0.000	37.113	0.00	0.74
<b>Totals:</b>											<b>0.0</b>	<b>1,251.7</b>

## Calculated Forces

**Structure:** CT01499-S-SBA  
**Site Name:** Torrington  
**Height:** 153.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** B - Competent Rock  
**Struct Class:** II

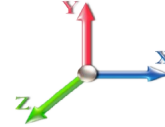
3/20/2019  
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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Iterations** 22

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-35.34	-44.39	0.00	-4535.8	0.00	4535.81	4463.02	2231.51	10951.4	5483.88	0.00	0.000	0.000	0.835
5.00	-33.90	-43.85	0.00	-4313.8	0.00	4313.88	4413.36	2206.68	10604.1	5309.95	0.11	-0.197	0.000	0.820
10.00	-32.48	-43.31	0.00	-4094.6	0.00	4094.65	4361.89	2180.94	10257.6	5136.44	0.42	-0.397	0.000	0.805
15.00	-31.08	-42.78	0.00	-3878.0	0.00	3878.08	4308.61	2154.31	9912.23	4963.48	0.95	-0.599	0.000	0.789
20.00	-29.78	-42.18	0.00	-3664.1	0.00	3664.16	4253.53	2126.77	9568.22	4791.22	1.68	-0.803	0.000	0.772
21.00	-29.46	-42.10	0.00	-3621.9	0.00	3621.98	4242.30	2121.15	9499.61	4756.87	1.86	-0.845	0.000	0.769
25.00	-27.74	-41.60	0.00	-3453.5	0.00	3453.58	4196.65	2098.33	9225.87	4619.79	2.64	-1.011	0.000	0.755
27.75	-26.60	-41.21	0.00	-3339.1	0.00	3339.18	4164.60	2082.30	9038.39	4525.91	3.26	-1.127	0.000	0.491
28.00	-26.48	-41.18	0.00	-3328.8	0.00	3328.88	3213.57	1606.78	7065.87	3538.19	3.32	-1.134	0.000	0.542
30.00	-26.00	-40.93	0.00	-3246.5	0.00	3246.52	3199.34	1599.67	6969.21	3489.78	3.80	-1.190	0.000	0.586
35.00	-24.90	-40.23	0.00	-3041.8	0.00	3041.87	3162.51	1581.26	6727.41	3368.71	5.13	-1.340	0.000	0.563
40.00	-23.87	-39.48	0.00	-2840.7	0.00	2840.74	3123.88	1561.94	6485.64	3247.64	6.61	-1.490	0.000	0.540
40.75	-23.67	-39.40	0.00	-2811.1	0.00	2811.13	3117.93	1558.96	6449.39	3229.49	6.85	-1.512	0.000	0.537
40.75	-23.67	-39.40	0.00	-2811.1	0.00	2811.13	3117.93	1558.96	6449.39	3229.49	6.85	-1.512	0.000	0.537
45.00	-22.74	-38.81	0.00	-2643.7	0.00	2643.70	3083.44	1541.72	6244.17	3126.72	8.26	-1.639	0.000	0.854
50.00	-21.64	-38.16	0.00	-2449.6	0.00	2449.66	3041.20	1520.60	6003.26	3006.09	10.10	-1.882	0.000	0.823
55.00	-20.57	-37.49	0.00	-2258.8	0.00	2258.89	2997.16	1498.58	5763.21	2885.89	12.20	-2.124	0.000	0.790
60.00	-19.53	-36.82	0.00	-2071.4	0.00	2071.42	2951.32	1475.66	5524.28	2766.24	14.56	-2.364	0.000	0.756
65.00	-18.51	-36.14	0.00	-1887.3	0.00	1887.32	2903.67	1451.83	5286.75	2647.30	17.16	-2.603	0.000	0.720
70.00	-16.87	-35.18	0.00	-1706.6	0.00	1706.61	2854.22	1427.11	5050.90	2529.20	20.02	-2.838	0.000	0.681
71.00	-16.50	-35.06	0.00	-1671.4	0.00	1671.43	2869.57	1434.79	5123.02	2565.32	20.62	-2.886	0.000	0.658
75.00	-15.71	-34.50	0.00	-1531.2	0.00	1531.20	2829.16	1414.58	4935.24	2471.29	23.11	-3.071	0.000	0.626
80.00	-14.77	-33.80	0.00	-1358.6	0.00	1358.69	2777.01	1388.51	4702.41	2354.70	26.45	-3.286	0.000	0.583
85.00	-13.87	-33.09	0.00	-1189.7	0.00	1189.71	2723.06	1361.53	4471.94	2239.29	30.00	-3.493	0.000	0.537
90.00	-12.99	-32.37	0.00	-1024.2	0.00	1024.28	2667.31	1333.66	4244.12	2125.22	33.76	-3.690	0.000	0.487
95.00	-9.75	-23.78	0.00	-862.41	0.00	862.41	2609.76	1304.88	4019.22	2012.60	37.73	-3.874	0.000	0.433
100.00	-9.01	-23.15	0.00	-743.50	0.00	743.50	2550.40	1275.20	3797.52	1901.58	41.88	-4.047	0.000	0.395
105.00	-8.26	-22.18	0.00	-626.84	0.00	626.84	2489.24	1244.62	3579.29	1792.30	46.20	-4.210	0.000	0.353
110.00	-7.58	-21.57	0.00	-515.93	0.00	515.93	2426.28	1213.14	3364.80	1684.90	50.69	-4.361	0.000	0.310
115.00	-6.51	-20.93	0.00	-408.08	0.00	408.08	1783.00	891.50	2427.68	1215.65	55.33	-4.497	0.000	0.340
120.00	-5.98	-20.34	0.00	-303.43	0.00	303.43	1739.91	869.95	2280.12	1141.75	60.10	-4.614	0.000	0.270
123.00	-4.31	-11.14	0.00	-241.22	0.00	241.22	1713.19	856.59	2192.59	1097.92	63.02	-4.685	0.000	0.222
125.00	-4.14	-10.92	0.00	-218.94	0.00	218.94	1695.01	847.51	2134.69	1068.93	64.99	-4.729	0.000	0.207
130.00	-3.74	-10.36	0.00	-164.36	0.00	164.36	1648.31	824.16	1991.67	997.31	69.99	-4.823	0.000	0.167
133.00	-2.57	-7.46	0.00	-133.27	0.00	133.27	1619.42	809.71	1907.13	954.98	73.04	-4.873	0.000	0.141
135.00	-2.44	-7.25	0.00	-118.35	0.00	118.35	1599.81	799.90	1851.33	927.04	75.08	-4.903	0.000	0.129
140.00	-2.12	-6.73	0.00	-82.10	0.00	82.10	1549.50	774.75	1713.96	858.25	80.25	-4.966	0.000	0.097
145.00	-1.83	-6.23	0.00	-48.44	0.00	48.44	1497.39	748.69	1579.82	791.09	85.47	-5.014	0.000	0.063
150.00	-1.55	-5.76	0.00	-17.27	0.00	17.27	1443.48	721.74	1449.20	725.68	90.73	-5.041	0.000	0.025
150.00	-1.55	-5.76	0.00	-17.27	0.00	17.27	1443.48	721.74	1449.20	725.68	90.73	-5.041	0.000	0.025
153.00	0.00	-5.60	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	93.90	-5.046	0.000	0.000

## Wind Loading - Shaft

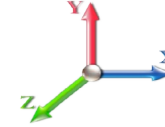
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor**    1.20  
**Wind Load Factor**    1.00



**Iterations**    21

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	3.308	3.64	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	3.308	3.64	0.00	1.200	1.242	5.00	26.160	31.39	114.2	466.9	1900.8
10.00		1.00	0.85	3.308	3.64	0.00	1.200	1.331	5.00	25.712	30.85	112.3	490.9	1894.8
15.00		1.00	0.85	3.308	3.64	0.00	1.200	1.386	5.00	25.236	30.28	110.2	500.9	1874.9
20.00		1.00	0.90	3.509	3.86	0.00	1.200	1.427	5.00	24.748	29.70	114.6	504.9	1848.9
21.00	Bot - Section 2	1.00	0.91	3.546	3.90	0.00	1.200	1.434	1.00	4.888	5.87	22.9	101.0	366.2
25.00		1.00	0.95	3.678	4.05	0.00	1.212 *	1.459	4.00	19.572	23.73	96.0	408.8	2342.7
27.75	RB1	1.00	0.97	3.760	4.14	0.00	1.285 *	1.474	2.75	13.269	17.06	70.5	280.6	1589.8
28.00	Top - Section 1	1.00	0.97	3.767	4.14	0.00	1.288 *	1.476	0.25	1.198	1.54	6.4	25.5	143.7
30.00		1.00	0.98	3.822	4.20	0.00	1.286 *	1.486	2.00	9.544	12.27	51.6	203.7	634.2
35.00		1.00	1.01	3.948	4.34	0.00	1.293 *	1.509	5.00	23.515	30.40	132.0	505.6	1564.6
40.00		1.00	1.04	4.061	4.47	0.00	1.304 *	1.529	5.00	23.010	30.00	134.0	500.8	1534.8
40.75	RT1	1.00	1.05	4.077	4.48	0.00	1.310 *	1.532	0.75	3.407	4.46	20.0	75.0	227.9
45.00		1.00	1.07	4.163	4.58	0.00	1.300 *	1.547	4.25	19.094	24.83	113.7	420.7	1276.7
50.00		1.00	1.09	4.256	4.68	0.00	1.237 *	1.564	5.00	21.995	27.20	127.3	488.3	1472.3
55.00		1.00	1.12	4.342	4.78	0.00	1.247 *	1.579	5.00	21.485	26.79	128.0	480.9	1439.9
60.00		1.00	1.14	4.423	4.86	0.00	1.258 *	1.592	5.00	20.975	26.38	128.3	472.9	1406.9
65.00	Bot - Section 3	1.00	1.16	4.498	4.95	0.00	1.269 *	1.605	5.00	20.463	25.97	128.5	464.4	1373.5
70.00	Appurtenance(s)	1.00	1.17	4.569	5.03	0.00	1.281 *	1.617	5.00	20.216	25.90	130.1	461.8	2242.6
71.00	Top - Section 2	1.00	1.18	4.582	5.04	0.00	1.289 *	1.619	1.00	3.981	5.13	25.9	92.0	442.2
75.00		1.00	1.19	4.635	5.10	0.00	1.289 *	1.628	4.00	15.721	20.26	103.3	362.0	1057.4
80.00		1.00	1.21	4.699	5.17	0.00	1.300 *	1.639	5.00	19.190	24.95	129.0	442.9	1289.7
85.00		1.00	1.22	4.759	5.24	0.00	1.314 *	1.649	5.00	18.676	24.54	128.5	433.0	1254.7
90.00		1.00	1.24	4.817	5.30	0.00	1.329 *	1.658	5.00	18.162	24.14	127.9	422.7	1219.5
95.00	Appurtenance(s)	1.00	1.25	4.872	5.36	0.00	1.345 *	1.667	5.00	17.648	23.73	127.2	412.2	1184.0
100.00		1.00	1.27	4.925	5.42	0.00	1.200	1.676	5.00	17.133	20.56	111.4	401.5	1148.3
105.00	Appurtenance(s)	1.00	1.28	4.976	5.47	0.00	1.200	1.684	5.00	16.618	19.94	109.1	390.5	1112.4
110.00	Bot - Section 4	1.00	1.29	5.025	5.53	0.00	1.200	1.692	5.00	16.102	19.32	106.8	379.3	1076.2
115.00	Top - Section 3	1.00	1.30	5.072	5.58	0.00	1.200	1.699	5.00	15.798	18.96	105.8	373.3	1591.8
120.00		1.00	1.32	5.117	5.63	0.00	1.200	1.707	5.00	15.282	18.34	103.2	361.7	888.4
123.00	Appurtenance(s)	1.00	1.32	5.144	5.66	0.00	1.200	1.711	3.00	8.921	10.71	60.6	212.8	519.2
125.00		1.00	1.33	5.162	5.68	0.00	1.200	1.714	2.00	5.844	7.01	39.8	140.0	340.3
130.00		1.00	1.34	5.204	5.72	0.00	1.200	1.720	5.00	14.250	17.10	97.9	338.2	824.9
133.00	Appurtenance(s)	1.00	1.34	5.230	5.75	0.00	1.200	1.724	3.00	8.301	9.96	57.3	198.6	481.0
135.00		1.00	1.35	5.246	5.77	0.00	1.200	1.727	2.00	5.431	6.52	37.6	130.5	314.8
140.00		1.00	1.36	5.286	5.81	0.00	1.200	1.733	5.00	13.217	15.86	92.2	314.1	760.8
145.00		1.00	1.37	5.325	5.86	0.00	1.200	1.739	5.00	12.700	15.24	89.3	301.8	728.5
150.00	Top - Section 4	1.00	1.38	5.364	5.90	0.00	1.200	1.745	5.00	12.183	14.62	86.3	289.4	696.1
153.00	Appurtenance(s)	1.00	1.38	5.386	5.92	0.00	1.200	1.749	3.00	7.061	8.47	50.2	169.1	403.6
<b>Totals:</b>									<b>153.00</b>			<b>3,529.8</b>		<b>42,469.1</b>

\* Cf Adjusted by Linear Load Ra Effect

## Discrete Appurtenance Forces

**Structure:** CT01499-S-SBA

**Code:** EIA/TIA-222-G

3/20/2019

**Site Name:** Torrington

**Exposure:** C

**Height:** 153.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** B - Competent Rock

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

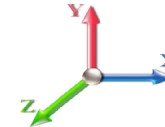
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**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



