Robinson+Cole

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Also admitted in Massachusetts
and New York

June 26, 2023

Via Electronic Mail

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

Re: **Notice of Exempt Modification – Facility Modification**
67 Fairchild Road, Middletown, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains an existing wireless telecommunications facility at the above-referenced property address (the "Property"). The Cellco facility consists of antennas at a height of 110 feet on the existing tower and related equipment on the ground, near the base of the tower. The original 120-foot tower was approved by the Siting Council (the "Council") in November of 2006 (Docket No. 316).[1] Cellco's shared use of the tower was approved by the Siting Council in May of 2008 (EM-VER-083-080404). A copy of the Docket No. 316 Decision and Order and Cellco's approval are included in Attachment 1.

Cellco now intends to modify its facility by removing all six (6) of its existing antennas and installing six (6) new antennas on the tower. Cellco also intends to remove six (6) remote radio heads ("RRH") and install six (6) new RRH behind its antennas. A set of project plans showing Cellco's proposed facility modifications and the new antenna and RRH specifications are included in Attachment 2.

Please accept this letter 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

[1] AT&T received Council approval to extend the tower to 130 feet in August of 2011 (Docket No. 316A).

with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Middletown's Chief Elected Official and Land Use Officer.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's new antennas will be installed at the same height on the tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

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

4. The installation of Cellco's new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Included in Attachment 3 is a Calculated Radio Frequency Emissions Report demonstrating that the proposed modified facility will comply with the FCC safety standards. The modified facility will be capable of providing Cellco's 5G wireless service.

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

6. According to the attached Structural Analysis ("SA") and Mount Analysis ("MA"), the existing tower, tower foundation and antenna mounts can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 4.

A copy of the parcel map and Property owner information is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 6.

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Benjamin Florsheim, Middletown Mayor
Marek Kozikowski, Director of Land Use
Stephen and Barbara Borrelli, Property Owners
Aleksey Tyurin, Verizon Wireless

ATTACHMENT 1

DOCKET NO. 316 – Optasite, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility at 50 Fairchild Road in Middletown, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		November 14, 2006

Decision and Order

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

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

1. The tower shall be designed as a monopole and shall be constructed no taller than 120 feet above ground level to provide telecommunications services to both public and private entities.

2. All telecommunications antennas providing cellular and/or PCS service shall be flush-mounted to the tower.

3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the City of Middletown and all parties and intervenors, as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:

   a) a final site plan(s) of site development to include specifications for the tower, tower foundation, tower color, antenna mountings, equipment building, access road, utility line, and landscaping; and

   b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

4. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council in the event other carriers locate at this facility or if circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

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

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

7. The Certificate Holder shall provide reasonable space on the tower for no compensation for any City of Middletown public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

8. If the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

10. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

11. Any request for extension of the time periods referred to in Conditions 8, 9, and 10 shall be filed with the Council not later than sixty days prior to the expiration date of this Certificate and shall be served on all parties and intervenors and the City of Middletown, as listed in the service list. Any proposed modifications to this Decision and Order shall likewise be so served.

12. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

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

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

The parties and intervenors in this proceeding are:

Status Granted	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Applicant	Optasite, Inc.	Lucia Chiocchio, Esq. Cuddy & Feder, LLP 90 Maple Avenue White Plains, NY 10601 (914) 761-1300 (914) 761-5372/6405 fax lChiocchio@cuddyfeder.com Jennifer Young Gaudet 345 Taylor Street Talcottville, CT 06066
Intervenor (approved 06/2706)	Nextel Communications of the Mid-Atlantic, Inc.	Thomas J. Regan, Esq. Brown Rudnick Berlack Israels LLP 185 Asylum Street, CityPlace I Hartford, CT 06103-3402 (860) 509-6522 (860) 509-6501 tregan@brownrudnick.com mkozlik@brownrudnick.com
Intervenor (granted 07/27/06	Barbara Melia 379 Bow Lane Middletown, CT 06457 (860) 346-4334 bardebdave@yahoo.com	
Intervenor (granted 07/27/06)	Debora Bagley and Michael Bagley 393 Bow Lane Middletown, CT 06457 (860) 346-5373	
Intervenor (granted 07/27/06)	Earle Roberts 785 Bow Lane Middletown, CT 06457 (860) 346-0068 (860) 344-9327 eroberts4675@sbcglobal.net	

May 7, 2008

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-083-080404** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 50 Fairchild Road, Middletown, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated April 4, 2008, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/MP

c: Honorable Sebastian N. Giuliano, Mayor, City of Middletown
William Warner, AICP Director, City of Middletown
Optasite Towers LLC

ATTACHMENT 2

verizon

WIRELESS COMMUNICATIONS FACILITY

SOUTH FARMS CT
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

DRAWING INDEX

SITE DIRECTIONS

START: 20 ALEXANDER DRIVE
WALLINGFORD, CONNECTICUT 06492

END: 67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

1.	HEAD SOUTH TOWARDS ALEXANDER DRIVE	371 FT
2.	TURN RIGHT	0.1 MI
3.	TURN RIGHT TOWARDS ALEXANDER DRIVE	72 FT
4.	TURN RIGHT TOWARDS ALEXANDER DRIVE	167 FT
5.	TURN RIGHT ONTO ALEXANDER DRIVE	0.3 MI
6.	TURN RIGHT ONTO BARNES INDUSTRIAL PARK.	0.1 MI
7.	TURN RIGHT ONTO CT-68 E.	1.6 MI
8.	CONTINUE STRAIGHT TO STAY ON CT-68 E.	5.3 MI
9.	TURN LEFT ONTO CT-17 N/MAIN STREET	4.0 MI
10.	TURN RIGHT ONTO RANDOLPH ROAD	1.6 MI
11.	TURN LEFT ONTO LEE STREET	0.2 MI
12.	TURN RIGHT ONTO SAND HILL ROAD	0.1 MI
13.	TURN LEFT ONTO TRYON STREET	0.6 MI
14.	TURN RIGHT ONTO BOW LANE	0.5 MI
15.	TURN RIGHT ONTO FAIRCHILD ROAD	0.1 MI

LOCATION MAP
SCALE : 1" = 2000'-0"

SITE INFORMATION

VZ SITE NAME: SOUTH FARMS CT
VZ PROJ FUZE I.D.: 16235710
VZ LOCATION CODE: 20212261289
VZ PROJECT CODE: 535834
LOCATION: 67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

PROJECT SCOPE: REFER TO NOTES ON DRAWING C-1 FOR SCOPE OF WORK.

MAP/BLOCK/LOT: 42/0121

ZONING DISTRICT: R-30 (RESIDENTIAL)

LATITUDE: 41° 32' 42.6984" N (41.545194° N)

LONGITUDE: 72° 37' 13.4004" W (72.620389° W)

SITE COORDINATES AND GROUND ELEVATION OBTAINED FROM VERIZON RFDS & GOOGLE EARTH.

GROUND ELEVATION: 203'± AMSL

PROPERTY OWNER: BORRELLI STEPHEN G & BARBARA L
67 FAIRCHILD RD
MIDDLETOWN CT 06457

APPLICANT: CELLCO PARTNERSHIP
d/b/a VERIZON WIRELESS
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

LEGAL/REGULATORY COUNSEL: ROBINSON & COLE, LLP
KENNETH C. BALDWIN, ESQ.
280 TRUMBULL STREET
HARTFORD, CT 06103

ENGINEER CONTACT: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385
(860) 663-1697

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860) 663-1697
WWW.ALLPOINTSTECH.COM FAX: (860) 663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	05/19/22	FOR REVIEW: JRM
1	09/08/22	FOR REVIEW: JRM
2	05/25/23	FOR FILING: JRM
3	06/01/23	UDPATED ADDRESS
4		FOR FILING: JRM
5		
6		

STATE OF CONNECTICUT
MICHAEL TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: BORRELLI STEPHEN G & BARBARA L
ADDRESS: 67 FAIRCHILD RD MIDDLETOWN CT 06457

SOUTH FARMS CT

SITE ADDRESS: 67 FAIRCHILD ROAD MIDDLETOWN, CT 06457

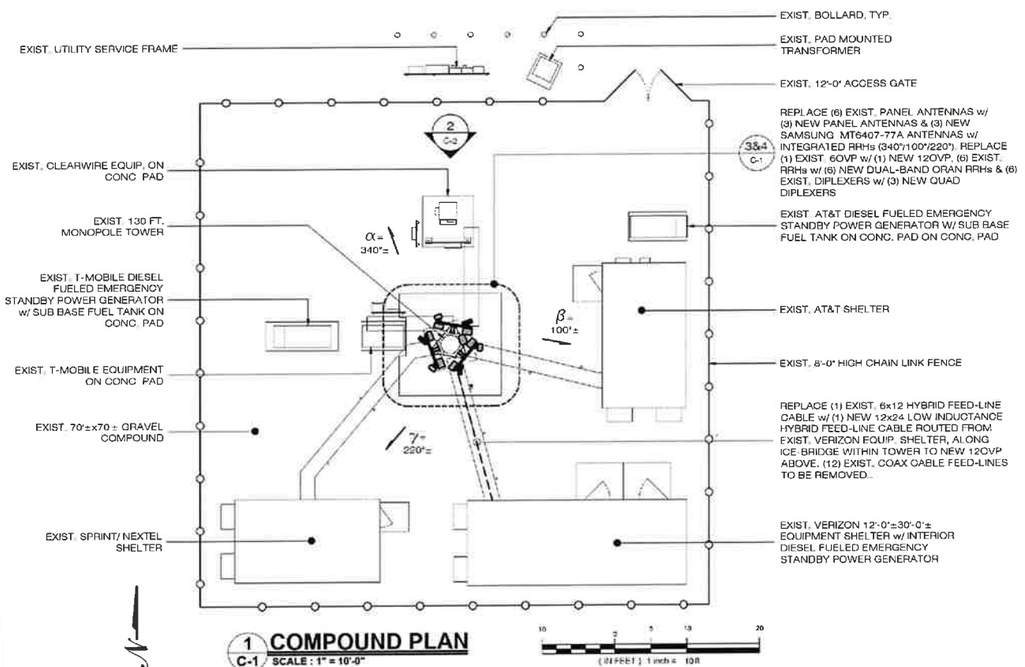
APT FILING NUMBER: CT141_13370

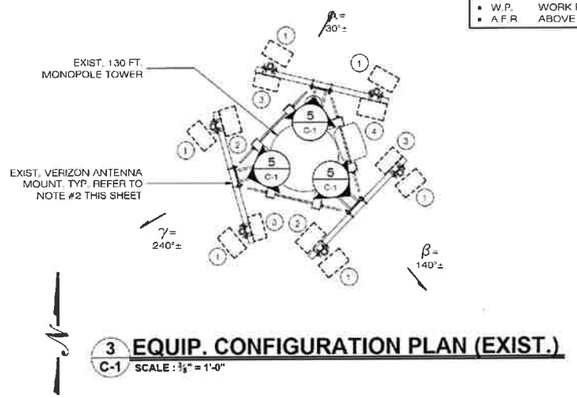
DRAWN BY: JCL
DATE: 05/19/22 CHECKED BY: JRM

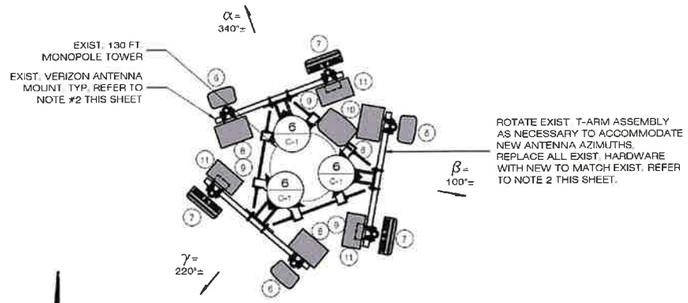
VZW PROJECT CODE: 20212261289
VZW LOCATION CODE: 535834
VZW FUZE ID: 16235710

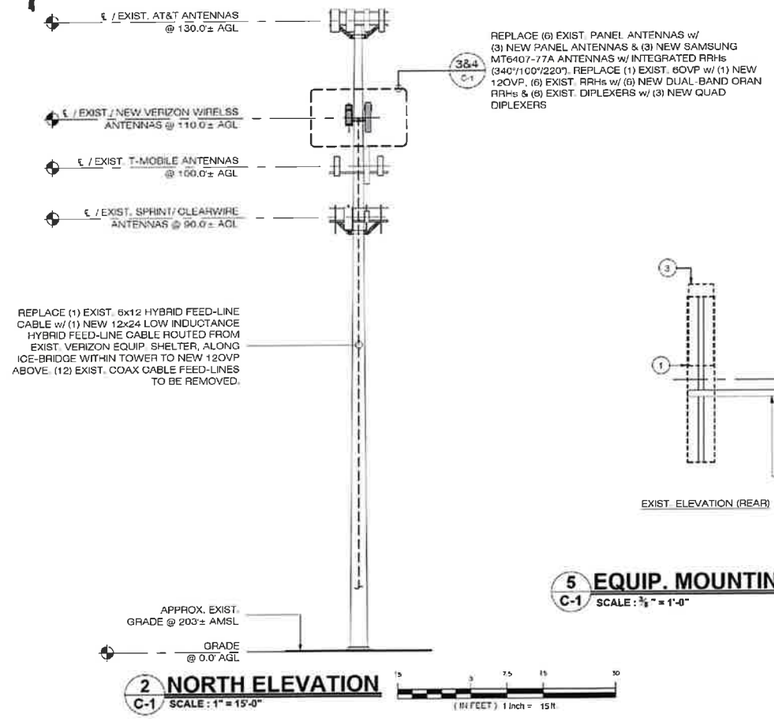
SHEET TITLE: **TITLE SHEET**

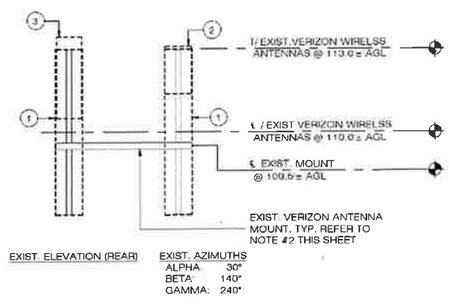
SHEET NUMBER: **T-1**

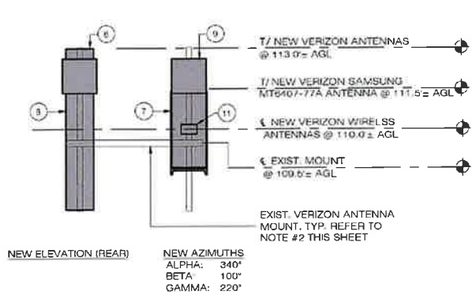












GENERAL ABBREVIATION LIST:

- ABP ABOVE BASE PLATE
- AGL ABOVE GROUND LEVEL
- AMSL ABOVE MEAN SEA LEVEL
- AWS ADVANCED WIRELESS SERVICE
- HDG HOT DIP GALVANIZED
- OVP OVER VOLTAGE PROTECTION
- RRH REMOTE RADIO HEAD
- V.I.F. VERIFY IN FIELD
- W.P. WORK POINT
- A.F.R. ABOVE FINISH ROOF

NOTES:

1. REFER TO TOWER STRUCTURAL ANALYSIS REPORT BY TOWER ENGINEERING SOLUTIONS, DATED 12/07/22, AVAILABLE UNDER SEPARATE COVER.
2. REFER TO MOUNT ANALYSIS REPORT PREPARED BY MASER CONSULTING, CONNECTICUT, PROJECT #21777971 MARKED REV2, DATED 05/23/22 AVAILABLE UNDER SEPARATE COVER
3. BASE MAPPING OBTAINED FROM FIELD MEASUREMENTS CONDUCTED BY ALL-POINTS TECHNOLOGY CORPORATION, P.C. ON 04/29/22
4. PROJECT SCOPE INCLUDES THE FOLLOWING:
   - REPLACEMENT OF (6) EXIST. PANEL ANTENNAS w/ (3) NEW PANEL ANTENNAS & (3) NEW SAMSUNG MT6407-77A ANTENNAS w/ INTEGRATED RRHs.
   - REPLACEMENT OF (6) EXIST. RRHs w/ (6) NEW DUAL-BAND ORAN RRHs.
   - REPLACEMENT OF (1) EXIST. 6OVP w/ (1) NEW 12OVP.
   - REPLACEMENT OF (3) EXIST. DIPLEXERS w/ (3) NEW QUAD DIPLEXERS.
   - REMOVAL OF (3) EXIST. DIPLEXERS.
   - REPLACEMENT OF (1) EXIST. 6x12 HYBRID FEED-LINE CABLE w/ (1) NEW 12x24 LOW INDUCTANCE HYBRID FEED-LINE CABLE.
   - REMOVAL OF (12) 1⅝" EXIST. COAX FEED-LINE CABLES.
4. ALL EXPOSED STEEL AND HARDWARE TO BE HOT DIP GALV. (HDG). PAINT TO MATCH EXIST (WHERE APPLICABLE)
5. CAP & WEATHERPROOF ALL UN-USED CABLE ENTRY PORTS (WHERE APPLICABLE).
6. MOUNT & GROUND ALL NEW EQUIPMENT IN ACCORDANCE WITH NEC (NFPA-70), NESC AND MANUFACTURERS SPECIFICATION.
7. SECURE ALL NEW ANTENNA CABLES PER MANUFACTURER RECOMMENDATIONS.
8. BOND NEW ANTENNA MOUNTING PIPES TO ANTENNA SECTOR GROUND BAR w/ # 2 AWG, BCW, (WHERE APPLICABLE).
9. CONTRACTOR SHALL INSTALL NEW SIDE-BY-SIDE & DUAL-MOUNT BRACKETS PER ANTENNA MOUNT MANUFACTURER RECOMMENDATIONS, INCLUDING VERIFICATION OF MINIMUM PIPE MAST DIAMETER REQUIRED TO INSTALL NEW MOUNT BRACKETS. UNLESS NOTED OTHER WISE, CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD SHOULD EXIST. PIPE MASTS REQUIRE REPLACEMENT TO SUPPORT THE NEW MOUNT BRACKETS.
10. ANTENNA CONFIGURATIONS SHOWN HEREIN ARE REAR ELEVATIONS (UNLESS NOTED OTHERWISE).
11. ANTENNA SPACING DIMENSIONS ARE TO THE CENTER OF THE EXIST. ANTENNA AND PROP. ANTENNA FACE.
12. REFER TO THE FINAL RFDS PROVIDED BY VERIZON FOR THE LATEST INFORMATION REGARDING EQUIPMENT MODELS, REQUIRED CABLING & DOWN-TILT INFORMATION
13. PAINT ALL LSUB6 ANTENNAS TO MATCH EXISTING STRUCTURE (WHERE APPLICABLE). COORDINATE W/ LSUB6 MANUFACTURER INSTALLATION MANUAL REQUIREMENTS. VERIZON CONSTRUCTION MANAGER & OWNER.
14. PAINT ALL NEW NON SAMSUNG MT6407-77A ANTENNAS & APPURTENANCES TO MATCH EXIST. STRUCTURE (WHERE APPLICABLE) COORDINATE W/ VERIZON CONSTRUCTION MANAGER & BUILDING OWNER.

SCOPE OF WORK (ALL) SECTORS

1. EXIST. ANTENNA (TO BE REPLACED) MODEL: ANDREW SBNHH-1D65B
2. EXIST. RRH (TO BE REPLACED) MODEL: NOKIA B13 4x30 RRH
3. EXIST. RRH (TO BE REPLACED) MODEL: NOKIA B4 2x60-4R RRH
4. EXIST. OVP MOUNTED TO TOWER (TO BE REPLACED) MODEL: RFS RRFDC-3315-PF-48
5. EXIST. DIPLEXER (TO BE REPLACED) MODEL: COMMSCOPE CBC78-DF
8. NEW ANTENNA MODEL: JMA MX10FIT665-02
7. NEW ANTENNA MODEL: SAMSUNG MT6407-77A w/ INTEGRATED RRH
8. NEW DUAL-BAND ORAN RRH MODEL: SAMSUNG B2/B66A RRH (RF4439d-25A)
9. NEW DUAL-BAND ORAN RRH MODEL: SAMSUNG B5-B13 RRH (RF4440d-13A)
10. NEW 12OVP (MOUNTED TO TOWER) MODEL: RAYCAP RVZD-6627-PF-48
11. NEW DIPLEXER MODEL: COMMSCOPE SDX1926Q-43

Cellco Partnership d/b/a
verizon
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6		

STATE OF CONNECTICUT · MICHAEL TRODDEN · 33313 · LICENSED PROFESSIONAL ENGINEER

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SITE ADDRESS: 67 FAIRCHILD ROAD MIDDLETOWN, CT 06457

APT FILING NUMBER: CT141_13370

DRAWN BY: JCL
DATE: 05/19/22
CHECKED BY: JRM

VZW PROJECT CODE: 20212261289
VZW LOCATION CODE: 535834
VZW FUZE ID: 16235710

SHEET TITLE:
COMPOUND PLAN, TOWER ELEVATION, EQUIP. PLANS, ELEVATIONS & NOTES

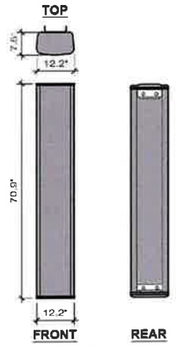
SHEET NUMBER:
C-1

EQUIPMENT DATA

EQUIPMENT SPECIFICATIONS

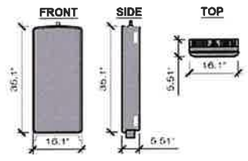
SECTOR	ANTENNA MAKE/MODEL	QTY	AZIMUTH	EQUIPMENT STATUS	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LBS)
ALPHA	700/850/1900/2100: JMA MX10FIT665-02	1	340°	NEW	70.9	12.2	7.5	53.4 (2)
	SAMSUNG MT6407-77A	1	340°	NEW	35.1 (2)	16.1 (2)(4)	5.51 (2)	87.1 (2)
BETA	700/850/1900/2100: JMA MX10FIT665-02	1	100°	NEW	70.9	12.2	7.5	53.4 (2)
	SAMSUNG MT6407-77A	1	100°	NEW	35.1 (2)	16.1 (2)	5.5 (2)	87.1 (2)
GAMMA	700/850/1900/2100: JMA MX10FIT665-02	1	220°	NEW	70.9	12.2	7.5	53.4 (2)
	SAMSUNG MT6407-77A	1	220°	NEW	35.1 (2)	16.1 (2)	5.5 (2)	87.1 (2)
	APPURTENANCE MAKE/MODEL							
	SAMSUNG B2/B66A ORAN RRH (RF4439d-25A)	3	-	NEW	15.0	15.0	10.1	74.7
	SAMSUNG B5/B13 ORAN RRH (RF4440d-13A)	3	-	NEW	15.0	15.0	9.1	70.3
	COMMSCOPE DIPLEXER (SDX1926Q-43)	3	-	NEW	4.2	6.9	2.9	6.2
	RAYCAP RVZDC-6627-PF-48	1	-	NEW	29.5	16.5	12.6	32.0

(1) ETR DENOTES EXIST. TO REMAIN
(2) WEIGHT WITHOUT MOUNTING BRACKET.
(3) ANTENNA DATA BASED ON LATEST VERIZON RFDS.
(4) EQUIPMENT CONFIGURATION INDICATED ABOVE AS VIEWED FROM BEHIND.
(5) NOT TO EXCEED



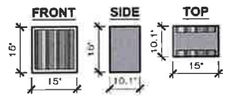
JMA MX10FRO665-02
X-POL ANTENNA
7.39 SF (FRONT)
(53.4 lbs)

2 B-1 NEW ANTENNA DETAILS
SCALE : ½" = 1'-0"

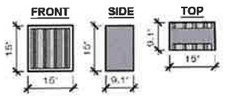


SAMSUNG MT6407-77A ANTENNA
HxWxD=35.1"x16.1"x5.51"
WT=87.1 Lbs
(NOT TO EXCEED)

3 B-1 NEW ANTENNA DETAIL
SCALE : ½" = 1'-0"

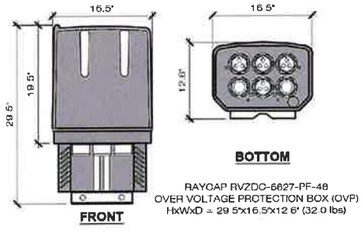


SAMSUNG DUAL HIGH BAND
B2/B66A (RF4439d-25A) ORAN
REMOTE RADIO HEAD (RRH)
HxWxD=15.0"x15.0"x10.1" (74.7 Lbs)



SAMSUNG DUAL LOW BAND B5/B13
(RF4440d-13A) ORAN
REMOTE RADIO HEAD (RRH)
HxWxD=15.0"x15.0"x9.1" (70.3 Lbs)

4 B-1 RRH EQUIPMENT DETAILS
SCALE : ½" = 1'-0"



RAYCAP RVZDC-6627-PF-48
OVER VOLTAGE PROTECTION BOX (OVP)
HxWxD = 29.5"x16.5"x12.6" (32.0 lbs)

5 B-1 OVER VOLTAGE PROTECTION BOX (OVP)
SCALE : 1" = 1'-0"

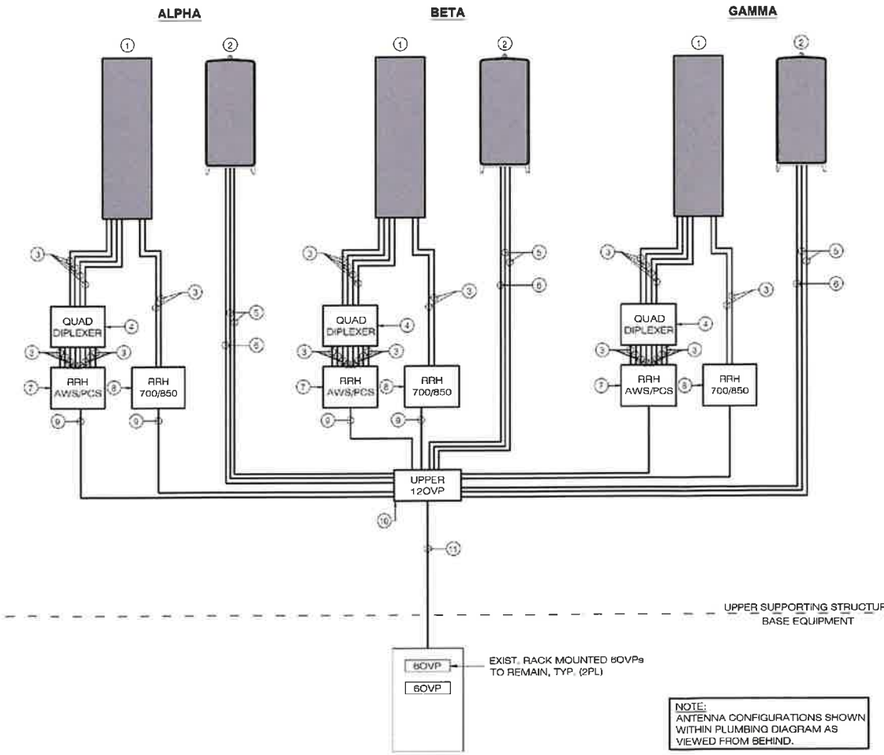
COMMSCOPE QUAD-PACK DIPLEXER
SDX1926Q-43 (OR EQUAL)
HxWxD=4.2"x6.9"x2.9" (6.2± LBS.)

6 A-2 QUAD-PACK DIPLEXER
SCALE : 1" = 1'-0"

BILL OF MATERIALS

	EQUIPMENT DESCRIPTION	QUANTITY	LENGTH	COMMENTS
1	700/850/1900/2100	3		JMA MX10FIT665-02
2	LSUB6 ANTENNA w/ INTEGRATED RRH	3		SAMSUNG MT6407-77A
3	1/2" JUMPER CABLE	42	15 FT	ROUTE FROM RRH TO DIPLEXER/ANTENNAS
4	QUAD DIPLEXER	3		COMMSCOPE SDX1926Q-43
5	ANTENNA LINK CABLES	6	15 M	ROUTE FROM UPPER OVP TO ANTENNAS
6	ANTENNA POWER CABLES	3	15 M	PROPRIETARY POWER CABLE FROM UPPER OVP TO ANTENNAS
7	AWS/PCS RRH	3		SAMSUNG B2/B66A ORAN RRH (RF4439d-25A)
8	700/850 RRH	3		SAMSUNG B5/B13 ORAN RRH (RF4440d-13A)
9	RRH CABLES	6	15M	PROPRIETARY POWER & FIBER CABLES
10	UPPER 12OVP	1		(RAYCAP RVZDC-6627-PF-48)
11	HYBRID CABLE	1	150± FT	12x24 LOW INDUCTANCE HYBRID FEED-LINE CABLE ROUTED FROM LOWER OVP TO UPPER OVP

NOTES:
1. INFORMATION SHOWN HEREON IS FOR USE BY VERIZON EQUIPMENT OPERATIONS.
2. ANTENNA DATA BASED ON LATEST VERIZON RFDS
3. * DENOTES EQUIPMENT DESIGNATED FOR LEASING ONLY* (WHERE APPLICABLE)
4. INSTALL ALARM BOARDS AT ALL OVPs WHERE REQUIRED. COORDINATE w/ VERIZON EQUIPMENT ENGINEERING.
5. INSTALL UP-CONVERTER(S) LOCATED AT BASE OVPs WHERE REQUIRED. COORDINATE w/ VERIZON EQUIPMENT ENGINEERING AS NECESSARY.
6. COORDINATE ANTENNA CABLING REQUIREMENTS WITH VERIZON ENGINEERING.
7. CONTRACTOR SHALL INSTALL NEW SIDE-BY-SIDE & DUAL-MOUNT BRACKETS PER ANTENNA MOUNT MANUFACTURER RECOMMENDATIONS, INCLUDING VERIFICATION OF MINIMUM PIPE MAST DIAMETER REQUIRED TO INSTALL NEW MOUNT BRACKETS. UNLESS NOTED OTHER WISE, CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD SHOULD EXIST. PIPE MAST REQUIRE REPLACEMENT TO SUPPORT THE NEW MOUNT BRACKETS.



1 B-1 PLUMBING DIAGRAM
SCALE : N.T.S.

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860) 663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	05/19/22	FOR REVIEW: JRM
1	09/08/22	FOR REVIEW: JRM
2	05/25/23	FOR FILING: JRM
3	06/01/23	UDPATED ADDRESS
4		FOR FILING: JRM
5		
6		

STATE OF CONNECTICUT
MICHAEL TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: BORRELLI STEPHEN G & BARBARA L
ADDRESS: 67 FAIRCHILD RD MIDDLETOWN CT 06457

SOUTH FARMS CT

SITE ADDRESS: 67 FAIRCHILD ROAD MIDDLETOWN, CT 06457

APT FILING NUMBER: CT141_13370

DRAWN BY: JCL
DATE: 05/19/22 CHECKED BY: JRM

VZW PROJECT CODE: 20212261289
VZW LOCATION CODE: 535834
VZW FUZE ID: 16235710

SHEET TITLE:
RF BILL OF MATERIALS, EQUIPMENT SPECIFICATIONS & DETAILS

SHEET NUMBER:
B-1

DESIGN BASIS

GOVERNING CODES/DESIGN STANDARDS

2021 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2022 CONNECTICUT STATE BUILDING CODE
ASCE 7-16
TIA-222-H (TOWER)

01 GENERAL

ABBREVIATIONS USED IN THESE SPECIFICATIONS INCLUDE THE FOLLOWING:

ACI	AMERICAN CONCRETE INSTITUTE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWS	AMERICAN WELDING SOCIETY
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN STANDARDS AND TESTING METHODS
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
ICC ES	INTERNATIONAL CODE COUNCIL EVALUATION SERVICE
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
UL	UNDERWRITERS LABORATORIES
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

EVERY INDIVIDUAL TRADE, DISCIPLINE, AND CONTRACTOR SHALL INCLUDE THESE GENERAL SPECIFICATIONS.

THE ENGINEER IS NOT RESPONSIBLE FOR NOR A GUARANTOR OF THE INSTALLING CONTRACTORS WORK, ADEQUACY OF ANY SITE COMPONENT, SUPERVISION OF ANY WORK, AND SAFETY IN, ON, OR ABOUT THE WORK SITE.

ANY REFERENCE HEREIN TO AN OR EQUAL ITEM, THAT EQUAL ITEM SHALL BE PRE-APPROVED BY THE CONSTRUCTION MANAGER BEFORE INSTALLATION.

ALL TRADES SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES AND OTHER WORK AND CONDITIONS AS APPROPRIATE OR REQUIRED TO AVOID CONFLICTS. RESOLVE AND COORDINATE ALL CONFLICTS WITH ALL AFFECTED WORK AND SITE OPERATIONS. COORDINATION WITH THE SITE SHALL BE WITH THE OWNER, OR OWNERS SPECIFIED REPRESENTATIVE, FOR EVERYTHING RELATED TO THE INSTALLATION OF THIS PROJECT.

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE EDITIONS OF ALL APPLICABLE CODES AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION (AHJ). WHERE A CONFLICT EXISTS BETWEEN CODES, PLANS, SPECIFICATIONS, AND/OR AHJ, THE MORE STRINGENT AUTHORITY SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLANS AND SPECIFICATIONS, PLAN SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLAN SHEETS, CONSTRUCTION MANAGER SHALL BE CONSULTED PRIOR TO COMMENCING ANY WORK.

CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND NEWERLY OPERATIVE AND USABLE SYSTEM THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.

CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, INSTALLATIONS, AND EQUIPMENT IN THE FIELD PRIOR TO BID, FABRICATION, AND INSTALLATION OF ANY WORK.

CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED FOR INSPECTIONS PRIOR TO CLOSING PENETRATIONS AND OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

CONTRACTOR SHALL VISIT THE SITE TO MANAGE AND GAIN APPROVAL FOR ALL TENANT DISRUPTIONS, POWER OUTAGES, WORK SCHEDULES, DEFINITION OF WORK AREA AND WORK STORAGE, NEWER BUILDINGS/SITE ACCESS, NOISE AND CLEANLINESS REQUIREMENTS WITH THE BUILDING/SITE MANAGEMENT PRIOR TO ALL WORK. ANY DISRUPTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE IMPLEMENTED ONLY UPON WRITTEN APPROVAL OF THE OWNER.

THE CONTRACTOR SHALL SAFEGUARD AGAINST CREATING ANY HAZARD AFFECTING TENANT EGRESS OR COMPROMISING SITE SECURITY MEASURES.

PRIOR TO ALL BELOW-GRADE WORK AND ANY SURFACE WORK IN A NEW AREA FOR STRUCTURES OR VEHICLES, CONTRACTOR SHALL ENGAGE A MARKOUT SERVICE TO IDENTIFY ANY UNDERGROUND STRUCTURES, CONDUITS, AND PIPELINES IN THE AREA. ALL EXISTING SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UNDERGROUND UTILITIES IDENTIFIED OR ENCOUNTERED, SHALL BE PROTECTED AT ALL TIMES. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN DIGGING OR EXCAVATING IN ANY MANNER AROUND OR NEAR SUCH UTILITIES. CONTRACTOR IS RESPONSIBLE FOR REPAIRS, REPLACEMENT, AND ALL DAMAGES DUE TO DAMAGE OF UTILITIES BY HIS OPERATIONS.

ALL EXISTING AND NEW EQUIPMENT AND MATERIAL LOCATIONS, ROUTING, ORIENTATION, MOUNTING, SPECIFICATIONS AND GENERAL INSTALLED CHARACTERISTICS SHALL BE CONSIDERED DIAGRAMMATIC ON THE PLANS. EXACT CONDITIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO ANY INSTALLATION. ANY DIFFERENCES THAT MAY CAUSE SCHEDULE, COST, OR QUALITY SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER OR ENGINEER PRIOR TO ANY WORK.

ALL REFERENCES HEREIN TO VERIFICATION OF ANY CONDITION OF SITE, FIELD, PLANS, OR SPECIFICATIONS PRIOR TO ANY WORK SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR. ANY AND ALL ADDITIONS, MODIFICATIONS, CHANGES, REPAIR, OR DEMOLITION AS A RESULT OF FAILURE TO BRING ANY EXISTING CONDITION NEWERLY TO THE ATTENTION OF THE OWNER OR ENGINEER SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR WITHOUT DELAY, COST, OR CHANGES IN QUALITY.

ALL NOTES THIS SHEET SHALL APPLY UNLESS SPECIFICALLY NOTED OTHERWISE ON THE INCLUDED DRAWINGS OR IN SEPARATE PROJECT SPECIFICATIONS AS APPLICABLE. ALL SPECIFICATIONS SHALL BE CONSIDERED REQUIRED UNLESS APPROVED EQUAL BY THE OWNER, CONSTRUCTION MANAGER, OR ENGINEER AS APPLICABLE.

THE WORDS "PROVIDE" OR "INSTALL" SHALL MEAN FURNISH AND INSTALL.

CONTRACTOR SHALL PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR THE INSTALLATION OF HIS WORK. ANY PATCHING SHALL MATCH EXISTING SURROUNDING AREA IN ALL RESPECTS. ALL REMOVED MATERIAL SHALL BE REMOVED FROM THE PREMISES DAILY IN AN APPROVED SAFE MANNER.

ALL SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE PROMPTLY WHEN DEEMED TO BE SURPLUS.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF HIS WORK AND NEWLY INSTALLED OR EXISTING WORK, INCLUDING PROTECTION OF THE SITE, ALL STRUCTURES, AND ALL OCCUPANTS. FURNISH, INSTALL, MAINTAIN, AND REMOVE AS APPROPRIATE, ALL APPROPRIATE BARRIERS, SAFETY GUARDS, SIGNAGE, AND SECURITY AS REQUIRED.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR RESPECTIVE FEES, PERMITS, INSPECTIONS, TESTING, CERTIFICATES, AND ALL MANAGEMENT OF SAME REQUIRED FOR COMPLETION OF AND LEGAL OCCUPANCY OF THE FINISHED PROJECT.

ALL CONTRACTORS SHALL PROVIDE ALL NECESSARY TOOLS, FIXTURES, SERVICES, MATERIALS, JOB AIDS, AND PERSONNEL REQUIRED FOR THE EXECUTION OF THEIR WORK.

EACH CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP BY THEM TO BE FREE OF DEFECTS AND MAINTAINED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE INSTALLATION BY THE OWNER AND ENGINEER.

ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS IN THE TRADE HAVING JURISDICTION.

ANY DEVIATION, MODIFICATION, ADDITION, OR CHANGE IN DESIGN SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE OWNER OR ENGINEER.

ALL CONTRACTORS SHALL SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIALS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION, AND SHALL NOT PROCEED UNTIL ENGINEER APPROVAL IN WRITING IS RETURNED. EACH CONTRACTOR SHALL MAINTAIN ON JOB SITE A COMPLETE SET OF SHOP DRAWINGS WITH ANY DEVIATIONS FROM THE ORIGINAL DESIGN SHALL BE NOTED.

ALL MATERIALS AND EQUIPMENT SHALL BE NEW, WITHOUT BLEMISH OR DEFECT, AND SUITABLE AND LISTED FOR THE INSTALLATION AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS OR SPECIFICATIONS. ALL ITEMS OF EQUIPMENT OR MATERIAL THAT ARE OF ONE GENERIC TYPE SHALL BE ONE MANUFACTURER THROUGHOUT.

ALL MATERIALS, EQUIPMENT, TOOLS, AND ITEMS UNDER THE CONTRACTOR'S RESPONSIBILITY ON THE JOBSITE SHALL BE ADEQUATELY SECURED, MAINTAINED, AND PROTECTED, SO AS NOT TO BECOME DAMAGED OR CREATE ANY HAZARD TO PERSONNEL OR NEWERTY.

THE CONTRACTORS HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY THE OWNER.

CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR ALL OF HIS CREW, AND ENSURE THAT EVERY CREW MEMBER FOLLOWS SAFE WORK PRACTICES. SAFETY TRAINING SHALL INCLUDE, BUT NOT BE LIMITED TO FALL PROTECTION, CONFINED SPACE ENTRY, ELECTRICAL SAFETY, AND TRENCHING/EXCAVATION SAFETY WHERE SUCH WORK IS EXECUTED OR ENCOUNTERED.

ALL TEMPORARY WORK REQUIRED OR SPECIFIED AS A PART OF THIS WORK, SHALL MEET ALL OF THE SAME REQUIREMENTS AS PERMANENT INSTALLATIONS, SHALL MEET ALL APPLICABLE CODE REQUIREMENTS AND SHALL BE COMPLETELY REMOVED AFTER ITS PURPOSES HAVE BEEN SERVED.

ANY EXISTING UTILITY, SERVICE, STRUCTURE, EQUIPMENT, OR FIXTURE OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER.

IF ASBESTOS IS ENCOUNTERED DURING WORK EXECUTION, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER AND CEASE ALL ACTIVITIES IN AFFECTED AREAS UNTIL NOTIFIED BY THE CONSTRUCTION TO RESUME OPERATIONS.

EXISTING ELECTRICAL AND MECHANICAL FIXTURES, PIPING, WIRING, AND EQUIPMENT OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. TEMPORARY SERVICE INTERRUPTIONS MUST BE COORDINATED WITH OWNER.

05 STEEL

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

MATERIALS:

WIDE FLANGE	ASTM A992, GR 50
TUBING	ASTM A500, GR B
PIPE	ASTM A53, GR B
BOLTS	ASTM A325
GRATING	TYPE GW-2 [illegible]
[illegible] METALS	ASTM A36

PROVIDE CERTIFICATION THAT WELDERS TO BE USED IN WORK ARE LICENSED AND HAVE SATISFACTORILY PASSED AWS QUALIFICATION TEST UNDER THE PROVISIONS OF APPENDIX D, PARTS II AND III OF THE AWS CODE FOR WELDING IN BUILDING CONSTRUCTION.

ALL BUILDING CONNECTION POINTS TO BE CENTERED ON EXISTING STRUCTURAL BEARING POINTS AND THE LOCATIONS ARE TO BE VERIFIED IN FIELD PRIOR TO THE FABRICATION OF STEEL.

DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF AISC SPECIFICATION FOR *THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS*.

NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIAMETER GALVANIZED ASTM A 307 BOLTS UNLESS OTHERWISE NOTED.

ALL STEEL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIPPED GALVANIZED) COATINGS" ON IRON AND STEEL PRODUCTS WITH A COATING WEIGHT OF 2 OZ/SF.

ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE EXPOSED TO WEATHER SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".

DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY TOUCHING UP ALL DAMAGED GALVANIZED STEEL WITH COLD ZINC, "GALVANOX", "DRY GALV", OR "ZINC IT" IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH UP DAMAGED NON-GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW. FIELD CUTTING OF STRUCTURAL STEEL IS NOT PERMITTED EXCEPT WITH THE PRIOR APPROVAL OF THE ENGINEER.

CONTRACTOR TO REMOVE AND REINSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

THE STEEL STRUCTURE SHALL BE DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.

ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.

TOWER MANUFACTURERS DESIGNS SHALL PREVAIL FOR TOWER.

CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC *MANUAL OF STEEL CONSTRUCTION*. CONNECTIONS SHALL BE PROVIDED TO CONFORM TO THE REQUIREMENTS OF TYPE 2 CONSTRUCTION.

STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE MINIMUM 3/4" DIAMETER AND EACH CONNECTION SHALL HAVE MINIMUM TWO BOLTS. LOCK WASHERS ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES. IF TENSION CONTROL BOLTS ARE USED, CONNECTIONS SHALL BE DESIGNED FOR SLIP CRITICAL BOLT ALLOWABLE LOAD VALUES.

DESIGN CONNECTIONS AT BEAM ENDS FOR 10 KIPS (MIN).

ALL U-BOLTED CONNECTIONS SHALL BE COMPLETED WITH DOUBLE NUTS OR A LOCK WASHER.

CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD *QUALIFICATION PROCEDURES*". ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE LARGER OF 1/4" FILLET OR MINIMUM SIZE PER TABLE J2.4 IN THE AISC *MANUAL OF STEEL CONSTRUCTION*. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED. SEE NOTE REGARDING DAMAGED GALVANIZED SURFACES.

ALL ARC AND GAS WELDING SHALL BE DONE BY A LICENSED AND CERTIFIED WELDER IN ACCORDANCE WITH AWS.

SEAL ALL PENETRATIONS AND SEAMS BETWEEN MASONRY AND STEEL WITH DOW CORNING 790 SILICONE BUILDING SEALANT OR EQUAL.

26 ELECTRICAL

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

ALL ELECTRICAL CONDUCTORS:

- INSULATION SHALL BE MINIMUM 600V TYPE THHN, THWN-2, OR XHHW.
- BRANCH CIRCUIT CONDUCTORS SHALL BE SOFT DRAWN 98% MINIMUM CONDUCTIVITY NEWERLY REFINED COPPER.
- FEEDER CIRCUIT CONDUCTORS SHALL BE EITHER COPPER OR ALUMINUM OF THE APPROPRIATE SIZE FOR THE APPLICATION, OR AS SPECIFICALLY NOTED.
- PERMANENTLY LABEL OR TAG ALL CONDUCTORS WITH THEIR CIRCUIT DESIGNATION AT ALL TERMINATION ENDS, SPLICES, AND VISIBLE AS PASS-THROUGH IN ALL ENCLOSURES.

ALL CONDUIT, RACEWAY, WIREWAYS, DUCTS, ETC. SHALL BE LISTED AND SUITABLE FOR THE APPLICATION. ONLY THE FOLLOWING CONDUITS AS APPROVED AND LISTED FOR THE APPLICATION SHALL BE ACCEPTABLE:

- ELECTRICAL METALLIC TUBING (EMT)
- COMPRESSION COUPLINGS AND CONNECTORS ONLY MADE UP WRENCH TIGHT.
- FLEXIBLE METAL CONDUIT (FMC) AND LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)
- FINAL CONNECTIONS TO VIBRATING OR ADJUSTABLE EQUIPMENT INCLUDING, BUT NOT LIMITED TO, LIGHT FIXTURES, HVAC UNITS, TRANSFORMERS, MOTORS, ETC. OR WHERE EQUIPMENT IS PLACED UPON SLAB ON GRADE.
- RIGID GALVANIZED STEEL (RGS)
- ALL FITTINGS, CONNECTORS, AND COUPLINGS SHALL BE THREADED MADE UP WRENCH TIGHT.
- RIGID POLYVINYL CHLORIDE (PVC) SCHEDULE 40 OR SCHEDULE 80
- MAY BE USED FOR SERVICES, EXTERIOR, BELOW GRADE, AND WET LOCATIONS.
- SHALL NOT BE USED IN CONCRETE SLABS NOR EXPOSED WITHIN A BUILDING OR STRUCTURE.
- METAL CLAD CABLE (MC)
- CONCEALED INSTALLATIONS ONLY.
- WITHIN A DUCT WITH SMOOTH OR CORRUGATED METAL JACKET AND NO OUTER COVERING OVER THE METAL JACKET.

IN FINISHED SPACES, ALL CONDUITS SHALL BE CONCEALED EXCEPT TO MAKE A FINAL CONNECTION TO EQUIPMENT NOT MOUNTED IN OR AGAINST FINISH MATERIAL.

ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE A SEPARATE NEWERLY SIZED AND MARKED GROUNDING CONDUCTOR, PER APPLICABLE CODES THAT BONDS ALL ENCLOSURES, BOXES, ETC. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING CONDUCTOR.

IF EXISTING ELECTRIC SERVICE IS TO REMAIN, CONTRACTOR SHALL BE VERIFY THAT IT MEETS PROJECT REQUIREMENTS WITHOUT MODIFICATION. IF IT IS TO BE ADDED OR REPLACED AS A PART OF THIS WORK, CONTRACTOR SHALL ORDER FROM, COORDINATE WITH, AND GAIN APPROVAL FROM THE ELECTRICAL UTILITY. ALL ELECTRICAL EQUIPMENT SHALL BE AS SPECIFIED AND AS APPROVED BY THE LOCAL UTILITY WHERE APPLICABLE.

ALL EQUIPMENT, ENCLOSURES, ETC. SHALL BE SUITABLE FOR THE INSTALLED ENVIRONMENT, MINIMUM NEMA 3R FOR ALL EXTERIOR INSTALLATIONS.

WIRING DEVICES SHALL BE SPECIFICATION GRADE AND WIRING DEVICE COVER PLATES SHALL BE PLASTIC WITH ENGRAVING AS SPECIFIED. COLOR SHALL BE IVORY. ALL DEVICES AND COVER PLATES SHALL BE OF THE SAME MANUFACTURER.

ALL FIRE-RATED PENETRATIONS SHALL BE SEALED USING A SUITABLE AND LISTED FIRE SEALING DEVICE OR GROUT THAT WILL MAINTAIN THE FIRE RATING OF THE STRUCTURE PENETRATED.

PROVIDE PERMANENTLY AFFIXED ENGRAVED NAMEPLATES FOR ALL CODE REQUIRED LABELING AND ON ALL PANELS, METERING, DISCONNECTS, AND ELECTRICAL EQUIPMENT THAT IDENTIFIES EQUIPMENT SERVED, ELECTRICAL SOURCE WITH CIRCUIT IDENTIFICATION, AND VOLTAGES WITHIN.

ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL FINAL TERMINATIONS TO ALL EQUIPMENT.

ALL ELECTRICAL APPURTENANCES THAT ARE DISCONNECTED SHALL BE COMPLETELY REMOVED WITH EXISTING STRUCTURES TO REMAIN REPAIRED, FINISHED, FILLED, PAINTED, ETC. ALL PANEL SCHEDULES, EQUIPMENT LABELING, AND CODE-REQUIRED LABELING SHALL BE VERIFIED AND NEWERLY COMPLETED TO MATCH THE INSTALLATION.

26 GROUNDING

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

GROUND ALL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH BEST INDUSTRY PRACTICE, THE REQUIREMENTS OF THE NFPA 70 NATIONAL ELECTRICAL CODE (NEC), AND ALL OTHER APPLICABLE CODES AND REGULATIONS.

ALL GROUNDING ELECTRODES PRESENT AT EACH SERVICE LOCATION SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM.

ALL EQUIPMENT ENCLOSURES, DEVICES, AND CONDUITS SHALL BE GROUNDED BY THE INSTALLATION OF A SEPARATE GROUNDING CONDUCTOR FOR ALL FEEDER AND BRANCH CIRCUITS THAT IS SIZED PER CODE OR IS OF THE SIZE INDICATED ON THE DRAWINGS. SHALL BE CONTINUOUS IN LENGTH, AND SHALL BE BONDED TO EACH ENCLOSURE PASSED THROUGH. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING WIRE OR CIRCUIT.

BOND ALL METALLIC CONDUITS TOGETHER THAT ARE CONNECTED TO NON-METALLIC ENCLOSURES, IN-GROUND BOXES, AND TO AN ENCLOSURE WHERE A GROUND BUS IS SPECIFIED OR SUPPLIED. ACCOMPLISH THIS BOND WITH GROUNDING CONDUCTORS MINIMUM SIZED TO THE LARGEST GROUNDING CONDUCTOR PRESENT IN THE ENCLOSURE CONNECTED TO A GROUNDING TYPE BUSHING EQUALLY SIZED OR MAXIMUM GROUND WIRE ACCOMMODATION AVAILABLE IN STANDARD MANUFACTURE FOR THE CONDUIT SIZE, WHICHEVER IS LESS.

EQUIPMENT GROUNDING AND LOAD SIDE BONDING CONDUCTORS SHALL BE SIZED PER THE CIRCUITS OVER-CURRENT PROTECTIVE DEVICE (OCPD) SIZE. WHERE THE UNGROUNDED CONDUCTORS ARE INCREASED IN SIZE ABOVE THE STANDARD FOR THE CIRCUITS OCPD, INCREASE THE GROUNDING CONDUCTOR NEWPORTIONATELY TO THE CROSS-SECTIONAL AREA OF THE UNGROUNDED CONDUCTORS.

SERVICE MAIN BONDING JUMPERS AND GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED AND INSTALLED PER THE MINIMUM OF ALL APPLICABLE CODES AND REGULATIONS.

26 LIGHTNING PROTECTION

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS AND THE GROUNDING SPECIFICATIONS HEREIN.

THE LIGHTNING PROTECTION GROUNDING SYSTEM (LPGS) SHALL CONSIST OF BONDING ALL EQUIPMENT AND CONDUCTIVE STRUCTURES TO LOCALIZED SINGLE-POINT GROUNDING CONNECTIONS (TYPICALLY GROUND BARS) WHICH ARE BONDED TOGETHER AND TO AN IN-GROUND SYSTEM. IF THE LPGS IS ON A BUILDING, IT SHALL BE EFFECTIVELY BONDED TO THE ELECTRICAL SERVICE MAIN BONDING JUMPER AND TO ADDITIONAL IN-GROUND ELECTRODES AS MAY BE REQUIRED OR INDICATED. IF THE LPGS IS ON A DEDICATED COMMUNICATION SITE, ALL EQUIPMENT AREAS AND TOWERS SHALL EACH HAVE THEIR OWN IN-GROUND RING WITH EVERY RING BONDED TOGETHER, AND ALL CONDUCTIVE STRUCTURES IN CLOSE PROXIMITY (FENCES, ICE BRIDGES, ISOLATED EQUIPMENT, ETC.) ALSO BONDED TO PROVIDE A COMMON ELECTRICAL EQUIPOTENTIAL SYSTEM FOR ALL CONDUCTIVE ELEMENTS AND STRUCTURES.

CONDUCTORS

- MIN #2 AWG SOLID BARE TINNED COPPER (SBTC) FOR ALL IN-GROUND CONDUCTORS.
- MIN #2 AWG COPPER GREEN STRANDED FOR BONDING STRUCTURES, AND FOR INTER-SYSTEM BONDING OF INDIVIDUAL ELEMENTS SUCH AS GROUND BAR TO GROUND BAR.
- MIN #6 AWG COPPER GREEN STRANDED OR ALL EQUIPMENT BONDING.
- INSTALL ALL IN-GROUND CONDUCTORS IN THE SAME HORIZONTAL PLANE OR IN A DOWNWARD DIRECTION AWAY FROM THE TOWER AND EQUIPMENT AREAS.
- AVOID LONG RUNS. MAKE DIRECT RUNS AS MUCH AS POSSIBLE.
- PLACE THROUGH NON-METALLIC SLEEVES WHEN PASSING THROUGH FLOORS, WALLS, CEILINGS, AND SIMILAR STRUCTURES.
- MAKE ALL CONNECTIONS IN CONTACT WITH EARTH WITH EXOTHERMIC WELDING. MAKE ALL OTHER CONNECTIONS WITH EXOTHERMIC WELDING, IRREVERSIBLE COMPRESSION CONNECTORS, OR LISTED COMPRESSION TWO-HOLE LUGS.
- INSTALL ALL CONDUCTORS WITH A MINIMUM 18 INCH BEND RADIUS AND NO BEND LONGER THAN A 90 DEGREE ARC. ALL BENDS SHALL BE HORIZONTAL, OR DOWNWARD TOWARDS EARTH.
- ALL CONDUCTORS PASSING FROM ABOVE-GROUND TO IN-GROUND CONNECTIONS, WHERE EXPOSED, SHALL BE COVERED AND PROTECTED WITH A NON-METALLIC CONDUIT SEALED AT BOTH ENDS.
- #2 OR MORE IN-GROUND CONDUCTORS ARE IN THE SAME PATH IN RINGS OVERLAPPING, BONDING FOLLOWING ANOTHER RING OR RADIAL OR SIMILAR, COMBINE WITH A SHARED SINGLE CONDUCTOR.

EQUIPMENT AND TOWER GROUND RINGS SHALL BE:

- BONDED TO ANY CONDUCTIVE OBJECT OR STRUCTURE WITHIN 6 FEET OF EQUIPMENT GROUND RINGS AND WITHIN 20 FEET OF TOWER GROUND RINGS.
- INSTALLED MINIMUM 18 INCHES FROM FOUNDATIONS, FOOTINGS AND SIMILAR.

INSTALL ALL IN-GROUND RINGS, RADIALS, BONDS CONNECTING THEM AND ALL SIMILAR GROUNDING:

- MIN 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE, WHICHEVER IS GREATER DEPTH.
- MIN 2 FEET FROM FOUNDATIONS, FOOTINGS, OTHER GROUNDING SYSTEMS, AND SIMILAR STRUCTURES, EXCEPT WHEN MAKING A BOND TO ANY OF THESE STRUCTURES. DO NOT BOND TO FOUNDATION INTERNAL REINFORCEMENT.

ALL EQUIPMENT GROUPED IN A COMMON AREA, COMPOUND, STRUCTURE, OR SIMILAR SHALL BE BONDED TO A SINGLE POINT GROUND, PREFERABLY AN ISOLATED GROUND BAR. BOND THE GROUND BAR TO THE SYSTEM WITH MINIMUM SINGLE BONDING CONDUCTOR. IF BONDING TO AN IN-GROUND RING, INSTALL 2 BONDING CONDUCTORS MINIMUM WITH EACH CONDUCTOR INSTALLED DIRECTIONALLY AWAY FROM EACH OTHER AND PARALLEL TO THE IN-GROUND CONDUCTOR WITH NO TEE CONNECTIONS.

TOWER GROUNDING

- EACH TOWER LEG SHALL BE BONDED TO ITS RING. SINGLE-LEGGED TOWERS, OR MONOPOLES, SHALL HAVE 2 BONDS ON OPPOSITE SIDES.
- BOND TO TOWER BASE, NOT TO VERTICAL TOWER STRUCTURE, AWAY FROM TOWER MOUNTING HARDWARE.
- EACH BOND SHALL HAVE A CORRESPONDING GROUND ROD ON THE RING.
- EACH BOND SHALL CONSIST OF 2 CONDUCTORS FROM THE TOWER TO ITS RING WITH EACH CONDUCTOR DIRECTED IN OPPOSITE DIRECTIONS WITH A PARALLEL CONNECTION ON THE RING ON OPPOSITE SIDES OF THE GROUND ROD.

EQUIPMENT AREA GROUNDING

- COMMUNICATION AREAS ON EARTH SHALL HAVE A GROUND RING.
- BOND ALL EQUIPMENT TO A SINGLE POINT GROUND (GROUND BAR).
- BOND THE EQUIPMENT SINGLE-POINT GROUND TO THE EQUIPMENT GROUND RING WITH MINIMUM 2 CONDUCTORS DIRECTED IN OPPOSITE DIRECTIONS WITH PARALLEL CONNECTIONS ON THE RING.
- IF EQUIPMENT IS ENCLOSED IN A SHELTER:
- IF THE SHELTER IS CONSIDERED TO BE EXPOSED TO A DIRECT LIGHTNING STRIKE, INSTALL A BUILDING LIGHTNING PROTECTION SYSTEM PER APPLICABLE VERSION OF NFPA 780.
- BOND ALL FIXED CONDUCTIVE BUILDING COMPONENTS TOGETHER AND TO THE BUILDING RING GROUND AT THE CORNERS. THIS IS TYPICALLY CALLED THE HALO GROUND. DO NOT BOND EQUIPMENT TO THE HALO GROUND.
- BOND ALL EQUIPMENT TOGETHER TO A SINGLE-POINT OR INTERIOR EQUIPMENT RING GROUND (IEGR). BOND THE SINGLE-POINT OR IEGR TO THE EXTERNAL EQUIPMENT RING GROUND.
- PLACE GROUND RODS AT THE EQUIPMENT GROUND RING CORNERS.

GROUND RODS

- SEPARATION SPACE BETWEEN ANY 2 GROUND RODS SHALL BE NO CLOSER THAN THEIR DEPTH. THIS APPLIES TO ALL RODS IN THE COMPLETE SYSTEM.
- DRIVE VERTICALLY IN UNDISTURBED SOIL WITH THE TOP AT SAME DEPTH AS THE IN-GROUND CONDUCTOR. IF NOT POSSIBLE TO INSTALL VERTICALLY, PLACE AS CLOSE TO VERTICAL AS POSSIBLE AND IN A DIRECTION AWAY FROM THE NEAREST ABOVE-GROUND CONDUCTIVE ELEMENT (TOWER, EQUIPMENT, ETC.)

RADIALS (TYP. NEW DEDICATED COMMUNICATION SITES)

- WHERE FEASIBLE WITH ENOUGH SPACE AVAILABLE, INSTALL A MINIMUM OF 4, MAXIMUM 10 RING RADIALS.
- EACH RADIALS LENGTH SHALL BE MIN 20 FT, MAX 80 FT.
- EXTEND RADIALS PERPENDICULAR FROM RINGS IN AS STRAIGHT LINE AS POSSIBLE, AWAY FROM OTHER RING GROUNDS, RADIALS, BONDS, AND SIMILAR.
- A COMMON PRACTICE IS TO PLACE 4 RADIALS FROM THE TOWER RING TO THE 4 CORNERS OF THE AVAILABLE AREA.

AT A MINIMUM, BOND ALL COMPOUND CONDUCTIVE FENCE CORNER POSTS AND GATE POSTS TO THE LPGS. PREFERABLY, INSTALL A GROUND RING THAT FOLLOWS THE FENCE LINE, BONDING ALL POSTS TO THE RING.

27 ANTENNAS & CABLES

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRANSMISSION CABLES, JUMPERS, CONNECTORS, GROUNDING STRAPS, ANTENNAS, MOUNT AND HARDWARE. ALL MATERIALS SHALL BE INSPECTED BY THE CONTRACTOR FOR DAMAGE UPON DELIVERY. JUMPERS SHALL BE SUPPLIED AT ANTENNAS AND EQUIPMENT INSIDE SHELTER. COORDINATE LENGTH OF JUMPER CABLES WITH OWNER. COORDINATE AND VERIFY ALL OF THE MATERIALS TO BE PROVIDED WITH OWNER PRIOR TO SUBMITTING BID AND ORDERING MATERIALS.

AFTER INSTALLATION, THE TRANSMISSION LINE SYSTEM SHALL BE PIM SWEEP TESTED FOR NEWER INSTALLATION AND DAMAGE WITH ANTENNAS CONNECTED. CONTRACTOR SHALL OBTAIN AND USE LATEST TESTING PROCEDURES FROM OWNER OR MANUFACTURER PRIOR TO BIDDING.

ANTENNA CABLES SHALL BE UNIQUELY COLOR CODED AT THE ANTENNAS, BOTH SIDES OF EQUIPMENT SHELTER WALL, AND JUMPER CABLES AT THE EQUIPMENT.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONNECTORS, ASSOCIATED CABLE MOUNTING AND GROUNDING HARDWARE, WALL MOUNTS, STANDOFFS, AND ALL ASSOCIATED HARDWARE TO INSTALL ALL CABLES AND ANTENNAS TO THE MANUFACTURERS AND OWNER'S SPECIFICATIONS.

ANTENNA CABLES SHALL BE FOAM DIELECTRIC COAXIAL CABLES AS FOLLOWS:

- BASE STATION ANTENNAS
  - 7/8" DIAMETER FOR CABLE LENGTHS UP TO 150 FT
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 150 FT
- GPS ANTENNAS
  - 7/8" DIAMETER FOR CABLE LENGTHS UP TO 200 FT
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 200 FT

MINIMUM BENDING RADIUS FOR COAXIAL CABLES SHALL BE:

- 15 FT FOR 7/8" COAXIAL CABLES
- 25 FT FOR 1-5/8" COAXIAL CABLES

CABLE SHALL BE INSTALLED WITH A MINIMUM NUMBER OF BENDS WHERE POSSIBLE. CABLE SHALL NOT BE LEFT UNTERMINATED AND SHALL BE SEALED IMMEDIATELY AFTER BEING INSTALLED.