**Iterations** 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	153.00	Low Profile Platform	1	5.386	5.925	1.00	1.00	45.98	2189.20	0.000	0.000	272.44	0.00	0.00
2	153.00	TD-RRH8x20-25	3	5.386	5.925	0.62	0.90	9.06	584.18	0.000	0.000	53.70	0.00	0.00
3	153.00	ACU-A20-N	4	5.386	5.925	0.81	0.90	1.42	16.82	0.000	0.000	8.39	0.00	0.00
4	153.00	800 MHz Filters	3	5.386	5.925	0.62	0.90	2.66	69.71	0.000	0.000	15.76	0.00	0.00
5	153.00	800 MHz RRUs	3	5.386	5.925	0.83	0.90	9.03	349.82	0.000	0.000	53.51	0.00	0.00
6	153.00	1900 MHz RRUs	3	5.386	5.925	0.79	0.90	12.34	392.94	0.000	0.000	73.10	0.00	0.00
7	153.00	APXVSP18-C-A20	3	5.386	5.925	0.75	0.90	24.25	576.28	0.000	0.000	143.65	0.00	0.00
8	153.00	APXVTM14-C-I20	3	5.386	5.925	0.71	0.90	15.90	683.98	0.000	0.000	94.22	0.00	0.00
9	153.00	Lightning Rod	1	5.386	5.925	1.00	1.00	2.25	20.98	0.000	0.000	13.32	0.00	0.00
10	133.00	RR90-17-02DP	6	5.230	5.752	0.54	0.80	17.41	680.25	0.000	0.000	100.13	0.00	0.00
11	133.00	Low Profile Platform	1	5.230	5.752	1.00	1.00	45.69	2174.61	0.000	0.000	262.84	0.00	0.00
12	123.00	Low Profile Platform	1	5.144	5.659	1.00	1.00	45.53	2166.55	0.000	0.000	257.64	0.00	0.00
13	123.00	DB-T1-6Z-8AB-OZ	2	5.144	5.659	0.72	0.80	8.14	326.18	0.000	0.000	46.08	0.00	0.00
14	123.00	RRH2x60-700	3	5.170	5.687	0.61	0.80	7.80	412.42	0.000	3.000	44.33	0.00	133.00
15	123.00	RRH2X60-PCS	3	5.144	5.659	0.71	0.80	6.03	445.45	0.000	0.000	34.11	0.00	0.00
16	123.00	LPA-80063/6CF	6	5.144	5.659	0.75	0.80	49.29	1883.92	0.000	0.000	278.91	0.00	0.00
17	123.00	SBNHH-1D65B	9	5.144	5.659	0.66	0.80	55.84	2210.58	0.000	0.000	316.00	0.00	0.00
18	123.00	B66 4X45 AWS	3	5.144	5.659	0.64	0.80	6.31	475.05	0.000	0.000	35.73	0.00	0.00
19	105.00	Standoff	1	4.976	5.473	1.00	1.00	8.39	102.47	0.000	0.000	45.92	0.00	0.00
20	105.00	10' Omni	1	5.025	5.527	1.00	1.00	6.48	81.69	0.000	5.000	35.82	0.00	179.08
21	95.00	RRUS-12	3	4.872	5.359	0.54	0.80	6.99	365.36	0.000	0.000	37.48	0.00	0.00
22	95.00	HPA-65R-BUU-H6	4	4.872	5.359	0.72	0.80	31.57	1185.99	0.000	0.000	169.19	0.00	0.00
23	95.00	7770	3	4.872	5.359	0.58	0.80	11.41	509.48	0.000	0.000	61.17	0.00	0.00
24	95.00	SBNH-1D65A	2	4.872	5.359	0.72	0.80	10.48	261.83	0.000	0.000	56.14	0.00	0.00
25	95.00	AM-X-CW-16-65-00T-RET	2	4.872	5.359	0.60	0.80	12.83	317.43	0.000	0.000	68.74	0.00	0.00
26	95.00	LGP17201	6	4.872	5.359	0.80	0.80	13.93	376.87	0.000	0.000	74.65	0.00	0.00
27	95.00	LGP21901	6	4.872	5.359	0.60	0.80	2.09	70.48	0.000	0.000	11.22	0.00	0.00
28	95.00	RRUS-11	3	4.872	5.359	0.54	0.80	9.55	378.73	0.000	0.000	51.19	0.00	0.00
29	95.00	4426 B66	3	4.872	5.359	0.58	0.80	2.81	285.00	0.000	0.000	15.03	0.00	0.00
30	95.00	RRUS-A2	3	4.872	5.359	0.50	0.80	4.15	149.21	0.000	0.000	22.25	0.00	0.00
31	95.00	RRUS-32	3	4.872	5.359	0.70	0.80	8.49	599.75	0.000	0.000	45.52	0.00	0.00
32	95.00	RRUS-E2	3	4.872	5.359	0.56	0.80	5.80	453.46	0.000	0.000	31.10	0.00	0.00
33	95.00	1000860	3	4.872	5.359	1.00	1.00	0.78	12.58	0.000	0.000	4.18	0.00	0.00
34	95.00	Raycap/Squid	2	4.872	5.359	0.72	0.80	3.08	159.05	0.000	0.000	16.50	0.00	0.00
35	95.00	Sector Frame	3	4.872	5.359	0.56	0.75	51.98	3200.75	0.000	0.000	278.58	0.00	0.00
36	95.00	800 10764	1	4.872	5.359	0.60	0.80	4.76	134.28	0.000	0.000	25.49	0.00	0.00
37	70.00	Standoff	1	4.569	5.025	1.00	1.00	8.16	99.39	0.000	0.000	41.01	0.00	0.00
38	70.00	GPS	1	4.569	5.025	1.00	1.00	1.66	31.17	0.000	0.000	8.34	0.00	0.00

**Totals:** 24,433.92

**3,203.41**

## Total Applied Force Summary

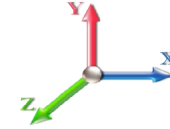
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 21

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		114.21	2385.57	0.00	0.00
10.00		112.26	2394.82	0.00	0.00
15.00		110.18	2384.54	0.00	0.00
20.00		114.64	2365.68	0.00	0.00
21.00		22.88	469.85	0.00	0.00
25.00		96.00	2766.23	0.00	0.00
27.75		70.54	1898.94	0.00	0.00
28.00		6.40	171.82	0.00	0.00
30.00		51.59	860.06	0.00	0.00
35.00		132.04	2134.07	0.00	0.00
40.00		134.00	2108.63	0.00	0.00
40.75		20.02	314.11	0.00	0.00
45.00		113.70	1762.00	0.00	0.00
50.00		127.33	2013.94	0.00	0.00
55.00		127.95	1984.35	0.00	0.00
60.00		128.33	1953.96	0.00	0.00
65.00		128.48	1922.88	0.00	0.00
70.00	(2) attachments	179.49	2924.83	0.00	0.00
71.00		25.86	552.58	0.00	0.00
75.00		103.28	1500.43	0.00	0.00
80.00		128.97	1845.41	0.00	0.00
85.00		128.49	1812.36	0.00	0.00
90.00		127.89	1778.92	0.00	0.00
95.00	(50) attachments	1095.61	10205.39	0.00	0.00
100.00		111.38	1374.33	0.00	0.00
105.00	(2) attachments	190.88	1522.71	0.00	179.08
110.00		106.80	1301.61	0.00	0.00
115.00		105.77	1817.38	0.00	0.00
120.00		103.23	1114.13	0.00	0.00
123.00	(27) attachments	1073.40	8574.91	0.00	133.00
125.00		39.82	385.43	0.00	0.00
130.00		97.90	937.88	0.00	0.00
133.00	(7) attachments	420.28	3403.73	0.00	0.00
135.00		37.61	330.07	0.00	0.00
140.00		92.22	799.17	0.00	0.00
145.00		89.27	767.05	0.00	0.00
150.00		86.25	734.79	0.00	0.00
153.00	(24) attachments	778.29	5310.76	0.00	0.00
<b>Totals:</b>		<b>6,733.22</b>	<b>78,885.31</b>	<b>0.00</b>	<b>312.08</b>



## Linear Appurtenance Segment Forces (Factored)

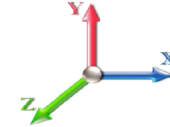
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.38	1.19	0.00	0.091	0.000	3.308	0.00	12.93
5.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.69	0.00	0.091	0.000	3.308	0.00	218.70
5.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.19	0.00	0.091	0.000	3.308	0.00	13.94
5.00	3/4" DC	Yes	5.00	0.000	0.75	1.35	0.00	0.091	0.000	3.308	0.00	34.45
10.00	Safety Cable	Yes	5.00	0.000	0.38	1.27	0.00	0.093	0.000	3.308	0.00	14.46
10.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.76	0.00	0.093	0.000	3.308	0.00	228.34
10.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.27	0.00	0.093	0.000	3.308	0.00	15.60
10.00	3/4" DC	Yes	5.00	0.000	0.75	1.42	0.00	0.093	0.000	3.308	0.00	36.89
15.00	Safety Cable	Yes	5.00	0.000	0.38	1.31	0.00	0.095	0.000	3.308	0.00	15.46
15.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.81	0.00	0.095	0.000	3.308	0.00	234.34
15.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.31	0.00	0.095	0.000	3.308	0.00	16.68
15.00	3/4" DC	Yes	5.00	0.000	0.75	1.47	0.00	0.095	0.000	3.308	0.00	38.45
20.00	Safety Cable	Yes	5.00	0.000	0.38	1.35	0.00	0.097	0.000	3.509	0.00	16.21
20.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.84	0.00	0.097	0.000	3.509	0.00	238.78
20.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.35	0.00	0.097	0.000	3.509	0.00	17.49
20.00	3/4" DC	Yes	5.00	0.000	0.75	1.50	0.00	0.097	0.000	3.509	0.00	39.62
21.00	Safety Cable	Yes	1.00	0.000	0.38	0.27	0.00	0.098	0.000	3.546	0.00	3.27
21.00	1 5/8" Coax	Yes	1.00	0.000	3.96	0.57	0.00	0.098	0.000	3.546	0.00	47.91
21.00	1/2" Fiber	Yes	1.00	0.000	0.38	0.27	0.00	0.098	0.000	3.546	0.00	3.53
21.00	3/4" DC	Yes	1.00	0.000	0.75	0.30	0.00	0.098	0.000	3.546	0.00	7.96
25.00	Safety Cable	Yes	4.00	0.000	0.38	1.10	0.00	0.103	1.010	3.678	0.00	13.46
25.00	1 5/8" Coax	Yes	4.00	0.000	3.96	2.29	0.00	0.103	1.010	3.678	0.00	193.85
25.00	1/2" Fiber	Yes	4.00	0.000	0.38	1.10	0.00	0.103	1.010	3.678	0.00	14.52
25.00	3/4" DC	Yes	4.00	0.000	0.75	1.22	0.00	0.103	1.010	3.678	0.00	32.45
25.00	1.25" Reinforcing	Yes	0.75	0.000	1.25	0.26	0.00	0.103	1.010	3.678	0.00	5.44
27.75	Safety Cable	Yes	2.75	0.000	0.38	0.76	0.00	0.124	1.071	3.760	0.00	9.42
27.75	1 5/8" Coax	Yes	2.75	0.000	3.96	1.58	0.00	0.124	1.071	3.760	0.00	134.20
27.75	1/2" Fiber	Yes	2.75	0.000	0.38	0.76	0.00	0.124	1.071	3.760	0.00	10.16
27.75	3/4" DC	Yes	2.75	0.000	0.75	0.85	0.00	0.124	1.071	3.760	0.00	22.56
27.75	1.25" Reinforcing	Yes	2.75	0.000	1.25	0.96	0.00	0.124	1.071	3.760	0.00	20.20
28.00	Safety Cable	Yes	0.25	0.000	0.38	0.07	0.00	0.125	1.074	3.767	0.00	0.86
28.00	1 5/8" Coax	Yes	0.25	0.000	3.96	0.14	0.00	0.125	1.074	3.767	0.00	12.21
28.00	1/2" Fiber	Yes	0.25	0.000	0.38	0.07	0.00	0.125	1.074	3.767	0.00	0.93
28.00	3/4" DC	Yes	0.25	0.000	0.75	0.08	0.00	0.125	1.074	3.767	0.00	2.05
28.00	1.25" Reinforcing	Yes	0.25	0.000	1.25	0.09	0.00	0.125	1.074	3.767	0.00	1.84
30.00	Safety Cable	Yes	2.00	0.000	0.38	0.56	0.00	0.124	1.071	3.822	0.00	6.94
30.00	1 5/8" Coax	Yes	2.00	0.000	3.96	1.16	0.00	0.124	1.071	3.822	0.00	98.11
30.00	1/2" Fiber	Yes	2.00	0.000	0.38	0.56	0.00	0.124	1.071	3.822	0.00	7.49
30.00	3/4" DC	Yes	2.00	0.000	0.75	0.62	0.00	0.124	1.071	3.822	0.00	16.54
30.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.70	0.00	0.124	1.071	3.822	0.00	14.84
35.00	Safety Cable	Yes	5.00	0.000	0.38	1.42	0.00	0.126	1.077	3.948	0.00	17.80
35.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.91	0.00	0.126	1.077	3.948	0.00	247.84
35.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.42	0.00	0.126	1.077	3.948	0.00	19.21
35.00	3/4" DC	Yes	5.00	0.000	0.75	1.57	0.00	0.126	1.077	3.948	0.00	42.05
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.78	0.00	0.126	1.077	3.948	0.00	37.87
40.00	Safety Cable	Yes	5.00	0.000	0.38	1.43	0.00	0.129	1.086	4.061	0.00	18.21
40.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.92	0.00	0.129	1.086	4.061	0.00	250.09