ALL EXTERIOR CABLE CONNECTIONS SHALL BE COVERED WITH A WEATHERPROOF SPLICING KIT.

CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.

CABLE SHALL BE FURNISHED AND INSTALLED WITHOUT SPLICES AND WITH CONNECTIONS AT EACH END.

27 CABLE TRAY

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

CABLE TRAY SHALL BE MADE OF EITHER CORROSION RESISTANT METAL OR WITH A CORROSION RESISTANT FINISH.

CABLE TRAY SHALL BE OF LADDER TRAY TYPE WITH FLAT COVER CLAMPED TO SIDE RAILS.

CABLE LADDER SHALL BE SIZED TO FIT ALL CABLES IN ACCORDANCE WITH NEC AND NEMA VE1-VE4.

CABLE LADDER TRAYS SHALL BE NEMA CLASS 12A BY PW INDUSTRIES, INC. OR EQUAL.

CABLE LADDER TRAY SHALL BE SUPPORTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

ALL WORKMANSHIP SHALL CONFORM TO THESE REQUIREMENTS AND ALL LOCAL CODES AND STANDARDS TO ENSURE SAFE AND ADEQUATE GROUNDING SYSTEM.

Cellco Partnership d/b/a
verizon

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS
TECHNOLOGY CORPORATION

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WATERFORD, CT 06385 PHONE: (860) 663-1697
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CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	05/19/22	FOR REVIEW: JRM
1	09/08/22	FOR REVIEW: JRM
2	05/25/23	FOR FILING: JRM
3	06/01/23	UDPATED ADDRESS
4		FOR FILING: JRM
5		
6		

STATE OF CONNECTICUT
MICHAEL TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: BORRELLI STEPHEN G & BARBARA L
ADDRESS: 67 FAIRCHILD RD MIDDLETOWN CT 06457

SOUTH FARMS CT

SITE ADDRESS: 67 FAIRCHILD ROAD MIDDLETOWN, CT 06457

APT FILING NUMBER: CT141_13370

DRAWN BY: JCL

DATE: 05/19/22 CHECKED BY: JRM

VZW PROJECT CODE: 20212261289

VZW LOCATION CODE: 535834

VZW FUZE ID: 16235710

SHEET TITLE:

NOTES & SPECIFICATIONS

SHEET NUMBER:

N-1

JMA WIRELESS

MX10FIT665-xx

NWAV™ X-Pol Ten-Port Antenna

X-Pol Ten-Port 6 ft, 65° Form in Tighter with Smart Bias Ts, 698-4200 MHz:
2 ports 698-894 MHz, 4 ports 1695-2180 MHz, and 4 ports 3400-4200 MHz

- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated (iRETs) with independent RET control for low band and mid band
- FET configured with internal RET for high band & ease of future network optimization.
- SON-Ready array spacing supports beamforming capabilities
- Suitable for 3G, 4G, and 5G interface technologies
- Integrated Smart Bias-Ts reduce leasing costs
- Optimized form factor for reduced wind loading

nWAV

Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	±45°		±45°		
Average gain over all tilts, dBi	14.4	14.8	17.8	18.1	18.2
Horizontal beamwidth (HBW), degrees[1]	66.0	61.0	63.0	63.0	58.0
Front-to-back ratio, co-polar power @180°± 30°, dB	>22	>22.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>17.0	>15.6	>23	>18	>18
Vertical beamwidth (VBW), degrees[1]	13.5	12.0	6.0	5.5	5.4
Electrical downtilt (EDT) range, degrees	2-14		0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-17.0	≤-16.0	≤-17.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports (1-10), watts	1500				

[1] Typical value over frequency and tilt

MX10FIT665-xx

NWAV™ X-Pol Ten-Port Antenna

Electrical specification (minimum/maximum)	Ports 7, 8, 9, 10			
Frequency bands, MHz	3400-3550	3550-3700	3700-3950	3950-4200
Polarization	±45°			
Average gain over all tilts, dBi	13.6	13.8	14.0	14.2
Horizontal beamwidth (HBW), degrees	65	62	60	58
Front-to-back ratio, co-polar power @180°± 30°, dB	>23	>23	>23	>22
Vertical beamwidth (VBW), degrees[1]	20	19.6	19.3	18.5
Electrical downtilt (EDT) range, degrees	2-12 orderable in 1 deg increments			
First upper side lobe (USLS) suppression, dB[1]	≤-15	≤-15	≤-15	≤-15
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0			
Max input power per any port, watts	150			
Total composite power all ports (1-10), watts	1500			

[1] Typical value over frequency and tilt

* For ports 7-10, the electrical downtilt is FET configured with internal RET, where the required electrical downtilt is defined at the time of order per the ordering information below.

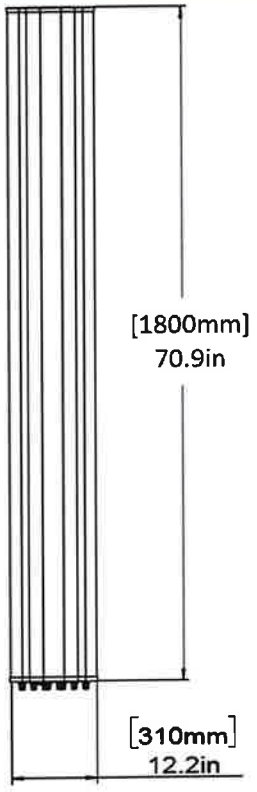
Ordering information	
Antenna model	**Description**
MX10FIT665-xx (xx represents the FET in one degree increments for 3.4-4.2 GHz)	6F X- Pol 10 Port FIT 65º 2-14º/ 0-9º/ 2-12º, 4.3-10 & SBTs
	xx=02 thru 12 for each 1 degree tilt 3.4-4.2 GHz Examples MX10FIT665-02 – 2deg, MX10FIT665-09 – 9deg, MX10FIT665-12-12deg
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations
91900314-02	Dual Mount Bracket (see 91900314 bracket document for details)

MX10FIT665-xx

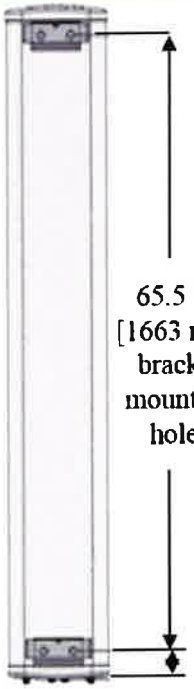
NWAV™ X-Pol Ten-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	70.9/ 12.2/ 7.5 (1800/ 309.9/ 190.5)
Shipping dimensions length/width/height, inches (mm)	76/ 20/ 14.5 (1930/ 508/ 368)
No. of RF input ports, connector type, and location	10 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	53.4 (24.3)
Shipping weight, lb (kg)	97.5 (44.3)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	20.3 (9.2)
Range of mechanical up/down tilt	-2° to 12°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal and lateral, and rear wind loading @ 150 km/h, lbf (N)	66.9 (297.6), 60.0 (266.9)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	1.49
EPA frontal and lateral, ft^2, (m^2)	3.0 (0.28), 3.6 (0.33)

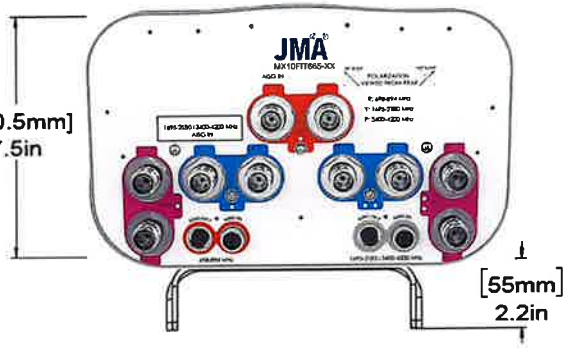
Front view



Back view



Bottom view



MX10FIT665-xx

NWAV™ X-Pol Ten-Port Antenna

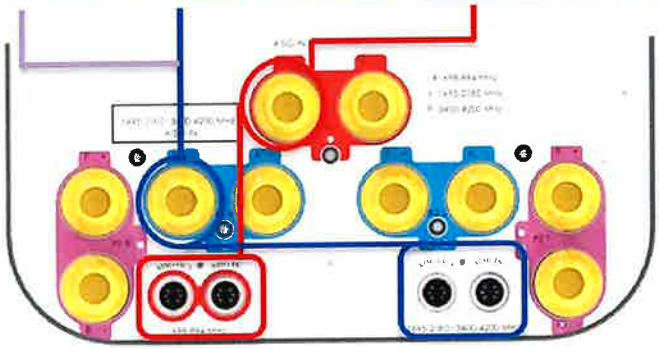
Remote electrical tilt (RET 1000) information	
RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9 or RF port bias-t
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors and 2 RF port bias-ts
RET interface connector location	Bottom of the antenna
Total no. of internal RETs 698-894 MHz	1
Total no. of internal RETs 1695-2180 MHz	1
Total no. of internal RETs 3400-4200 MHz	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF smart bias-t port as shown below:

Band	RF port	Band	RF port
3400-4200	7-10	1695-2180	3-6

Band	RF port
698-894	1-2



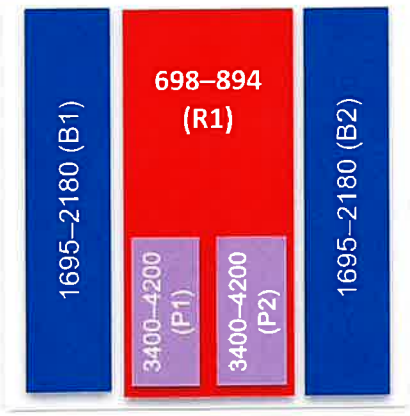
Note: The RET Device for 3400-4200 MHz is connected via the 1695-2180 Port 3 Bias T port or 1695-2180/3400-4200 MHz AISG ports.

Array topology

5 sets of radiating arrays

R1: 698-894 MHz
B1: 1695-2180 MHz
B2: 1695-2180 MHz
P1: 3400-4200 MHz
P2: 3400-4200 MHz

Band	RF port
698-894	1-2
1695-2180	3-4
1695-2180	5-6
3400-4200	7-8
3400-4200	9-10



SAMSUNG

SAMSUNG C-Band 64T64R Massive MIMO Radio

for High Capacity and Wide Coverage

Samsung C-Band 64T64R Massive MIMO Radio enables mobile operators to increase coverage range, boost data speeds and ultimately offer enriched 5G experiences to users in the U.S..

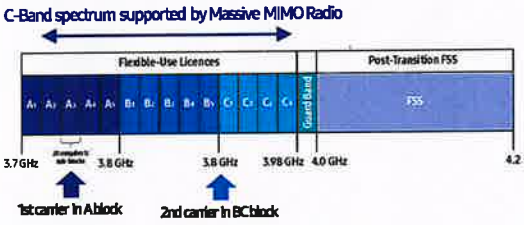
Model Code : MT6407-77A

Points of Differentiation

Wide Bandwidth

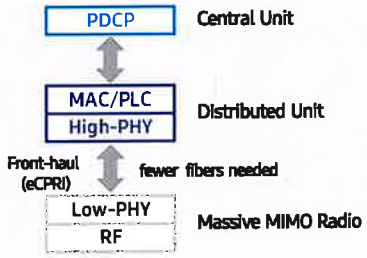
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

Samsung C-Band massive MIMO Radio covers the entire C-Band 280 MHz spectrum, so it can meet the operator's needs in current A block and future B/C blocks



Future Proof Product

Samsung C-Band 64T64R Massive MIMO radio supports not only CPRI but also eCPRI as front-haul interface.
It enables operators can cut down on OPEX/CAPEX by reducing front-haul bandwidth through low layer split and using ethernet based higher efficient line.



Enhanced Performance

C-Band massive MIMO Radio creates sharp beams and extends networks' coverage on the critical mid-band spectrum using a large number of antenna elements and high output power to boost data speeds.

This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

Furthermore, as C-Band massive MIMO Radio supports MU-MIMO(Multi-user MIMO) , it enables to increase user throughput by minimizing interference.

Well Matched Design

Samsung C-Band Massive MIMO radio utilizes 64 antennas, supports up to 280MHz bandwidth, and delivers a 200W output power. despite the above advanced performance, the Radio has a compact size of 50.9L and 79.4lbs. This makes it easy to install the Radio.

It is designed to look solid and compact, with a low profile appearance so that, when installed, harmonizes well with the surrounding environment..

Technical Specifications

Item	Specification
Tech	NR
Band	n77
Frequency Band	3700 - 3980 MHz
EIRP	78.5dBm (53.0 dBm+25.5 dBi)
IBW/OBW	280 MHz / 200 MHz
Installation	Pole/Wall
Size/ Weight	16.06 x 35.06 x 5.51 inch (50.86L)/ 79.4 lbs

SAMSUNG

About Samsung Electronics Co., Ltd.

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

129 Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, Korea

SAMSUNG

AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code	RF4439d-25A

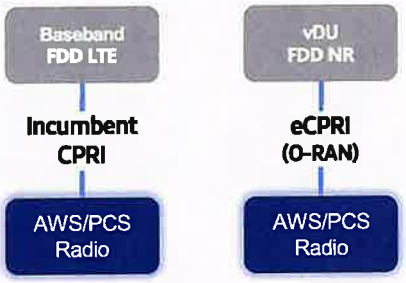
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

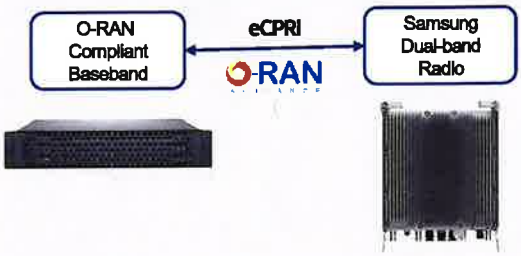
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

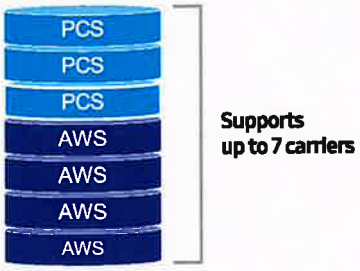
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.

- **2 FH connectivity**
- **O-RAN capability**
- **More carriers and spectrum**

Same as an Incumbent radio volume

Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

SAMSUNG

700/850MHZ MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This 700/850MHz 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code	RF4440d-13A

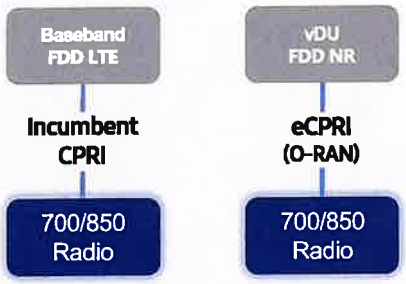
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

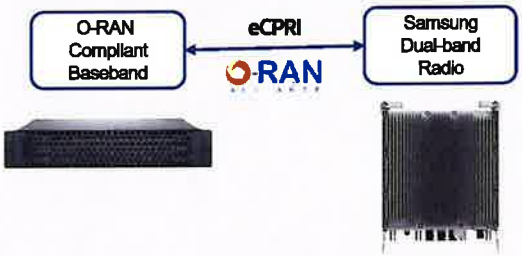
Samsung's 700/850MHz macro radio can support each incumbent CPRI interface as well as an advanced eCPRI interface. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help when implementing cost-effective networks because it is capable of sending more data without compromising additional investments.

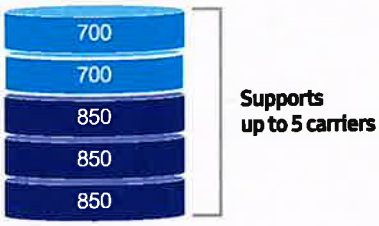
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

The number of required carriers varies according to site (region). The ability to support many carriers is essential for using all frequencies that the operator has available.

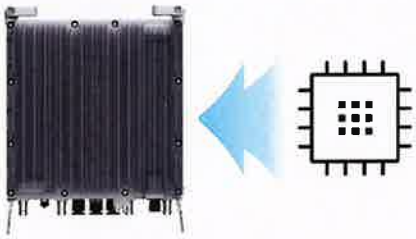
The new 700/850MHz dual-band radio can support up to 2 carriers in the B13 (700MHz) band and 3 carriers in the B5 (850MHz) band, respectively.



Secured Integrity

Access to sensitive data is allowed only to authorized software.

The Samsung radio's CPU can protect root of trust, which is credential information to verify SW integrity, and secure storage provides access control to sensitive data by using dedicated hardware (TPM).



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B13(700MHz), B5(850MHz)
Frequency Band	DL: 746 – 756MHz, UL: 777 – 787MHz DL: 869 – 894MHz, UL: 824 – 849MHz
RF Power	(B13) 4 × 40W or 2 × 60W (B5) 4 × 40W or 2 × 60W
IBW/OBW	(B13) 10MHz / 10MHz (B5) 25MHz / 25MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 9.05inch (33.2L) / 70.33 lb

ATTACHMENT 3

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

South Farms CT

50 Fairchild Road, Middletown, CT 06457

June 22, 2023

Table of Contents

List of Figures

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of Verizon's antenna arrays to be mounted at 110' AGL on an existing monopole located at 50 Fairchild Road in Middletown, CT. The coordinates of the monopole tower are 41° 32' 42.04" N, 72° 37' 14.76" W.

Verizon is proposing the following:

1) Install six (6) multi-band antennas, two (2) per sector to support its commercial LTE network.

This report considers the planned antenna configuration for Verizon[1] and the existing antennas for AT&T[2] and T-Mobile[3] to derive the resulting % MPE of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As referenced to Verizon's Radio Frequency Design Sheet updated 8/22/2022.

[2] As referenced to Connecticut Siting Council, notice of intent to modify – 50 Fairchild Road, Middletown CT, Dated 8/19/2015

[3] As referenced to Radio Frequency Emissions Analysis Report by Fox Hill Telecom, dated 6/3/2022

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{\text{GRF}^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor (GRF) of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 340°	700	120	14.4	3156	MX10FIT665-xx	66.0	0	5.9	110
		850	120	14.8	3624		61.0			
		1900	160	18.1	10330		63.0			
		2100	240	18.2	15857		58.0			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	110
	Beta / 100°	700	120	14.2	3156	MX10FIT665-xx	66.0	0	5.9	110
		850	120	14.8	3624		61.0			
		1900	160	18.1	10330		63.0			
		2100	240	18.2	15857		58.0			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	110
	Gamma / 220°	700	120	14.2	3156	MX10FIT665-xx	66.0	0	5.9	110
		850	120	14.8	3624		61.0			
		1900	160	18.1	10330		63.0			
		2100	240	18.2	15857		58.0			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	110

Table 1: Proposed Antenna Inventory[4] [5]

[4] Antenna heights are in reference to Verizon's Radio Frequency Design Sheet updated 8/22/2022.

[5] Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

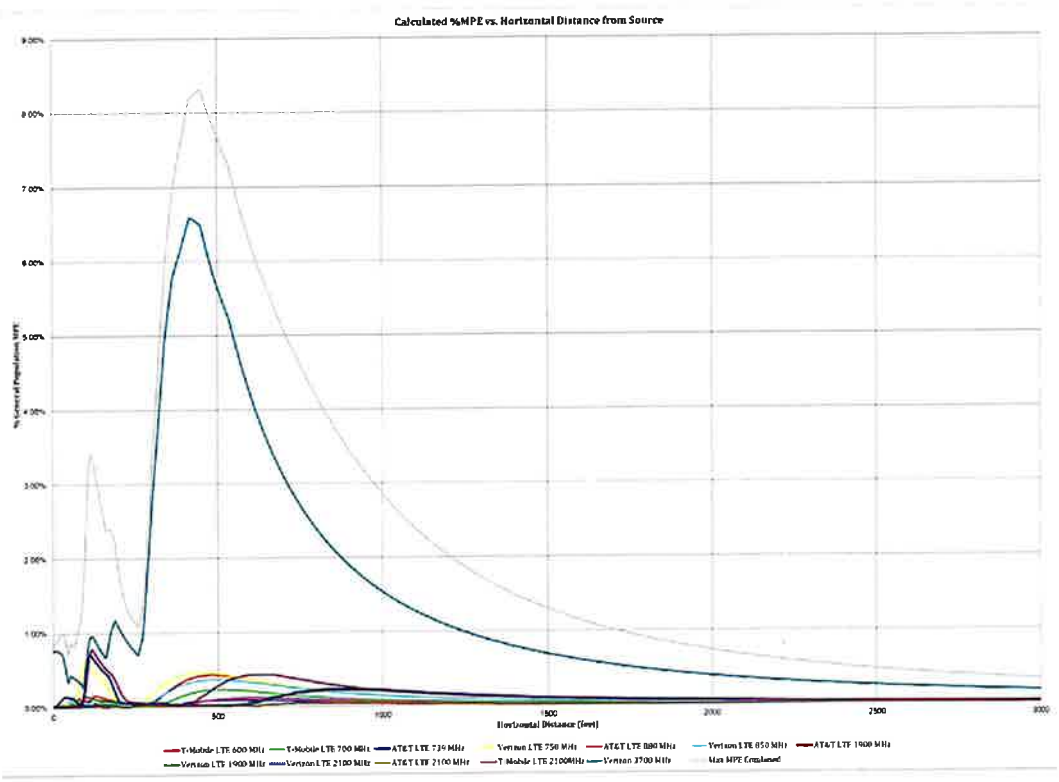


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (8.31% of the General Population limit) is calculated to occur at a horizontal distance of 450 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 450 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
AT&T LTE 1900 MHz	1	80.0	130.0	450	0.000122	1.000	0.01%
AT&T LTE 2100 MHz	1	80.0	130.0	450	0.000118	1.000	0.01%
AT&T LTE 739 MHz	1	60.0	130.0	450	0.000377	0.493	0.08%
AT&T LTE 880 MHz	1	80.0	130.0	450	0.000420	0.587	0.07%
T-Mobile LTE 2100MHz	1	160.0	100.0	450	0.001402	1.000	0.14%
T-Mobile LTE 600 MHz	1	80.0	100.0	450	0.001692	0.400	0.42%
T-Mobile LTE 700 MHz	1	40.0	100.0	450	0.001003	0.467	0.21%
Verizon 3700 MHz	1	200.0	110.0	450	0.064903	1.000	6.49%
Verizon LTE 1900 MHz	1	160.0	110.0	450	0.000172	1.000	0.02%
Verizon LTE 2100 MHz	1	160.0	110.0	450	0.000306	1.000	0.03%
Verizon LTE 750 MHz	1	120.0	110.0	450	0.002345	0.500	0.47%
Verizon LTE 850 MHz	1	120.0	110.0	450	0.001995	0.567	0.35%
						Total	**8.31%**

Table 2: Maximum Percent of General Population Exposure Values

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be 8.31% **of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 450 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Report Prepared By: Ram Acharya
RF Engineer 1
C Squared Systems, LLC

June 22, 2023
Date

Reviewed/Approved By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC

June 22, 2023
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Verizon's Radio Frequency Design Sheet updated 10/21/2022

AT&T's filing, Connecticut Siting Council Notice of Exempt Modification – Antenna Add - 50 Fairchild Road (aka 1 Service Road) Middletown, CT, dated 9/23/2022

As referenced to Dish Wireless LLC's filing, Connecticut Siting Council Tower Share Application – 50 Fairchild Road , Middletown, CT, dated 11/19/2021

T-Mobile's filing, Connecticut Siting Council Notice of Exempt Modification – 50 Fairchild Road , Middletown, CT, dated 10/1/2020

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[6]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[7]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

[6] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[7] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

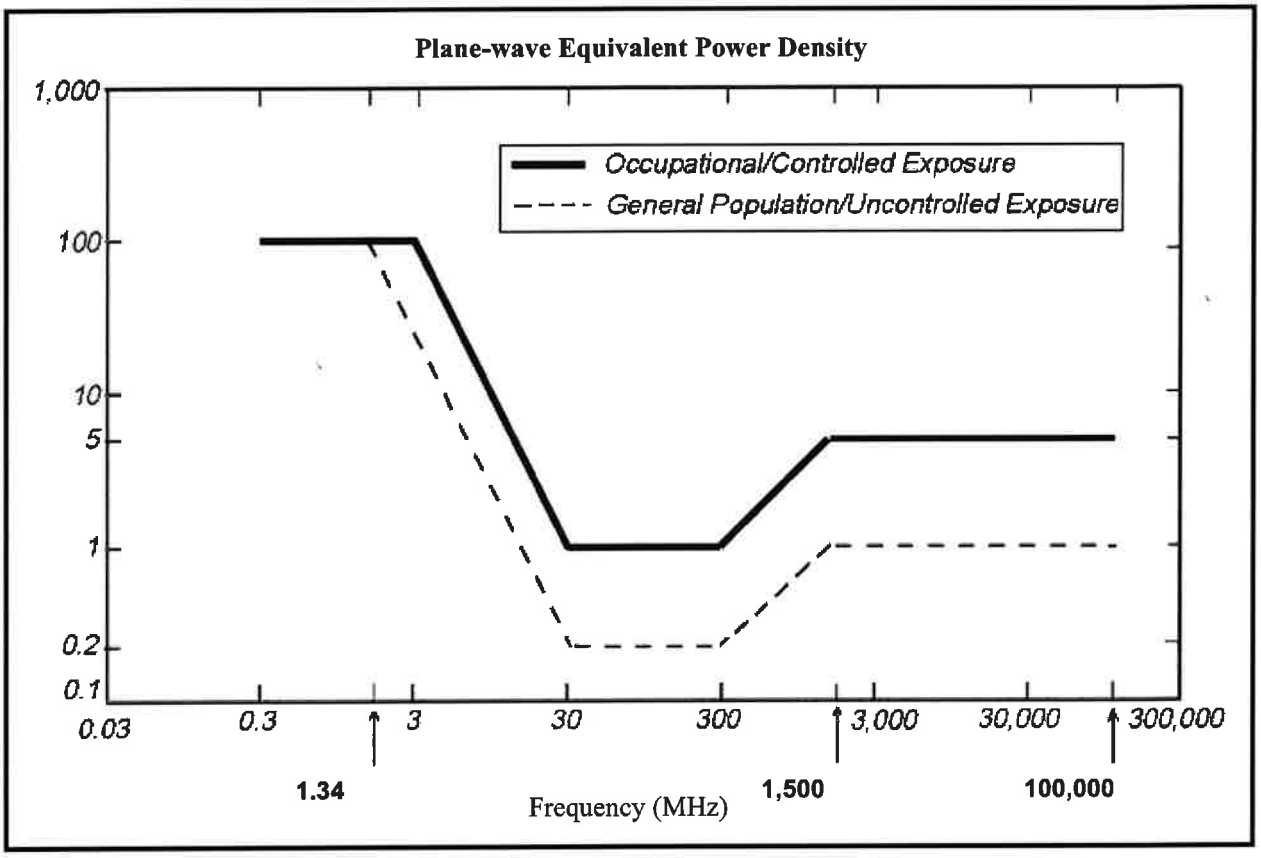
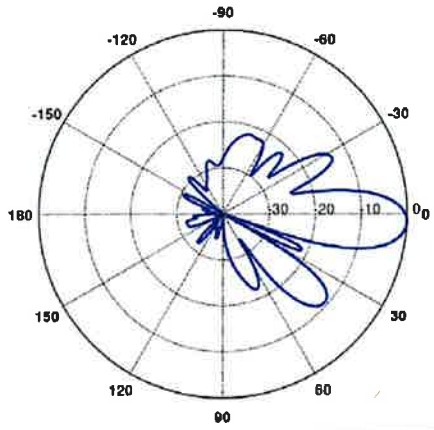


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

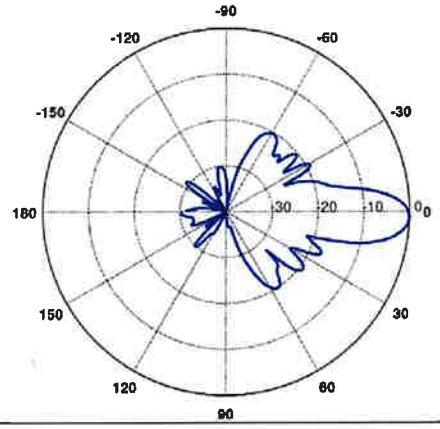
750 MHz

Manufacturer:	JMA WIRELESS
Model #:	MX10FIT665-xx
Frequency Band:	698-806 MHz
Gain:	14.4 dBi
Vertical Beamwidth:	13.5°
Horizontal Beamwidth:	66.0°
Polarization:	±45°
Dimensions (L x W x D):	70.9" x 7.5" x 12.2"



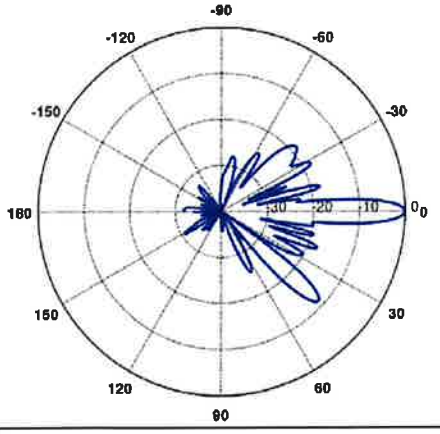
885 MHz

Manufacturer:	JMA WIRELESS
Model #:	MX10FIT665-xx
Frequency Band:	824-894 MHz
Gain:	14.8 dBi
Vertical Beamwidth:	12.0°
Horizontal Beamwidth:	61.0°
Polarization:	±45°
Dimensions (L x W x D):	70.9" x 7.5" x 12.2"



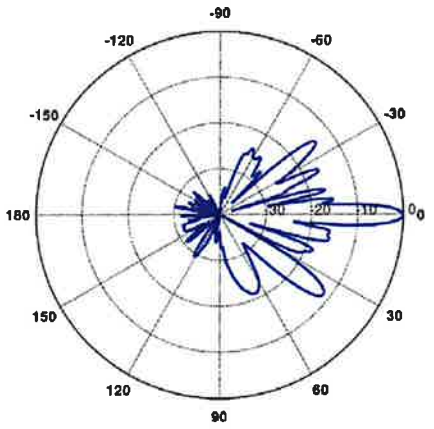
1900 MHz

Manufacturer:	JMA WIRELESS
Model #:	MX10FIT665-xx
Frequency Band:	1850-1990 MHz
Gain:	18.1 dBi
Vertical Beamwidth:	5.5°
Horizontal Beamwidth:	63.0°
Polarization:	±45°
Dimensions (L x W x D):	70.9" x 7.5" x 12.2"



2100 MHz

Manufacturer:	JMA WIRELESS
Model #:	MX10FIT665-xx
Frequency Band:	1920-2180MHz
Gain:	18.2 dBi
Vertical Beamwidth:	5.4°
Horizontal Beamwidth:	58.0°
Polarization:	±45°
Dimensions (L x W x D):	70.9" x 7.5" x 12.2"



ATTACHMENT 4

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

Post-Mod Structural Analysis Report

Existing 130 ft Rohn Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13064-A

Customer Site Name: Middletown 2, CT

Carrier Name: Verizon (App#: 198008-2)

Carrier Site ID / Name: 1535834 / SOUTH FARMS CT

Site Location: 67 Fairchild Road

Middletown, Connecticut

Middlesex County

Latitude: 41.545011

Longitude: -72.620766

Analysis Result:

Max Structural Usage: 89.7% [Pass]

Max Foundation Usage: 97.0% [Pass]

Report Prepared By : Changzhi Zang

Tower Engineering Solutions
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Max Foundation Usage: 97.0% [Pass]

Report Prepared By : Changzhi Zang

Introduction

The purpose of this report is to summarize the analysis results on the 130 ft Rohn Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any existing modification listed under Sources of Information was assumed completed and was included in this analysis.

The proposed modification by **TES** listed under Sources of Information was considered completed and was included in this analysis.