## Linear Appurtenance Segment Forces (Factored)

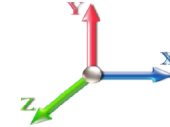
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
40.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.43	0.00	0.129	1.086	4.061	0.00	19.64
40.00	3/4" DC	Yes	5.00	0.000	0.75	1.59	0.00	0.129	1.086	4.061	0.00	42.66
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.80	0.00	0.129	1.086	4.061	0.00	38.54
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.22	0.00	0.131	1.092	4.077	0.00	2.74
40.75	1 5/8" Coax	Yes	0.75	0.000	3.96	0.44	0.00	0.131	1.092	4.077	0.00	37.56
40.75	1/2" Fiber	Yes	0.75	0.000	0.38	0.22	0.00	0.131	1.092	4.077	0.00	2.96
40.75	3/4" DC	Yes	0.75	0.000	0.75	0.24	0.00	0.131	1.092	4.077	0.00	6.41
40.75	1.25" Reinforcing	Yes	0.75	0.000	1.25	0.27	0.00	0.131	1.092	4.077	0.00	5.80
45.00	Safety Cable	Yes	4.25	0.000	0.38	1.23	0.00	0.128	1.084	4.163	0.00	15.79
45.00	1 5/8" Coax	Yes	4.25	0.000	3.96	2.50	0.00	0.128	1.084	4.163	0.00	214.29
45.00	1/2" Fiber	Yes	4.25	0.000	0.38	1.23	0.00	0.128	1.084	4.163	0.00	17.03
45.00	3/4" DC	Yes	4.25	0.000	0.75	1.36	0.00	0.128	1.084	4.163	0.00	36.73
45.00	1.25" Reinforcing	Yes	3.50	0.000	1.25	1.27	0.00	0.128	1.084	4.163	0.00	27.40
50.00	Safety Cable	Yes	5.00	0.000	0.38	1.46	0.00	0.110	1.030	4.256	0.00	18.91
50.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.95	0.00	0.110	1.030	4.256	0.00	253.93
50.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.46	0.00	0.110	1.030	4.256	0.00	20.40
50.00	3/4" DC	Yes	5.00	0.000	0.75	1.62	0.00	0.110	1.030	4.256	0.00	43.72
55.00	Safety Cable	Yes	5.00	0.000	0.38	1.47	0.00	0.113	1.039	4.342	0.00	19.22
55.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.97	0.00	0.113	1.039	4.342	0.00	255.60
55.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.47	0.00	0.113	1.039	4.342	0.00	20.73
55.00	3/4" DC	Yes	5.00	0.000	0.75	1.63	0.00	0.113	1.039	4.342	0.00	44.18
60.00	Safety Cable	Yes	5.00	0.000	0.38	1.49	0.00	0.116	1.048	4.423	0.00	19.51
60.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.98	0.00	0.116	1.048	4.423	0.00	257.14
60.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.49	0.00	0.116	1.048	4.423	0.00	21.04
60.00	3/4" DC	Yes	5.00	0.000	0.75	1.64	0.00	0.116	1.048	4.423	0.00	44.61
65.00	Safety Cable	Yes	5.00	0.000	0.38	1.50	0.00	0.119	1.058	4.498	0.00	19.78
65.00	1 5/8" Coax	Yes	5.00	0.000	3.96	2.99	0.00	0.119	1.058	4.498	0.00	258.57
65.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.50	0.00	0.119	1.058	4.498	0.00	21.32
65.00	3/4" DC	Yes	5.00	0.000	0.75	1.65	0.00	0.119	1.058	4.498	0.00	45.01
70.00	Safety Cable	Yes	5.00	0.000	0.38	1.51	0.00	0.123	1.068	4.569	0.00	20.03
70.00	1 5/8" Coax	Yes	5.00	0.000	3.96	3.00	0.00	0.123	1.068	4.569	0.00	259.91
70.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.51	0.00	0.123	1.068	4.569	0.00	21.60
70.00	3/4" DC	Yes	5.00	0.000	0.75	1.66	0.00	0.123	1.068	4.569	0.00	45.38
71.00	Safety Cable	Yes	1.00	0.000	0.38	0.30	0.00	0.125	1.074	4.582	0.00	4.02
71.00	1 5/8" Coax	Yes	1.00	0.000	3.96	0.60	0.00	0.125	1.074	4.582	0.00	52.03
71.00	1/2" Fiber	Yes	1.00	0.000	0.38	0.30	0.00	0.125	1.074	4.582	0.00	4.33
71.00	3/4" DC	Yes	1.00	0.000	0.75	0.33	0.00	0.125	1.074	4.582	0.00	9.09
75.00	Safety Cable	Yes	4.00	0.000	0.38	1.21	0.00	0.125	1.074	4.635	0.00	16.21
75.00	1 5/8" Coax	Yes	4.00	0.000	3.96	2.41	0.00	0.125	1.074	4.635	0.00	208.93
75.00	1/2" Fiber	Yes	4.00	0.000	0.38	1.21	0.00	0.125	1.074	4.635	0.00	17.48
75.00	3/4" DC	Yes	4.00	0.000	0.75	1.34	0.00	0.125	1.074	4.635	0.00	36.59
80.00	Safety Cable	Yes	5.00	0.000	0.38	1.52	0.00	0.128	1.084	4.699	0.00	20.49
80.00	1 5/8" Coax	Yes	5.00	0.000	3.96	3.02	0.00	0.128	1.084	4.699	0.00	262.35
80.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.52	0.00	0.128	1.084	4.699	0.00	22.09
80.00	3/4" DC	Yes	5.00	0.000	0.75	1.68	0.00	0.128	1.084	4.699	0.00	46.07
85.00	Safety Cable	Yes	5.00	0.000	0.38	1.53	0.00	0.132	1.095	4.759	0.00	20.71
85.00	1 5/8" Coax	Yes	5.00	0.000	3.96	3.02	0.00	0.132	1.095	4.759	0.00	263.47



## Linear Appurtenance Segment Forces (Factored)

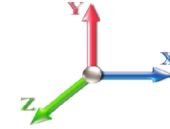
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor**    1.20  
**Wind Load Factor**    1.00



**Iterations**    21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
85.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.53	0.00	0.132	1.095	4.759	0.00	22.32
85.00	3/4" DC	Yes	5.00	0.000	0.75	1.69	0.00	0.132	1.095	4.759	0.00	46.38
90.00	Safety Cable	Yes	5.00	0.000	0.38	1.54	0.00	0.136	1.107	4.817	0.00	20.91
90.00	1 5/8" Coax	Yes	5.00	0.000	3.96	3.03	0.00	0.136	1.107	4.817	0.00	264.54
90.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.54	0.00	0.136	1.107	4.817	0.00	22.54
90.00	3/4" DC	Yes	5.00	0.000	0.75	1.69	0.00	0.136	1.107	4.817	0.00	46.68
95.00	Safety Cable	Yes	5.00	0.000	0.38	1.55	0.00	0.140	1.121	4.872	0.00	21.11
95.00	1 5/8" Coax	Yes	5.00	0.000	3.96	3.04	0.00	0.140	1.121	4.872	0.00	265.55
95.00	1/2" Fiber	Yes	5.00	0.000	0.38	1.55	0.00	0.140	1.121	4.872	0.00	22.75
95.00	3/4" DC	Yes	5.00	0.000	0.75	1.70	0.00	0.140	1.121	4.872	0.00	46.97
100.00	Safety Cable	Yes	5.00	0.000	0.38	1.55	0.00	0.010	0.000	4.925	0.00	21.30
105.00	Safety Cable	Yes	5.00	0.000	0.38	1.56	0.00	0.010	0.000	4.976	0.00	21.48
110.00	Safety Cable	Yes	5.00	0.000	0.38	1.57	0.00	0.011	0.000	5.025	0.00	21.65
115.00	Safety Cable	Yes	5.00	0.000	0.38	1.57	0.00	0.011	0.000	5.072	0.00	21.82
120.00	Safety Cable	Yes	5.00	0.000	0.38	1.58	0.00	0.011	0.000	5.117	0.00	21.98
123.00	Safety Cable	Yes	3.00	0.000	0.38	0.95	0.00	0.012	0.000	5.144	0.00	13.24
125.00	Safety Cable	Yes	2.00	0.000	0.38	0.63	0.00	0.012	0.000	5.162	0.00	8.85
130.00	Safety Cable	Yes	5.00	0.000	0.38	1.59	0.00	0.012	0.000	5.204	0.00	22.29
133.00	Safety Cable	Yes	3.00	0.000	0.38	0.96	0.00	0.013	0.000	5.230	0.00	13.42
135.00	Safety Cable	Yes	2.00	0.000	0.38	0.64	0.00	0.013	0.000	5.246	0.00	8.97
140.00	Safety Cable	Yes	5.00	0.000	0.38	1.60	0.00	0.013	0.000	5.286	0.00	22.57
145.00	Safety Cable	Yes	5.00	0.000	0.38	1.61	0.00	0.014	0.000	5.325	0.00	22.71
150.00	Safety Cable	Yes	5.00	0.000	0.38	1.61	0.00	0.015	0.000	5.364	0.00	22.85
153.00	Safety Cable	Yes	3.00	0.000	0.38	0.97	0.00	0.015	0.000	5.386	0.00	13.76
<b>Totals:</b>											<b>0.0</b>	<b>6,704.8</b>

## Calculated Forces

**Structure:** CT01499-S-SBA  
**Site Name:** Torrington  
**Height:** 153.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

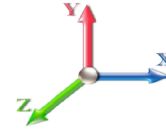
**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** B - Competent Rock  
**Struct Class:** II

3/20/2019  
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**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 21

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-78.88	-6.75	0.00	-687.97	0.00	687.97	4463.02	2231.51	10951.4	5483.88	0.00	0.000	0.000	0.143
5.00	-76.49	-6.68	0.00	-654.21	0.00	654.21	4413.36	2206.68	10604.1	5309.95	0.02	-0.030	0.000	0.141
10.00	-74.10	-6.60	0.00	-620.81	0.00	620.81	4361.89	2180.94	10257.6	5136.44	0.06	-0.060	0.000	0.138
15.00	-71.71	-6.53	0.00	-587.79	0.00	587.79	4308.61	2154.31	9912.23	4963.48	0.14	-0.091	0.000	0.135
20.00	-69.34	-6.43	0.00	-555.14	0.00	555.14	4253.53	2126.77	9568.22	4791.22	0.26	-0.122	0.000	0.132
21.00	-68.87	-6.43	0.00	-548.71	0.00	548.71	4242.30	2121.15	9499.61	4756.87	0.28	-0.128	0.000	0.132
25.00	-66.10	-6.35	0.00	-523.00	0.00	523.00	4196.65	2098.33	9225.87	4619.79	0.40	-0.153	0.000	0.129
27.75	-64.20	-6.28	0.00	-505.54	0.00	505.54	4164.60	2082.30	9038.39	4525.91	0.49	-0.171	0.000	0.084
28.00	-64.03	-6.28	0.00	-503.97	0.00	503.97	3213.57	1606.78	7065.87	3538.19	0.50	-0.172	0.000	0.093
30.00	-63.17	-6.25	0.00	-491.40	0.00	491.40	3199.34	1599.67	6969.21	3489.78	0.58	-0.180	0.000	0.100
35.00	-61.03	-6.13	0.00	-460.17	0.00	460.17	3162.51	1581.26	6727.41	3368.71	0.78	-0.203	0.000	0.097
40.00	-58.92	-6.00	0.00	-429.52	0.00	429.52	3123.88	1561.94	6485.64	3247.64	1.00	-0.226	0.000	0.093
40.75	-58.61	-5.99	0.00	-425.02	0.00	425.02	3117.93	1558.96	6449.39	3229.49	1.04	-0.229	0.000	0.092
40.75	-58.61	-5.99	0.00	-425.02	0.00	425.02	3117.93	1558.96	6449.39	3229.49	1.04	-0.229	0.000	0.092
45.00	-56.84	-5.90	0.00	-399.55	0.00	399.55	3083.44	1541.72	6244.17	3126.72	1.25	-0.248	0.000	0.146
50.00	-54.83	-5.80	0.00	-370.06	0.00	370.06	3041.20	1520.60	6003.26	3006.09	1.53	-0.285	0.000	0.141
55.00	-52.84	-5.69	0.00	-341.07	0.00	341.07	2997.16	1498.58	5763.21	2885.89	1.85	-0.321	0.000	0.136
60.00	-50.88	-5.59	0.00	-312.61	0.00	312.61	2951.32	1475.66	5524.28	2766.24	2.21	-0.358	0.000	0.130
65.00	-48.96	-5.47	0.00	-284.68	0.00	284.68	2903.67	1451.83	5286.75	2647.30	2.60	-0.394	0.000	0.124
70.00	-46.03	-5.29	0.00	-257.31	0.00	257.31	2854.22	1427.11	5050.90	2529.20	3.03	-0.429	0.000	0.118
71.00	-45.48	-5.28	0.00	-252.02	0.00	252.02	2869.57	1434.79	5123.02	2565.32	3.12	-0.436	0.000	0.114
75.00	-43.97	-5.18	0.00	-230.92	0.00	230.92	2829.16	1414.58	4935.24	2471.29	3.50	-0.464	0.000	0.109
80.00	-42.13	-5.06	0.00	-205.01	0.00	205.01	2777.01	1388.51	4702.41	2354.70	4.00	-0.497	0.000	0.102
85.00	-40.31	-4.94	0.00	-179.70	0.00	179.70	2723.06	1361.53	4471.94	2239.29	4.54	-0.528	0.000	0.095
90.00	-38.53	-4.81	0.00	-155.00	0.00	155.00	2667.31	1333.66	4244.12	2125.22	5.11	-0.558	0.000	0.087
95.00	-28.34	-3.63	0.00	-130.94	0.00	130.94	2609.76	1304.88	4019.22	2012.60	5.71	-0.586	0.000	0.076
100.00	-26.96	-3.52	0.00	-112.79	0.00	112.79	2550.40	1275.20	3797.52	1901.58	6.34	-0.612	0.000	0.070
105.00	-25.44	-3.32	0.00	-95.03	0.00	95.03	2489.24	1244.62	3579.29	1792.30	6.99	-0.637	0.000	0.063
110.00	-24.14	-3.21	0.00	-78.44	0.00	78.44	2426.28	1213.14	3364.80	1684.90	7.67	-0.660	0.000	0.057
115.00	-22.32	-3.09	0.00	-62.41	0.00	62.41	1783.00	891.50	2427.68	1215.65	8.38	-0.680	0.000	0.064
120.00	-21.21	-2.98	0.00	-46.98	0.00	46.98	1739.91	869.95	2280.12	1141.75	9.10	-0.698	0.000	0.053
123.00	-12.65	-1.80	0.00	-37.92	0.00	37.92	1713.19	856.59	2192.59	1097.92	9.54	-0.709	0.000	0.042
125.00	-12.26	-1.76	0.00	-34.32	0.00	34.32	1695.01	847.51	2134.69	1068.93	9.84	-0.716	0.000	0.039
130.00	-11.33	-1.65	0.00	-25.53	0.00	25.53	1648.31	824.16	1991.67	997.31	10.60	-0.731	0.000	0.032
133.00	-7.93	-1.19	0.00	-20.59	0.00	20.59	1619.42	809.71	1907.13	954.98	11.06	-0.739	0.000	0.026
135.00	-7.60	-1.15	0.00	-18.22	0.00	18.22	1599.81	799.90	1851.33	927.04	11.37	-0.743	0.000	0.024
140.00	-6.80	-1.04	0.00	-12.49	0.00	12.49	1549.50	774.75	1713.96	858.25	12.15	-0.753	0.000	0.019
145.00	-6.03	-0.94	0.00	-7.27	0.00	7.27	1497.39	748.69	1579.82	791.09	12.95	-0.760	0.000	0.013
150.00	-5.30	-0.85	0.00	-2.55	0.00	2.55	1443.48	721.74	1449.20	725.68	13.75	-0.764	0.000	0.007
150.00	-5.30	-0.85	0.00	-2.55	0.00	2.55	1443.48	721.74	1449.20	725.68	13.75	-0.764	0.000	0.007
153.00	0.00	-0.78	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	14.23	-0.765	0.000	0.000

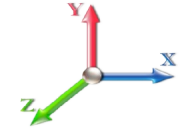
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0E						<b>Iterations</b> 19
<b>Gust Response Factor</b>	1.10			<b>Sds</b>	0.12	<b>Ss</b> 0.18
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.04	<b>S1</b> 0.07
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.43	<b>SA</b>	0.02	<b>Seismic Importance Factor</b> 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		1194.9	0.00	0.03	0.02	15.15	
10.00		1169.9	0.01	0.05	0.03	21.12	
15.00		1144.9	0.02	0.06	0.04	23.64	
20.00		1119.9	0.03	0.07	0.04	24.61	
21.00	Bot - Section 2	221.00	0.04	0.07	0.04	4.90	
25.00		1611.6	0.05	0.07	0.04	36.64	
27.75	RB1	1090.9	0.06	0.07	0.04	25.16	
28.00	Top - Section 1	98.49	0.06	0.07	0.04	2.27	
30.00		358.81	0.07	0.07	0.04	8.36	
35.00		882.46	0.10	0.07	0.04	21.06	
40.00		861.64	0.13	0.07	0.03	21.06	
40.75	RT1	127.45	0.13	0.07	0.03	3.12	
45.00		713.37	0.16	0.07	0.03	17.77	
50.00		820.00	0.20	0.06	0.02	20.55	
55.00		799.19	0.24	0.06	0.02	19.58	
60.00		778.37	0.29	0.05	0.01	17.70	
65.00	Bot - Section 3	757.55	0.34	0.04	0.01	14.53	
70.00	Appurtenance(s)	1534.0	0.40	0.02	0.01	20.42	
71.00	Top - Section 2	291.81	0.41	0.02	0.01	3.46	
75.00		579.50	0.45	0.00	0.01	2.97	
80.00		705.64	0.52	-0.02	0.01	-3.17	
85.00		684.82	0.58	-0.05	0.01	-9.49	
90.00		664.01	0.65	-0.07	0.02	-14.11	
95.00	Appurtenance(s)	3898.9	0.73	-0.10	0.04	-100.05	
100.00		622.37	0.81	-0.11	0.06	-16.66	
105.00	Appurtenance(s)	666.55	0.89	-0.12	0.08	-16.43	
110.00	Bot - Section 4	580.73	0.98	-0.11	0.12	-11.28	
115.00	Top - Section 3	1015.4	1.07	-0.09	0.17	-11.36	
120.00		438.87	1.16	-0.03	0.23	0.00	
123.00	Appurtenance(s)	2557.5	1.22	0.03	0.27	20.84	
125.00		166.89	1.26	0.07	0.30	2.37	
130.00		405.56	1.36	0.22	0.40	12.71	
133.00	Appurtenance(s)	1516.3	1.43	0.34	0.46	65.38	
135.00		153.57	1.47	0.43	0.51	7.92	
140.00		372.25	1.58	0.73	0.65	27.90	
145.00		355.60	1.70	1.11	0.81	36.11	
150.00	Top - Section 4	338.95	1.82	1.62	1.01	44.55	
153.00	Appurtenance(s)	2270.7	1.89	1.98	1.14	342.89	
<b>Totals:</b>		<b>33,570.9</b>				<b>702.2</b>	<b>Total Wind: 44,324.4</b>

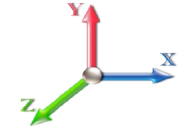
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	<b>3/20/2019</b>
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 1.2D + 1.0E		<b>Iterations</b> 19
<b>Gust Response Factor</b> 1.10	<b>Sds</b> 0.12	<b>Ss</b> 0.18
<b>Dead Load Factor</b> 1.20	<b>Seismic Load Factor</b> 1.00	<b>S1</b> 0.07
<b>Wind Load Factor</b> 0.00	<b>Structure Frequency (f1)</b> 0.43	<b>SA</b> 0.02
		<b>Seismic Importance Factor</b> 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.23	-0.89	0.00	-97.13	0.00	97.13	4463.02	2231.51	10951.4	5483.88	0.00	0.00	0.00	0.028
5.00	-45.51	-0.87	0.00	-92.71	0.00	92.71	4413.36	2206.68	10604.1	5309.95	0.00	0.00	0.00	0.028
10.00	-43.81	-0.86	0.00	-88.34	0.00	88.34	4361.89	2180.94	10257.6	5136.44	0.01	-0.01	-0.01	0.027
15.00	-42.14	-0.83	0.00	-84.06	0.00	84.06	4308.61	2154.31	9912.23	4963.48	0.02	-0.01	-0.01	0.027
20.00	-40.51	-0.81	0.00	-79.89	0.00	79.89	4253.53	2126.77	9568.22	4791.22	0.04	-0.02	-0.02	0.026
21.00	-40.19	-0.81	0.00	-79.08	0.00	79.08	4242.30	2121.15	9499.61	4756.87	0.04	-0.02	-0.02	0.026
25.00	-38.02	-0.77	0.00	-75.84	0.00	75.84	4196.65	2098.33	9225.87	4619.79	0.06	-0.02	-0.02	0.025
27.75	-36.55	-0.75	0.00	-73.72	0.00	73.72	4164.60	2082.30	9038.39	4525.91	0.07	-0.02	-0.02	0.017
28.00	-36.42	-0.75	0.00	-73.53	0.00	73.53	3213.57	1606.78	7065.87	3538.19	0.07	-0.02	-0.02	0.018
30.00	-35.87	-0.74	0.00	-72.04	0.00	72.04	3199.34	1599.67	6969.21	3489.78	0.08	-0.03	-0.03	0.020
35.00	-34.52	-0.72	0.00	-68.34	0.00	68.34	3162.51	1581.26	6727.41	3368.71	0.11	-0.03	-0.03	0.019
40.00	-33.19	-0.70	0.00	-64.75	0.00	64.75	3123.88	1561.94	6485.64	3247.64	0.14	-0.03	-0.03	0.019
40.75	-33.00	-0.70	0.00	-64.22	0.00	64.22	3117.93	1558.96	6449.39	3229.49	0.15	-0.03	-0.03	0.019
40.75	-33.00	-0.70	0.00	-64.22	0.00	64.22	3117.93	1558.96	6449.39	3229.49	0.15	-0.03	-0.03	0.019
45.00	-31.89	-0.68	0.00	-61.26	0.00	61.26	3083.44	1541.72	6244.17	3126.72	0.18	-0.04	-0.04	0.030
50.00	-30.62	-0.66	0.00	-57.86	0.00	57.86	3041.20	1520.60	6003.26	3006.09	0.22	-0.04	-0.04	0.029
55.00	-29.37	-0.64	0.00	-54.55	0.00	54.55	2997.16	1498.58	5763.21	2885.89	0.27	-0.05	-0.05	0.029
60.00	-28.14	-0.63	0.00	-51.33	0.00	51.33	2951.32	1475.66	5524.28	2766.24	0.32	-0.05	-0.05	0.028
65.00	-26.94	-0.62	0.00	-48.18	0.00	48.18	2903.67	1451.83	5286.75	2647.30	0.38	-0.06	-0.06	0.027
70.00	-24.81	-0.59	0.00	-45.10	0.00	45.10	2854.22	1427.11	5050.90	2529.20	0.44	-0.07	-0.07	0.027
71.00	-24.40	-0.59	0.00	-44.51	0.00	44.51	2869.57	1434.79	5123.02	2565.32	0.46	-0.07	-0.07	0.026
75.00	-23.47	-0.59	0.00	-42.14	0.00	42.14	2829.16	1414.58	4935.24	2471.29	0.52	-0.07	-0.07	0.025
80.00	-22.33	-0.59	0.00	-39.19	0.00	39.19	2777.01	1388.51	4702.41	2354.70	0.59	-0.08	-0.08	0.025
85.00	-21.22	-0.59	0.00	-36.23	0.00	36.23	2723.06	1361.53	4471.94	2239.29	0.68	-0.08	-0.08	0.024
90.00	-20.13	-0.59	0.00	-33.27	0.00	33.27	2667.31	1333.66	4244.12	2125.22	0.77	-0.09	-0.09	0.023
95.00	-15.16	-0.59	0.00	-30.31	0.00	30.31	2609.76	1304.88	4019.22	2012.60	0.87	-0.10	-0.10	0.021
100.00	-14.21	-0.59	0.00	-27.38	0.00	27.38	2550.40	1275.20	3797.52	1901.58	0.97	-0.10	-0.10	0.020
105.00	-13.20	-0.59	0.00	-24.45	0.00	24.45	2489.24	1244.62	3579.29	1792.30	1.08	-0.11	-0.11	0.019
110.00	-12.30	-0.59	0.00	-21.52	0.00	21.52	2426.28	1213.14	3364.80	1684.90	1.20	-0.11	-0.11	0.018
115.00	-10.87	-0.58	0.00	-18.60	0.00	18.60	1783.00	891.50	2427.68	1215.65	1.32	-0.12	-0.12	0.021
120.00	-10.14	-0.58	0.00	-15.68	0.00	15.68	1739.91	869.95	2280.12	1141.75	1.45	-0.13	-0.13	0.020
123.00	-6.95	-0.56	0.00	-13.93	0.00	13.93	1713.19	856.59	2192.59	1097.92	1.53	-0.13	-0.13	0.017
125.00	-6.71	-0.55	0.00	-12.82	0.00	12.82	1695.01	847.51	2134.69	1068.93	1.59	-0.13	-0.13	0.016
130.00	-6.13	-0.54	0.00	-10.06	0.00	10.06	1648.31	824.16	1991.67	997.31	1.73	-0.14	-0.14	0.014
133.00	-4.26	-0.47	0.00	-8.44	0.00	8.44	1619.42	809.71	1907.13	954.98	1.82	-0.14	-0.14	0.011
135.00	-4.07	-0.46	0.00	-7.50	0.00	7.50	1599.81	799.90	1851.33	927.04	1.88	-0.14	-0.14	0.011
140.00	-3.60	-0.43	0.00	-5.19	0.00	5.19	1549.50	774.75	1713.96	858.25	2.03	-0.15	-0.15	0.008
145.00	-3.16	-0.40	0.00	-3.03	0.00	3.03	1497.39	748.69	1579.82	791.09	2.19	-0.15	-0.15	0.006
150.00	-2.73	-0.35	0.00	-1.05	0.00	1.05	1443.48	721.74	1449.20	725.68	2.35	-0.15	-0.15	0.003
150.00	-2.73	-0.35	0.00	-1.05	0.00	1.05	1443.48	721.74	1449.20	725.68	2.35	-0.15	-0.15	0.003
153.00	0.00	-0.34	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	2.44	-0.15	-0.15	0.000

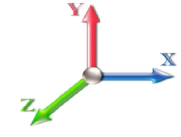
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.0E				<b>Iterations</b> 19
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.12	<b>Ss</b> 0.18
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.07
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.43	<b>SA</b> 0.02
				<b>Seismic Importance Factor</b> 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		1194.9	0.00	0.03	0.02	15.15	
10.00		1169.9	0.01	0.05	0.03	21.12	
15.00		1144.9	0.02	0.06	0.04	23.64	
20.00		1119.9	0.03	0.07	0.04	24.61	
21.00	Bot - Section 2	221.00	0.04	0.07	0.04	4.90	
25.00		1611.6	0.05	0.07	0.04	36.64	
27.75	RB1	1090.9	0.06	0.07	0.04	25.16	
28.00	Top - Section 1	98.49	0.06	0.07	0.04	2.27	
30.00		358.81	0.07	0.07	0.04	8.36	
35.00		882.46	0.10	0.07	0.04	21.06	
40.00		861.64	0.13	0.07	0.03	21.06	
40.75	RT1	127.45	0.13	0.07	0.03	3.12	
45.00		713.37	0.16	0.07	0.03	17.77	
50.00		820.00	0.20	0.06	0.02	20.55	
55.00		799.19	0.24	0.06	0.02	19.58	
60.00		778.37	0.29	0.05	0.01	17.70	
65.00	Bot - Section 3	757.55	0.34	0.04	0.01	14.53	
70.00	Appurtenance(s)	1534.0	0.40	0.02	0.01	20.42	
71.00	Top - Section 2	291.81	0.41	0.02	0.01	3.46	
75.00		579.50	0.45	0.00	0.01	2.97	
80.00		705.64	0.52	-0.02	0.01	-3.17	
85.00		684.82	0.58	-0.05	0.01	-9.49	
90.00		664.01	0.65	-0.07	0.02	-14.11	
95.00	Appurtenance(s)	3898.9	0.73	-0.10	0.04	-100.05	
100.00		622.37	0.81	-0.11	0.06	-16.66	
105.00	Appurtenance(s)	666.55	0.89	-0.12	0.08	-16.43	
110.00	Bot - Section 4	580.73	0.98	-0.11	0.12	-11.28	
115.00	Top - Section 3	1015.4	1.07	-0.09	0.17	-11.36	
120.00		438.87	1.16	-0.03	0.23	0.00	
123.00	Appurtenance(s)	2557.5	1.22	0.03	0.27	20.84	
125.00		166.89	1.26	0.07	0.30	2.37	
130.00		405.56	1.36	0.22	0.40	12.71	
133.00	Appurtenance(s)	1516.3	1.43	0.34	0.46	65.38	
135.00		153.57	1.47	0.43	0.51	7.92	
140.00		372.25	1.58	0.73	0.65	27.90	
145.00		355.60	1.70	1.11	0.81	36.11	
150.00	Top - Section 4	338.95	1.82	1.62	1.01	44.55	
153.00	Appurtenance(s)	2270.7	1.89	1.98	1.14	342.89	
<b>Totals:</b>		<b>33,570.9</b>				<b>702.2</b>	<b>Total Wind: 44,324.4</b>

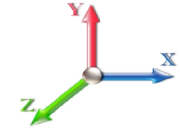
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	<b>3/20/2019</b>
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 0.9D + 1.0E		<b>Iterations</b> 19
<b>Gust Response Factor</b> 1.10	<b>Sds</b> 0.12	<b>Ss</b> 0.18
<b>Dead Load Factor</b> 0.90	<b>Seismic Load Factor</b> 1.00	<b>S1</b> 0.07
<b>Wind Load Factor</b> 0.00	<b>Structure Frequency (f1)</b> 0.43	<b>SA</b> 0.02
	<b>Seismic Importance Factor</b> 1.00	