Sources of Information

Tower Drawings	Rohn Parent File # 57886EH, Eng. File # 060-3494, Dwg. # A060995, dated 12/15/2006
Foundation Drawing	Rohn Parent File # 57886EH, Eng. File # 060-3494, Dwg. # A060998, dated 12/15/2006
Geotechnical Report	Gemini Geotechnical Associates Project # 06161CT, dated 11/30/2006
Mount Analysis	TMO MA by TES Project #130391, dated 06/28/2022 VZW MA by Maser Consulting Connecticut Project #21777971A, dated 04/21/022
Existing Modification	FDH Project # 11-01248E S1, dated 09/21/2011; FDH Project # 12-08192E S2, dated 11/14/2012; FDH Project # 15BVXK1400, dated 08/06/2015; TES Job # 18134, dated 11/05/2015; TES Job # 56931, dated 08/24/2018; TES Job # 92080, dated 04/20/2020; TES Job # 121134, dated 02/14/2022
Proposed Modification	TES Job # 134991

Analysis Criteria

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

Wind Speed Used in the Analysis:	120.0 mph (3-Sec. Gust) (Ultimate wind speed)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Service Load Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.211$, $S_1 = 0.056$

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	132.0	3	Ericsson AIR6419 - Panel	Platform w/ Hand Rail (Commscope MTC3607R) + Platform Reinforcement Kit (SitePro1 PRK-FMA), (6) P2.5" X-STR Pipe Masts, (6) Channel Reinforcement Angles L2x2x1/4 (3) Pipe Mast (6) Steel Tube Stand off (3) Horizontal Pipes	*(5) 2" Conduits (Housing (6) 1.496" Fiber & (8) 0.645" DC cables) (1) 1/2"	AT&T
2	130.0	3	Cci DMP65R-BU6DA - Panel			
3		3	Quintel QD6616-7 - Panel			
4		6	Ericsson - RRUS 32 - RRU			
5		3	Ericsson - RRUS 4478 B14 - RRU			
6		3	Ericsson - RRUS 8843 B2 B66A - RRU			
7		3	Ericsson - 4449 B5/B12 - RRU			
8		3	Ericsson - RRUS E2 B29 - RRU			
9		2	Raycap - DC6-48-60-18-8F - OVP			
10		2	Raycap - DC6-48-60-0-8C-EV - OVP			
11	128.0	3	Ericcson AIR6449 - Panel			
12	120.0	3	JMA Wireless MX08FRO665-21 - Panel	Platform w/ Handrails Commscope MC-PK8-DSH	(1) 1.6" Hybrid	Dish Wireless
13		3	Fujitsu TA08025-B605 - RRU			
14		3	Fujitsu TA08025-B604 - RRU			
15		1	Raycap RDIDC-9181-PF-48 - OVP			
-	111.0	3	Andrew - CBC721-DF - Panel	(3) T-Arms	(12) 1 5/8" (2) 1 5/8" Hybrid	Verizon
-	110.0	6	Andrew - SBNHH-1D65B - Panel			
-		3	Alcatel - RRH2X60-1900A-4R			
-		3	Alcatel - B13 RRH4X30-4R			
-		3	Alcatel - B4 RRH2X60-4R			
-		2	RFS - DB-T1-6Z-8AB-0Z			
-	109.0	3	Andrew - CBC721-DF - Panel			
22	100.0	3	Ericsson AIR21 B2A B4P - Panel	(3) T-Arms (Site Pro P/N RMV12-3xx) Modifed w/ Support rails [(3) P1374+(3) SP1-SKF4]	(6) 1 5/8" (3) 1.9" Fiber	T-Mobile
23		3	Ericsson AIR21 B4A B2P - Panel			
24		3	Kathrein 782 11056			
25		3	RFS APXVAALL24_43-U-NA20 - Panel			
26		3	Ericsson 4480 B71 + B85 - RRUs			
27	90.0	3	Nokia - AAHC - MIMO - Panel	Platform w/ Handrails (Site Pro F3P-10W w/HRK10)	(3) 1-1/4" Fiber (1) 1.689" Fiber (2) 1/2" Fiber	Sprint Nextel
28		3	Commscope - NNVV-65B-R4 - Panel			
29		3	ALU - 1900 Mhz - RRU			
30		6	ALU - 800 Mhz - RRU			
31		2	Andrew - VHLP2-11 - Dish			

*Inside (5) 2" Conduits

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
16	111.0	3	COMMSCOPE SDX1926Q-43	(3) T-Arms	(12) 1 5/8" (1) 1 5/8" Hybrid	Verizon
17	110.0	3	JMA MX10FIT665-02 - Panel			
18		3	SAMSUNG MT6407-77A - Panel			
19		3	SAMSUNG B2/B66ARRH-ORAN RF4439D-25A - RRU			
20		3	SAMSUNG B5/B13RRH-ORAN RF 4440d-13A - RRU			
21		1	RFS RVZDC-6627-PF-48 - OVP			

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:	**89.7%**	**60.0%**	**48.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3300.3	33.0	41.3

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 TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.3334 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the structure and its foundation will be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222-H Standard after the following proposed modification is successfully completed.

- Proposed modification design drawing by **TES** Job # 134991

Pre-Mod Installation Determination

We have also checked this tower to determine if the proposed Verizon equipment loading can be installed prior to the completion of the required modifications. We ran a reduced wind loading case as required by TIA-322 considering a construction period of no more than 6 months.

The tower and foundations passed, so the Carrier can proceed and install their proposed loading prior to the mods completion. Please be aware that this approval is being provided and is based on the method outlined in TIA-322. This approval is not a blanket approval and there is still a risk that the tower will experience a wind event that cannot be predicted by TIA-322 or our Engineers. In the event of an unforeseen wind event, Tower Engineering Solutions will not be liable nor responsible for damage to the tower or the Carriers equipment. Additionally, the tower cannot go beyond the 6 month construction period without the modifications being completed. If the modifications cannot be completed within 6 months from the completed installation of the Carrier's proposed equipment, TES must be notified immediately for further review.

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.

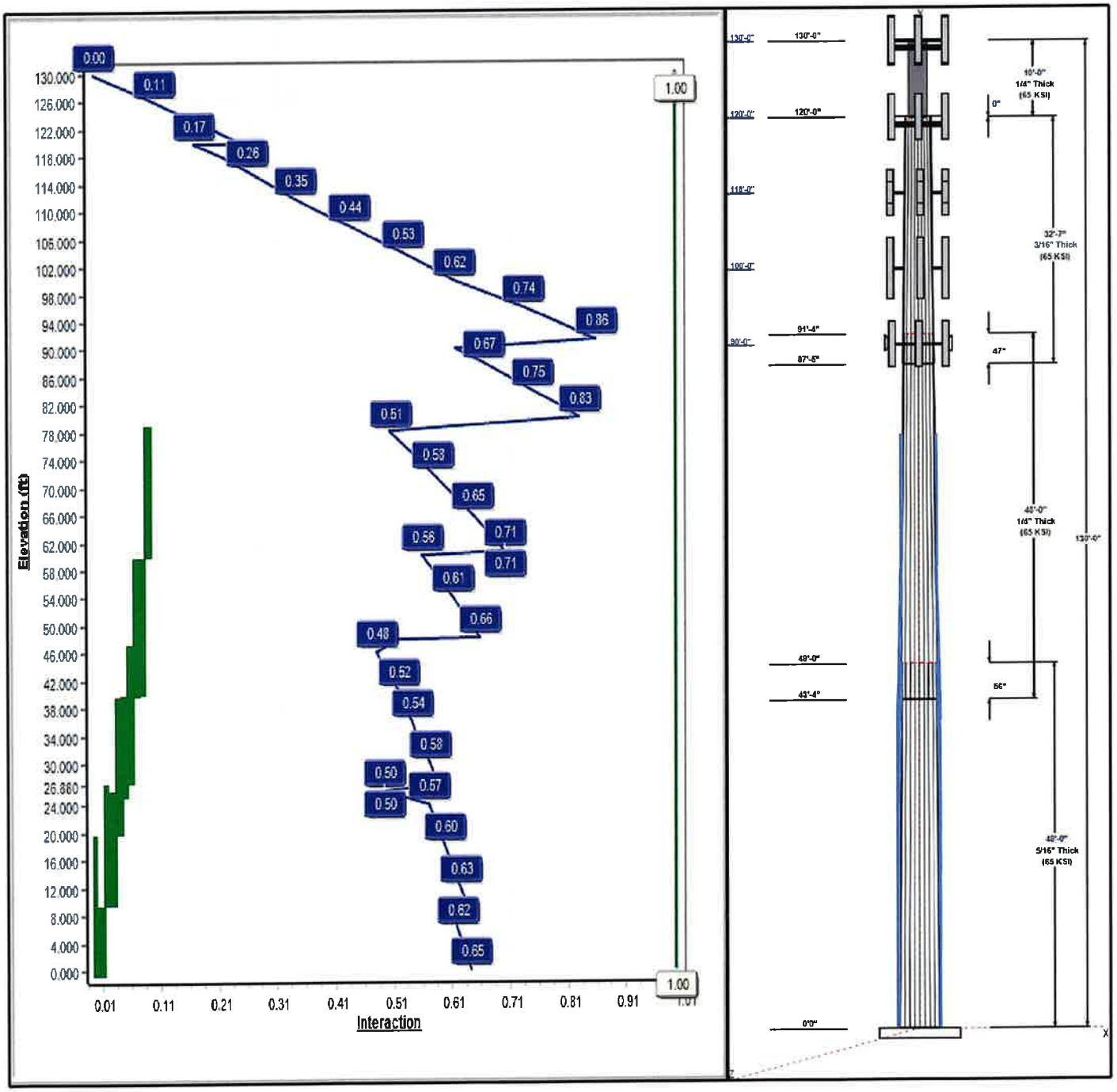
Usage Diagram - Max Ratio 86.37% at 91.3ft

Structure:	CT13064-A-SBA	**Code:**	EIA/TIA-222-H	10/4/2022
Site Name:	Middletown 2, CT	**Exposure:**	C	
Height:	130.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	25
Wind Load Factor:	1.00		

Load Case : 1.2D + 1.0W 120 mph Wind



Structure: CT13064-A-SBA

Type: Custom
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.15529

10/4/2022

Tower Engineering Solutions

Shaft Properties

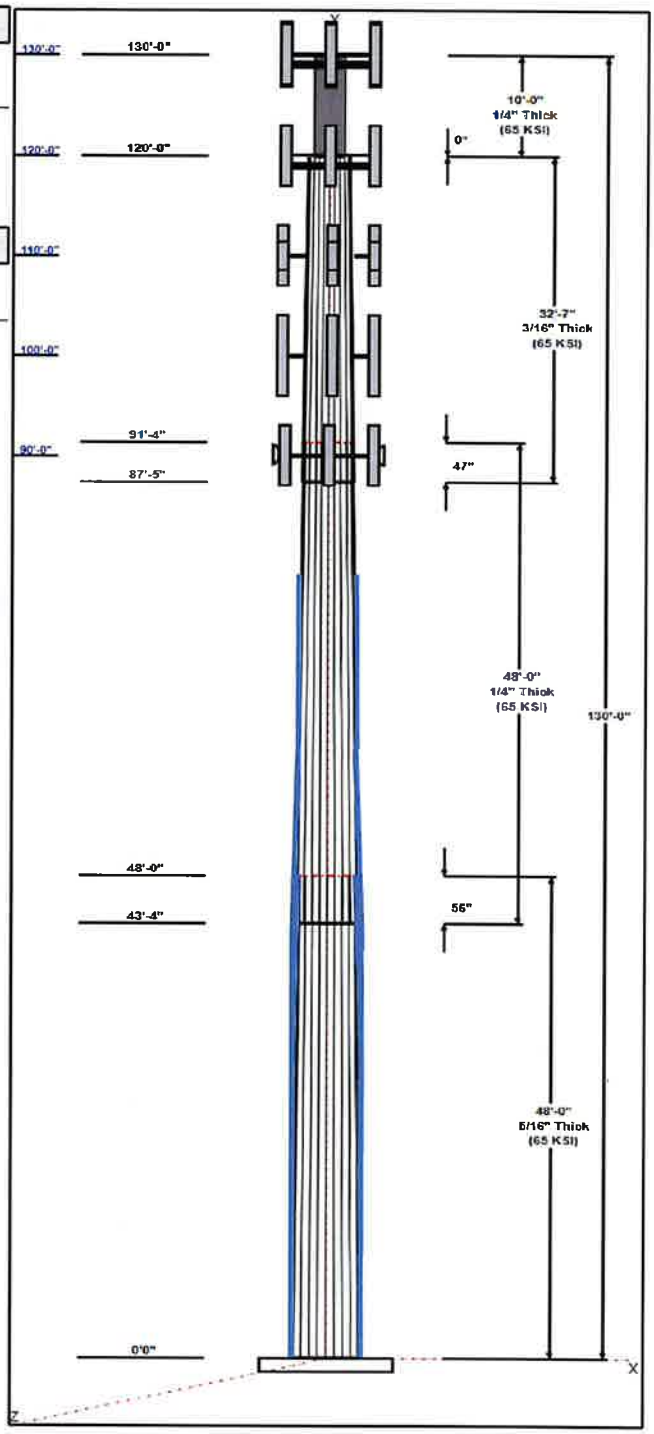
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	48.00	35.05	42.50	0.313		0.15529	65
2	48.00	28.82	36.27	0.250	Slip	0.15529	65
3	32.58	24.74	29.80	0.188	Slip	0.15529	65
4	10.00	18.00	18.00	0.250	Butt	0.00000	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
130.00	133.00	1	6' Lightning rod	
130.00	130.00	3	Cci DMP65R-BU6DA	AT&T
130.00	130.00	6	RRUS 32	AT&T
130.00	130.00	3	RRUS 4478 B14	AT&T
130.00	130.00	3	B2 B66A 8843	AT&T
130.00	130.00	3	4449 B5/B12	AT&T
130.00	130.00	3	RRUS E2 B29	AT&T
130.00	130.00	2	DC6-48-60-18-8F	AT&T
130.00	130.00	2	DC6-48-60-0-8C	AT&T
130.00	130.00	1	MTC3607 Platform + HR &	AT&T
130.00	130.00	1	Angle Reinforcement kit	AT&T
130.00	128.00	3	Ericcson AIR6449	AT&T
130.00	130.00	3	Quinte QD6616-7	AT&T
130.00	132.00	3	Ericsson AIR6419	AT&T
130.00	130.00	1	(3) Horizontal bracing	AT&T
130.00	130.00	3	Additional mount pipe	AT&T
120.00	120.00	3	MX08FRO665-21	Dish Wireless
120.00	120.00	3	TA08025-B605	Dish Wireless
120.00	120.00	3	TA08025-B604	Dish Wireless
120.00	120.00	1	RDIDC-9181-OF-48	Dish Wireless
120.00	120.00	1	MC-PK8-DSH	Dish Wireless
110.00	111.00	3	COMMSCOPE	Verizon
110.00	110.00	3	T-Arm (Round)	Verizon
110.00	110.00	3	JMA MX10FIT665-02	Verizon
110.00	110.00	3	SAMSUNG MT6407-77A	Verizon
110.00	110.00	1	RFS RVZDC-6627-PF-48	Verizon
110.00	110.00	3	SAMSUNG	Verizon
110.00	110.00	3	SAMSUNG	Verizon
100.00	100.00	3	Ericsson AIR21 B2A B4P	T-Mobile
100.00	100.00	3	Ericsson AIR21 B4A B2P	T-Mobile
100.00	100.00	3	Kathrein 782 11056	T-Mobile
100.00	100.00	6	T-Arm (Round)	T-Mobile
100.00	100.00	3	RFS	T-Mobile
100.00	100.00	3	Ericsson 4480 B71 + B85	T-Mobile
90.00	90.00	2	Andrew - VHLP2-11	Sprint Nextel
90.00	90.00	3	ALU - 1900MHz - RRU	Sprint Nextel
90.00	90.00	6	ALU - 800 MHz - RRU	Sprint Nextel
90.00	90.00	1	F3P-HRK10	Sprint Nextel
90.00	90.00	3	AAHC	Sprint Nextel
90.00	90.00	3	NNVV-65B-R4	Sprint Nextel
90.00	90.00	1	F3P-10W	Sprint Nextel

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	130.00	Inside	0.645" DC Cables	AT&T



0.00	130.00	Inside	1.496" Hybrid	AT&T
0.00	130.00	Inside	1/2" Coax	AT&T
0.00	130.00	Inside	2" Conduit	AT&T
0.00	130.00	Outside	2" Conduit	AT&T
0.00	130.00	Inside	3/4" DC	AT&T
0.00	120.00	Inside	1.6" Hybrid	Dish Wireless
0.00	110.00	Inside	1 5/8" Coax	Verizon
0.00	110.00	Inside	1 5/8" Hybrid	Verizon
0.00	100.00	Inside	1 5/8" Coax	T-Mobile
0.00	100.00	Inside	1.9" Fiber	T-Mobile
0.00	90.00	Inside	1-1/4" Fiber	Sprint Nextel
0.00	90.00	Inside	1.689" Hybrid	Sprint Nextel
0.00	90.00	Inside	1/2" Fiber	Sprint Nextel
0.00	81.00	Outside	1" Reinforcing plate	
23.33	63.33	Outside	1" Reinforcing plate	
30.50	50.50	Outside	1" Reinforcing plate	
0.00	30.50	Outside	1" Reinforcing plate	

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
14	1.5" F1554 105	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	51.8	50.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.0W 120 mph Wind	3303.5	33.0	41.3
0.9D + 1.0W 120 mph Wind	3264.6	33.0	31.0
1.2D + 1.0Di + 1.0Wi 50 mph Wind	860.3	8.6	57.8
1.2D + 1.0Ev + 1.0Eh	50.7	0.4	42.9
0.9D + 1.0Ev + 1.0Eh	50.1	0.4	32.5
1.0D + 1.0W 60 mph Wind	734.1	7.4	34.4

Structure: CT13064-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Middletown 2, CT
Height: 130.00 (ft)

10/4/2022

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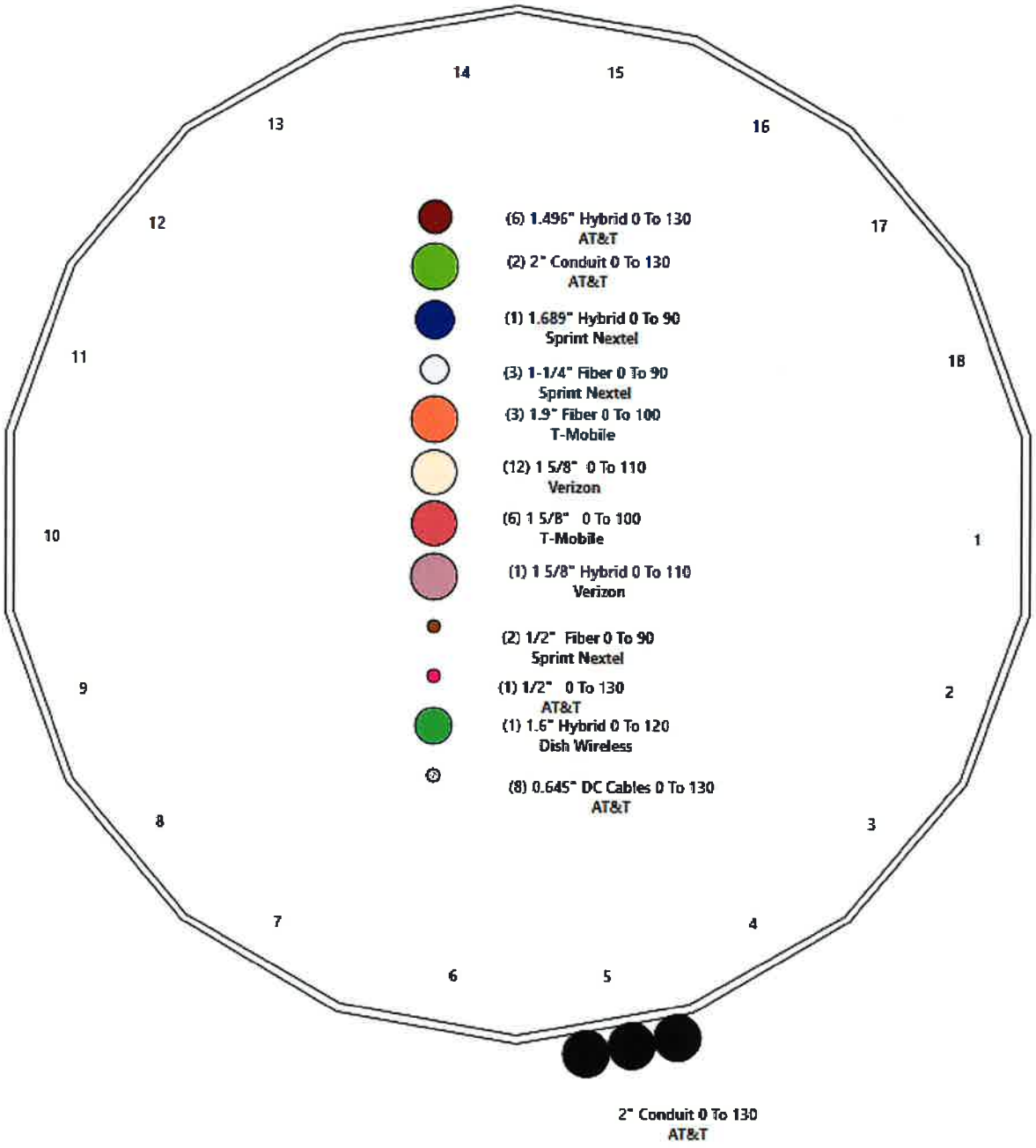

Shaft Properties

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 5	

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	48.000	0.3125	65		0.00	6,231
2	18	48.000	0.2500	65	Slip	56.00	4,185
3	18	32.583	0.1875	65	Slip	47.00	1,787
4	R	10.000	0.2500	65	Flange	0.00	474
					Total Shaft Weight:		**12,677**

	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	42.50	0.00	41.84	9409.05	22.57	136.00	35.05	48.00	34.45	5250.98	18.36	112.1	0.155292
2	36.27	43.33	28.58	4685.33	24.17	145.08	28.82	91.33	22.67	2337.03	18.91	115.2	0.155292
3	29.80	87.42	17.62	1952.39	26.61	158.93	24.74	120.00	14.61	1112.84	21.86	131.9	0.155292
4	18.00	120.0	13.94	549.45	0.00	72.00	18.00	130.00	13.94	549.45	0.00	72.00	0.000000

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Intermediate Connectors: Description	Intermediate Connectors: Spacing (in)	Termination Connectors: Description	Termination Connectors: Spacing (in)	Termination Connectors: Lower Qty	Termination Connectors: Upper Qty
0.00	20.50	4	PLT 6"x1" (1.25" Hole)	65	80	0.00	AJM20&sleeve	16.00	AJM20&sleeve	3.00	8	8
0.00	10.25	4	PLT 5.5"x1 1/4"(1.25"hol	65	80	0.00	AJM20&sleeve	18.00	AJM20&sleeve	3.00	9	9
10.25	27.88	2	LNP LP6X100-G-20CC	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00		
10.25	26.88	2	LNP LP6X100-G-20CT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00		9
20.50	40.50	4	PLT 6"x1" (1.25" Hole)	65	80	0.00	AJM20&sleeve	16.00	AJM20&sleeve	3.00	8	8
25.96	40.71	2	LNP LP6X100-G-20CT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00		10
27.88	48.12	2	LNP LP6X100-G-20TT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00	10	10
40.50	60.75	4	PLT 6"x1" (1.25" Hole)	65	80	0.00	AJM20&sleeve	16.00	AJM20&sleeve	3.00	8	8
40.71	60.71	2	LNP LP6X100-G-20TT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00	10	10
60.75	78.25	4	PLT 6"x1" (1.25" Hole)	65	80	0.00	AJM20&sleeve	16.00	AJM20&sleeve	3.00	8	10

Load Summary

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

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Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	130.00	6' Lightning rod	1	6.50	0.38	1.00	30.36	1.095	1.00	0.00	3.00
2	130.00	Cci DMP65R-BU6DA	3	63.30	12.71	0.72	261.24	13.690	0.74	0.00	0.00
3	130.00	RRUS 32	6	77.00	1.65	0.50	147.65	2.029	0.50	0.00	0.00
4	130.00	RRUS 4478 B14	3	59.40	1.65	0.50	86.65	1.991	0.50	0.00	0.00
5	130.00	B2 B66A 8843	3	70.00	1.64	0.50	100.22	1.979	0.50	0.00	0.00
6	130.00	4449 B5/B12	3	71.00	1.97	0.50	106.08	2.330	0.50	0.00	0.00
7	130.00	RRUS E2 B29	3	59.40	3.15	0.50	101.91	3.612	0.50	0.00	0.00
8	130.00	DC6-48-60-18-8F	2	31.80	0.92	1.00	72.43	1.208	1.00	0.00	0.00
9	130.00	DC6-48-60-0-8C	2	16.00	4.78	1.00	97.32	5.361	1.00	0.00	0.00
10	130.00	MTC3607 Platform + HR & Kicker	1	2246.00	51.70	1.00	3791.62	76.842	1.00	0.00	0.00
11	130.00	Angle Reinforcement kit	1	250.00	5.80	1.00	444.98	9.525	1.00	0.00	0.00
12	130.00	Ericcson AIR6449	3	88.00	4.13	0.85	172.75	4.681	0.85	0.00	-2.00
13	130.00	Quinte QD6616-7	3	59.10	13.58	0.75	330.24	14.826	0.77	0.00	0.00
14	130.00	Ericsson AIR6419	3	66.10	3.80	0.76	129.33	4.323	0.76	0.00	2.00
15	130.00	(3) Horizontal bracing Pipes	1	137.25	5.94	1.00	225.40	10.841	1.00	0.00	0.00
16	130.00	Additional mount pipe	3	17.00	1.75	0.75	39.42	4.360	0.75	0.00	0.00
17	120.00	MX08FRO665-21	3	64.50	12.49	0.74	254.14	13.445	0.74	0.00	0.00
18	120.00	TA08025-B605	3	75.00	1.96	0.50	109.10	2.326	0.50	0.00	0.00
19	120.00	TA08025-B604	3	63.90	1.96	0.50	96.91	2.326	0.50	0.00	0.00
20	120.00	RDIDC-9181-OF-48	1	21.90	2.01	1.00	56.62	2.381	1.00	0.00	0.00
21	120.00	MC-PK8-DSH	1	1727.00	37.59	1.00	2827.39	68.384	1.00	0.00	0.00
22	110.00	COMMSCOPE SDX1926Q-43	3	6.60	0.40	0.50	16.51	0.583	0.50	0.00	1.00
23	110.00	T-Arm (Round)	3	350.00	8.00	0.75	507.91	12.512	0.75	0.00	0.00
24	110.00	JMA MX10FIT665-02	3	53.40	8.09	0.84	235.28	9.824	0.86	0.00	0.00
25	110.00	SAMSUNG MT6407-77A	3	87.10	4.69	0.70	158.72	5.295	0.70	0.00	0.00
26	110.00	RFS RVZDC-6627-PF-48	1	32.00	4.06	0.50	105.63	4.591	0.50	0.00	0.00
27	110.00	SAMSUNG B2/B66ARRH-BR049	3	74.70	1.87	0.50	120.05	2.229	0.50	0.00	0.00
28	110.00	SAMSUNG B5/B13RRH-BR04C	3	70.33	1.87	0.50	115.68	2.229	0.50	0.00	0.00
29	100.00	Ericsson AIR21 B2A B4P	3	91.50	6.09	0.80	192.18	6.775	0.83	0.00	0.00
30	100.00	Ericsson AIR21 B4A B2P	3	90.40	6.09	0.80	191.08	6.775	0.83	0.00	0.00
31	100.00	Kathrein 782 11056	3	1.80	0.13	0.50	3.39	0.317	0.50	0.00	0.00
32	100.00	T-Arm (Round)	6	350.00	8.00	0.75	506.41	12.469	0.75	0.00	0.00
33	100.00	RFS APXVAALL24_43-U-NA20	3	122.80	20.24	0.73	384.41	21.440	0.73	0.00	0.00
34	100.00	Ericsson 4480 B71 + B85	3	93.00	2.85	0.74	139.05	3.282	0.74	0.00	0.00
35	90.00	Andrew - VHLP2-11	2	27.00	4.68	1.00	88.99	5.487	1.00	0.00	0.00
36	90.00	ALU - 1900MHz - RRU	3	44.00	3.80	0.50	113.15	4.681	0.50	0.00	0.00
37	90.00	ALU - 800 MHz - RRU	6	53.00	2.49	0.50	99.85	3.215	0.50	0.00	0.00
38	90.00	F3P-HRK10	1	391.00	7.12	1.00	650.36	10.269	1.00	0.00	0.00
39	90.00	AAHC	3	104.00	4.20	0.75	180.35	4.713	0.75	0.00	0.00
40	90.00	NNVV-65B-R4	3	77.40	12.27	0.74	258.29	13.192	0.74	0.00	0.00
41	90.00	F3P-10W	1	2122.00	51.77	1.00	3435.73	92.978	1.00	0.00	0.00
		Totals:	**111**	**16,034.44**			**29,821.22**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
0.00	130.00	(8) 0.645" DC Cables			0.00	Inside					
0.00	130.00	(6) 1.496" Hybrid			0.00	Inside					
0.00	130.00	(1) 1/2" Coax			0.00	Inside					
0.00	130.00	(2) 2" Conduit			0.00	Inside					
0.00	130.00	(3) 2" Conduit			2.00	Outside					
0.00	130.00	(8) 3/4" DC			0.00	Inside					
0.00	120.00	(1) 1.6" Hybrid			0.00	Inside					
0.00	110.00	(12) 1 5/8" Coax			0.00	Inside					
0.00	110.00	(1) 1 5/8" Hybrid			0.00	Inside					
0.00	100.00	(6) 1 5/8" Coax			0.00	Inside					
0.00	100.00	(3) 1.9" Fiber			0.00	Inside					
0.00	90.00	(3) 1-1/4" Fiber			0.00	Inside					
0.00	90.00	(1) 1.689" Hybrid			0.00	Inside					
0.00	90.00	(2) 1/2" Fiber			0.00	Inside					
0.00	81.00	(4) 1" Reinforcing plate			1.00	Outside					
23.33	63.33	(2) 1" Reinforcing plate			0.00	Outside					
30.50	50.50	(2) 1" Reinforcing plate			0.00	Outside					
0.00	30.50	(4) 1" Reinforcing plate			0.00	Outside					