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-35.42	-0.88	0.00	-96.36	0.00	96.36	4463.02	2231.51	10951.4	5483.88	0.00	0.00	0.00	0.026
5.00	-34.13	-0.87	0.00	-91.94	0.00	91.94	4413.36	2206.68	10604.1	5309.95	0.00	0.00	0.00	0.025
10.00	-32.86	-0.85	0.00	-87.58	0.00	87.58	4361.89	2180.94	10257.6	5136.44	0.01	-0.01	-0.01	0.025
15.00	-31.61	-0.83	0.00	-83.31	0.00	83.31	4308.61	2154.31	9912.23	4963.48	0.02	-0.01	-0.01	0.024
20.00	-30.38	-0.81	0.00	-79.15	0.00	79.15	4253.53	2126.77	9568.22	4791.22	0.04	-0.02	-0.02	0.024
21.00	-30.14	-0.80	0.00	-78.34	0.00	78.34	4242.30	2121.15	9499.61	4756.87	0.04	-0.02	-0.02	0.024
25.00	-28.51	-0.77	0.00	-75.12	0.00	75.12	4196.65	2098.33	9225.87	4619.79	0.06	-0.02	-0.02	0.023
27.75	-27.41	-0.74	0.00	-73.01	0.00	73.01	4164.60	2082.30	9038.39	4525.91	0.07	-0.02	-0.02	0.015
28.00	-27.31	-0.74	0.00	-72.82	0.00	72.82	3213.57	1606.78	7065.87	3538.19	0.07	-0.02	-0.02	0.017
30.00	-26.90	-0.73	0.00	-71.34	0.00	71.34	3199.34	1599.67	6969.21	3489.78	0.08	-0.03	-0.03	0.018
35.00	-25.89	-0.71	0.00	-67.66	0.00	67.66	3162.51	1581.26	6727.41	3368.71	0.11	-0.03	-0.03	0.018
40.00	-24.89	-0.69	0.00	-64.09	0.00	64.09	3123.88	1561.94	6485.64	3247.64	0.14	-0.03	-0.03	0.017
40.75	-24.75	-0.69	0.00	-63.57	0.00	63.57	3117.93	1558.96	6449.39	3229.49	0.15	-0.03	-0.03	0.017
40.75	-24.75	-0.69	0.00	-63.57	0.00	63.57	3117.93	1558.96	6449.39	3229.49	0.15	-0.03	-0.03	0.017
45.00	-23.92	-0.67	0.00	-60.63	0.00	60.63	3083.44	1541.72	6244.17	3126.72	0.18	-0.04	-0.04	0.027
50.00	-22.96	-0.66	0.00	-57.26	0.00	57.26	3041.20	1520.60	6003.26	3006.09	0.22	-0.04	-0.04	0.027
55.00	-22.02	-0.64	0.00	-53.98	0.00	53.98	2997.16	1498.58	5763.21	2885.89	0.26	-0.05	-0.05	0.026
60.00	-21.11	-0.62	0.00	-50.79	0.00	50.79	2951.32	1475.66	5524.28	2766.24	0.32	-0.05	-0.05	0.026
65.00	-20.20	-0.61	0.00	-47.68	0.00	47.68	2903.67	1451.83	5286.75	2647.30	0.38	-0.06	-0.06	0.025
70.00	-18.61	-0.59	0.00	-44.64	0.00	44.64	2854.22	1427.11	5050.90	2529.20	0.44	-0.06	-0.06	0.024
71.00	-18.30	-0.58	0.00	-44.05	0.00	44.05	2869.57	1434.79	5123.02	2565.32	0.45	-0.07	-0.07	0.024
75.00	-17.60	-0.58	0.00	-41.71	0.00	41.71	2829.16	1414.58	4935.24	2471.29	0.51	-0.07	-0.07	0.023
80.00	-16.75	-0.58	0.00	-38.80	0.00	38.80	2777.01	1388.51	4702.41	2354.70	0.59	-0.08	-0.08	0.023
85.00	-15.91	-0.58	0.00	-35.88	0.00	35.88	2723.06	1361.53	4471.94	2239.29	0.67	-0.08	-0.08	0.022
90.00	-15.10	-0.58	0.00	-32.96	0.00	32.96	2667.31	1333.66	4244.12	2125.22	0.76	-0.09	-0.09	0.021
95.00	-11.37	-0.58	0.00	-30.04	0.00	30.04	2609.76	1304.88	4019.22	2012.60	0.86	-0.10	-0.10	0.019
100.00	-10.65	-0.58	0.00	-27.15	0.00	27.15	2550.40	1275.20	3797.52	1901.58	0.96	-0.10	-0.10	0.018
105.00	-9.90	-0.58	0.00	-24.25	0.00	24.25	2489.24	1244.62	3579.29	1792.30	1.07	-0.11	-0.11	0.018
110.00	-9.22	-0.58	0.00	-21.36	0.00	21.36	2426.28	1213.14	3364.80	1684.90	1.19	-0.11	-0.11	0.016
115.00	-8.15	-0.58	0.00	-18.46	0.00	18.46	1783.00	891.50	2427.68	1215.65	1.83	-0.12	-0.12	0.020
120.00	-7.61	-0.58	0.00	-15.57	0.00	15.57	1739.91	869.95	2280.12	1141.75	1.44	-0.13	-0.13	0.018
123.00	-5.21	-0.55	0.00	-13.84	0.00	13.84	1713.19	856.59	2192.59	1097.92	1.52	-0.13	-0.13	0.016
125.00	-5.03	-0.55	0.00	-12.74	0.00	12.74	1695.01	847.51	2134.69	1068.93	1.57	-0.13	-0.13	0.015
130.00	-4.60	-0.54	0.00	-10.00	0.00	10.00	1648.31	824.16	1991.67	997.31	1.71	-0.14	-0.14	0.013
133.00	-3.19	-0.47	0.00	-8.39	0.00	8.39	1619.42	809.71	1907.13	954.98	1.80	-0.14	-0.14	0.011
135.00	-3.05	-0.46	0.00	-7.46	0.00	7.46	1599.81	799.90	1851.33	927.04	1.86	-0.14	-0.14	0.010
140.00	-2.70	-0.43	0.00	-5.16	0.00	5.16	1549.50	774.75	1713.96	858.25	2.01	-0.15	-0.15	0.008
145.00	-2.37	-0.39	0.00	-3.01	0.00	3.01	1497.39	748.69	1579.82	791.09	2.17	-0.15	-0.15	0.005
150.00	-2.05	-0.35	0.00	-1.04	0.00	1.04	1443.48	721.74	1449.20	725.68	2.32	-0.15	-0.15	0.003
150.00	-2.05	-0.35	0.00	-1.04	0.00	1.04	1443.48	721.74	1449.20	725.68	2.32	-0.15	-0.15	0.003
153.00	0.00	-0.34	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	2.42	-0.15	-0.15	0.000

## Wind Loading - Shaft

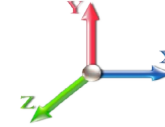
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 21

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	280.85	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	275.08	0.650	0.000	5.00	25.125	16.33	133.7	0.0	1194.9
10.00		1.00	0.85	7.442	8.19	269.30	0.650	0.000	5.00	24.603	15.99	130.9	0.0	1169.9
15.00		1.00	0.85	7.442	8.19	263.53	0.650	0.000	5.00	24.081	15.65	128.1	0.0	1145.0
20.00		1.00	0.90	7.896	8.69	265.50	0.650	0.000	5.00	23.559	15.31	133.0	0.0	1120.0
21.00	Bot - Section 2	1.00	0.91	7.978	8.78	265.68	0.650	0.000	1.00	4.649	3.02	26.5	0.0	221.0
25.00		1.00	0.95	8.276	9.10	265.73	0.657 *	0.000	4.00	18.599	12.21	111.2	0.0	1611.6
27.75	RB1	1.00	0.97	8.460	9.31	265.27	0.696 *	0.000	2.75	12.593	8.77	81.6	0.0	1091.0
28.00	Top - Section 1	1.00	0.97	8.476	9.32	265.22	0.698 *	0.000	0.25	1.137	0.79	7.4	0.0	98.5
30.00		1.00	0.98	8.600	9.46	267.81	0.696 *	0.000	2.00	9.049	6.30	59.6	0.0	358.8
35.00		1.00	1.01	8.883	9.77	265.88	0.700 *	0.000	5.00	22.257	15.59	152.3	0.0	882.5
40.00		1.00	1.04	9.137	10.05	263.25	0.706 *	0.000	5.00	21.735	15.35	154.3	0.0	861.6
40.75	RT1	1.00	1.05	9.173	10.09	262.80	0.710 *	0.000	0.75	3.215	2.28	23.0	0.0	127.5
45.00		1.00	1.07	9.366	10.30	260.05	0.704 *	0.000	4.25	17.998	12.68	130.6	0.0	713.4
50.00		1.00	1.09	9.576	10.53	256.40	0.670 *	0.000	5.00	20.692	13.86	146.0	0.0	820.0
55.00		1.00	1.12	9.770	10.75	252.37	0.675 *	0.000	5.00	20.170	13.62	146.4	0.0	799.2
60.00		1.00	1.14	9.951	10.95	248.02	0.681 *	0.000	5.00	19.648	13.38	146.5	0.0	778.4
65.00	Bot - Section 3	1.00	1.16	10.120	11.13	243.38	0.687 *	0.000	5.00	19.126	13.15	146.3	0.0	757.6
70.00	Appurtenance(s)	1.00	1.17	10.279	11.31	238.50	0.694 *	0.000	5.00	18.868	13.09	148.0	0.0	1484.0
71.00	Top - Section 2	1.00	1.18	10.310	11.34	237.50	0.698 *	0.000	1.00	3.711	2.59	29.4	0.0	291.8
75.00		1.00	1.19	10.430	11.47	236.87	0.698 *	0.000	4.00	14.635	10.21	117.2	0.0	579.5
80.00		1.00	1.21	10.572	11.63	231.60	0.704 *	0.000	5.00	17.824	12.55	146.0	0.0	705.6
85.00		1.00	1.22	10.708	11.78	226.15	0.712 *	0.000	5.00	17.302	12.32	145.1	0.0	684.8
90.00		1.00	1.24	10.838	11.92	220.55	0.720 *	0.000	5.00	16.780	12.08	144.0	0.0	664.0
95.00	Appurtenance(s)	1.00	1.25	10.962	12.06	214.80	0.728 *	0.000	5.00	16.258	11.84	142.8	0.0	643.2
100.00		1.00	1.27	11.081	12.19	208.92	0.650	0.000	5.00	15.736	10.23	124.7	0.0	622.4
105.00	Appurtenance(s)	1.00	1.28	11.195	12.31	202.91	0.650	0.000	5.00	15.214	9.89	121.8	0.0	601.6
110.00	Bot - Section 4	1.00	1.29	11.305	12.44	196.79	0.650	0.000	5.00	14.693	9.55	118.8	0.0	580.7
115.00	Top - Section 3	1.00	1.30	11.412	12.55	190.56	0.650	0.000	5.00	14.382	9.35	117.3	0.0	1015.4
120.00		1.00	1.32	11.514	12.67	187.15	0.650	0.000	5.00	13.860	9.01	114.1	0.0	438.9
123.00	Appurtenance(s)	1.00	1.32	11.574	12.73	183.31	0.650	0.000	3.00	8.066	5.24	66.7	0.0	255.3
125.00		1.00	1.33	11.614	12.78	180.74	0.650	0.000	2.00	5.273	3.43	43.8	0.0	166.9
130.00		1.00	1.34	11.710	12.88	174.24	0.650	0.000	5.00	12.816	8.33	107.3	0.0	405.6
133.00	Appurtenance(s)	1.00	1.34	11.766	12.94	170.30	0.650	0.000	3.00	7.439	4.84	62.6	0.0	235.3
135.00		1.00	1.35	11.803	12.98	167.66	0.650	0.000	2.00	4.855	3.16	41.0	0.0	153.6
140.00		1.00	1.36	11.894	13.08	161.01	0.650	0.000	5.00	11.772	7.65	100.1	0.0	372.3
145.00		1.00	1.37	11.982	13.18	154.27	0.650	0.000	5.00	11.250	7.31	96.4	0.0	355.6
150.00	Top - Section 4	1.00	1.38	12.068	13.27	147.47	0.650	0.000	5.00	10.728	6.97	92.6	0.0	338.9
153.00	Appurtenance(s)	1.00	1.38	12.119	13.33	143.36	0.650	0.000	3.00	6.187	4.02	53.6	0.0	195.4
<b>Totals:</b>									<b>153.00</b>			<b>3,990.7</b>		<b>24,541.5</b>