Shaft Section Properties

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Increment Length: 2 (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	RB1 RB2	0.3125	42.500	41.843	9409.0	22.57	136.00	65	75	0.0	51.50	14174.7	10484.2	
2.00		0.3125	42.189	41.535	9202.8	22.39	135.01	65	75	283.7	51.50	13974.5	10336.6	350.5
4.00		0.3125	41.879	41.227	8999.5	22.22	134.01	65	75	281.6	51.50	13775.8	10190.1	350.5
6.00		0.3125	41.568	40.919	8799.3	22.04	133.02	65	75	279.5	51.50	13578.5	10044.7	350.5
8.00		0.3125	41.258	40.611	8602.1	21.87	132.02	65	76	277.4	51.50	13382.6	9900.3	350.5
10.00		0.3125	40.947	40.303	8407.8	21.69	131.03	65	76	275.3	51.50	13188.2	9756.9	350.5
10.25	RT2 RB3 RB4	0.3125	40.908	40.264	8383.7	21.67	130.91	65	76	34.3	48.00	12328.5	8895.1	40.8
12.00		0.3125	40.636	39.995	8216.5	21.52	130.04	65	76	239.0	48.00	12170.0	8781.1	285.8
14.00		0.3125	40.326	39.687	8028.1	21.34	129.04	65	76	271.1	48.00	11990.2	8651.8	326.7
16.00		0.3125	40.015	39.379	7842.6	21.17	128.05	65	77	269.0	48.00	11811.7	8523.4	326.7
18.00		0.3125	39.705	39.071	7660.0	20.99	127.06	65	77	266.9	48.00	11634.6	8395.9	326.7
20.00		0.3125	39.394	38.763	7480.2	20.82	126.06	65	77	264.9	48.00	11458.8	8269.5	326.7
20.50	RT1 RB5	0.3125	39.317	38.686	7435.7	20.77	125.81	65	77	65.9	48.00	11415.1	8238.0	81.7
22.00		0.3125	39.084	38.455	7303.3	20.64	125.07	65	77	196.9	48.00	11284.4	8144.0	245.0
24.00		0.3125	38.773	38.147	7129.2	20.47	124.07	65	77	260.7	48.00	11111.3	8019.4	326.7
25.96	RB6	0.3125	38.469	37.845	6961.3	20.30	123.10	65	78	253.4	60.00	13155.0	9930.1	400.2
26.00		0.3125	38.462	37.839	6957.9	20.29	123.08	65	78	5.2	60.00	13150.9	9927.0	8.2
26.88	RT4	0.3125	38.326	37.703	6883.3	20.21	122.64	65	78	113.1	48.00	11135.8	7021.5	143.7
27.88	RT3 RB7	0.3125	38.170	37.549	6799.3	20.13	122.15	65	78	128.0	48.00	11048.1	6966.6	163.3
28.00		0.3125	38.152	37.531	6789.3	20.12	122.09	65	78	15.3	48.00	11037.6	6960.0	19.6
30.00		0.3125	37.841	37.222	6623.5	19.94	121.09	65	78	254.4	48.00	10863.5	6850.9	326.7
32.00		0.3125	37.531	36.914	6460.4	19.77	120.10	65	78	252.3	48.00	10690.8	6742.6	326.7
34.00		0.3125	37.220	36.606	6300.0	19.59	119.10	65	78	250.2	48.00	10519.6	6635.2	326.7
36.00		0.3125	36.909	36.298	6142.3	19.42	118.11	65	79	248.1	48.00	10349.7	6528.7	326.7
38.00		0.3125	36.599	35.990	5987.2	19.24	117.12	65	79	246.0	48.00	10181.2	6423.0	326.7
40.00		0.3125	36.288	35.682	5834.8	19.06	116.12	65	79	243.9	48.00	10014.1	6318.3	326.7
40.50	RT5 RB8	0.3125	36.211	35.605	5797.1	19.02	115.87	65	79	60.6	48.00	9972.5	6292.2	81.7
40.71	RT6 RB9	0.3125	36.178	35.573	5781.3	19.00	115.77	65	79	25.4	48.00	9955.1	6281.3	34.3
42.00		0.3125	35.978	35.374	5685.0	18.89	115.13	65	79	155.7	48.00	9848.4	6214.4	210.7
43.33	Bot - Section 2	0.3125	35.771	35.169	5586.6	18.77	114.47	65	79	160.0	48.00	9738.7	6145.6	217.8
44.00		0.3125	35.667	35.066	5537.8	18.71	114.13	65	79	144.4	48.00	9948.2	6277.0	108.9
46.00		0.3125	35.357	34.758	5393.1	18.54	113.14	65	80	430.7	48.00	9783.1	6173.4	326.7
48.00	Top - Section 1	0.2500	35.546	28.006	4408.2	23.66	142.18	65	74	426.9	48.00	9619.3	6070.8	326.7
48.12	RT7	0.2500	35.527	27.992	4401.2	23.65	142.11	65	74	11.4	36.00	7227.7	4495.6	14.7
50.00		0.2500	35.235	27.760	4292.8	23.44	140.94	65	74	178.3	36.00	7112.8	4424.8	230.3
52.00		0.2500	34.925	27.513	4179.5	23.22	139.70	65	74	188.1	36.00	6991.5	4350.1	245.0
54.00		0.2500	34.614	27.267	4068.2	23.00	138.46	65	74	186.4	36.00	6871.3	4276.1	245.0
56.00		0.2500	34.304	27.021	3958.9	22.78	137.21	65	75	184.7	36.00	6752.1	4202.8	245.0
58.00		0.2500	33.993	26.774	3851.6	22.56	135.97	65	75	183.1	36.00	6634.0	4130.0	245.0
60.00		0.2500	33.682	26.528	3746.2	22.35	134.73	65	75	181.4	36.00	6517.0	4058.0	245.0
60.71	RT9	0.2500	33.572	26.440	3709.3	22.27	134.29	65	75	64.0	24.00	4800.1	2406.1	58.0
60.75	RT8 RB10	0.2500	33.566	26.435	3707.2	22.26	134.26	65	75	3.6	24.00	4798.4	2405.3	3.3
62.00		0.2500	33.372	26.281	3642.8	22.13	133.49	65	75	112.1	24.00	4745.0	2378.7	102.1
64.00		0.2500	33.061	26.035	3541.2	21.91	132.25	65	76	178.0	24.00	4660.2	2336.5	163.3
66.00		0.2500	32.751	25.788	3441.6	21.69	131.00	65	76	176.3	24.00	4576.2	2294.7	163.3
68.00		0.2500	32.440	25.542	3343.9	21.47	129.76	65	76	174.7	24.00	4493.0	2253.3	163.3
70.00		0.2500	32.130	25.296	3248.0	21.25	128.52	65	76	173.0	24.00	4410.5	2212.3	163.3
72.00		0.2500	31.819	25.049	3154.0	21.03	127.28	65	77	171.3	24.00	4328.8	2171.7	163.3
74.00		0.2500	31.508	24.803	3061.9	20.81	126.03	65	77	169.6	24.00	4247.9	2131.4	163.3
76.00		0.2500	31.198	24.556	2971.5	20.59	124.79	65	77	168.0	24.00	4167.7	2091.6	163.3

Increment Length: 2 (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)
78.00		0.2500	30.887	24.310	2882.9	20.37	123.55	65	77	166.3	24.00	4088.4	2052.1	163.3
78.25	RT10	0.2500	30.848	24.279	2872.0	20.35	123.39	65	77	20.7	24.00	4078.5	2047.2	20.4
80.00		0.2500	30.577	24.063	2796.1	20.16	122.31	65	78	143.9				
82.00		0.2500	30.266	23.817	2711.1	19.94	121.06	65	78	162.9				
84.00		0.2500	29.955	23.570	2627.8	19.72	119.82	65	78	161.2				
86.00		0.2500	29.645	23.324	2546.3	19.50	118.58	65	78	159.6				
87.42	Bot - Section 3	0.2500	29.425	23.149	2489.5	19.34	117.70	65	79	112.0				
88.00		0.2500	29.334	23.078	2466.4	19.28	117.34	65	79	80.8				
90.00		0.2500	29.024	22.831	2388.2	19.06	116.09	65	79	275.2				
91.33	Top - Section 2	0.1875	29.192	17.260	1834.5	26.04	155.69	65	71	181.8				
92.00		0.1875	29.088	17.199	1815.0	25.94	155.14	65	71	39.1				
94.00		0.1875	28.778	17.014	1757.1	25.65	153.48	65	71	116.4				
96.00		0.1875	28.467	16.829	1700.4	25.36	151.82	65	72	115.2				
98.00		0.1875	28.156	16.644	1645.0	25.07	150.17	65	72	113.9				
100.00		0.1875	27.846	16.460	1590.8	24.78	148.51	65	72	112.6				
102.00		0.1875	27.535	16.275	1537.8	24.48	146.85	65	73	111.4				
104.00		0.1875	27.225	16.090	1486.0	24.19	145.20	65	73	110.1				
106.00		0.1875	26.914	15.905	1435.4	23.90	143.54	65	73	108.9				
108.00		0.1875	26.603	15.720	1385.9	23.61	141.89	65	74	107.6				
110.00		0.1875	26.293	15.535	1337.6	23.32	140.23	65	74	106.4				
112.00		0.1875	25.982	15.351	1290.5	23.02	138.57	65	74	105.1				
114.00		0.1875	25.672	15.166	1244.4	22.73	136.92	65	75	103.8				
116.00		0.1875	25.361	14.981	1199.5	22.44	135.26	65	75	102.6				
118.00		0.1875	25.051	14.796	1155.6	22.15	133.60	65	75	101.3				
120.00	Top - Section 3	0.1875	24.740	14.611	1112.8	21.86	131.95	65	76	100.1				
120.00	Bot - Section 4	0.2500	18.000	13.941	549.4	16.39	98.96	65	59					
122.00		0.2500	18.000	13.941	549.4	0.00	72.00	65	59	94.9				
124.00		0.2500	18.000	13.941	549.4	0.00	72.00	65	59	94.9				
126.00		0.2500	18.000	13.941	549.4	0.00	72.00	65	59	94.9				
128.00		0.2500	18.000	13.941	549.4	0.00	72.00	65	59	94.9				
130.00		0.2500	18.000	13.941	549.4	0.00	72.00	65	59	94.9				
									Total Weight	**12677.2**				**11001.2**

Wind Loading - Shaft

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

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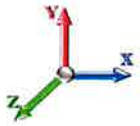
Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	29.565	32.52	396.52	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		1.00	0.85	29.565	32.52	393.62	0.730	0.000	2.00	7.166	5.23	170.1	0.0	340.5
4.00		1.00	0.85	29.565	32.52	390.72	0.730	0.000	2.00	7.114	5.19	168.9	0.0	337.9
6.00		1.00	0.85	29.565	32.52	387.82	0.730	0.000	2.00	7.061	5.15	167.6	0.0	335.4
8.00		1.00	0.85	29.565	32.52	384.93	0.730	0.000	2.00	7.009	5.12	166.4	0.0	332.9
10.00		1.00	0.85	29.565	32.52	382.03	0.730	0.000	2.00	6.956	5.08	165.1	0.0	330.4
10.25	RT2 RB3 RB4	1.00	0.85	29.565	32.52	381.67	0.730	0.000	0.25	0.866	0.63	20.6	0.0	41.1
12.00		1.00	0.85	29.565	32.52	379.13	0.730	0.000	1.75	6.038	4.41	143.3	0.0	286.8
14.00		1.00	0.85	29.565	32.52	376.23	0.730	0.000	2.00	6.851	5.00	162.6	0.0	325.4
16.00		1.00	0.86	29.930	32.92	375.63	0.730	0.000	2.00	6.798	4.96	163.4	0.0	322.9
18.00		1.00	0.88	30.681	33.75	377.37	0.730	0.000	2.00	6.746	4.92	166.2	0.0	320.3
20.00		1.00	0.90	31.369	34.51	378.59	0.730	0.000	2.00	6.693	4.89	168.6	0.0	317.8
20.50	RT1 RB5	1.00	0.91	31.533	34.69	378.83	0.730	0.000	0.50	1.665	1.22	42.2	0.0	79.1
22.00		1.00	0.92	32.005	35.21	379.39	0.730	0.000	1.50	4.976	3.63	127.9	0.0	236.2
24.00		1.00	0.94	32.597	35.86	379.84	0.730	0.000	2.00	6.588	4.81	172.4	0.0	312.8
25.96	RB6	1.00	0.95	33.140	36.45	379.99	0.730	0.000	1.96	6.405	4.68	170.5	0.0	304.1
26.00		1.00	0.95	33.151	36.47	379.99	0.730	0.000	0.04	0.130	0.10	3.5	0.0	6.2
26.88	RT4	1.00	0.96	33.384	36.72	379.97	0.730	0.000	0.88	2.859	2.09	76.6	0.0	135.7
27.88	RT3 RB7	1.00	0.97	33.642	37.01	379.88	0.730	0.000	1.00	3.237	2.36	87.4	0.0	153.6
28.00		1.00	0.97	33.672	37.04	379.87	0.730	0.000	0.12	0.387	0.28	10.5	0.0	18.4
30.00		1.00	0.98	34.165	37.58	379.52	0.730	0.000	2.00	6.430	4.69	176.4	0.0	305.2
32.00		1.00	1.00	34.632	38.10	378.98	0.730	0.000	2.00	6.378	4.66	177.4	0.0	302.7
34.00		1.00	1.01	35.077	38.58	378.25	0.730	0.000	2.00	6.325	4.62	178.2	0.0	300.2
36.00		1.00	1.02	35.502	39.05	377.35	0.730	0.000	2.00	6.273	4.58	178.8	0.0	297.7
38.00		1.00	1.03	35.908	39.50	376.31	0.730	0.000	2.00	6.220	4.54	179.4	0.0	295.2
40.00		1.00	1.04	36.298	39.93	375.14	0.730	0.000	2.00	6.168	4.50	179.8	0.0	292.7
40.50	RT5 RB8	1.00	1.05	36.393	40.03	374.83	0.730	0.000	0.50	1.534	1.12	44.8	0.0	72.8
40.71	RT6 RB9	1.00	1.05	36.433	40.08	374.69	0.730	0.000	0.21	0.643	0.47	18.8	0.0	30.5
42.00		1.00	1.05	36.673	40.34	373.84	0.730	0.000	1.29	3.938	2.87	116.0	0.0	186.9
43.33	Bot - Section 2	1.00	1.06	36.915	40.61	372.92	0.730	0.000	1.33	4.048	2.95	120.0	0.0	192.0
44.00		1.00	1.06	37.034	40.74	372.44	0.730	0.000	0.67	2.043	1.49	60.8	0.0	173.3
46.00		1.00	1.07	37.382	41.12	370.92	0.730	0.000	2.00	6.095	4.45	182.9	0.0	516.9
48.00	Top - Section 1	1.00	1.08	37.718	41.49	369.32	0.730	0.000	2.00	6.042	4.41	183.0	0.0	512.3
48.12	RT7	1.00	1.08	37.738	41.51	374.49	0.730	0.000	0.12	0.361	0.26	10.9	0.0	13.7
50.00		1.00	1.09	38.044	41.85	372.91	0.730	0.000	1.88	5.629	4.11	171.9	0.0	214.0
52.00		1.00	1.10	38.359	42.20	371.15	0.730	0.000	2.00	5.937	4.33	182.9	0.0	225.7
54.00		1.00	1.11	38.665	42.53	369.32	0.730	0.000	2.00	5.884	4.30	182.7	0.0	223.7
56.00		1.00	1.12	38.962	42.86	367.41	0.730	0.000	2.00	5.832	4.26	182.5	0.0	221.7
58.00		1.00	1.13	39.251	43.18	365.43	0.730	0.000	2.00	5.779	4.22	182.2	0.0	219.7
60.00		1.00	1.14	39.532	43.49	363.38	0.730	0.000	2.00	5.727	4.18	181.8	0.0	217.6
60.71	RT9	1.00	1.14	39.630	43.59	362.64	0.730	0.000	0.71	2.020	1.47	64.3	0.0	76.8
60.75	RT8 RB10	1.00	1.14	39.636	43.60	362.60	0.730	0.000	0.04	0.114	0.08	3.6	0.0	4.3
62.00		1.00	1.14	39.806	43.79	361.28	0.730	0.000	1.25	3.540	2.58	113.2	0.0	134.5
64.00		1.00	1.15	40.073	44.08	359.11	0.730	0.000	2.00	5.622	4.10	180.9	0.0	213.6
66.00		1.00	1.16	40.334	44.37	356.89	0.730	0.000	2.00	5.569	4.07	180.4	0.0	211.6
68.00		1.00	1.17	40.588	44.65	354.62	0.730	0.000	2.00	5.516	4.03	179.8	0.0	209.6
70.00		1.00	1.17	40.836	44.92	352.30	0.730	0.000	2.00	5.464	3.99	179.2	0.0	207.6

Wind Loading - Shaft

Structure: CT13064-A-SBA
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1
Code: TIA-222-H
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/4/2022

Tower Engineering Solutions

72.00	1.00	1.18	41.079	45.19	349.93	0.730	0.000	2.00	5.411	3.95	178.5	0.0	205.6
74.00	1.00	1.19	41.317	45.45	347.52	0.730	0.000	2.00	5.359	3.91	177.8	0.0	203.6
76.00	1.00	1.19	41.550	45.70	345.06	0.730	0.000	2.00	5.306	3.87	177.0	0.0	201.5
78.00	1.00	1.20	41.777	45.96	342.56	0.730	0.000	2.00	5.254	3.84	176.2	0.0	199.5
78.25 RT10	1.00	1.20	41.806	45.99	342.24	0.730	0.000	0.25	0.653	0.48	21.9	0.0	24.8
80.00	1.00	1.21	42.001	46.20	340.02	0.730	0.000	1.75	4.548	3.32	153.4	0.0	172.7
82.00	1.00	1.21	42.220	46.44	337.44	0.730	0.000	2.00	5.148	3.76	174.5	0.0	195.5
84.00	1.00	1.22	42.434	46.68	334.83	0.730	0.000	2.00	5.096	3.72	173.6	0.0	193.5
86.00	1.00	1.23	42.645	46.91	332.18	0.730	0.000	2.00	5.043	3.68	172.7	0.0	191.5
87.42 Bot - Section 3	1.00	1.23	42.792	47.07	330.28	0.730	0.000	1.42	3.541	2.58	121.7	0.0	134.4
88.00	1.00	1.23	42.852	47.14	329.49	0.730	0.000	0.58	1.469	1.07	50.5	0.0	97.0
90.00 Appurtenance(s)	1.00	1.24	43.055	47.36	326.78	0.730	0.000	2.00	5.002	3.65	172.9	0.0	330.2
91.33 Top - Section 2	1.00	1.24	43.189	47.51	324.95	0.730	0.000	1.33	3.305	2.41	114.6	0.0	218.2
92.00	1.00	1.24	43.255	47.58	328.26	0.730	0.000	0.67	1.644	1.20	57.1	0.0	46.9
94.00	1.00	1.25	43.451	47.80	325.49	0.730	0.000	2.00	4.897	3.57	170.8	0.0	139.7
96.00	1.00	1.25	43.644	48.01	322.69	0.730	0.000	2.00	4.844	3.54	169.8	0.0	138.2
98.00	1.00	1.26	43.834	48.22	319.87	0.730	0.000	2.00	4.791	3.50	168.7	0.0	136.7
100.00 Appurtenance(s)	1.00	1.27	44.021	48.42	317.01	0.730	0.000	2.00	4.739	3.46	167.5	0.0	135.2
102.00	1.00	1.27	44.205	48.63	314.13	0.730	0.000	2.00	4.686	3.42	166.3	0.0	133.7
104.00	1.00	1.28	44.386	48.82	311.22	0.730	0.000	2.00	4.634	3.38	165.2	0.0	132.2
106.00	1.00	1.28	44.564	49.02	308.29	0.730	0.000	2.00	4.581	3.34	163.9	0.0	130.6
108.00	1.00	1.29	44.740	49.21	305.33	0.730	0.000	2.00	4.529	3.31	162.7	0.0	129.1
110.00 Appurtenance(s)	1.00	1.29	44.913	49.40	302.35	0.730	0.000	2.00	4.476	3.27	161.4	0.0	127.6
112.00	1.00	1.30	45.084	49.59	299.35	0.730	0.000	2.00	4.423	3.23	160.1	0.0	126.1
114.00	1.00	1.30	45.252	49.78	296.32	0.730	0.000	2.00	4.371	3.19	158.8	0.0	124.6
116.00	1.00	1.31	45.418	49.96	293.27	0.730	0.000	2.00	4.318	3.15	157.5	0.0	123.1
118.00	1.00	1.31	45.582	50.14	290.20	0.730	0.000	2.00	4.266	3.11	156.1	0.0	121.6
120.00 Top - Section 3	1.00	1.32	45.743	50.32	287.11	0.730	0.000	2.00	4.213	3.08	154.8	0.0	120.1
122.00	1.00	1.32	45.903	50.49	206.08	0.620 *	0.000	2.00	3.000	1.86	93.9	0.0	113.9
124.00	1.00	1.32	46.060	50.67	206.43	0.620 *	0.000	2.00	3.000	1.86	94.2	0.0	113.9
126.00	1.00	1.33	46.216	50.84	206.78	0.620 *	0.000	2.00	3.000	1.86	94.6	0.0	113.9
128.00	1.00	1.33	46.369	51.01	207.12	0.620 *	0.000	2.00	3.000	1.86	94.9	0.0	113.9
130.00 Appurtenance(s)	1.00	1.34	46.521	51.17	207.46	0.620 *	0.000	2.00	3.000	1.86	95.2	0.0	113.9
* Cf Adjusted by Linear Load Ra Effect							**Totals:**	**130.00**			**10,825.2**		**15,212.6**

Discrete Appurtenance Forces

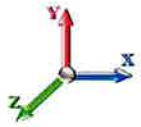
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	DC6-48-60-18-8F	2	46.521	51.173	0.75	0.75	1.38	76.32	0.000	0.000	70.62	0.00	0.00
2	130.00	6' Lightning rod	1	46.745	51.419	1.00	1.00	0.38	7.80	0.000	3.000	19.54	0.00	58.62
3	130.00	Cci DMP65R-BU6DA	3	46.521	51.173	0.54	0.75	20.62	227.88	0.000	0.000	1055.12	0.00	0.00
4	130.00	RRUS 32	6	46.521	51.173	0.38	0.75	3.71	554.40	0.000	0.000	189.98	0.00	0.00
5	130.00	RRUS 4478 B14	3	46.521	51.173	0.38	0.75	1.86	213.84	0.000	0.000	94.99	0.00	0.00
6	130.00	B2 B66A 8843	3	46.521	51.173	0.38	0.75	1.84	252.00	0.000	0.000	94.41	0.00	0.00
7	130.00	4449 B5/B12	3	46.521	51.173	0.38	0.75	2.22	255.60	0.000	0.000	113.41	0.00	0.00
8	130.00	RRUS E2 B29	3	46.521	51.173	0.38	0.75	3.54	213.84	0.000	0.000	181.34	0.00	0.00
9	130.00	Additional mount pipe	3	46.521	51.173	0.56	0.75	2.95	61.20	0.000	0.000	151.12	0.00	0.00
10	130.00	Quinte QD6616-7	3	46.521	51.173	0.56	0.75	22.92	212.76	0.000	0.000	1172.69	0.00	0.00
11	130.00	(3) Horizontal bracing	1	46.521	51.173	0.75	0.75	4.45	164.70	0.000	0.000	227.88	0.00	0.00
12	130.00	Ericsson AIR6419	3	46.670	51.337	0.57	0.75	6.50	237.96	0.000	2.000	333.59	0.00	667.18
13	130.00	DC6-48-60-0-8C	2	46.521	51.173	0.75	0.75	7.17	38.40	0.000	0.000	366.91	0.00	0.00
14	130.00	Ericcson AIR6449	3	46.369	51.006	0.64	0.75	7.90	316.80	0.000	-2.000	402.88	0.00	-805.75
15	130.00	Angle Reinforcement kit	1	46.521	51.173	1.00	1.00	5.80	300.00	0.000	0.000	296.80	0.00	0.00
16	130.00	MTC3607 Platform + HR &	1	46.521	51.173	1.00	1.00	51.70	2695.20	0.000	0.000	2645.63	0.00	0.00
17	120.00	MC-PK8-DSH	1	45.743	50.318	1.00	1.00	37.59	2072.40	0.000	0.000	1891.44	0.00	0.00
18	120.00	RDIDC-9181-OF-48	1	45.743	50.318	0.75	0.75	1.51	26.28	0.000	0.000	75.85	0.00	0.00
19	120.00	TA08025-B604	3	45.743	50.318	0.38	0.75	2.21	230.04	0.000	0.000	110.95	0.00	0.00
20	120.00	TA08025-B605	3	45.743	50.318	0.38	0.75	2.21	270.00	0.000	0.000	110.95	0.00	0.00
21	120.00	MX08FRO665-21	3	45.743	50.318	0.55	0.75	20.80	232.20	0.000	0.000	1046.40	0.00	0.00
22	110.00	SAMSUNG	3	44.913	49.404	0.40	0.80	2.24	268.92	0.000	0.000	110.86	0.00	0.00
23	110.00	RFS RVZDC-6627-PF-48	1	44.913	49.404	0.40	0.80	1.62	38.40	0.000	0.000	80.23	0.00	0.00
24	110.00	SAMSUNG MT6407-77A	3	44.913	49.404	0.56	0.80	7.88	313.56	0.000	0.000	389.27	0.00	0.00
25	110.00	JMA MX10FIT665-02	3	44.913	49.404	0.67	0.80	16.27	192.24	0.000	0.000	803.84	0.00	0.00
26	110.00	T-Arm (Round)	3	44.913	49.404	0.56	0.75	13.50	1260.00	0.000	0.000	666.96	0.00	0.00
27	110.00	COMMSCOPE	3	44.999	49.499	0.40	0.80	0.48	23.76	0.000	1.000	23.76	0.00	23.76
28	110.00	SAMSUNG	3	44.913	49.404	0.40	0.80	2.24	253.19	0.000	0.000	110.86	0.00	0.00
29	100.00	Kathrein 782 11056	3	44.021	48.423	0.40	0.80	0.16	6.48	0.000	0.000	7.55	0.00	0.00
30	100.00	Ericsson AIR21 B2A B4P	3	44.021	48.423	0.64	0.80	11.69	329.40	0.000	0.000	566.20	0.00	0.00
31	100.00	Ericsson AIR21 B4A B2P	3	44.021	48.423	0.64	0.80	11.69	325.44	0.000	0.000	566.20	0.00	0.00
32	100.00	T-Arm (Round)	6	44.021	48.423	0.56	0.75	27.00	2520.00	0.000	0.000	1307.42	0.00	0.00
33	100.00	RFS	3	44.021	48.423	0.58	0.80	35.46	442.08	0.000	0.000	1717.10	0.00	0.00
34	100.00	Ericsson 4480 B71 + B85	3	44.021	48.423	0.59	0.80	5.06	334.80	0.000	0.000	245.10	0.00	0.00
35	90.00	F3P-10W	1	43.055	47.361	1.00	1.00	51.77	2546.40	0.000	0.000	2451.86	0.00	0.00
36	90.00	NNVV-65B-R4	3	43.055	47.361	0.55	0.75	20.43	278.64	0.000	0.000	967.56	0.00	0.00
37	90.00	AAHC	3	43.055	47.361	0.56	0.75	7.09	374.40	0.000	0.000	335.67	0.00	0.00
38	90.00	F3P-HRK10	1	43.055	47.361	1.00	1.00	7.12	469.20	0.000	0.000	337.21	0.00	0.00
39	90.00	ALU - 800 MHz - RRU	6	43.055	47.361	0.38	0.75	5.60	381.60	0.000	0.000	265.34	0.00	0.00
40	90.00	ALU - 1900MHz - RRU	3	43.055	47.361	0.38	0.75	4.27	158.40	0.000	0.000	202.47	0.00	0.00
41	90.00	Andrew - VHLP2-11	2	43.055	47.361	0.75	0.75	7.02	64.80	0.000	0.000	332.47	0.00	0.00
							Totals:		**19,241.33**			**22,140.42**		

Total Applied Force Summary

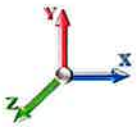
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		170.13	460.06	0.00	0.00
4.00		168.88	457.54	0.00	0.00
6.00		167.64	455.03	0.00	0.00
8.00		166.39	452.51	0.00	0.00
10.00		165.14	450.00	0.00	0.00
10.25		20.55	56.07	0.00	0.00
12.00		143.34	391.41	0.00	0.00
14.00		162.64	444.96	0.00	0.00
16.00		163.39	442.45	0.00	0.00
18.00		166.20	439.93	0.00	0.00
20.00		168.60	437.42	0.00	0.00
20.50		42.16	108.96	0.00	0.00
22.00		127.87	325.94	0.00	0.00
24.00		172.45	432.39	0.00	0.00
25.96		170.46	421.30	0.00	0.00
26.00		3.47	8.57	0.00	0.00
26.88		76.64	188.35	0.00	0.00
27.88		87.43	213.44	0.00	0.00
28.00		10.48	25.57	0.00	0.00
30.00		176.41	424.84	0.00	0.00
32.00		177.37	422.32	0.00	0.00
34.00		178.16	419.81	0.00	0.00
36.00		178.82	417.29	0.00	0.00
38.00		179.35	414.78	0.00	0.00
40.00		179.77	412.26	0.00	0.00
40.50		44.82	102.67	0.00	0.00
40.71		18.82	43.08	0.00	0.00
42.00		115.97	264.00	0.00	0.00
43.33		119.98	271.76	0.00	0.00
44.00		60.76	213.16	0.00	0.00
46.00		182.94	636.45	0.00	0.00
48.00		183.00	631.92	0.00	0.00
48.12		10.94	20.90	0.00	0.00
50.00		171.95	326.41	0.00	0.00
52.00		182.87	345.30	0.00	0.00
54.00		182.70	343.28	0.00	0.00
56.00		182.46	341.27	0.00	0.00
58.00		182.15	339.26	0.00	0.00
60.00		181.79	337.25	0.00	0.00
60.71		64.29	119.24	0.00	0.00
60.75		3.62	6.71	0.00	0.00
62.00		113.16	209.29	0.00	0.00
64.00		180.89	333.22	0.00	0.00
66.00		180.37	331.21	0.00	0.00
68.00		179.79	329.20	0.00	0.00
70.00		179.17	327.18	0.00	0.00

Total Applied Force Summary

Structure:	CT13064-A-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Middletown 2, CT		**Exposure:**	C	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Tower Engineering Solutions

72.00		178.50	325.17	0.00	0.00
74.00		177.79	323.16	0.00	0.00
76.00		177.04	321.15	0.00	0.00
78.00		176.24	319.13	0.00	0.00
78.25		21.92	39.75	0.00	0.00
80.00		153.39	277.37	0.00	0.00
82.00		174.54	315.11	0.00	0.00
84.00		173.64	313.10	0.00	0.00
86.00		172.70	311.08	0.00	0.00
87.42		121.66	219.13	0.00	0.00
88.00		50.54	131.85	0.00	0.00
90.00	(19) attachments	5065.49	4723.22	0.00	0.00
91.33		114.63	291.20	0.00	0.00
92.00		57.10	83.42	0.00	0.00
94.00		170.85	249.26	0.00	0.00
96.00		169.76	247.75	0.00	0.00
98.00		168.65	246.24	0.00	0.00
100.00	(21) attachments	4577.08	4202.93	0.00	0.00
102.00		166.35	220.33	0.00	0.00
104.00		165.15	218.82	0.00	0.00
106.00		163.94	217.31	0.00	0.00
108.00		162.69	215.80	0.00	0.00
110.00	(19) attachments	2347.21	2564.36	0.00	23.76
112.00		160.14	180.19	0.00	0.00
114.00		158.83	178.68	0.00	0.00
116.00		157.49	177.17	0.00	0.00
118.00		156.14	175.66	0.00	0.00
120.00	(11) attachments	3390.35	3005.07	0.00	0.00
122.00		93.92	163.55	0.00	0.00
124.00		94.24	163.55	0.00	0.00
126.00		94.56	163.55	0.00	0.00
128.00		94.87	163.55	0.00	0.00
130.00	(41) attachments	7512.09	5992.25	0.00	-79.95
	Totals:	**32,965.66**	**41,335.83**	**0.00**	**-56.20**

Linear Appurtenance Segment Forces (Factored)