\* Cf Adjusted by Linear Load Ra Effect



## Discrete Appurtenance Forces

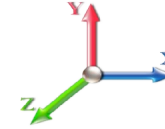
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	153.00	Low Profile Platform	1	12.119	13.330	1.00	1.00	25.00	1200.00	0.000	0.000	333.26	0.00	0.00
2	153.00	TD-RRH8x20-25	3	12.119	13.330	0.62	0.90	7.55	210.00	0.000	0.000	100.58	0.00	0.00
3	153.00	ACU-A20-N	4	12.119	13.330	0.81	0.90	0.45	4.00	0.000	0.000	6.05	0.00	0.00
4	153.00	800 MHz Filters	3	12.119	13.330	0.62	0.90	1.45	26.40	0.000	0.000	19.37	0.00	0.00
5	153.00	800 MHz RRUs	3	12.119	13.330	0.83	0.90	6.19	159.00	0.000	0.000	82.45	0.00	0.00
6	153.00	1900 MHz RRUs	3	12.119	13.330	0.79	0.90	9.03	132.00	0.000	0.000	120.36	0.00	0.00
7	153.00	APXVSP18-C-A20	3	12.119	13.330	0.75	0.90	17.97	171.00	0.000	0.000	239.59	0.00	0.00
8	153.00	APXVTM14-C-I20	3	12.119	13.330	0.71	0.90	13.52	168.00	0.000	0.000	180.27	0.00	0.00
9	153.00	Lightning Rod	1	12.119	13.330	1.00	1.00	0.50	5.00	0.000	0.000	6.67	0.00	0.00
10	133.00	RR90-17-02DP	6	11.766	12.943	0.54	0.80	14.23	81.00	0.000	0.000	184.19	0.00	0.00
11	133.00	Low Profile Platform	1	11.766	12.943	1.00	1.00	25.00	1200.00	0.000	0.000	323.58	0.00	0.00
12	123.00	Low Profile Platform	1	11.574	12.732	1.00	1.00	25.00	1200.00	0.000	0.000	318.29	0.00	0.00
13	123.00	DB-T1-6Z-8AB-OZ	2	11.574	12.732	0.72	0.80	6.91	37.80	0.000	0.000	88.00	0.00	0.00
14	123.00	RRH2x60-700	3	11.633	12.797	0.61	0.80	6.38	180.00	0.000	3.000	81.69	0.00	245.08
15	123.00	RRH2X60-PCS	3	11.574	12.732	0.71	0.80	4.70	165.00	0.000	0.000	59.83	0.00	0.00
16	123.00	LPA-80063/6CF	6	11.574	12.732	0.75	0.80	43.32	162.00	0.000	0.000	551.48	0.00	0.00
17	123.00	SBNHH-1D65B	9	11.574	12.732	0.66	0.80	48.29	365.40	0.000	0.000	614.77	0.00	0.00
18	123.00	B66 4X45 AWS	3	11.574	12.732	0.64	0.80	4.99	192.00	0.000	0.000	63.56	0.00	0.00
19	105.00	Standoff	1	11.195	12.315	1.00	1.00	2.63	40.00	0.000	0.000	32.39	0.00	0.00
20	105.00	10' Omni	1	11.305	12.436	1.00	1.00	3.00	25.00	0.000	5.000	37.31	0.00	186.54
21	95.00	RRUS-12	3	10.962	12.058	0.54	0.80	5.07	180.00	0.000	0.000	61.08	0.00	0.00
22	95.00	HPA-65R-BUU-H6	4	10.962	12.058	0.72	0.80	27.82	204.00	0.000	0.000	335.46	0.00	0.00
23	95.00	7770	3	10.962	12.058	0.58	0.80	9.64	105.00	0.000	0.000	116.19	0.00	0.00
24	95.00	SBNH-1D65A	2	10.962	12.058	0.72	0.80	7.75	76.80	0.000	0.000	93.42	0.00	0.00
25	95.00	AM-X-CW-16-65-00T-RET	2	10.962	12.058	0.60	0.80	9.62	83.60	0.000	0.000	116.05	0.00	0.00
26	95.00	LGP17201	6	10.962	12.058	0.80	0.80	9.36	186.00	0.000	0.000	112.86	0.00	0.00
27	95.00	LGP21901	6	10.962	12.058	0.60	0.80	0.83	33.00	0.000	0.000	9.98	0.00	0.00
28	95.00	RRUS-11	3	10.962	12.058	0.54	0.80	7.21	165.00	0.000	0.000	86.98	0.00	0.00
29	95.00	4426 B66	3	10.962	12.058	0.58	0.80	2.01	145.50	0.000	0.000	24.29	0.00	0.00
30	95.00	RRUS-A2	3	10.962	12.058	0.50	0.80	2.77	63.60	0.000	0.000	33.37	0.00	0.00
31	95.00	RRUS-32	3	10.962	12.058	0.70	0.80	8.08	231.00	0.000	0.000	97.43	0.00	0.00
32	95.00	RRUS-E2	3	10.962	12.058	0.56	0.80	4.72	171.90	0.000	0.000	56.92	0.00	0.00
33	95.00	1000860	3	10.962	12.058	1.00	1.00	0.18	6.00	0.000	0.000	2.17	0.00	0.00
34	95.00	Raycap/Squid	2	10.962	12.058	0.72	0.80	2.12	63.60	0.000	0.000	25.52	0.00	0.00
35	95.00	Sector Frame	3	10.962	12.058	0.56	0.75	29.53	1500.00	0.000	0.000	356.09	0.00	0.00
36	95.00	800 10764	1	10.962	12.058	0.60	0.80	3.53	40.80	0.000	0.000	42.54	0.00	0.00
37	70.00	Standoff	1	10.279	11.307	1.00	1.00	2.63	40.00	0.000	0.000	29.74	0.00	0.00
38	70.00	GPS	1	10.279	11.307	1.00	1.00	1.00	10.00	0.000	0.000	11.31	0.00	0.00

**Totals:** 9,029.40

5,055.07

## Total Applied Force Summary

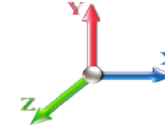
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 21

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		133.69	1437.88	0.00	0.00
10.00		130.91	1412.90	0.00	0.00
15.00		128.13	1387.92	0.00	0.00
20.00		133.01	1362.94	0.00	0.00
21.00		26.52	269.59	0.00	0.00
25.00		111.18	1805.98	0.00	0.00
27.75		81.59	1224.61	0.00	0.00
28.00		7.40	110.64	0.00	0.00
30.00		59.61	456.00	0.00	0.00
35.00		152.31	1125.42	0.00	0.00
40.00		154.27	1104.61	0.00	0.00
40.75		23.02	163.90	0.00	0.00
45.00		130.62	919.89	0.00	0.00
50.00		145.99	1062.97	0.00	0.00
55.00		146.40	1042.15	0.00	0.00
60.00		146.50	1021.33	0.00	0.00
65.00		146.35	1000.52	0.00	0.00
70.00	(2) attachments	189.08	1776.98	0.00	0.00
71.00		29.38	340.40	0.00	0.00
75.00		117.19	773.88	0.00	0.00
80.00		146.00	948.61	0.00	0.00
85.00		145.08	927.79	0.00	0.00
90.00		144.00	906.97	0.00	0.00
95.00	(50) attachments	1713.14	4141.95	0.00	0.00
100.00		124.68	794.34	0.00	0.00
105.00	(2) attachments	191.48	838.52	0.00	186.54
110.00		118.76	751.90	0.00	0.00
115.00		117.35	1186.61	0.00	0.00
120.00		114.11	610.04	0.00	0.00
123.00	(27) attachments	1844.37	2660.23	0.00	245.08
125.00		43.78	197.67	0.00	0.00
130.00		107.31	482.53	0.00	0.00
133.00	(7) attachments	570.35	1562.52	0.00	0.00
135.00		40.97	159.39	0.00	0.00
140.00		100.12	386.82	0.00	0.00
145.00		96.39	370.17	0.00	0.00
150.00		92.57	353.51	0.00	0.00
153.00	(24) attachments	1142.19	2279.51	0.00	0.00
<b>Totals:</b>		<b>9,045.81</b>	<b>39,359.57</b>	<b>0.00</b>	<b>431.62</b>

## Linear Appurtenance Segment Forces (Factored)

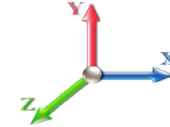
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.091	0.000	7.442	0.00	1.37
5.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.091	0.000	7.442	0.00	62.40
5.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.091	0.000	7.442	0.00	0.60
5.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.091	0.000	7.442	0.00	8.00
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.093	0.000	7.442	0.00	1.37
10.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.093	0.000	7.442	0.00	62.40
10.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.093	0.000	7.442	0.00	0.60
10.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.093	0.000	7.442	0.00	8.00
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.095	0.000	7.442	0.00	1.37
15.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.095	0.000	7.442	0.00	62.40
15.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.095	0.000	7.442	0.00	0.60
15.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.095	0.000	7.442	0.00	8.00
20.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.097	0.000	7.896	0.00	1.37
20.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.097	0.000	7.896	0.00	62.40
20.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.097	0.000	7.896	0.00	0.60
20.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.097	0.000	7.896	0.00	8.00
21.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.098	0.000	7.978	0.00	0.27
21.00	1 5/8" Coax	Yes	1.00	0.000	3.96	0.33	0.00	0.098	0.000	7.978	0.00	12.48
21.00	1/2" Fiber	Yes	1.00	0.000	0.38	0.03	0.00	0.098	0.000	7.978	0.00	0.12
21.00	3/4" DC	Yes	1.00	0.000	0.75	0.06	0.00	0.098	0.000	7.978	0.00	1.60
25.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.103	1.010	8.276	0.00	1.09
25.00	1 5/8" Coax	Yes	4.00	0.000	3.96	1.32	0.00	0.103	1.010	8.276	0.00	49.92
25.00	1/2" Fiber	Yes	4.00	0.000	0.38	0.13	0.00	0.103	1.010	8.276	0.00	0.48
25.00	3/4" DC	Yes	4.00	0.000	0.75	0.25	0.00	0.103	1.010	8.276	0.00	6.40
25.00	1.25" Reinforcing	Yes	0.75	0.000	1.25	0.08	0.00	0.103	1.010	8.276	0.00	0.00
27.75	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.124	1.071	8.460	0.00	0.75
27.75	1 5/8" Coax	Yes	2.75	0.000	3.96	0.91	0.00	0.124	1.071	8.460	0.00	34.32
27.75	1/2" Fiber	Yes	2.75	0.000	0.38	0.09	0.00	0.124	1.071	8.460	0.00	0.33
27.75	3/4" DC	Yes	2.75	0.000	0.75	0.17	0.00	0.124	1.071	8.460	0.00	4.40
27.75	1.25" Reinforcing	Yes	2.75	0.000	1.25	0.29	0.00	0.124	1.071	8.460	0.00	0.00
28.00	Safety Cable	Yes	0.25	0.000	0.38	0.01	0.00	0.125	1.074	8.476	0.00	0.07
28.00	1 5/8" Coax	Yes	0.25	0.000	3.96	0.08	0.00	0.125	1.074	8.476	0.00	3.12
28.00	1/2" Fiber	Yes	0.25	0.000	0.38	0.01	0.00	0.125	1.074	8.476	0.00	0.03
28.00	3/4" DC	Yes	0.25	0.000	0.75	0.02	0.00	0.125	1.074	8.476	0.00	0.40
28.00	1.25" Reinforcing	Yes	0.25	0.000	1.25	0.03	0.00	0.125	1.074	8.476	0.00	0.00
30.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.124	1.071	8.600	0.00	0.55
30.00	1 5/8" Coax	Yes	2.00	0.000	3.96	0.66	0.00	0.124	1.071	8.600	0.00	24.96
30.00	1/2" Fiber	Yes	2.00	0.000	0.38	0.06	0.00	0.124	1.071	8.600	0.00	0.24
30.00	3/4" DC	Yes	2.00	0.000	0.75	0.13	0.00	0.124	1.071	8.600	0.00	3.20
30.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.124	1.071	8.600	0.00	0.00
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.126	1.077	8.883	0.00	1.37
35.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.126	1.077	8.883	0.00	62.40
35.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.126	1.077	8.883	0.00	0.60
35.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.126	1.077	8.883	0.00	8.00
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.126	1.077	8.883	0.00	0.00
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.129	1.086	9.137	0.00	1.37
40.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.129	1.086	9.137	0.00	62.40

## Linear Appurtenance Segment Forces (Factored)

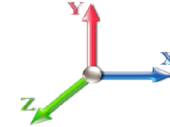
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
40.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.129	1.086	9.137	0.00	0.60
40.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.129	1.086	9.137	0.00	8.00
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.129	1.086	9.137	0.00	0.00
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.131	1.092	9.173	0.00	0.20
40.75	1 5/8" Coax	Yes	0.75	0.000	3.96	0.25	0.00	0.131	1.092	9.173	0.00	9.36
40.75	1/2" Fiber	Yes	0.75	0.000	0.38	0.02	0.00	0.131	1.092	9.173	0.00	0.09
40.75	3/4" DC	Yes	0.75	0.000	0.75	0.05	0.00	0.131	1.092	9.173	0.00	1.20
40.75	1.25" Reinforcing	Yes	0.75	0.000	1.25	0.08	0.00	0.131	1.092	9.173	0.00	0.00
45.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.128	1.084	9.366	0.00	1.16
45.00	1 5/8" Coax	Yes	4.25	0.000	3.96	1.40	0.00	0.128	1.084	9.366	0.00	53.04
45.00	1/2" Fiber	Yes	4.25	0.000	0.38	0.13	0.00	0.128	1.084	9.366	0.00	0.51
45.00	3/4" DC	Yes	4.25	0.000	0.75	0.27	0.00	0.128	1.084	9.366	0.00	6.80
45.00	1.25" Reinforcing	Yes	3.50	0.000	1.25	0.36	0.00	0.128	1.084	9.366	0.00	0.00
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.110	1.030	9.576	0.00	1.37
50.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.110	1.030	9.576	0.00	62.40
50.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.110	1.030	9.576	0.00	0.60
50.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.110	1.030	9.576	0.00	8.00
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.113	1.039	9.770	0.00	1.37
55.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.113	1.039	9.770	0.00	62.40
55.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.113	1.039	9.770	0.00	0.60
55.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.113	1.039	9.770	0.00	8.00
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.116	1.048	9.951	0.00	1.37
60.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.116	1.048	9.951	0.00	62.40
60.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.116	1.048	9.951	0.00	0.60
60.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.116	1.048	9.951	0.00	8.00
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.119	1.058	10.120	0.00	1.37
65.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.119	1.058	10.120	0.00	62.40
65.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.119	1.058	10.120	0.00	0.60
65.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.119	1.058	10.120	0.00	8.00
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.123	1.068	10.279	0.00	1.37
70.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.123	1.068	10.279	0.00	62.40
70.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.123	1.068	10.279	0.00	0.60
70.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.123	1.068	10.279	0.00	8.00
71.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.125	1.074	10.310	0.00	0.27
71.00	1 5/8" Coax	Yes	1.00	0.000	3.96	0.33	0.00	0.125	1.074	10.310	0.00	12.48
71.00	1/2" Fiber	Yes	1.00	0.000	0.38	0.03	0.00	0.125	1.074	10.310	0.00	0.12
71.00	3/4" DC	Yes	1.00	0.000	0.75	0.06	0.00	0.125	1.074	10.310	0.00	1.60
75.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.125	1.074	10.430	0.00	1.09
75.00	1 5/8" Coax	Yes	4.00	0.000	3.96	1.32	0.00	0.125	1.074	10.430	0.00	49.92
75.00	1/2" Fiber	Yes	4.00	0.000	0.38	0.13	0.00	0.125	1.074	10.430	0.00	0.48
75.00	3/4" DC	Yes	4.00	0.000	0.75	0.25	0.00	0.125	1.074	10.430	0.00	6.40
80.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.128	1.084	10.572	0.00	1.37
80.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.128	1.084	10.572	0.00	62.40
80.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.128	1.084	10.572	0.00	0.60
80.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.128	1.084	10.572	0.00	8.00
85.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.132	1.095	10.708	0.00	1.37
85.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.132	1.095	10.708	0.00	62.40

## Linear Appurtenance Segment Forces (Factored)

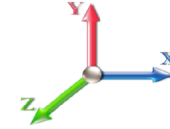
<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
85.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.132	1.095	10.708	0.00	0.60
85.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.132	1.095	10.708	0.00	8.00
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.136	1.107	10.838	0.00	1.37
90.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.136	1.107	10.838	0.00	62.40
90.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.136	1.107	10.838	0.00	0.60
90.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.136	1.107	10.838	0.00	8.00
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.140	1.121	10.962	0.00	1.37
95.00	1 5/8" Coax	Yes	5.00	0.000	3.96	1.65	0.00	0.140	1.121	10.962	0.00	62.40
95.00	1/2" Fiber	Yes	5.00	0.000	0.38	0.16	0.00	0.140	1.121	10.962	0.00	0.60
95.00	3/4" DC	Yes	5.00	0.000	0.75	0.31	0.00	0.140	1.121	10.962	0.00	8.00
100.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	11.081	0.00	1.37
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	11.195	0.00	1.37
110.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	11.305	0.00	1.37
115.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	11.412	0.00	1.37
120.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	11.514	0.00	1.37
123.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.012	0.000	11.574	0.00	0.82
125.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.012	0.000	11.614	0.00	0.55
130.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	11.710	0.00	1.37
133.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.013	0.000	11.766	0.00	0.82
135.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.013	0.000	11.803	0.00	0.55
140.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	11.894	0.00	1.37
145.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	11.982	0.00	1.37
150.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	12.068	0.00	1.37
153.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.015	0.000	12.119	0.00	0.82
<b>Totals:</b>											<b>0.0</b>	<b>1,390.8</b>

## Calculated Forces

**Structure:** CT01499-S-SBA  
**Site Name:** Torrington  
**Height:** 153.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** B - Competent Rock  
**Struct Class:** II

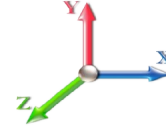
3/20/2019  
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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 21

**Dead Load Factor** 1.00  
**Wind Load 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	-39.36	-9.06	0.00	-928.82	0.00	928.82	4463.02	2231.51	10951.4	5483.88	0.00	0.000	0.000	0.178
5.00	-37.91	-8.95	0.00	-883.53	0.00	883.53	4413.36	2206.68	10604.1	5309.95	0.02	-0.040	0.000	0.175
10.00	-36.49	-8.85	0.00	-838.77	0.00	838.77	4361.89	2180.94	10257.6	5136.44	0.09	-0.081	0.000	0.172
15.00	-35.10	-8.74	0.00	-794.54	0.00	794.54	4308.61	2154.31	9912.23	4963.48	0.19	-0.123	0.000	0.168
20.00	-33.73	-8.62	0.00	-750.84	0.00	750.84	4253.53	2126.77	9568.22	4791.22	0.35	-0.165	0.000	0.165
21.00	-33.46	-8.60	0.00	-742.22	0.00	742.22	4242.30	2121.15	9499.61	4756.87	0.38	-0.173	0.000	0.164
25.00	-31.65	-8.50	0.00	-707.80	0.00	707.80	4196.65	2098.33	9225.87	4619.79	0.54	-0.207	0.000	0.161
27.75	-30.42	-8.42	0.00	-684.42	0.00	684.42	4164.60	2082.30	9038.39	4525.91	0.67	-0.231	0.000	0.105
28.00	-30.31	-8.42	0.00	-682.31	0.00	682.31	3213.57	1606.78	7065.87	3538.19	0.68	-0.232	0.000	0.115
30.00	-29.85	-8.37	0.00	-665.48	0.00	665.48	3199.34	1599.67	6969.21	3489.78	0.78	-0.244	0.000	0.125
35.00	-28.72	-8.23	0.00	-623.63	0.00	623.63	3162.51	1581.26	6727.41	3368.71	1.05	-0.275	0.000	0.120
40.00	-27.62	-8.08	0.00	-582.50	0.00	582.50	3123.88	1561.94	6485.64	3247.64	1.36	-0.305	0.000	0.115
40.75	-27.45	-8.06	0.00	-576.45	0.00	576.45	3117.93	1558.96	6449.39	3229.49	1.40	-0.310	0.000	0.114
40.75	-27.45	-8.06	0.00	-576.45	0.00	576.45	3117.93	1558.96	6449.39	3229.49	1.40	-0.310	0.000	0.114
45.00	-26.53	-7.94	0.00	-542.20	0.00	542.20	3083.44	1541.72	6244.17	3126.72	1.69	-0.336	0.000	0.182
50.00	-25.46	-7.81	0.00	-502.50	0.00	502.50	3041.20	1520.60	6003.26	3006.09	2.07	-0.386	0.000	0.176
55.00	-24.41	-7.68	0.00	-463.45	0.00	463.45	2997.16	1498.58	5763.21	2885.89	2.50	-0.435	0.000	0.169
60.00	-23.38	-7.54	0.00	-425.06	0.00	425.06	2951.32	1475.66	5524.28	2766.24	2.98	-0.485	0.000	0.162
65.00	-22.38	-7.41	0.00	-387.35	0.00	387.35	2903.67	1451.83	5286.75	2647.30	3.52	-0.534	0.000	0.154
70.00	-20.60	-7.21	0.00	-350.32	0.00	350.32	2854.22	1427.11	5050.90	2529.20	4.10	-0.582	0.000	0.146
71.00	-20.26	-7.19	0.00	-343.11	0.00	343.11	2869.57	1434.79	5123.02	2565.32	4.23	-0.592	0.000	0.141
75.00	-19.48	-7.07	0.00	-314.37	0.00	314.37	2829.16	1414.58	4935.24	2471.29	4.74	-0.630	0.000	0.134
80.00	-18.53	-6.93	0.00	-279.00	0.00	279.00	2777.01	1388.51	4702.41	2354.70	5.42	-0.674	0.000	0.125
85.00	-17.60	-6.79	0.00	-244.34	0.00	244.34	2723.06	1361.53	4471.94	2239.29	6.15	-0.716	0.000	0.116
90.00	-16.69	-6.64	0.00	-210.40	0.00	210.40	2667.31	1333.66	4244.12	2125.22	6.92	-0.757	0.000	0.105
95.00	-12.57	-4.88	0.00	-177.18	0.00	177.18	2609.76	1304.88	4019.22	2012.60	7.74	-0.795	0.000	0.093
100.00	-11.77	-4.75	0.00	-152.77	0.00	152.77	2550.40	1275.20	3797.52	1901.58	8.59	-0.830	0.000	0.085
105.00	-10.93	-4.56	0.00	-128.81	0.00	128.81	2489.24	1244.62	3579.29	1792.30	9.48	-0.864	0.000	0.076
110.00	-10.18	-4.43	0.00	-106.03	0.00	106.03	2426.28	1213.14	3364.80	1684.90	10.40	-0.895	0.000	0.067
115.00	-8.99	-4.30	0.00	-83.88	0.00	83.88	1783.00	891.50	2427.68	1215.65	11.35	-0.923	0.000	0.074
120.00	-8.38	-4.18	0.00	-62.38	0.00	62.38	1739.91	869.95	2280.12	1141.75	12.33	-0.947	0.000	0.059
123.00	-5.75	-2.29	0.00	-49.60	0.00	49.60	1713.19	856.59	2192.59	1097.92	12.93	-0.961	0.000	0.049
125.00	-5.56	-2.25	0.00	-45.02	0.00	45.02	1695.01	847.51	2134.69	1068.93	13.34	-0.970	0.000	0.045
130.00	-5.08	-2.13	0.00	-33.80	0.00	33.80	1648.31	824.16	1991.67	997.31	14.36	-0.990	0.000	0.037
133.00	-3.52	-1.53	0.00	-27.40	0.00	27.40	1619.42	809.71	1907.13	954.98	14.99	-1.000	0.000	0.031
135.00	-3.36	-1.49	0.00	-24.33	0.00	24.33	1599.81	799.90	1851.33	927.04	15.41	-1.006	0.000	0.028
140.00	-2.98	-1.38	0.00	-16.88	0.00	16.88	1549.50	774.75	1713.96	858.25	16.47	-1.019	0.000	0.022
145.00	-2.61	-1.28	0.00	-9.96	0.00	9.96	1497.39	748.69	1579.82	791.09	17.54	-1.029	0.000	0.014
150.00	-2.26	-1.18	0.00	-3.55	0.00	3.55	1443.48	721.74	1449.20	725.68	18.62	-1.035	0.000	0.006
150.00	-2.26	-1.18	0.00	-3.55	0.00	3.55	1443.48	721.74	1449.20	725.68	18.62	-1.035	0.000	0.006
153.00	0.00	-1.14	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	19.27	-1.036	0.000	0.000

## Final Analysis Summary

<b>Structure:</b> CT01499-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/20/2019
<b>Site Name:</b> Torrington	<b>Exposure:</b> C	
<b>Height:</b> 153.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 105 mph Wind	44.4	0.00	47.15	0.00	0.00	4568.21
0.9D + 1.6W 105 mph Wind	44.4	0.00	35.34	0.00	0.00	4535.81
1.2D + 1.0Di + 1.0Wi 40 mph Wind	6.8	0.00	78.88	0.00	0.00	687.97
1.2D + 1.0E	0.9	0.00	47.23	0.00	0.00	97.13
0.9D + 1.0E	0.9	0.00	35.42	0.00	0.00	96.36
1.0D + 1.0W 60 mph Wind	9.1	0.00	39.36	0.00	0.00	928.82

### Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 105 mph Wind	-30.69	-39.06	0.00	-2669.4	0.00	-2669.4	3083.44	1541.7	6244.17	3126.72	45.00	0.864
0.9D + 1.6W 105 mph Wind	-22.74	-38.81	0.00	-2643.7	0.00	-2643.7	3083.44	1541.7	6244.17	3126.72	45.00	0.854
1.2D + 1.0Di + 1.0Wi 40 mph Wind	-56.84	-5.90	0.00	-399.55	0.00	-399.55	3083.44	1541.7	6244.17	3126.72	45.00	0.146
1.2D + 1.0E	-31.89	-0.68	0.00	-61.26	0.00	-61.26	3083.44	1541.7	6244.17	3126.72	45.00	0.030
0.9D + 1.0E	-23.92	-0.67	0.00	-60.63	0.00	-60.63	3083.44	1541.7	6244.17	3126.72	45.00	0.027
1.0D + 1.0W 60 mph Wind	-26.53	-7.94	0.00	-542.20	0.00	-542.20	3083.44	1541.7	6244.17	3126.72	45.00	0.182

### Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
			VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
27.8	40.8	(3) PLT-8"x1.25"(1.25Hole)	394.0	7.09	37.1	331.6	37.1	9	14	338.6	37.1	9	14	359.61	551.4	506.25	0.710





# Monopole Mat Foundation Design

Date

3/20/2019

<b>Customer Name:</b>	AT&T	<b>EIA/TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	153
<b>Site Number:</b>	CT01499-S-SBA	<b>Engineer Name:</b>	J. Chen
<b>Engr. Number:</b>	71843	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations

**Structure Type:**

Monopole

**Analysis or Design?**

Analysis

**Base Reactions (Factored):**

Axial Load (Kips):	78.9	Shear Force (Kips):	44.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4568.2

Allowable overstress %: 5.0%

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	8.0
Pier Height A. G. (ft.):	0.25	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	29	Width of Pad (ft.):	29

Final Length of pad (ft)	29.0	Final width of pad (ft):	29.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0

**Material Properties and Rebar Info:**

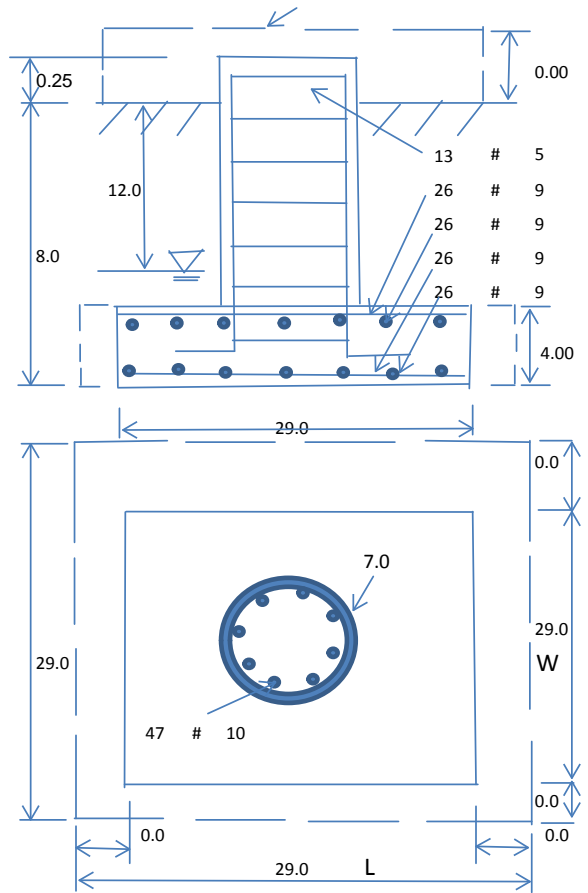
Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	47	Tie Spacing (in):	8.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:			
Qty. of Rebar in Pad (L):	26	Qty. of Rebar in Pad (W):	26
Rebar at the top of the concrete pad:			
Qty. of Rebar in Pad (L):	26	Qty. of Rebar in Pad (W):	26

Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	12.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	8000	Ultimate Skin Friction:	0	Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00	
		Angle from Top of Pad:	30	
		Angle from Bottm of Pad:	25	
		Angle from Bottm of Pad:	25	



**Foundation Analysis and Design:**

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	3210.06	Total Dry Soil Weight (Kips):	353.11
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	353.11	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3527.56	Total Dry Concrete Weight (Kips):	529.13
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	529.13	Total Vertical Load on Base (Kips):	961.14

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	2339	<	Allowable Factored Soil Bearing (psf):	6000	0.39	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	12657.3	>	Design Factored Momont (kips-ft):	4935	0.39	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.57					OK!