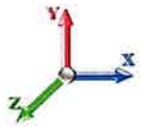
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
2.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	29.565	0.00	11.59
2.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.070	0.000	29.565	0.00	0.00
2.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.070	0.000	29.565	0.00	0.00
4.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	29.565	0.00	11.59
4.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.070	0.000	29.565	0.00	0.00
4.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.070	0.000	29.565	0.00	0.00
6.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	29.565	0.00	11.59
6.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.071	0.000	29.565	0.00	0.00
6.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.071	0.000	29.565	0.00	0.00
8.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	29.565	0.00	11.59
8.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.071	0.000	29.565	0.00	0.00
8.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.071	0.000	29.565	0.00	0.00
10.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.072	0.000	29.565	0.00	11.59
10.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.072	0.000	29.565	0.00	0.00
10.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.072	0.000	29.565	0.00	0.00
10.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.072	0.000	29.565	0.00	1.45
10.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.072	0.000	29.565	0.00	0.00
10.25	1" Reinforcing plate	Yes	0.25	0.000	0.00	0.00	0.00	0.072	0.000	29.565	0.00	0.00
12.00	2" Conduit	Yes	1.75	0.000	2.00	0.29	0.00	0.072	0.000	29.565	0.00	10.14
12.00	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.072	0.000	29.565	0.00	0.00
12.00	1" Reinforcing plate	Yes	1.75	0.000	0.00	0.00	0.00	0.072	0.000	29.565	0.00	0.00
14.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.073	0.000	29.565	0.00	11.59
14.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.073	0.000	29.565	0.00	0.00
14.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.073	0.000	29.565	0.00	0.00
16.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	29.930	0.00	11.59
16.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.074	0.000	29.930	0.00	0.00
16.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.074	0.000	29.930	0.00	0.00
18.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	30.681	0.00	11.59
18.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.074	0.000	30.681	0.00	0.00
18.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.074	0.000	30.681	0.00	0.00
20.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.075	0.000	31.369	0.00	11.59
20.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.075	0.000	31.369	0.00	0.00
20.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.075	0.000	31.369	0.00	0.00
20.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.075	0.000	31.533	0.00	2.90
20.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.075	0.000	31.533	0.00	0.00
20.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.075	0.000	31.533	0.00	0.00
22.00	2" Conduit	Yes	1.50	0.000	2.00	0.25	0.00	0.075	0.000	32.005	0.00	8.69
22.00	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.075	0.000	32.005	0.00	0.00
22.00	1" Reinforcing plate	Yes	1.50	0.000	0.00	0.00	0.00	0.075	0.000	32.005	0.00	0.00
24.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.076	0.000	32.597	0.00	11.59
24.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.076	0.000	32.597	0.00	0.00
24.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.076	0.000	32.597	0.00	0.00
24.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.076	0.000	32.597	0.00	0.00
25.96	2" Conduit	Yes	1.96	0.000	2.00	0.33	0.00	0.076	0.000	33.140	0.00	11.36
25.96	1" Reinforcing plate	Yes	1.96	0.000	1.00	0.16	0.00	0.076	0.000	33.140	0.00	0.00
25.96	1" Reinforcing plate	Yes	1.96	0.000	0.00	0.00	0.00	0.076	0.000	33.140	0.00	-0.00
25.96	1" Reinforcing plate	Yes	1.96	0.000	0.00	0.00	0.00	0.076	0.000	33.140	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

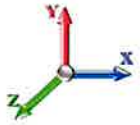
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
26.00	2" Conduit	Yes	0.04	0.000	2.00	0.01	0.00	0.077	0.000	33.151	0.00	0.23
26.00	1" Reinforcing plate	Yes	0.04	0.000	1.00	0.00	0.00	0.077	0.000	33.151	0.00	0.00
26.00	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.077	0.000	33.151	0.00	0.00
26.00	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.077	0.000	33.151	0.00	0.00
26.88	2" Conduit	Yes	0.88	0.000	2.00	0.15	0.00	0.077	0.000	33.384	0.00	5.10
26.88	1" Reinforcing plate	Yes	0.88	0.000	1.00	0.07	0.00	0.077	0.000	33.384	0.00	0.00
26.88	1" Reinforcing plate	Yes	0.88	0.000	0.00	0.00	0.00	0.077	0.000	33.384	0.00	0.00
26.88	1" Reinforcing plate	Yes	0.88	0.000	0.00	0.00	0.00	0.077	0.000	33.384	0.00	0.00
27.88	2" Conduit	Yes	1.00	0.000	2.00	0.17	0.00	0.077	0.000	33.642	0.00	5.80
27.88	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.077	0.000	33.642	0.00	0.00
27.88	1" Reinforcing plate	Yes	1.00	0.000	0.00	0.00	0.00	0.077	0.000	33.642	0.00	0.00
27.88	1" Reinforcing plate	Yes	1.00	0.000	0.00	0.00	0.00	0.077	0.000	33.642	0.00	0.00
28.00	2" Conduit	Yes	0.12	0.000	2.00	0.02	0.00	0.077	0.000	33.672	0.00	0.70
28.00	1" Reinforcing plate	Yes	0.12	0.000	1.00	0.01	0.00	0.077	0.000	33.672	0.00	0.00
28.00	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.077	0.000	33.672	0.00	0.00
28.00	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.077	0.000	33.672	0.00	0.00
30.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	34.165	0.00	11.59
30.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.078	0.000	34.165	0.00	0.00
30.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	34.165	0.00	0.00
30.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	34.165	0.00	0.00
32.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	34.632	0.00	11.59
32.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.078	0.000	34.632	0.00	0.00
32.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	34.632	0.00	0.00
32.00	1" Reinforcing plate	Yes	1.50	0.000	0.00	0.00	0.00	0.078	0.000	34.632	0.00	0.00
32.00	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.078	0.000	34.632	0.00	0.00
34.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.079	0.000	35.077	0.00	11.59
34.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.079	0.000	35.077	0.00	0.00
34.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.079	0.000	35.077	0.00	0.00
34.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.079	0.000	35.077	0.00	0.00
36.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.080	0.000	35.502	0.00	11.59
36.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.080	0.000	35.502	0.00	0.00
36.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	35.502	0.00	0.00
36.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	35.502	0.00	0.00
38.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.080	0.000	35.908	0.00	11.59
38.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.080	0.000	35.908	0.00	0.00
38.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	35.908	0.00	0.00
38.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	35.908	0.00	0.00
40.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.081	0.000	36.298	0.00	11.59
40.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.081	0.000	36.298	0.00	0.00
40.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.081	0.000	36.298	0.00	0.00
40.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.081	0.000	36.298	0.00	0.00
40.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.082	0.000	36.393	0.00	2.90
40.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.082	0.000	36.393	0.00	0.00
40.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.082	0.000	36.393	0.00	0.00
40.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.082	0.000	36.393	0.00	0.00
40.71	2" Conduit	Yes	0.21	0.000	2.00	0.04	0.00	0.082	0.000	36.433	0.00	1.22
40.71	1" Reinforcing plate	Yes	0.21	0.000	1.00	0.02	0.00	0.082	0.000	36.433	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

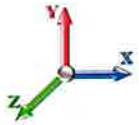
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
40.71	1" Reinforcing plate	Yes	0.21	0.000	0.00	0.00	0.00	0.082	0.000	36.433	0.00	0.00
40.71	1" Reinforcing plate	Yes	0.21	0.000	0.00	0.00	0.00	0.082	0.000	36.433	0.00	0.00
42.00	2" Conduit	Yes	1.29	0.000	2.00	0.21	0.00	0.082	0.000	36.673	0.00	7.48
42.00	1" Reinforcing plate	Yes	1.29	0.000	1.00	0.11	0.00	0.082	0.000	36.673	0.00	0.00
42.00	1" Reinforcing plate	Yes	1.29	0.000	0.00	0.00	0.00	0.082	0.000	36.673	0.00	0.00
42.00	1" Reinforcing plate	Yes	1.29	0.000	0.00	0.00	0.00	0.082	0.000	36.673	0.00	0.00
43.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.082	0.000	36.915	0.00	7.73
43.33	1" Reinforcing plate	Yes	1.33	0.000	1.00	0.11	0.00	0.082	0.000	36.915	0.00	0.00
43.33	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.082	0.000	36.915	0.00	0.00
43.33	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.082	0.000	36.915	0.00	0.00
44.00	2" Conduit	Yes	0.67	0.000	2.00	0.11	0.00	0.083	0.000	37.034	0.00	3.86
44.00	1" Reinforcing plate	Yes	0.67	0.000	1.00	0.06	0.00	0.083	0.000	37.034	0.00	0.00
44.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.083	0.000	37.034	0.00	0.00
44.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.083	0.000	37.034	0.00	0.00
46.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.083	0.000	37.382	0.00	11.59
46.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.083	0.000	37.382	0.00	0.00
46.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.083	0.000	37.382	0.00	0.00
46.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.083	0.000	37.382	0.00	0.00
48.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.084	0.000	37.718	0.00	11.59
48.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.084	0.000	37.718	0.00	0.00
48.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	37.718	0.00	0.00
48.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	37.718	0.00	0.00
48.12	2" Conduit	Yes	0.12	0.000	2.00	0.02	0.00	0.083	0.000	37.738	0.00	0.70
48.12	1" Reinforcing plate	Yes	0.12	0.000	1.00	0.01	0.00	0.083	0.000	37.738	0.00	0.00
48.12	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.083	0.000	37.738	0.00	0.00
48.12	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.083	0.000	37.738	0.00	0.00
50.00	2" Conduit	Yes	1.88	0.000	2.00	0.31	0.00	0.084	0.000	38.044	0.00	10.90
50.00	1" Reinforcing plate	Yes	1.88	0.000	1.00	0.16	0.00	0.084	0.000	38.044	0.00	0.00
50.00	1" Reinforcing plate	Yes	1.88	0.000	0.00	0.00	0.00	0.084	0.000	38.044	0.00	0.00
50.00	1" Reinforcing plate	Yes	1.88	0.000	0.00	0.00	0.00	0.084	0.000	38.044	0.00	0.00
52.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.084	0.000	38.359	0.00	11.59
52.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.084	0.000	38.359	0.00	0.00
52.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	38.359	0.00	0.00
52.00	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.084	0.000	38.359	0.00	0.00
54.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.085	0.000	38.665	0.00	11.59
54.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.085	0.000	38.665	0.00	0.00
54.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.085	0.000	38.665	0.00	0.00
56.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.086	0.000	38.962	0.00	11.59
56.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.086	0.000	38.962	0.00	0.00
56.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.086	0.000	38.962	0.00	0.00
58.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.087	0.000	39.251	0.00	11.59
58.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.087	0.000	39.251	0.00	0.00
58.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.087	0.000	39.251	0.00	0.00
60.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.087	0.000	39.532	0.00	11.59
60.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.087	0.000	39.532	0.00	0.00
60.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.087	0.000	39.532	0.00	0.00
60.71	2" Conduit	Yes	0.71	0.000	2.00	0.12	0.00	0.088	0.000	39.630	0.00	4.12

Linear Appurtenance Segment Forces (Factored)

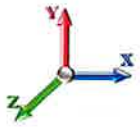
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
60.71	1" Reinforcing plate	Yes	0.71	0.000	1.00	0.06	0.00	0.088	0.000	39.630	0.00	0.00
60.71	1" Reinforcing plate	Yes	0.71	0.000	0.00	0.00	0.00	0.088	0.000	39.630	0.00	0.00
60.75	2" Conduit	Yes	0.04	0.000	2.00	0.01	0.00	0.088	0.000	39.636	0.00	0.23
60.75	1" Reinforcing plate	Yes	0.04	0.000	1.00	0.00	0.00	0.088	0.000	39.636	0.00	0.00
60.75	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.088	0.000	39.636	0.00	0.00
62.00	2" Conduit	Yes	1.25	0.000	2.00	0.21	0.00	0.088	0.000	39.806	0.00	7.25
62.00	1" Reinforcing plate	Yes	1.25	0.000	1.00	0.10	0.00	0.088	0.000	39.806	0.00	0.00
62.00	1" Reinforcing plate	Yes	1.25	0.000	0.00	0.00	0.00	0.088	0.000	39.806	0.00	0.00
64.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.089	0.000	40.073	0.00	11.59
64.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.089	0.000	40.073	0.00	0.00
64.00	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.089	0.000	40.073	0.00	0.00
66.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.090	0.000	40.334	0.00	11.59
66.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.090	0.000	40.334	0.00	0.00
68.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.091	0.000	40.588	0.00	11.59
68.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.091	0.000	40.588	0.00	0.00
70.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.092	0.000	40.836	0.00	11.59
70.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.092	0.000	40.836	0.00	0.00
72.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.092	0.000	41.079	0.00	11.59
72.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.092	0.000	41.079	0.00	0.00
74.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.093	0.000	41.317	0.00	11.59
74.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.093	0.000	41.317	0.00	0.00
76.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.094	0.000	41.550	0.00	11.59
76.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.094	0.000	41.550	0.00	0.00
78.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.095	0.000	41.777	0.00	11.59
78.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.095	0.000	41.777	0.00	0.00
78.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.096	0.000	41.806	0.00	1.45
78.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.096	0.000	41.806	0.00	0.00
80.00	2" Conduit	Yes	1.75	0.000	2.00	0.29	0.00	0.096	0.000	42.001	0.00	10.14
80.00	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.096	0.000	42.001	0.00	0.00
82.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.081	0.000	42.220	0.00	11.59
82.00	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.081	0.000	42.220	0.00	0.00
84.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.065	0.000	42.434	0.00	11.59
86.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.066	0.000	42.645	0.00	11.59
87.42	2" Conduit	Yes	1.42	0.000	2.00	0.24	0.00	0.067	0.000	42.792	0.00	8.21
88.00	2" Conduit	Yes	0.58	0.000	2.00	0.10	0.00	0.067	0.000	42.852	0.00	3.38
90.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.068	0.000	43.055	0.00	11.59
91.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.068	0.000	43.189	0.00	7.73
92.00	2" Conduit	Yes	0.67	0.000	2.00	0.11	0.00	0.068	0.000	43.255	0.00	3.86
94.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.068	0.000	43.451	0.00	11.59
96.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.069	0.000	43.644	0.00	11.59
98.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	43.834	0.00	11.59
100.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	44.021	0.00	11.59
102.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	44.205	0.00	11.59
104.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.072	0.000	44.386	0.00	11.59
106.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.073	0.000	44.564	0.00	11.59
108.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	44.740	0.00	11.59
110.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	44.913	0.00	11.59

Linear Appurtenance Segment Forces (Factored)

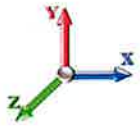
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
112.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.075	0.000	45.084	0.00	11.59
114.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.076	0.000	45.252	0.00	11.59
116.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.077	0.000	45.418	0.00	11.59
118.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	45.582	0.00	11.59
120.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.079	0.000	45.743	0.00	11.59
122.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	45.903	0.00	11.59
124.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	46.060	0.00	11.59
126.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	46.216	0.00	11.59
128.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	46.369	0.00	11.59
130.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	46.521	0.00	11.59
										Totals:	**0.0**	**753.5**

Calculated Forces

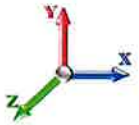
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

TES Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.31	-33.00	0.00	-3303.5	0.00	3303.52	2818.94	734.35	2570.40	2448.04	0.00	0.000	0.000	0.647
2.00	-40.79	-32.90	0.00	-3237.5	0.00	3237.52	2805.89	728.94	2532.69	2418.63	0.02	-0.094	0.000	0.639
4.00	-40.28	-32.79	0.00	-3171.7	0.00	3171.73	2792.73	723.54	2495.26	2389.30	0.08	-0.187	0.000	0.631
6.00	-39.78	-32.69	0.00	-3106.1	0.00	3106.15	2779.45	718.13	2458.11	2360.04	0.18	-0.280	0.000	0.623
8.00	-39.27	-32.58	0.00	-3040.7	0.00	3040.78	2766.06	712.72	2421.24	2330.86	0.32	-0.373	0.000	0.615
10.00	-38.79	-32.45	0.00	-2975.6	0.00	2975.62	2752.56	707.32	2384.65	2301.75	0.49	-0.465	0.000	0.607
10.25	-38.71	-32.46	0.00	-2967.5	0.00	2967.50	2750.86	706.64	2380.10	2298.12	0.52	-0.477	0.000	0.635
12.00	-38.27	-32.37	0.00	-2910.7	0.00	2910.70	2738.94	701.91	2348.34	2272.72	0.71	-0.562	0.000	0.628
14.00	-37.77	-32.27	0.00	-2845.9	0.00	2845.96	2725.20	696.50	2312.30	2243.77	0.96	-0.658	0.000	0.619
16.00	-37.28	-32.16	0.00	-2781.4	0.00	2781.42	2711.35	691.10	2276.54	2214.91	1.26	-0.754	0.000	0.610
18.00	-36.79	-32.05	0.00	-2717.1	0.00	2717.10	2697.39	685.69	2241.07	2186.13	1.60	-0.850	0.000	0.601
20.00	-36.32	-31.91	0.00	-2653.0	0.00	2653.00	2683.32	680.29	2205.87	2157.44	1.97	-0.945	0.000	0.592
20.50	-36.19	-31.90	0.00	-2637.0	0.00	2637.04	2679.78	678.93	2197.11	2150.28	2.07	-0.969	0.000	0.590
22.00	-35.82	-31.82	0.00	-2589.1	0.00	2589.19	2669.12	674.88	2170.95	2128.84	2.39	-1.040	0.000	0.583
24.00	-35.34	-31.69	0.00	-2525.5	0.00	2525.56	2654.82	669.47	2136.30	2100.34	2.84	-1.134	0.000	0.574
25.96	-34.89	-31.54	0.00	-2463.4	0.00	2463.43	2640.69	664.18	2102.62	2072.49	3.33	-1.226	0.000	0.496
26.00	-34.87	-31.55	0.00	-2462.1	0.00	2462.17	2640.40	664.07	2101.94	2071.92	3.34	-1.227	0.000	0.496
26.88	-34.66	-31.50	0.00	-2434.4	0.00	2434.41	2634.02	661.69	2086.91	2059.45	3.57	-1.264	0.000	0.591
27.88	-34.44	-31.42	0.00	-2402.9	0.00	2402.91	2626.74	658.99	2069.89	2045.30	3.84	-1.313	0.000	0.586
28.00	-34.38	-31.44	0.00	-2399.1	0.00	2399.14	2625.87	658.66	2067.85	2043.61	3.87	-1.319	0.000	0.585
30.00	-33.91	-31.31	0.00	-2336.2	0.00	2336.26	2611.22	653.25	2034.05	2015.39	4.45	-1.416	0.000	0.575
32.00	-33.44	-31.18	0.00	-2273.6	0.00	2273.64	2596.46	647.85	2000.52	1987.27	5.06	-1.513	0.000	0.565
34.00	-32.97	-31.05	0.00	-2211.2	0.00	2211.27	2581.58	642.44	1967.27	1959.26	5.72	-1.610	0.000	0.555
36.00	-32.51	-30.91	0.00	-2149.1	0.00	2149.18	2566.59	637.04	1934.30	1931.36	6.41	-1.705	0.000	0.545
38.00	-32.05	-30.77	0.00	-2087.3	0.00	2087.36	2551.48	631.63	1901.61	1903.56	7.14	-1.800	0.000	0.534
40.00	-31.61	-30.61	0.00	-2025.8	0.00	2025.82	2536.26	626.22	1869.20	1875.87	7.92	-1.894	0.000	0.524
40.50	-31.50	-30.57	0.00	-2010.5	0.00	2010.52	2532.44	624.87	1861.14	1868.96	8.12	-1.917	0.000	0.521
40.71	-31.44	-30.57	0.00	-2004.1	0.00	2004.10	2530.83	624.30	1857.76	1866.07	8.20	-1.927	0.000	0.520
42.00	-31.15	-30.48	0.00	-1964.6	0.00	1964.67	2520.93	620.82	1837.06	1848.29	8.73	-1.987	0.000	0.513
43.33	-30.86	-30.37	0.00	-1924.0	0.00	1924.03	2510.64	617.21	1815.79	1829.97	9.30	-2.049	0.000	0.506
44.00	-30.61	-30.34	0.00	-1903.7	0.00	1903.78	2505.48	615.41	1805.20	1820.83	9.58	-2.080	0.000	0.495
46.00	-29.94	-30.18	0.00	-1843.1	0.00	1843.11	2489.92	610.00	1773.63	1793.48	10.47	-2.169	0.000	0.484
48.00	-29.29	-29.99	0.00	-1782.7	0.00	1782.75	1854.44	491.51	1439.37	1347.80	11.40	-2.258	0.000	0.522
48.12	-29.24	-30.01	0.00	-1779.1	0.00	1779.15	1853.85	491.25	1437.86	1346.66	11.46	-2.264	0.000	0.663
50.00	-28.86	-29.88	0.00	-1722.7	0.00	1722.73	1844.56	487.19	1414.16	1328.74	12.37	-2.369	0.000	0.648
52.00	-28.47	-29.74	0.00	-1662.9	0.00	1662.97	1834.56	482.86	1389.16	1309.72	13.39	-2.479	0.000	0.631
54.00	-28.08	-29.59	0.00	-1603.5	0.00	1603.50	1824.45	478.54	1364.38	1290.76	14.45	-2.588	0.000	0.615
56.00	-27.69	-29.45	0.00	-1544.3	0.00	1544.31	1814.23	474.21	1339.83	1271.84	15.56	-2.695	0.000	0.598
58.00	-27.31	-29.30	0.00	-1485.4	0.00	1485.42	1803.89	469.89	1315.50	1252.97	16.71	-2.800	0.000	0.581
60.00	-26.95	-29.13	0.00	-1426.8	0.00	1426.83	1793.44	465.56	1291.40	1234.16	17.90	-2.904	0.000	0.564
60.71	-26.82	-29.07	0.00	-1406.1	0.00	1406.15	1789.70	464.03	1282.90	1227.50	18.34	-2.940	0.000	0.706
60.75	-26.79	-29.09	0.00	-1404.9	0.00	1404.98	1789.49	463.94	1282.42	1227.12	18.36	-2.943	0.000	0.705
62.00	-26.54	-29.01	0.00	-1368.6	0.00	1368.62	1782.87	461.24	1267.52	1215.41	19.14	-3.023	0.000	0.692
64.00	-26.15	-28.87	0.00	-1310.6	0.00	1310.60	1772.19	456.91	1243.86	1196.72	20.44	-3.150	0.000	0.671
66.00	-25.77	-28.73	0.00	-1252.8	0.00	1252.87	1761.39	452.59	1220.42	1178.08	21.78	-3.274	0.000	0.649
68.00	-25.39	-28.58	0.00	-1195.4	0.00	1195.41	1750.48	448.26	1197.21	1159.51	23.18	-3.395	0.000	0.627
70.00	-25.02	-28.43	0.00	-1138.2	0.00	1138.25	1739.46	443.94	1174.22	1141.01	24.63	-3.513	0.000	0.604
72.00	-24.65	-28.28	0.00	-1081.3	0.00	1081.39	1728.32	439.61	1151.45	1122.57	26.12	-3.629	0.000	0.581

Calculated Forces

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

TES Tower Engineering Solutions

74.00	-24.28	-28.13	0.00	-1024.8	0.00	1024.82	1717.07	435.29	1128.90	1104.20	27.67	-3.741	0.000	0.558
76.00	-23.92	-27.98	0.00	-968.56	0.00	968.56	1705.70	430.96	1106.58	1085.91	29.26	-3.850	0.000	0.534
78.00	-23.59	-27.81	0.00	-912.60	0.00	912.60	1694.22	426.64	1084.48	1067.69	30.89	-3.956	0.000	0.510
78.25	-23.52	-27.80	0.00	-905.65	0.00	905.65	1692.78	426.10	1081.74	1065.41	31.10	-3.969	0.000	0.507
78.25	-23.52	-27.80	0.00	-905.65	0.00	905.65	1692.78	426.10	1081.74	1065.41	31.10	-3.969	0.000	0.507
80.00	-23.19	-27.68	0.00	-856.99	0.00	856.99	1682.63	422.31	1062.61	1049.54	32.57	-4.058	0.000	0.835
82.00	-22.81	-27.55	0.00	-801.63	0.00	801.63	1670.92	417.99	1040.95	1031.48	34.30	-4.227	0.000	0.795
84.00	-22.44	-27.42	0.00	-746.52	0.00	746.52	1659.09	413.66	1019.52	1013.49	36.11	-4.389	0.000	0.754
86.00	-22.08	-27.27	0.00	-691.68	0.00	691.68	1647.16	409.34	998.31	995.59	37.98	-4.545	0.000	0.713
87.42	-21.83	-27.16	0.00	-653.05	0.00	653.05	1638.63	406.27	983.43	982.97	39.35	-4.651	0.000	0.682
88.00	-21.66	-27.14	0.00	-637.21	0.00	637.21	1635.10	405.01	977.33	977.78	39.92	-4.694	0.000	0.669
90.00	-17.33	-21.73	0.00	-582.93	0.00	582.93	1622.94	400.69	956.57	960.05	41.91	-4.835	0.000	0.621
91.33	-17.03	-21.61	0.00	-553.96	0.00	553.96	1099.39	302.92	728.96	657.00	43.27	-4.925	0.000	0.864
92.00	-16.91	-21.58	0.00	-539.55	0.00	539.55	1097.24	301.84	723.77	653.36	43.97	-4.970	0.000	0.846
94.00	-16.62	-21.43	0.00	-496.40	0.00	496.40	1090.71	298.60	708.30	642.45	46.08	-5.132	0.000	0.793
96.00	-16.33	-21.28	0.00	-453.54	0.00	453.54	1084.06	295.35	692.99	631.55	48.26	-5.286	0.000	0.738
98.00	-16.05	-21.13	0.00	-410.97	0.00	410.97	1077.30	292.11	677.85	620.68	50.51	-5.431	0.000	0.682
100.00	-12.27	-16.20	0.00	-368.71	0.00	368.71	1070.43	288.87	662.88	609.82	52.81	-5.565	0.000	0.619
102.00	-12.03	-16.04	0.00	-336.31	0.00	336.31	1063.44	285.62	648.08	598.99	55.16	-5.692	0.000	0.576
104.00	-11.80	-15.88	0.00	-304.23	0.00	304.23	1056.34	282.38	633.44	588.19	57.57	-5.810	0.000	0.532
106.00	-11.57	-15.71	0.00	-272.48	0.00	272.48	1049.12	279.13	618.97	577.41	60.03	-5.920	0.000	0.486
108.00	-11.35	-15.55	0.00	-241.06	0.00	241.06	1041.79	275.89	604.67	566.67	62.52	-6.022	0.000	0.439
110.00	-9.02	-12.96	0.00	-209.94	0.00	209.94	1034.34	272.65	590.53	555.96	65.06	-6.115	0.000	0.389
112.00	-8.85	-12.79	0.00	-184.03	0.00	184.03	1026.79	269.40	576.57	545.28	67.64	-6.199	0.000	0.348
114.00	-8.67	-12.62	0.00	-158.45	0.00	158.45	1019.11	266.16	562.77	534.64	70.25	-6.274	0.000	0.307
116.00	-8.50	-12.46	0.00	-133.21	0.00	133.21	1011.32	262.92	549.13	524.04	72.89	-6.341	0.000	0.265
118.00	-8.33	-12.29	0.00	-108.30	0.00	108.30	1003.42	259.67	535.67	513.49	75.55	-6.398	0.000	0.221
120.00	-5.72	-8.59	0.00	-83.72	0.00	83.72	995.40	256.43	522.37	502.97	78.24	-6.445	0.000	0.173
120.00	-5.72	-8.59	0.00	-83.72	0.00	83.72	735.22	244.66	14507.7	335.79	78.24	-6.445	0.000	0.258
122.00	-5.56	-8.48	0.00	-66.54	0.00	66.54	735.22	244.66	14507.7	335.79	80.94	-6.484	0.000	0.207
124.00	-5.40	-8.37	0.00	-49.58	0.00	49.58	735.22	244.66	14507.7	335.79	83.66	-6.544	0.000	0.156
126.00	-5.24	-8.26	0.00	-32.83	0.00	32.83	735.22	244.66	14507.7	335.79	86.41	-6.587	0.000	0.106
128.00	-5.09	-8.15	0.00	-16.31	0.00	16.31	735.22	244.66	14507.7	335.79	89.17	-6.612	0.000	0.057
130.00	0.00	-7.51	0.00	0.00	0.00	0.00	735.22	244.66	14507.7	335.79	91.94	-6.621	0.000	0.001

Wind Loading - Shaft

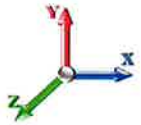
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	29.565	32.52	396.52	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		1.00	0.85	29.565	32.52	393.62	0.730	0.000	2.00	7.166	5.23	170.1	0.0	255.3
4.00		1.00	0.85	29.565	32.52	390.72	0.730	0.000	2.00	7.114	5.19	168.9	0.0	253.5
6.00		1.00	0.85	29.565	32.52	387.82	0.730	0.000	2.00	7.061	5.15	167.6	0.0	251.6
8.00		1.00	0.85	29.565	32.52	384.93	0.730	0.000	2.00	7.009	5.12	166.4	0.0	249.7
10.00		1.00	0.85	29.565	32.52	382.03	0.730	0.000	2.00	6.956	5.08	165.1	0.0	247.8
10.25	RT2 RB3 RB4	1.00	0.85	29.565	32.52	381.67	0.730	0.000	0.25	0.866	0.63	20.6	0.0	30.8
12.00		1.00	0.85	29.565	32.52	379.13	0.730	0.000	1.75	6.038	4.41	143.3	0.0	215.1
14.00		1.00	0.85	29.565	32.52	376.23	0.730	0.000	2.00	6.851	5.00	162.6	0.0	244.0
16.00		1.00	0.86	29.930	32.92	375.63	0.730	0.000	2.00	6.798	4.96	163.4	0.0	242.1
18.00		1.00	0.88	30.681	33.75	377.37	0.730	0.000	2.00	6.746	4.92	166.2	0.0	240.3
20.00		1.00	0.90	31.369	34.51	378.59	0.730	0.000	2.00	6.693	4.89	168.6	0.0	238.4
20.50	RT1 RB5	1.00	0.91	31.533	34.69	378.83	0.730	0.000	0.50	1.665	1.22	42.2	0.0	59.3
22.00		1.00	0.92	32.005	35.21	379.39	0.730	0.000	1.50	4.976	3.63	127.9	0.0	177.2
24.00		1.00	0.94	32.597	35.86	379.84	0.730	0.000	2.00	6.588	4.81	172.4	0.0	234.6
25.96	RB6	1.00	0.95	33.140	36.45	379.99	0.730	0.000	1.96	6.405	4.68	170.5	0.0	228.1
26.00		1.00	0.95	33.151	36.47	379.99	0.730	0.000	0.04	0.130	0.10	3.5	0.0	4.6
26.88	RT4	1.00	0.96	33.384	36.72	379.97	0.730	0.000	0.88	2.859	2.09	76.6	0.0	101.8
27.88	RT3 RB7	1.00	0.97	33.642	37.01	379.88	0.730	0.000	1.00	3.237	2.36	87.4	0.0	115.2
28.00		1.00	0.97	33.672	37.04	379.87	0.730	0.000	0.12	0.387	0.28	10.5	0.0	13.8
30.00		1.00	0.98	34.165	37.58	379.52	0.730	0.000	2.00	6.430	4.69	176.4	0.0	228.9
32.00		1.00	1.00	34.632	38.10	378.98	0.730	0.000	2.00	6.378	4.66	177.4	0.0	227.0
34.00		1.00	1.01	35.077	38.58	378.25	0.730	0.000	2.00	6.325	4.62	178.2	0.0	225.2
36.00		1.00	1.02	35.502	39.05	377.35	0.730	0.000	2.00	6.273	4.58	178.8	0.0	223.3
38.00		1.00	1.03	35.908	39.50	376.31	0.730	0.000	2.00	6.220	4.54	179.4	0.0	221.4
40.00		1.00	1.04	36.298	39.93	375.14	0.730	0.000	2.00	6.168	4.50	179.8	0.0	219.5
40.50	RT5 RB8	1.00	1.05	36.393	40.03	374.83	0.730	0.000	0.50	1.534	1.12	44.8	0.0	54.6
40.71	RT6 RB9	1.00	1.05	36.433	40.08	374.69	0.730	0.000	0.21	0.643	0.47	18.8	0.0	22.9
42.00		1.00	1.05	36.673	40.34	373.84	0.730	0.000	1.29	3.938	2.87	116.0	0.0	140.1
43.33	Bot - Section 2	1.00	1.06	36.915	40.61	372.92	0.730	0.000	1.33	4.048	2.95	120.0	0.0	144.0
44.00		1.00	1.06	37.034	40.74	372.44	0.730	0.000	0.67	2.043	1.49	60.8	0.0	130.0
46.00		1.00	1.07	37.382	41.12	370.92	0.730	0.000	2.00	6.095	4.45	182.9	0.0	387.6
48.00	Top - Section 1	1.00	1.08	37.718	41.49	369.32	0.730	0.000	2.00	6.042	4.41	183.0	0.0	384.2
48.12	RT7	1.00	1.08	37.738	41.51	374.49	0.730	0.000	0.12	0.361	0.26	10.9	0.0	10.3
50.00		1.00	1.09	38.044	41.85	372.91	0.730	0.000	1.88	5.629	4.11	171.9	0.0	160.5
52.00		1.00	1.10	38.359	42.20	371.15	0.730	0.000	2.00	5.937	4.33	182.9	0.0	169.3
54.00		1.00	1.11	38.665	42.53	369.32	0.730	0.000	2.00	5.884	4.30	182.7	0.0	167.8
56.00		1.00	1.12	38.962	42.86	367.41	0.730	0.000	2.00	5.832	4.26	182.5	0.0	166.3
58.00		1.00	1.13	39.251	43.18	365.43	0.730	0.000	2.00	5.779	4.22	182.2	0.0	164.7
60.00		1.00	1.14	39.532	43.49	363.38	0.730	0.000	2.00	5.727	4.18	181.8	0.0	163.2
60.71	RT9	1.00	1.14	39.630	43.59	362.64	0.730	0.000	0.71	2.020	1.47	64.3	0.0	57.6
60.75	RT8 RB10	1.00	1.14	39.636	43.60	362.60	0.730	0.000	0.04	0.114	0.08	3.6	0.0	3.2
62.00		1.00	1.14	39.806	43.79	361.28	0.730	0.000	1.25	3.540	2.58	113.2	0.0	100.9
64.00		1.00	1.15	40.073	44.08	359.11	0.730	0.000	2.00	5.622	4.10	180.9	0.0	160.2
66.00		1.00	1.16	40.334	44.37	356.89	0.730	0.000	2.00	5.569	4.07	180.4	0.0	158.7
68.00		1.00	1.17	40.588	44.65	354.62	0.730	0.000	2.00	5.516	4.03	179.8	0.0	157.2
70.00		1.00	1.17	40.836	44.92	352.30	0.730	0.000	2.00	5.464	3.99	179.2	0.0	155.7