Load/  
Capacity  
Ratio

**Check the capacities of Reinforcing Concrete:**

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00

Load/  
Capacity  
Ratio**(1) Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):	1.27	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	9234.8	> Design Factored Moment (Mu, Kips-Ft)	4756.9	0.52	OK!
Calculated Shear Capacity (Kips):	767.8	> Design Factored Shear (Kips):	44.4	0.06	OK!
Calculated Tension Capacity (Tn, Kips):	3223.3	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7269.2	> Design Factored Axial Load (Pu Kips):	78.9	0.01	OK!
Moment & Axial Strength Combination:	0.52	OK! Check Tie Spacing (Design/Required):		0.6667	OK!
Pier Reinforcement Ratio:	0.011	Reinforcement Ratio is satisfied per ACI			

**(2).Concrete Pad:**

One-Way Design Shear Capacity (L-Direction, Kips):	1270.5	> One-Way Factored Shear (L-D. Kips):	307.1	0.24	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1270.5	> One-Way Factored Shear (W-D., Kips)	307.1	0.24	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1165.6	> One-Way Factored Shear (C-C, Kips):	286.3	0.25	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0017	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0017		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	5096.3	> Moment at Bottom ( L-Dir. K-Ft):	2176.4	0.43	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5096.3	> Moment at Bottom ( W-Dir. K-Ft):	2176.4	0.43	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	7177.4	> Moment at Bottom ( C-C Dir. K-Ft):	3077.9	0.43	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0017	OK! Upper Steel Reinf. Ratio (W-Dir. ):	0.0017		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	5096.3	> Moment at the top (L-Dir K-Ft):	853.6	0.17	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	5096.3	> Moment at the top (W-Dir K-Ft):	853.6	0.17	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	7177.4	> Moment at the top (C-C Dir. K-Ft):	797.6	0.11	OK!

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

Moment transferred by punching shear:	1827.3	k-ft.	Max. factored shear stress $v_{u,CD}$ :	3.3	Psi
Max. factored shear stress $v_{u,AB}$ :	9.8	Psi	Factored shear Strength $\phi v_n$ :	164.3	Psi
Max. factored shear stress $v_u$ :	9.8	Psi	Check Usage of Punching Shear Capacity:	0.06	OK!



# Radio Frequency Emissions Analysis Report

AT&T Existing Facility

**Site ID: CT1118**

FA#: 10042345

Torrington East Main St  
1925 East Main Street  
Torrington, CT 06790

**March 29, 2019**

**Centerline Communications Project Number: 950006-174**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>23.92 %</b>



March 29, 2019

AT&T Mobility – New England  
Attn: John Benedetto, RF Manager  
550 Cochituate Road  
Suite 550 – 13&14  
Framingham, MA 06040

### Emissions Analysis for Site: **CT1118 – Torrington East Main St**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **1925 East Main Street, Torrington, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 700 and 850 MHz Bands are approximately  $467 \mu\text{W}/\text{cm}^2$  and  $567 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.



## CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **1925 East Main Street, Torrington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	1900 MHz (PCS)	2	30
LTE	1900 MHz (PCS)	4	40
LTE	700 MHz (Band 14)	2	40
LTE	850 MHz	2	40
LTE	2100 MHz (AWS)	4	30
5G	850 MHz	2	25
LTE	700 MHz	2	40
LTE	2300 MHz (WCS)	4	30

*Table 1: Channel Data Table*



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	95
A	2	KMW AM-X-CD-16-65-00T-RET	95
A	3	CCI HPA-65R-BUU-H6	95
A	4	CCI HPA-65R-BUU-H6	95
B	1	Powerwave 7770	95
B	2	Kathrein 800-10764	95
B	3	Commscope SBNHH-1D65A	95
B	4	Commscope SBNHH-1D65A	95
C	1	Powerwave 7770	95
C	2	KMW AM-X-CD-16-65-00T-RET	95
C	3	CCI HPA-65R-BUU-H6	95
C	4	CCI HPA-65R-BUU-H6	95

*Table 2: Antenna Data*

All calculations were done with respect to uncontrolled / general population threshold limits.





## RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	1900 MHz (PCS)	13.4	2	60	1,312.66	0.60
Antenna A2	KMW AM-X-CD-16-65-00T-RET	1900 MHz (PCS)	15.25	4	160	5,359.45	2.43
Antenna A3	CCI HPA-65R-BUU-H6	700 MHz (Band 14) / 850 MHz / 2100 MHz (AWS)	11.95 / 12.65 / 15.05	10	330	7,485.08	4.88
Antenna A4	CCI HPA-65R-BUU-H6	700 MHz / 2300 MHz (WCS)	11.95 / 15.25	6	200	5,272.99	3.04
Sector A Composite MPE%							<b>10.95</b>
Antenna B1	Powerwave 7770	1900 MHz (PCS)	13.4	2	60	1,312.66	0.60
Antenna B2	Kathrein 800-10764	1900 MHz (PCS)	15.35	4	160	5,484.28	2.49
Antenna B3	Commscope SBNHH-1D65A	700 MHz (Band 14) / 850 MHz / 2100 MHz (AWS)	10.85 / 10.65 / 14.65	10	330	5,983.74	3.74
Antenna B4	Commscope SBNHH-1D65A	700 MHz / 2300 MHz (WCS)	10.85 / 15.85	6	200	5,588.05	3.04
Sector B Composite MPE%							<b>9.87</b>
Antenna C1	Powerwave 7770	1900 MHz (PCS)	13.4	2	60	1,312.66	0.60
Antenna C2	KMW AM-X-CD-16-65-00T-RET	1900 MHz (PCS)	15.25	4	160	5,359.45	2.43
Antenna C3	CCI HPA-65R-BUU-H6	700 MHz (Band 14) / 850 MHz / 2100 MHz (AWS)	11.95 / 12.65 / 15.05	10	330	7,485.08	4.88
Antenna C4	CCI HPA-65R-BUU-H6	700 MHz / 2300 MHz (WCS)	11.95 / 15.25	6	200	5,272.99	3.04
Sector C Composite MPE%							<b>10.95</b>

*Table 3: AT&T Emissions Levels*



The Following table (table 4) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sectors with the largest calculated MPE% are Sectors A & C. Table 5 below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

<b>Site Composite MPE%</b>	
<b>Carrier</b>	<b>MPE%</b>
AT&T – Max Per Sector Value (Sectors A & C)	<b>10.95 %</b>
Nextel	0.30 %
Voicestream (T-Mobile)	0.26 %
Sprint	0.02 %
MetroPCS	1.09 %
Verizon Wireless	6.30 %
Town	5.00 %
<b>Site Total MPE %:</b>	<b>23.92 %</b>

*Table 4: All Carrier MPE Contributions*

AT&T Sector A Total:	10.95 %
AT&T Sector B Total:	9.87 %
AT&T Sector C Total:	10.95 %
Site Total:	23.92 %

*Table 5: Site MPE Summary*



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sectors with the largest calculated MPE% are Sectors A & C.

AT&T _ Frequency Band / Technology Max Power Values (Sectors A & C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 1900 MHz (PCS) UMTS – Antenna 1	2	656.33	95	5.96	1900 MHz (PCS)	1000	0.60%
AT&T 1900 MHz (PCS) LTE – Antenna 2	4	1,339.86	95	24.32	1900 MHz (PCS)	1000	2.43%
AT&T 700 MHz (Band 14) LTE – Antenna 3	2	626.70	95	5.69	700 MHz	467	1.22%
AT&T 850 MHz LTE – Antenna 3	2	736.31	95	6.68	850 MHz	567	1.18%
AT&T 2100 MHz (AWS) LTE – Antenna 3	4	959.67	95	17.42	2100 MHz (AWS)	1000	1.74%
AT&T 850 MHz 5G – Antenna 3	2	460.19	95	4.18	850 MHz	567	0.74%
AT&T 700 MHz LTE – Antenna 4	2	626.70	95	5.69	700 MHz	467	1.22%
AT&T 2300 MHz (WCS) LTE – Antenna 4	4	1,004.90	95	18.24	2300 MHz (WCS)	1000	1.82%
						<b>Total:</b>	<b>10.95%</b>

*Table 6: AT&T Maximum Sector MPE Power Values*



## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	10.95 %
Sector B:	9.87 %
Sector C:	10.95 %
AT&T Maximum Total (Sectors A & C):	10.95 %
Site Total:	23.92 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **23.92 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is positioned above the printed name.

Scott Heffernan  
RF Engineering Director  
**Centerline Communications, LLC**  
95 Ryan Drive, Suite 1  
Raynham, MA 02767

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<b>EMPIRE TELECOM</b> 16 ESQUIRE ROAD NORTH BILLERICA MA 01862	<b>0.4 LBS LTR</b>	<b>1 OF 1</b>
<b>SHIP TO:</b> CARLA SHORTER, ACCOUNT EXECUTIVE 718.333.5294 SBA COMMUNICATIONS CORPORATION 8051 CONGRESS AVENUE <b>BOCA RATON FL 33487-1307</b>	<b>FL 332 6-07</b> 	
<b>UPS 2ND DAY AIR</b> TRACKING #: 1Z 870 26W 02 9241 8527		
		
<b>BILLING: P/P</b>		
Reference # 1: PC 321 Reference # 2: C11118	CS 21.0.21. WNTNVS0 09.04.01/2019	

**UPS CampusShip: View/Print Label**

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
3. **GETTING YOUR SHIPMENT TO UPS**  
**Customers with a Daily Pickup**  
Your driver will pickup your shipment(s) as usual.

**Customers without a Daily Pickup**

Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.


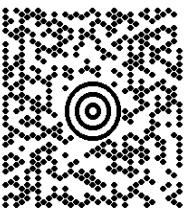
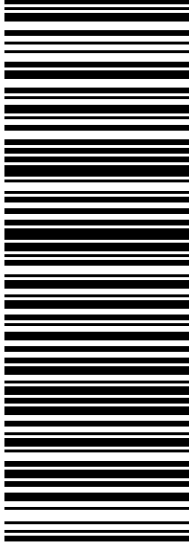
Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.  
Hand the package to any UPS driver in your area.

UPS Access Point™  
MACLF-LOCKR-STOP & SHOP #480  
299 CHELMSFORD ST  
CHELMSFORD ,MA 01824

UPS Access Point™  
JERRY'S VARIETY  
1172 LAWRENCE ST  
LOWELL ,MA 01852

UPS Access Point™  
THE UPS STORE  
101 GREAT RD  
BEDFORD ,MA 01730

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<b>EMPIRE TELECOM</b> 16 ESQUIRE ROAD NORTH BILLERICA MA 01862	<b>0.0 LBS LTR</b>	<b>1 OF 1</b>
<b>SHIP TO:</b> TORRINGTON CITY HALL HON. ELINOR CARBONE, MAYOR 140 MAIN STREET TORRINGTON CT 06790-5201	<b>CT 067 9-02</b> 	<b>2</b> <b>UPS 2ND DAY AIR</b> TRACKING #: 1Z 870 26W 02 9430 1943
		<b>BILLING: P/P</b>
Reference # 1: PC 321 Reference # 2: CT1118 - to Mayor		 WNTNVS0 09.04.01/2019 CS 21.0.21.



**UPS CampusShip: View/Print Label**

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
3. **GETTING YOUR SHIPMENT TO UPS**  
**Customers with a Daily Pickup**  
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Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.  
Hand the package to any UPS driver in your area.

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MACLF-LOCKR-STOP & SHOP #480  
299 CHELMSFORD ST  
CHELMSFORD ,MA 01824

UPS Access Point™  
JERRY'S VARIETY  
1172 LAWRENCE ST  
LOWELL ,MA 01852

UPS Access Point™  
THE UPS STORE  
101 GREAT RD  
BEDFORD ,MA 01730

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<p>EMPIRE TELECOM 16 ESQUIRE ROAD NORTH BILLERICA MA 01862</p> <p><b>0.3 LBS LTR</b></p> <p><b>1 OF 1</b></p> <p><b>SHIP TO:</b> TEP INCORPORATED PO BOX 876 TORRINGTON CT 06790-0781</p>	<p><b>CT 067 9-02</b></p>  	<p><b>UPS 2ND DAY AIR</b></p> <p><b>2</b></p> <p>TRACKING #: 1Z 870 26W 02 9342 7533</p> 	<p>BILLING: P/P</p> <p>Reference # 1: PC 321 Reference # 2: CT1118 to property owner CS 21.0.21. WNTNVS0 09.04.01/2019</p> 
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**UPS CampusShip: View/Print Label**

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
3. **GETTING YOUR SHIPMENT TO UPS**  
**Customers with a Daily Pickup**  
Your driver will pickup your shipment(s) as usual.

**Customers without a Daily Pickup**

Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.

Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.  
Hand the package to any UPS driver in your area.

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JERRY'S VARIETY  
1172 LAWRENCE ST  
LOWELL ,MA 01852

UPS Access Point™  
THE UPS STORE  
101 GREAT RD  
BEDFORD ,MA 01730

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<b>EMPIRE TELECOM</b> 16 ESQUIRE ROAD NORTH BILLERICA MA 01862	<b>0.0 LBS LTR</b>	<b>1 OF 1</b>
<b>SHIP TO:</b> TORRINGTON CITY HALL DAVID MORAGHAN, ZONING ROOM 324 140 MAIN STREET <b>TORRINGTON CT 06790-5201</b>	<b>CT 067 9-02</b> 	<b>2</b> TRACKING #: 1Z 870 26W 02 9235 7754
	<b>UPS 2ND DAY AIR</b>	
<b>BILLING: P/P</b>		
Reference # 1: PC 321 Reference # 2: CT1118 - Zoning <sub>CS 21.0.21.</sub> WNTNVS0 09.04.01/2019		
		

# Tracking Summary

## Tracking Numbers

**Tracking Number:** 1Z 870 26W 02 9235 775 4  
**Type:** Package  
**Status:** **Delivered**  
**Delivered On:** 04/08/2019  
9:50 A.M.  
**Delivered To:** TORRINGTON, CT, US  
**Received By:** MICHNA  
**Service:** UPS 2nd Day Air

**Tracking Number:** 1Z 870 26W 02 9430 194 3  
**Type:** Package  
**Status:** **Delivered**  
**Delivered On:** 04/08/2019  
9:50 A.M.  
**Delivered To:** TORRINGTON, CT, US  
**Received By:** MICHNA  
**Service:** UPS 2nd Day Air

**Tracking Number:** 1Z 870 26W 02 9342 753 3  
**Type:** Package  
**Status:** **Delivered**  
**Delivered On:** 04/10/2019  
4:21 P.M.  
**Delivered To:** OLD LYME, CT, US  
**Service:** UPS 2nd Day Air

**Tracking Number:** 1Z 870 26W 02 9241 852 7  
**Type:** Package  
**Status:** **Delivered**  
**Delivered On:** 04/08/2019  
1:03 P.M.  
**Delivered To:** BOCA RATON, FL, US  
**Received By:** WALKER  
**Service:** UPS 2nd Day Air

Tracking results provided by UPS: 04/10/2019 4:51 P.M. ET

**NOTICE:** UPS authorizes you to use UPS tracking systems solely to track shipments tendered by or for you to UPS for delivery and for no other purpose. Any other use of UPS tracking systems and information is strictly prohibited.