Wind Loading - Shaft

Structure: CT13064-A-SBA
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: TIA-222-H
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/4/2022

Tower Engineering Solutions

72.00	1.00	1.18	41.079	45.19	349.93	0.730	0.000	2.00	5.411	3.95	178.5	0.0	154.2
74.00	1.00	1.19	41.317	45.45	347.52	0.730	0.000	2.00	5.359	3.91	177.8	0.0	152.7
76.00	1.00	1.19	41.550	45.70	345.06	0.730	0.000	2.00	5.306	3.87	177.0	0.0	151.2
78.00	1.00	1.20	41.777	45.96	342.56	0.730	0.000	2.00	5.254	3.84	176.2	0.0	149.7
78.25 RT10	1.00	1.20	41.806	45.99	342.24	0.730	0.000	0.25	0.653	0.48	21.9	0.0	18.6
80.00	1.00	1.21	42.001	46.20	340.02	0.730	0.000	1.75	4.548	3.32	153.4	0.0	129.5
82.00	1.00	1.21	42.220	46.44	337.44	0.730	0.000	2.00	5.148	3.76	174.5	0.0	146.6
84.00	1.00	1.22	42.434	46.68	334.83	0.730	0.000	2.00	5.096	3.72	173.6	0.0	145.1
86.00	1.00	1.23	42.645	46.91	332.18	0.730	0.000	2.00	5.043	3.68	172.7	0.0	143.6
87.42 Bot - Section 3	1.00	1.23	42.792	47.07	330.28	0.730	0.000	1.42	3.541	2.58	121.7	0.0	100.8
88.00	1.00	1.23	42.852	47.14	329.49	0.730	0.000	0.58	1.469	1.07	50.5	0.0	72.7
90.00 Appurtenance(s)	1.00	1.24	43.055	47.36	326.78	0.730	0.000	2.00	5.002	3.65	172.9	0.0	247.6
91.33 Top - Section 2	1.00	1.24	43.189	47.51	324.95	0.730	0.000	1.33	3.305	2.41	114.6	0.0	163.6
92.00	1.00	1.24	43.255	47.58	328.26	0.730	0.000	0.67	1.644	1.20	57.1	0.0	35.2
94.00	1.00	1.25	43.451	47.80	325.49	0.730	0.000	2.00	4.897	3.57	170.8	0.0	104.8
96.00	1.00	1.25	43.644	48.01	322.69	0.730	0.000	2.00	4.844	3.54	169.8	0.0	103.6
98.00	1.00	1.26	43.834	48.22	319.87	0.730	0.000	2.00	4.791	3.50	168.7	0.0	102.5
100.00 Appurtenance(s)	1.00	1.27	44.021	48.42	317.01	0.730	0.000	2.00	4.739	3.46	167.5	0.0	101.4
102.00	1.00	1.27	44.205	48.63	314.13	0.730	0.000	2.00	4.686	3.42	166.3	0.0	100.2
104.00	1.00	1.28	44.386	48.82	311.22	0.730	0.000	2.00	4.634	3.38	165.2	0.0	99.1
106.00	1.00	1.28	44.564	49.02	308.29	0.730	0.000	2.00	4.581	3.34	163.9	0.0	98.0
108.00	1.00	1.29	44.740	49.21	305.33	0.730	0.000	2.00	4.529	3.31	162.7	0.0	96.9
110.00 Appurtenance(s)	1.00	1.29	44.913	49.40	302.35	0.730	0.000	2.00	4.476	3.27	161.4	0.0	95.7
112.00	1.00	1.30	45.084	49.59	299.35	0.730	0.000	2.00	4.423	3.23	160.1	0.0	94.6
114.00	1.00	1.30	45.252	49.78	296.32	0.730	0.000	2.00	4.371	3.19	158.8	0.0	93.5
116.00	1.00	1.31	45.418	49.96	293.27	0.730	0.000	2.00	4.318	3.15	157.5	0.0	92.3
118.00	1.00	1.31	45.582	50.14	290.20	0.730	0.000	2.00	4.266	3.11	156.1	0.0	91.2
120.00 Top - Section 3	1.00	1.32	45.743	50.32	287.11	0.730	0.000	2.00	4.213	3.08	154.8	0.0	90.1
122.00	1.00	1.32	45.903	50.49	206.08	0.620 *	0.000	2.00	3.000	1.86	93.9	0.0	85.4
124.00	1.00	1.32	46.060	50.67	206.43	0.620 *	0.000	2.00	3.000	1.86	94.2	0.0	85.4
126.00	1.00	1.33	46.216	50.84	206.78	0.620 *	0.000	2.00	3.000	1.86	94.6	0.0	85.4
128.00	1.00	1.33	46.369	51.01	207.12	0.620 *	0.000	2.00	3.000	1.86	94.9	0.0	85.4
130.00 Appurtenance(s)	1.00	1.34	46.521	51.17	207.46	0.620 *	0.000	2.00	3.000	1.86	95.2	0.0	85.4
* Cf Adjusted by Linear Load Ra Effect							**Totals:**	**130.00**			**10,825.2**		**11,409.5**

Discrete Appurtenance Forces

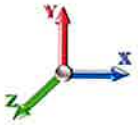
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	DC6-48-60-18-8F	2	46.521	51.173	0.75	0.75	1.38	57.24	0.000	0.000	70.62	0.00	0.00
2	130.00	6' Lightning rod	1	46.745	51.419	1.00	1.00	0.38	5.85	0.000	3.000	19.54	0.00	58.62
3	130.00	Cci DMP65R-BU6DA	3	46.521	51.173	0.54	0.75	20.62	170.91	0.000	0.000	1055.12	0.00	0.00
4	130.00	RRUS 32	6	46.521	51.173	0.38	0.75	3.71	415.80	0.000	0.000	189.98	0.00	0.00
5	130.00	RRUS 4478 B14	3	46.521	51.173	0.38	0.75	1.86	160.38	0.000	0.000	94.99	0.00	0.00
6	130.00	B2 B66A 8843	3	46.521	51.173	0.38	0.75	1.84	189.00	0.000	0.000	94.41	0.00	0.00
7	130.00	4449 B5/B12	3	46.521	51.173	0.38	0.75	2.22	191.70	0.000	0.000	113.41	0.00	0.00
8	130.00	RRUS E2 B29	3	46.521	51.173	0.38	0.75	3.54	160.38	0.000	0.000	181.34	0.00	0.00
9	130.00	Additional mount pipe	3	46.521	51.173	0.56	0.75	2.95	45.90	0.000	0.000	151.12	0.00	0.00
10	130.00	Quinte QD6616-7	3	46.521	51.173	0.56	0.75	22.92	159.57	0.000	0.000	1172.69	0.00	0.00
11	130.00	(3) Horizontal bracing	1	46.521	51.173	0.75	0.75	4.45	123.53	0.000	0.000	227.88	0.00	0.00
12	130.00	Ericsson AIR6419	3	46.670	51.337	0.57	0.75	6.50	178.47	0.000	2.000	333.59	0.00	667.18
13	130.00	DC6-48-60-0-8C	2	46.521	51.173	0.75	0.75	7.17	28.80	0.000	0.000	366.91	0.00	0.00
14	130.00	Ericcson AIR6449	3	46.369	51.006	0.64	0.75	7.90	237.60	0.000	-2.000	402.88	0.00	-805.75
15	130.00	Angle Reinforcement kit	1	46.521	51.173	1.00	1.00	5.80	225.00	0.000	0.000	296.80	0.00	0.00
16	130.00	MTC3607 Platform + HR &	1	46.521	51.173	1.00	1.00	51.70	2021.40	0.000	0.000	2645.63	0.00	0.00
17	120.00	MC-PK8-DSH	1	45.743	50.318	1.00	1.00	37.59	1554.30	0.000	0.000	1891.44	0.00	0.00
18	120.00	RDIDC-9181-OF-48	1	45.743	50.318	0.75	0.75	1.51	19.71	0.000	0.000	75.85	0.00	0.00
19	120.00	TA08025-B604	3	45.743	50.318	0.38	0.75	2.21	172.53	0.000	0.000	110.95	0.00	0.00
20	120.00	TA08025-B605	3	45.743	50.318	0.38	0.75	2.21	202.50	0.000	0.000	110.95	0.00	0.00
21	120.00	MX08FRO665-21	3	45.743	50.318	0.55	0.75	20.80	174.15	0.000	0.000	1046.40	0.00	0.00
22	110.00	SAMSUNG	3	44.913	49.404	0.40	0.80	2.24	201.69	0.000	0.000	110.86	0.00	0.00
23	110.00	RFS RVZDC-6627-PF-48	1	44.913	49.404	0.40	0.80	1.62	28.80	0.000	0.000	80.23	0.00	0.00
24	110.00	SAMSUNG MT6407-77A	3	44.913	49.404	0.56	0.80	7.88	235.17	0.000	0.000	389.27	0.00	0.00
25	110.00	JMA MX10FIT665-02	3	44.913	49.404	0.67	0.80	16.27	144.18	0.000	0.000	803.84	0.00	0.00
26	110.00	T-Arm (Round)	3	44.913	49.404	0.56	0.75	13.50	945.00	0.000	0.000	666.96	0.00	0.00
27	110.00	COMMSCOPE	3	44.999	49.499	0.40	0.80	0.48	17.82	0.000	1.000	23.76	0.00	23.76
28	110.00	SAMSUNG	3	44.913	49.404	0.40	0.80	2.24	189.89	0.000	0.000	110.86	0.00	0.00
29	100.00	Kathrein 782 11056	3	44.021	48.423	0.40	0.80	0.16	4.86	0.000	0.000	7.55	0.00	0.00
30	100.00	Ericsson AIR21 B2A B4P	3	44.021	48.423	0.64	0.80	11.69	247.05	0.000	0.000	566.20	0.00	0.00
31	100.00	Ericsson AIR21 B4A B2P	3	44.021	48.423	0.64	0.80	11.69	244.08	0.000	0.000	566.20	0.00	0.00
32	100.00	T-Arm (Round)	6	44.021	48.423	0.56	0.75	27.00	1890.00	0.000	0.000	1307.42	0.00	0.00
33	100.00	RFS	3	44.021	48.423	0.58	0.80	35.46	331.56	0.000	0.000	1717.10	0.00	0.00
34	100.00	Ericsson 4480 B71 + B85	3	44.021	48.423	0.59	0.80	5.06	251.10	0.000	0.000	245.10	0.00	0.00
35	90.00	F3P-10W	1	43.055	47.361	1.00	1.00	51.77	1909.80	0.000	0.000	2451.86	0.00	0.00
36	90.00	NNVV-65B-R4	3	43.055	47.361	0.55	0.75	20.43	208.98	0.000	0.000	967.56	0.00	0.00
37	90.00	AAHC	3	43.055	47.361	0.56	0.75	7.09	280.80	0.000	0.000	335.67	0.00	0.00
38	90.00	F3P-HRK10	1	43.055	47.361	1.00	1.00	7.12	351.90	0.000	0.000	337.21	0.00	0.00
39	90.00	ALU - 800 MHz - RRU	6	43.055	47.361	0.38	0.75	5.60	286.20	0.000	0.000	265.34	0.00	0.00
40	90.00	ALU - 1900MHz - RRU	3	43.055	47.361	0.38	0.75	4.27	118.80	0.000	0.000	202.47	0.00	0.00
41	90.00	Andrew - VHLP2-11	2	43.055	47.361	0.75	0.75	7.02	48.60	0.000	0.000	332.47	0.00	0.00
							Totals:		**14,431.00**			**22,140.42**		

Total Applied Force Summary

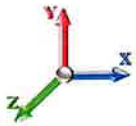
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		170.13	345.04	0.00	0.00
4.00		168.88	343.16	0.00	0.00
6.00		167.64	341.27	0.00	0.00
8.00		166.39	339.38	0.00	0.00
10.00		165.14	337.50	0.00	0.00
10.25		20.55	42.05	0.00	0.00
12.00		143.34	293.56	0.00	0.00
14.00		162.64	333.72	0.00	0.00
16.00		163.39	331.84	0.00	0.00
18.00		166.20	329.95	0.00	0.00
20.00		168.60	328.06	0.00	0.00
20.50		42.16	81.72	0.00	0.00
22.00		127.87	244.46	0.00	0.00
24.00		172.45	324.29	0.00	0.00
25.96		170.46	315.97	0.00	0.00
26.00		3.47	6.43	0.00	0.00
26.88		76.64	141.26	0.00	0.00
27.88		87.43	160.08	0.00	0.00
28.00		10.48	19.18	0.00	0.00
30.00		176.41	318.63	0.00	0.00
32.00		177.37	316.74	0.00	0.00
34.00		178.16	314.86	0.00	0.00
36.00		178.82	312.97	0.00	0.00
38.00		179.35	311.08	0.00	0.00
40.00		179.77	309.19	0.00	0.00
40.50		44.82	77.00	0.00	0.00
40.71		18.82	32.31	0.00	0.00
42.00		115.97	198.00	0.00	0.00
43.33		119.98	203.82	0.00	0.00
44.00		60.76	159.87	0.00	0.00
46.00		182.94	477.34	0.00	0.00
48.00		183.00	473.94	0.00	0.00
48.12		10.94	15.67	0.00	0.00
50.00		171.95	244.81	0.00	0.00
52.00		182.87	258.97	0.00	0.00
54.00		182.70	257.46	0.00	0.00
56.00		182.46	255.95	0.00	0.00
58.00		182.15	254.44	0.00	0.00
60.00		181.79	252.93	0.00	0.00
60.71		64.29	89.43	0.00	0.00
60.75		3.62	5.03	0.00	0.00
62.00		113.16	156.96	0.00	0.00
64.00		180.89	249.92	0.00	0.00
66.00		180.37	248.41	0.00	0.00
68.00		179.79	246.90	0.00	0.00
70.00		179.17	245.39	0.00	0.00

Total Applied Force Summary

Structure:	CT13064-A-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Middletown 2, CT		**Exposure:**	C	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

72.00		178.50	243.88	0.00	0.00
74.00		177.79	242.37	0.00	0.00
76.00		177.04	240.86	0.00	0.00
78.00		176.24	239.35	0.00	0.00
78.25		21.92	29.81	0.00	0.00
80.00		153.39	208.03	0.00	0.00
82.00		174.54	236.33	0.00	0.00
84.00		173.64	234.82	0.00	0.00
86.00		172.70	233.31	0.00	0.00
87.42		121.66	164.35	0.00	0.00
88.00		50.54	98.89	0.00	0.00
90.00	(19) attachments	5065.49	3542.41	0.00	0.00
91.33		114.63	218.40	0.00	0.00
92.00		57.10	62.57	0.00	0.00
94.00		170.85	186.95	0.00	0.00
96.00		169.76	185.82	0.00	0.00
98.00		168.65	184.68	0.00	0.00
100.00	(21) attachments	4577.08	3152.20	0.00	0.00
102.00		166.35	165.25	0.00	0.00
104.00		165.15	164.11	0.00	0.00
106.00		163.94	162.98	0.00	0.00
108.00		162.69	161.85	0.00	0.00
110.00	(19) attachments	2347.21	1923.27	0.00	23.76
112.00		160.14	135.14	0.00	0.00
114.00		158.83	134.01	0.00	0.00
116.00		157.49	132.88	0.00	0.00
118.00		156.14	131.75	0.00	0.00
120.00	(11) attachments	3390.35	2253.80	0.00	0.00
122.00		93.92	122.67	0.00	0.00
124.00		94.24	122.67	0.00	0.00
126.00		94.56	122.67	0.00	0.00
128.00		94.87	122.67	0.00	0.00
130.00	(41) attachments	7512.09	4494.19	0.00	-79.95
	Totals:	**32,965.66**	**31,001.87**	**0.00**	**-56.20**

Linear Appurtenance Segment Forces (Factored)

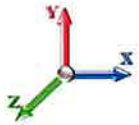
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
2.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	29.565	0.00	8.69
2.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.070	0.000	29.565	0.00	0.00
2.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.070	0.000	29.565	0.00	0.00
4.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	29.565	0.00	8.69
4.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.070	0.000	29.565	0.00	0.00
4.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.070	0.000	29.565	0.00	0.00
6.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	29.565	0.00	8.69
6.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.071	0.000	29.565	0.00	0.00
6.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.071	0.000	29.565	0.00	0.00
8.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	29.565	0.00	8.69
8.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.071	0.000	29.565	0.00	0.00
8.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.071	0.000	29.565	0.00	0.00
10.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.072	0.000	29.565	0.00	8.69
10.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.072	0.000	29.565	0.00	0.00
10.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.072	0.000	29.565	0.00	0.00
10.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.072	0.000	29.565	0.00	1.09
10.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.072	0.000	29.565	0.00	0.00
10.25	1" Reinforcing plate	Yes	0.25	0.000	0.00	0.00	0.00	0.072	0.000	29.565	0.00	0.00
12.00	2" Conduit	Yes	1.75	0.000	2.00	0.29	0.00	0.072	0.000	29.565	0.00	7.61
12.00	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.072	0.000	29.565	0.00	0.00
12.00	1" Reinforcing plate	Yes	1.75	0.000	0.00	0.00	0.00	0.072	0.000	29.565	0.00	0.00
14.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.073	0.000	29.565	0.00	8.69
14.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.073	0.000	29.565	0.00	0.00
14.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.073	0.000	29.565	0.00	0.00
16.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	29.930	0.00	8.69
16.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.074	0.000	29.930	0.00	0.00
16.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.074	0.000	29.930	0.00	0.00
18.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	30.681	0.00	8.69
18.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.074	0.000	30.681	0.00	0.00
18.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.074	0.000	30.681	0.00	0.00
20.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.075	0.000	31.369	0.00	8.69
20.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.075	0.000	31.369	0.00	0.00
20.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.075	0.000	31.369	0.00	0.00
20.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.075	0.000	31.533	0.00	2.17
20.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.075	0.000	31.533	0.00	0.00
20.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.075	0.000	31.533	0.00	0.00
22.00	2" Conduit	Yes	1.50	0.000	2.00	0.25	0.00	0.075	0.000	32.005	0.00	6.52
22.00	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.075	0.000	32.005	0.00	0.00
22.00	1" Reinforcing plate	Yes	1.50	0.000	0.00	0.00	0.00	0.075	0.000	32.005	0.00	0.00
24.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.076	0.000	32.597	0.00	8.69
24.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.076	0.000	32.597	0.00	0.00
24.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.076	0.000	32.597	0.00	0.00
24.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.076	0.000	32.597	0.00	0.00
25.96	2" Conduit	Yes	1.96	0.000	2.00	0.33	0.00	0.076	0.000	33.140	0.00	8.52
25.96	1" Reinforcing plate	Yes	1.96	0.000	1.00	0.16	0.00	0.076	0.000	33.140	0.00	0.00
25.96	1" Reinforcing plate	Yes	1.96	0.000	0.00	0.00	0.00	0.076	0.000	33.140	0.00	0.00
25.96	1" Reinforcing plate	Yes	1.96	0.000	0.00	0.00	0.00	0.076	0.000	33.140	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

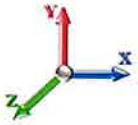
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
26.00	2" Conduit	Yes	0.04	0.000	2.00	0.01	0.00	0.077	0.000	33.151	0.00	0.17
26.00	1" Reinforcing plate	Yes	0.04	0.000	1.00	0.00	0.00	0.077	0.000	33.151	0.00	0.00
26.00	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.077	0.000	33.151	0.00	0.00
26.00	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.077	0.000	33.151	0.00	0.00
26.88	2" Conduit	Yes	0.88	0.000	2.00	0.15	0.00	0.077	0.000	33.384	0.00	3.83
26.88	1" Reinforcing plate	Yes	0.88	0.000	1.00	0.07	0.00	0.077	0.000	33.384	0.00	0.00
26.88	1" Reinforcing plate	Yes	0.88	0.000	0.00	0.00	0.00	0.077	0.000	33.384	0.00	0.00
26.88	1" Reinforcing plate	Yes	0.88	0.000	0.00	0.00	0.00	0.077	0.000	33.384	0.00	0.00
27.88	2" Conduit	Yes	1.00	0.000	2.00	0.17	0.00	0.077	0.000	33.642	0.00	4.35
27.88	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.077	0.000	33.642	0.00	0.00
27.88	1" Reinforcing plate	Yes	1.00	0.000	0.00	0.00	0.00	0.077	0.000	33.642	0.00	0.00
27.88	1" Reinforcing plate	Yes	1.00	0.000	0.00	0.00	0.00	0.077	0.000	33.642	0.00	0.00
28.00	2" Conduit	Yes	0.12	0.000	2.00	0.02	0.00	0.077	0.000	33.672	0.00	0.52
28.00	1" Reinforcing plate	Yes	0.12	0.000	1.00	0.01	0.00	0.077	0.000	33.672	0.00	0.00
28.00	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.077	0.000	33.672	0.00	0.00
28.00	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.077	0.000	33.672	0.00	0.00
30.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	34.165	0.00	8.69
30.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.078	0.000	34.165	0.00	0.00
30.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	34.165	0.00	0.00
30.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	34.165	0.00	0.00
32.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	34.632	0.00	8.69
32.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.078	0.000	34.632	0.00	0.00
32.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	34.632	0.00	0.00
32.00	1" Reinforcing plate	Yes	1.50	0.000	0.00	0.00	0.00	0.078	0.000	34.632	0.00	0.00
32.00	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.078	0.000	34.632	0.00	0.00
34.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.079	0.000	35.077	0.00	8.69
34.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.079	0.000	35.077	0.00	0.00
34.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.079	0.000	35.077	0.00	0.00
34.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.079	0.000	35.077	0.00	0.00
36.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.080	0.000	35.502	0.00	8.69
36.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.080	0.000	35.502	0.00	0.00
36.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	35.502	0.00	0.00
36.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	35.502	0.00	0.00
38.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.080	0.000	35.908	0.00	8.69
38.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.080	0.000	35.908	0.00	0.00
38.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	35.908	0.00	0.00
38.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	35.908	0.00	0.00
40.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.081	0.000	36.298	0.00	8.69
40.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.081	0.000	36.298	0.00	0.00
40.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.081	0.000	36.298	0.00	0.00
40.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.081	0.000	36.298	0.00	0.00
40.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.082	0.000	36.393	0.00	2.17
40.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.082	0.000	36.393	0.00	0.00
40.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.082	0.000	36.393	0.00	0.00
40.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.082	0.000	36.393	0.00	0.00
40.71	2" Conduit	Yes	0.21	0.000	2.00	0.04	0.00	0.082	0.000	36.433	0.00	0.91
40.71	1" Reinforcing plate	Yes	0.21	0.000	1.00	0.02	0.00	0.082	0.000	36.433	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

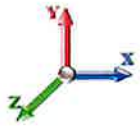
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
40.71	1" Reinforcing plate	Yes	0.21	0.000	0.00	0.00	0.00	0.082	0.000	36.433	0.00	0.00
40.71	1" Reinforcing plate	Yes	0.21	0.000	0.00	0.00	0.00	0.082	0.000	36.433	0.00	0.00
42.00	2" Conduit	Yes	1.29	0.000	2.00	0.21	0.00	0.082	0.000	36.673	0.00	5.61
42.00	1" Reinforcing plate	Yes	1.29	0.000	1.00	0.11	0.00	0.082	0.000	36.673	0.00	0.00
42.00	1" Reinforcing plate	Yes	1.29	0.000	0.00	0.00	0.00	0.082	0.000	36.673	0.00	0.00
42.00	1" Reinforcing plate	Yes	1.29	0.000	0.00	0.00	0.00	0.082	0.000	36.673	0.00	0.00
43.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.082	0.000	36.915	0.00	5.80
43.33	1" Reinforcing plate	Yes	1.33	0.000	1.00	0.11	0.00	0.082	0.000	36.915	0.00	0.00
43.33	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.082	0.000	36.915	0.00	0.00
43.33	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.082	0.000	36.915	0.00	0.00
44.00	2" Conduit	Yes	0.67	0.000	2.00	0.11	0.00	0.083	0.000	37.034	0.00	2.90
44.00	1" Reinforcing plate	Yes	0.67	0.000	1.00	0.06	0.00	0.083	0.000	37.034	0.00	0.00
44.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.083	0.000	37.034	0.00	0.00
44.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.083	0.000	37.034	0.00	0.00
46.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.083	0.000	37.382	0.00	8.69
46.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.083	0.000	37.382	0.00	0.00
46.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.083	0.000	37.382	0.00	0.00
46.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.083	0.000	37.382	0.00	0.00
48.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.084	0.000	37.718	0.00	8.69
48.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.084	0.000	37.718	0.00	0.00
48.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	37.718	0.00	0.00
48.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	37.718	0.00	0.00
48.12	2" Conduit	Yes	0.12	0.000	2.00	0.02	0.00	0.083	0.000	37.738	0.00	0.52
48.12	1" Reinforcing plate	Yes	0.12	0.000	1.00	0.01	0.00	0.083	0.000	37.738	0.00	0.00
48.12	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.083	0.000	37.738	0.00	0.00
48.12	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.083	0.000	37.738	0.00	0.00
50.00	2" Conduit	Yes	1.88	0.000	2.00	0.31	0.00	0.084	0.000	38.044	0.00	8.17
50.00	1" Reinforcing plate	Yes	1.88	0.000	1.00	0.16	0.00	0.084	0.000	38.044	0.00	0.00
50.00	1" Reinforcing plate	Yes	1.88	0.000	0.00	0.00	0.00	0.084	0.000	38.044	0.00	0.00
50.00	1" Reinforcing plate	Yes	1.88	0.000	0.00	0.00	0.00	0.084	0.000	38.044	0.00	0.00
52.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.084	0.000	38.359	0.00	8.69
52.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.084	0.000	38.359	0.00	0.00
52.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	38.359	0.00	0.00
52.00	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.084	0.000	38.359	0.00	0.00
54.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.085	0.000	38.665	0.00	8.69
54.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.085	0.000	38.665	0.00	0.00
54.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.085	0.000	38.665	0.00	0.00
56.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.086	0.000	38.962	0.00	8.69
56.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.086	0.000	38.962	0.00	0.00
56.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.086	0.000	38.962	0.00	0.00
58.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.087	0.000	39.251	0.00	8.69
58.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.087	0.000	39.251	0.00	0.00
58.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.087	0.000	39.251	0.00	0.00
60.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.087	0.000	39.532	0.00	8.69
60.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.087	0.000	39.532	0.00	0.00
60.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.087	0.000	39.532	0.00	0.00
60.71	2" Conduit	Yes	0.71	0.000	2.00	0.12	0.00	0.088	0.000	39.630	0.00	3.09

Linear Appurtenance Segment Forces (Factored)

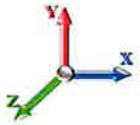
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
60.71	1" Reinforcing plate	Yes	0.71	0.000	1.00	0.06	0.00	0.088	0.000	39.630	0.00	0.00
60.71	1" Reinforcing plate	Yes	0.71	0.000	0.00	0.00	0.00	0.088	0.000	39.630	0.00	0.00
60.75	2" Conduit	Yes	0.04	0.000	2.00	0.01	0.00	0.088	0.000	39.636	0.00	0.17
60.75	1" Reinforcing plate	Yes	0.04	0.000	1.00	0.00	0.00	0.088	0.000	39.636	0.00	0.00
60.75	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.088	0.000	39.636	0.00	0.00
62.00	2" Conduit	Yes	1.25	0.000	2.00	0.21	0.00	0.088	0.000	39.806	0.00	5.43
62.00	1" Reinforcing plate	Yes	1.25	0.000	1.00	0.10	0.00	0.088	0.000	39.806	0.00	0.00
62.00	1" Reinforcing plate	Yes	1.25	0.000	0.00	0.00	0.00	0.088	0.000	39.806	0.00	0.00
64.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.089	0.000	40.073	0.00	8.69
64.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.089	0.000	40.073	0.00	0.00
64.00	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.089	0.000	40.073	0.00	0.00
66.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.090	0.000	40.334	0.00	8.69
66.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.090	0.000	40.334	0.00	0.00
68.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.091	0.000	40.588	0.00	8.69
68.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.091	0.000	40.588	0.00	0.00
70.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.092	0.000	40.836	0.00	8.69
70.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.092	0.000	40.836	0.00	0.00
72.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.092	0.000	41.079	0.00	8.69
72.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.092	0.000	41.079	0.00	0.00
74.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.093	0.000	41.317	0.00	8.69
74.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.093	0.000	41.317	0.00	0.00
76.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.094	0.000	41.550	0.00	8.69
76.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.094	0.000	41.550	0.00	0.00
78.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.095	0.000	41.777	0.00	8.69
78.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.095	0.000	41.777	0.00	0.00
78.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.096	0.000	41.806	0.00	1.09
78.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.096	0.000	41.806	0.00	0.00
80.00	2" Conduit	Yes	1.75	0.000	2.00	0.29	0.00	0.096	0.000	42.001	0.00	7.61
80.00	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.096	0.000	42.001	0.00	0.00
82.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.081	0.000	42.220	0.00	8.69
82.00	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.081	0.000	42.220	0.00	0.00
84.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.065	0.000	42.434	0.00	8.69
86.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.066	0.000	42.645	0.00	8.69
87.42	2" Conduit	Yes	1.42	0.000	2.00	0.24	0.00	0.067	0.000	42.792	0.00	6.16
88.00	2" Conduit	Yes	0.58	0.000	2.00	0.10	0.00	0.067	0.000	42.852	0.00	2.54
90.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.068	0.000	43.055	0.00	8.69
91.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.068	0.000	43.189	0.00	5.80
92.00	2" Conduit	Yes	0.67	0.000	2.00	0.11	0.00	0.068	0.000	43.255	0.00	2.90
94.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.068	0.000	43.451	0.00	8.69
96.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.069	0.000	43.644	0.00	8.69
98.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	43.834	0.00	8.69
100.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	44.021	0.00	8.69
102.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	44.205	0.00	8.69
104.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.072	0.000	44.386	0.00	8.69
106.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.073	0.000	44.564	0.00	8.69
108.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	44.740	0.00	8.69
110.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	44.913	0.00	8.69

Linear Appurtenance Segment Forces (Factored)

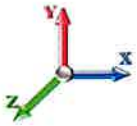
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
112.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.075	0.000	45.084	0.00	8.69
114.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.076	0.000	45.252	0.00	8.69
116.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.077	0.000	45.418	0.00	8.69
118.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	45.582	0.00	8.69
120.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.079	0.000	45.743	0.00	8.69
122.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	45.903	0.00	8.69
124.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	46.060	0.00	8.69
126.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	46.216	0.00	8.69
128.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	46.369	0.00	8.69
130.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	46.521	0.00	8.69
										Totals:	**0.0**	**565.1**

Calculated Forces

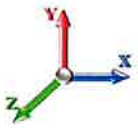
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-30.97	-32.99	0.00	-3264.6	0.00	3264.63	2818.94	734.35	2570.40	2448.04	0.00	0.000	0.000	0.638
2.00	-30.58	-32.87	0.00	-3198.6	0.00	3198.65	2805.89	728.94	2532.69	2418.63	0.02	-0.092	0.000	0.630
4.00	-30.18	-32.75	0.00	-3132.9	0.00	3132.91	2792.73	723.54	2495.26	2389.30	0.08	-0.185	0.000	0.622
6.00	-29.79	-32.63	0.00	-3067.4	0.00	3067.42	2779.45	718.13	2458.11	2360.04	0.18	-0.277	0.000	0.614
8.00	-29.40	-32.51	0.00	-3002.1	0.00	3002.16	2766.06	712.72	2421.24	2330.86	0.31	-0.368	0.000	0.606
10.00	-29.03	-32.36	0.00	-2937.1	0.00	2937.15	2752.56	707.32	2384.65	2301.75	0.49	-0.460	0.000	0.597
10.25	-28.96	-32.37	0.00	-2929.0	0.00	2929.06	2750.86	706.64	2380.10	2298.12	0.51	-0.471	0.000	0.625
12.00	-28.62	-32.27	0.00	-2872.4	0.00	2872.42	2738.94	701.91	2348.34	2272.72	0.70	-0.555	0.000	0.618
14.00	-28.24	-32.15	0.00	-2807.8	0.00	2807.89	2725.20	696.50	2312.30	2243.77	0.95	-0.650	0.000	0.609
16.00	-27.85	-32.03	0.00	-2743.6	0.00	2743.60	2711.35	691.10	2276.54	2214.91	1.24	-0.744	0.000	0.600
18.00	-27.47	-31.90	0.00	-2679.5	0.00	2679.55	2697.39	685.69	2241.07	2186.13	1.58	-0.839	0.000	0.591
20.00	-27.12	-31.75	0.00	-2615.7	0.00	2615.75	2683.32	680.29	2205.87	2157.44	1.95	-0.932	0.000	0.583
20.50	-27.01	-31.73	0.00	-2599.8	0.00	2599.87	2679.78	678.93	2197.11	2150.28	2.05	-0.956	0.000	0.580
22.00	-26.72	-31.64	0.00	-2552.2	0.00	2552.27	2669.12	674.88	2170.95	2128.84	2.36	-1.026	0.000	0.573
24.00	-26.35	-31.50	0.00	-2489.0	0.00	2489.00	2654.82	669.47	2136.30	2100.34	2.81	-1.119	0.000	0.564
25.96	-26.01	-31.35	0.00	-2427.2	0.00	2427.25	2640.69	664.18	2102.62	2072.49	3.29	-1.209	0.000	0.488
26.00	-26.00	-31.35	0.00	-2426.0	0.00	2426.00	2640.40	664.07	2101.94	2071.92	3.30	-1.211	0.000	0.488
26.88	-25.83	-31.29	0.00	-2398.4	0.00	2398.41	2634.02	661.69	2086.91	2059.45	3.52	-1.247	0.000	0.581
27.88	-25.66	-31.21	0.00	-2367.1	0.00	2367.12	2626.74	658.99	2069.89	2045.30	3.79	-1.295	0.000	0.576
28.00	-25.61	-31.22	0.00	-2363.3	0.00	2363.38	2625.87	658.66	2067.85	2043.61	3.82	-1.301	0.000	0.575
30.00	-25.25	-31.08	0.00	-2300.9	0.00	2300.93	2611.22	653.25	2034.05	2015.39	4.39	-1.397	0.000	0.565
32.00	-24.88	-30.94	0.00	-2238.7	0.00	2238.77	2596.46	647.85	2000.52	1987.27	4.99	-1.493	0.000	0.555
34.00	-24.52	-30.79	0.00	-2176.8	0.00	2176.89	2581.58	642.44	1967.27	1959.26	5.64	-1.587	0.000	0.545
36.00	-24.17	-30.64	0.00	-2115.3	0.00	2115.31	2566.59	637.04	1934.30	1931.36	6.33	-1.681	0.000	0.535
38.00	-23.81	-30.49	0.00	-2054.0	0.00	2054.02	2551.48	631.63	1901.61	1903.56	7.05	-1.775	0.000	0.525
40.00	-23.48	-30.33	0.00	-1993.0	0.00	1993.04	2536.26	626.22	1869.20	1875.87	7.81	-1.867	0.000	0.514
40.50	-23.39	-30.29	0.00	-1977.8	0.00	1977.87	2532.44	624.87	1861.14	1868.96	8.01	-1.890	0.000	0.511
40.71	-23.34	-30.28	0.00	-1971.5	0.00	1971.51	2530.83	624.30	1857.76	1866.07	8.09	-1.900	0.000	0.510
42.00	-23.12	-30.18	0.00	-1932.4	0.00	1932.45	2520.93	620.82	1837.06	1848.29	8.62	-1.959	0.000	0.504
43.33	-22.89	-30.07	0.00	-1892.2	0.00	1892.21	2510.64	617.21	1815.79	1829.97	9.17	-2.020	0.000	0.496
44.00	-22.71	-30.03	0.00	-1872.1	0.00	1872.16	2505.48	615.41	1805.20	1820.83	9.46	-2.050	0.000	0.486
46.00	-22.19	-29.86	0.00	-1812.1	0.00	1812.10	2489.92	610.00	1773.63	1793.48	10.33	-2.138	0.000	0.475
48.00	-21.70	-29.68	0.00	-1752.3	0.00	1752.37	1854.44	491.51	1439.37	1347.80	11.25	-2.226	0.000	0.512
48.12	-21.66	-29.69	0.00	-1748.8	0.00	1748.80	1853.85	491.25	1437.86	1346.66	11.30	-2.231	0.000	0.650
50.00	-21.36	-29.55	0.00	-1692.9	0.00	1692.99	1844.56	487.19	1414.16	1328.74	12.20	-2.334	0.000	0.635
52.00	-21.06	-29.39	0.00	-1633.8	0.00	1633.89	1834.56	482.86	1389.16	1309.72	13.20	-2.442	0.000	0.619
54.00	-20.75	-29.24	0.00	-1575.1	0.00	1575.10	1824.45	478.54	1364.38	1290.76	14.25	-2.549	0.000	0.602
56.00	-20.45	-29.08	0.00	-1516.6	0.00	1516.62	1814.23	474.21	1339.83	1271.84	15.34	-2.654	0.000	0.586
58.00	-20.16	-28.93	0.00	-1458.4	0.00	1458.46	1803.89	469.89	1315.50	1252.97	16.47	-2.758	0.000	0.569
60.00	-19.88	-28.75	0.00	-1400.6	0.00	1400.61	1793.44	465.56	1291.40	1234.16	17.65	-2.860	0.000	0.552
60.71	-19.78	-28.69	0.00	-1380.1	0.00	1380.19	1789.70	464.03	1282.90	1227.50	18.08	-2.896	0.000	0.691
60.75	-19.76	-28.70	0.00	-1379.0	0.00	1379.05	1789.49	463.94	1282.42	1227.12	18.10	-2.898	0.000	0.690
62.00	-19.55	-28.62	0.00	-1343.1	0.00	1343.17	1782.87	461.24	1267.52	1215.41	18.87	-2.977	0.000	0.677
64.00	-19.25	-28.46	0.00	-1285.9	0.00	1285.93	1772.19	456.91	1243.86	1196.72	20.15	-3.101	0.000	0.656
66.00	-18.96	-28.31	0.00	-1229.0	0.00	1229.01	1761.39	452.59	1220.42	1178.08	21.47	-3.223	0.000	0.634
68.00	-18.66	-28.16	0.00	-1172.3	0.00	1172.39	1750.48	448.26	1197.21	1159.51	22.85	-3.342	0.000	0.613
70.00	-18.37	-28.00	0.00	-1116.0	0.00	1116.08	1739.46	443.94	1174.22	1141.01	24.27	-3.458	0.000	0.590
72.00	-18.09	-27.84	0.00	-1060.0	0.00	1060.08	1728.32	439.61	1151.45	1122.57	25.74	-3.571	0.000	0.568

Calculated Forces

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 33

TES Tower Engineering Solutions

74.00	-17.80	-27.68	0.00	-1004.4	0.00	1004.40	1717.07	435.29	1128.90	1104.20	27.26	-3.681	0.000	0.545
76.00	-17.52	-27.52	0.00	-949.04	0.00	949.04	1705.70	430.96	1106.58	1085.91	28.83	-3.788	0.000	0.521
78.00	-17.27	-27.35	0.00	-893.99	0.00	893.99	1694.22	426.64	1084.48	1067.69	30.44	-3.891	0.000	0.498
78.25	-17.22	-27.34	0.00	-887.16	0.00	887.16	1692.78	426.10	1081.74	1065.41	30.64	-3.904	0.000	0.495
78.25	-17.22	-27.34	0.00	-887.16	0.00	887.16	1692.78	426.10	1081.74	1065.41	30.64	-3.904	0.000	0.495
80.00	-16.96	-27.21	0.00	-839.32	0.00	839.32	1682.63	422.31	1062.61	1049.54	32.09	-3.992	0.000	0.814
82.00	-16.66	-27.07	0.00	-784.90	0.00	784.90	1670.92	417.99	1040.95	1031.48	33.79	-4.157	0.000	0.775
84.00	-16.36	-26.92	0.00	-730.77	0.00	730.77	1659.09	413.66	1019.52	1013.49	35.57	-4.316	0.000	0.735
86.00	-16.08	-26.77	0.00	-676.93	0.00	676.93	1647.16	409.34	998.31	995.59	37.41	-4.468	0.000	0.694
87.42	-15.90	-26.65	0.00	-639.01	0.00	639.01	1638.63	406.27	983.43	982.97	38.75	-4.572	0.000	0.664
88.00	-15.76	-26.62	0.00	-623.47	0.00	623.47	1635.10	405.01	977.33	977.78	39.31	-4.614	0.000	0.652
90.00	-12.60	-21.30	0.00	-570.23	0.00	570.23	1622.94	400.69	956.57	960.05	41.27	-4.752	0.000	0.605
91.33	-12.37	-21.19	0.00	-541.83	0.00	541.83	1099.39	302.92	728.96	657.00	42.61	-4.840	0.000	0.841
92.00	-12.27	-21.15	0.00	-527.70	0.00	527.70	1097.24	301.84	723.77	653.36	43.29	-4.884	0.000	0.824
94.00	-12.05	-20.99	0.00	-485.41	0.00	485.41	1090.71	298.60	708.30	642.45	45.37	-5.043	0.000	0.772
96.00	-11.82	-20.84	0.00	-443.43	0.00	443.43	1084.06	295.35	692.99	631.55	47.51	-5.193	0.000	0.718
98.00	-11.61	-20.68	0.00	-401.75	0.00	401.75	1077.30	292.11	677.85	620.68	49.72	-5.335	0.000	0.663
100.00	-8.86	-15.85	0.00	-360.39	0.00	360.39	1070.43	288.87	662.88	609.82	51.98	-5.466	0.000	0.602
102.00	-8.68	-15.68	0.00	-328.70	0.00	328.70	1063.44	285.62	648.08	598.99	54.29	-5.590	0.000	0.560
104.00	-8.51	-15.52	0.00	-297.34	0.00	297.34	1056.34	282.38	633.44	588.19	56.66	-5.705	0.000	0.517
106.00	-8.33	-15.35	0.00	-266.30	0.00	266.30	1049.12	279.13	618.97	577.41	59.07	-5.813	0.000	0.472
108.00	-8.16	-15.19	0.00	-235.59	0.00	235.59	1041.79	275.89	604.67	566.67	61.52	-5.913	0.000	0.427
110.00	-6.47	-12.66	0.00	-205.19	0.00	205.19	1034.34	272.65	590.53	555.96	64.01	-6.003	0.000	0.377
112.00	-6.34	-12.50	0.00	-179.86	0.00	179.86	1026.79	269.40	576.57	545.28	66.54	-6.085	0.000	0.338
114.00	-6.21	-12.34	0.00	-154.86	0.00	154.86	1019.11	266.16	562.77	534.64	69.10	-6.159	0.000	0.298
116.00	-6.08	-12.17	0.00	-130.19	0.00	130.19	1011.32	262.92	549.13	524.04	71.69	-6.224	0.000	0.257
118.00	-5.96	-12.01	0.00	-105.85	0.00	105.85	1003.42	259.67	535.67	513.49	74.31	-6.280	0.000	0.214
120.00	-4.08	-8.39	0.00	-81.83	0.00	81.83	995.40	256.43	522.37	502.97	76.95	-6.326	0.000	0.168
120.00	-4.08	-8.39	0.00	-81.83	0.00	81.83	735.22	244.66	14507.7	335.79	76.95	-6.326	0.000	0.250
122.00	-3.96	-8.29	0.00	-65.05	0.00	65.05	735.22	244.66	14507.7	335.79	79.60	-6.364	0.000	0.200
124.00	-3.84	-8.18	0.00	-48.47	0.00	48.47	735.22	244.66	14507.7	335.79	82.27	-6.423	0.000	0.151
126.00	-3.73	-8.08	0.00	-32.10	0.00	32.10	735.22	244.66	14507.7	335.79	84.97	-6.464	0.000	0.102
128.00	-3.62	-7.97	0.00	-15.94	0.00	15.94	735.22	244.66	14507.7	335.79	87.68	-6.489	0.000	0.053
130.00	0.00	-7.51	0.00	0.00	0.00	0.00	735.22	244.66	14507.7	335.79	90.39	-6.497	0.000	0.001

Wind Loading - Shaft

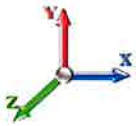
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 34	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	5.133	5.65	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		1.00	0.85	5.133	5.65	0.00	1.200	0.756	2.00	7.418	8.90	50.3	80.5	420.9
4.00		1.00	0.85	5.133	5.65	0.00	1.200	0.810	2.00	7.384	8.86	50.0	85.7	423.7
6.00		1.00	0.85	5.133	5.65	0.00	1.200	0.843	2.00	7.342	8.81	49.7	88.7	424.1
8.00		1.00	0.85	5.133	5.65	0.00	1.200	0.868	2.00	7.298	8.76	49.4	90.7	423.6
10.00		1.00	0.85	5.133	5.65	0.00	1.200	0.887	2.00	7.252	8.70	49.1	92.1	422.5
10.25	RT2 RB3 RB4	1.00	0.85	5.133	5.65	0.00	1.200	0.890	0.25	0.903	1.08	6.1	11.5	52.7
12.00		1.00	0.85	5.133	5.65	0.00	1.200	0.904	1.75	6.301	7.56	42.7	81.5	368.2
14.00		1.00	0.85	5.133	5.65	0.00	1.200	0.918	2.00	7.157	8.59	48.5	93.9	419.3
16.00		1.00	0.86	5.196	5.72	0.00	1.200	0.930	2.00	7.108	8.53	48.8	94.5	417.3
18.00		1.00	0.88	5.327	5.86	0.00	1.200	0.941	2.00	7.060	8.47	49.6	94.9	415.2
20.00		1.00	0.90	5.446	5.99	0.00	1.200	0.951	2.00	7.010	8.41	50.4	95.2	413.0
20.50	RT1 RB5	1.00	0.91	5.474	6.02	0.00	1.200	0.954	0.50	1.745	2.09	12.6	23.8	102.9
22.00		1.00	0.92	5.556	6.11	0.00	1.200	0.960	1.50	5.216	6.26	38.3	71.5	307.8
24.00		1.00	0.94	5.659	6.23	0.00	1.200	0.969	2.00	6.911	8.29	51.6	95.5	408.3
25.96	RB6	1.00	0.95	5.753	6.33	0.00	1.200	0.976	1.96	6.724	8.07	51.1	93.6	397.7
26.00		1.00	0.95	5.755	6.33	0.00	1.200	0.976	0.04	0.137	0.16	1.0	1.9	8.1
26.88	RT4	1.00	0.96	5.796	6.38	0.00	1.200	0.980	0.88	3.003	3.60	23.0	42.0	177.7
27.88	RT3 RB7	1.00	0.97	5.841	6.42	0.00	1.200	0.983	1.00	3.400	4.08	26.2	47.7	201.4
28.00		1.00	0.97	5.846	6.43	0.00	1.200	0.984	0.12	0.407	0.49	3.1	5.7	24.1
30.00		1.00	0.98	5.931	6.52	0.00	1.200	0.991	2.00	6.761	8.11	52.9	95.4	400.6
32.00		1.00	1.00	6.013	6.61	0.00	1.200	0.997	2.00	6.710	8.05	53.3	95.3	398.0
34.00		1.00	1.01	6.090	6.70	0.00	1.200	1.003	2.00	6.660	7.99	53.5	95.1	395.3
36.00		1.00	1.02	6.163	6.78	0.00	1.200	1.009	2.00	6.609	7.93	53.8	94.9	392.6
38.00		1.00	1.03	6.234	6.86	0.00	1.200	1.014	2.00	6.558	7.87	54.0	94.6	389.8
40.00		1.00	1.04	6.302	6.93	0.00	1.200	1.019	2.00	6.507	7.81	54.1	94.3	387.0
40.50	RT5 RB8	1.00	1.05	6.318	6.95	0.00	1.200	1.021	0.50	1.619	1.94	13.5	23.6	96.3
40.71	RT6 RB9	1.00	1.05	6.325	6.96	0.00	1.200	1.021	0.21	0.679	0.81	5.7	9.9	40.4
42.00		1.00	1.05	6.367	7.00	0.00	1.200	1.024	1.29	4.158	4.99	34.9	60.6	247.5
43.33	Bot - Section 2	1.00	1.06	6.409	7.05	0.00	1.200	1.028	1.33	4.276	5.13	36.2	62.5	254.6
44.00		1.00	1.06	6.429	7.07	0.00	1.200	1.029	0.67	2.158	2.59	18.3	31.6	204.9
46.00		1.00	1.07	6.490	7.14	0.00	1.200	1.034	2.00	6.439	7.73	55.2	94.6	611.4
48.00	Top - Section 1	1.00	1.08	6.548	7.20	0.00	1.200	1.038	2.00	6.388	7.67	55.2	94.2	606.5
48.12	RT7	1.00	1.08	6.552	7.21	0.00	1.200	1.038	0.12	0.382	0.46	3.3	5.7	19.4
50.00		1.00	1.09	6.605	7.27	0.00	1.200	1.042	1.88	5.955	7.15	51.9	88.2	302.2
52.00		1.00	1.10	6.660	7.33	0.00	1.200	1.047	2.00	6.286	7.54	55.3	93.4	319.1
54.00		1.00	1.11	6.713	7.38	0.00	1.200	1.050	2.00	6.234	7.48	55.2	92.9	316.6
56.00		1.00	1.12	6.764	7.44	0.00	1.200	1.054	2.00	6.183	7.42	55.2	92.5	314.1
58.00		1.00	1.13	6.814	7.50	0.00	1.200	1.058	2.00	6.132	7.36	55.2	92.0	311.6
60.00		1.00	1.14	6.863	7.55	0.00	1.200	1.062	2.00	6.081	7.30	55.1	91.5	309.1
60.71	RT9	1.00	1.14	6.880	7.57	0.00	1.200	1.063	0.71	2.146	2.58	19.5	32.4	109.2
60.75	RT8 RB10	1.00	1.14	6.881	7.57	0.00	1.200	1.063	0.04	0.121	0.14	1.1	1.8	6.1
62.00		1.00	1.14	6.911	7.60	0.00	1.200	1.065	1.25	3.762	4.51	34.3	56.9	191.4
64.00		1.00	1.15	6.957	7.65	0.00	1.200	1.068	2.00	5.978	7.17	54.9	90.4	304.1
66.00		1.00	1.16	7.002	7.70	0.00	1.200	1.072	2.00	5.926	7.11	54.8	89.9	301.5
68.00		1.00	1.17	7.047	7.75	0.00	1.200	1.075	2.00	5.875	7.05	54.6	89.3	298.9
70.00		1.00	1.17	7.090	7.80	0.00	1.200	1.078	2.00	5.823	6.99	54.5	88.8	296.4

Wind Loading - Shaft

Structure: CT13064-A-SBA
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1
Code: TIA-222-H
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/4/2022

Tower Engineering Solutions

72.00	1.00	1.18	7.132	7.84	0.00	1.200	1.081	2.00	5.772	6.93	54.3	88.2	293.8
74.00	1.00	1.19	7.173	7.89	0.00	1.200	1.084	2.00	5.720	6.86	54.2	87.6	291.2
76.00	1.00	1.19	7.213	7.93	0.00	1.200	1.087	2.00	5.668	6.80	54.0	87.0	288.6
78.00	1.00	1.20	7.253	7.98	0.00	1.200	1.090	2.00	5.617	6.74	53.8	86.4	286.0
78.25 RT10	1.00	1.20	7.258	7.98	0.00	1.200	1.090	0.25	0.698	0.84	6.7	10.8	35.6
80.00	1.00	1.21	7.292	8.02	0.00	1.200	1.093	1.75	4.867	5.84	46.8	75.1	247.8
82.00	1.00	1.21	7.330	8.06	0.00	1.200	1.095	2.00	5.514	6.62	53.3	85.2	280.7
84.00	1.00	1.22	7.367	8.10	0.00	1.200	1.098	2.00	5.462	6.55	53.1	84.5	278.0
86.00	1.00	1.23	7.404	8.14	0.00	1.200	1.101	2.00	5.410	6.49	52.9	83.9	275.4
87.42 Bot - Section 3	1.00	1.23	7.429	8.17	0.00	1.200	1.102	1.42	3.801	4.56	37.3	59.1	193.5
88.00	1.00	1.23	7.440	8.18	0.00	1.200	1.103	0.58	1.576	1.89	15.5	24.6	121.5
90.00 Appurtenance(s)	1.00	1.24	7.475	8.22	0.00	1.200	1.106	2.00	5.370	6.44	53.0	83.6	413.8
91.33 Top - Section 2	1.00	1.24	7.498	8.25	0.00	1.200	1.107	1.33	3.551	4.26	35.1	55.5	273.6
92.00	1.00	1.24	7.510	8.26	0.00	1.200	1.108	0.67	1.767	2.12	17.5	27.7	74.6
94.00	1.00	1.25	7.544	8.30	0.00	1.200	1.110	2.00	5.267	6.32	52.4	82.3	222.0
96.00	1.00	1.25	7.577	8.33	0.00	1.200	1.113	2.00	5.215	6.26	52.2	81.6	219.8
98.00	1.00	1.26	7.610	8.37	0.00	1.200	1.115	2.00	5.163	6.20	51.9	80.9	217.6
100.00 Appurtenance(s)	1.00	1.27	7.642	8.41	0.00	1.200	1.117	2.00	5.111	6.13	51.6	80.2	215.4
102.00	1.00	1.27	7.674	8.44	0.00	1.200	1.119	2.00	5.059	6.07	51.3	79.5	213.2
104.00	1.00	1.28	7.706	8.48	0.00	1.200	1.122	2.00	5.008	6.01	50.9	78.8	211.0
106.00	1.00	1.28	7.737	8.51	0.00	1.200	1.124	2.00	4.956	5.95	50.6	78.1	208.8
108.00	1.00	1.29	7.767	8.54	0.00	1.200	1.126	2.00	4.904	5.88	50.3	77.4	206.6
110.00 Appurtenance(s)	1.00	1.29	7.797	8.58	0.00	1.200	1.128	2.00	4.852	5.82	49.9	76.7	204.3
112.00	1.00	1.30	7.827	8.61	0.00	1.200	1.130	2.00	4.800	5.76	49.6	76.0	202.1
114.00	1.00	1.30	7.856	8.64	0.00	1.200	1.132	2.00	4.748	5.70	49.2	75.2	199.8
116.00	1.00	1.31	7.885	8.67	0.00	1.200	1.134	2.00	4.696	5.64	48.9	74.5	197.6
118.00	1.00	1.31	7.913	8.70	0.00	1.200	1.136	2.00	4.644	5.57	48.5	73.8	195.3
120.00 Top - Section 3	1.00	1.32	7.942	8.74	0.00	1.200	1.138	2.00	4.592	5.51	48.1	73.0	193.1
122.00	1.00	1.32	7.969	8.77	0.00	1.240 *	1.140	2.00	3.380	4.19	36.7	53.3	167.1
124.00	1.00	1.32	7.997	8.80	0.00	1.240 *	1.142	2.00	3.381	4.19	36.9	53.4	167.2
126.00	1.00	1.33	8.024	8.83	0.00	1.240 *	1.143	2.00	3.381	4.19	37.0	53.5	167.3
128.00	1.00	1.33	8.050	8.86	0.00	1.240 *	1.145	2.00	3.382	4.19	37.1	53.6	167.4
130.00 Appurtenance(s)	1.00	1.34	8.077	8.88	0.00	1.240 *	1.147	2.00	3.382	4.19	37.3	53.7	167.5
* Cf Adjusted by Linear Load Ra Effect							**Totals:**	**130.00**			**3,325.0**		**20,750.5**

Discrete Appurtenance Forces

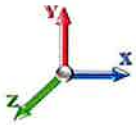
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 36	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	DC6-48-60-18-8F	2	8.077	8.884	0.75	0.75	1.81	122.18	0.000	0.000	16.10	0.00	0.00
2	130.00	6' Lightning rod	1	8.115	8.927	1.00	1.00	1.09	26.36	0.000	3.000	9.77	0.00	29.32
3	130.00	Cci DMP65R-BU6DA	3	8.077	8.884	0.56	0.75	22.82	619.80	0.000	0.000	202.77	0.00	0.00
4	130.00	RRUS 32	6	8.077	8.884	0.38	0.75	4.56	923.11	0.000	0.000	40.55	0.00	0.00
5	130.00	RRUS 4478 B14	3	8.077	8.884	0.38	0.75	2.24	267.39	0.000	0.000	19.90	0.00	0.00
6	130.00	B2 B66A 8843	3	8.077	8.884	0.38	0.75	2.23	308.76	0.000	0.000	19.78	0.00	0.00
7	130.00	4449 B5/B12	3	8.077	8.884	0.38	0.75	2.62	320.04	0.000	0.000	23.28	0.00	0.00
8	130.00	RRUS E2 B29	3	8.077	8.884	0.38	0.75	4.06	288.28	0.000	0.000	36.11	0.00	0.00
9	130.00	Additional mount pipe	3	8.077	8.884	0.56	0.75	7.36	-9.53	0.000	0.000	65.37	0.00	0.00
10	130.00	Quinte QD6616-7	3	8.077	8.884	0.57	0.75	25.55	713.57	0.000	0.000	227.01	0.00	0.00
11	130.00	(3) Horizontal bracing	1	8.077	8.884	0.75	0.75	8.13	210.10	0.000	0.000	72.23	0.00	0.00
12	130.00	Ericsson AIR6419	3	8.103	8.913	0.57	0.75	7.39	359.54	0.000	2.000	65.89	0.00	131.77
13	130.00	DC6-48-60-0-8C	2	8.077	8.884	0.75	0.75	8.04	141.44	0.000	0.000	71.44	0.00	0.00
14	130.00	Ericcson AIR6449	3	8.050	8.855	0.64	0.75	8.95	571.04	0.000	-2.000	79.27	0.00	-158.55
15	130.00	Angle Reinforcement kit	1	8.077	8.884	1.00	1.00	9.53	744.98	0.000	0.000	84.62	0.00	0.00
16	130.00	MTC3607 Platform + HR &	1	8.077	8.884	1.00	1.00	76.84	3236.82	0.000	0.000	682.68	0.00	0.00
17	120.00	MC-PK8-DSH	1	7.942	8.736	1.00	1.00	68.38	2799.79	0.000	0.000	597.39	0.00	0.00
18	120.00	RDIDC-9181-OF-48	1	7.942	8.736	0.75	0.75	1.79	48.30	0.000	0.000	15.60	0.00	0.00
19	120.00	TA08025-B604	3	7.942	8.736	0.38	0.75	2.62	292.76	0.000	0.000	22.86	0.00	0.00
20	120.00	TA08025-B605	3	7.942	8.736	0.38	0.75	2.62	334.50	0.000	0.000	22.86	0.00	0.00
21	120.00	MX08FRO665-21	3	7.942	8.736	0.55	0.75	22.39	599.51	0.000	0.000	195.56	0.00	0.00
22	110.00	SAMSUNG	3	7.797	8.577	0.40	0.80	2.67	404.97	0.000	0.000	22.94	0.00	0.00
23	110.00	RFS RVZDC-6627-PF-48	1	7.797	8.577	0.40	0.80	1.84	86.83	0.000	0.000	15.75	0.00	0.00
24	110.00	SAMSUNG MT6407-77A	3	7.797	8.577	0.56	0.80	8.90	528.43	0.000	0.000	76.31	0.00	0.00
25	110.00	JMA MX10FIT665-02	3	7.797	8.577	0.69	0.80	20.21	642.17	0.000	0.000	173.31	0.00	0.00
26	110.00	T-Arm (Round)	3	7.797	8.577	0.56	0.75	21.11	1523.74	0.000	0.000	181.09	0.00	0.00
27	110.00	COMMSCOPE	3	7.812	8.593	0.40	0.80	0.70	53.49	0.000	1.000	6.01	0.00	6.01
28	110.00	SAMSUNG	3	7.797	8.577	0.40	0.80	2.67	389.24	0.000	0.000	22.94	0.00	0.00
29	100.00	Kathrein 782 11056	3	7.642	8.407	0.40	0.80	0.38	4.64	0.000	0.000	3.20	0.00	0.00
30	100.00	Ericsson AIR21 B2A B4P	3	7.642	8.407	0.66	0.80	13.50	631.45	0.000	0.000	113.46	0.00	0.00
31	100.00	Ericsson AIR21 B4A B2P	3	7.642	8.407	0.66	0.80	13.50	627.49	0.000	0.000	113.46	0.00	0.00
32	100.00	T-Arm (Round)	6	7.642	8.407	0.56	0.75	42.08	3038.49	0.000	0.000	353.78	0.00	0.00
33	100.00	RFS	3	7.642	8.407	0.58	0.80	37.56	1226.90	0.000	0.000	315.79	0.00	0.00
34	100.00	Ericsson 4480 B71 + B85	3	7.642	8.407	0.59	0.80	5.83	421.95	0.000	0.000	49.00	0.00	0.00
35	90.00	F3P-10W	1	7.475	8.222	1.00	1.00	92.98	3260.13	0.000	0.000	764.50	0.00	0.00
36	90.00	NNVV-65B-R4	3	7.475	8.222	0.55	0.75	21.97	623.92	0.000	0.000	180.61	0.00	0.00
37	90.00	AAHC	3	7.475	8.222	0.56	0.75	7.95	603.44	0.000	0.000	65.40	0.00	0.00
38	90.00	F3P-HRK10	1	7.475	8.222	1.00	1.00	10.27	647.56	0.000	0.000	84.43	0.00	0.00
39	90.00	ALU - 800 MHz - RRU	6	7.475	8.222	0.38	0.75	7.23	536.11	0.000	0.000	59.47	0.00	0.00
40	90.00	ALU - 1900MHz - RRU	3	7.475	8.222	0.38	0.75	5.27	272.26	0.000	0.000	43.30	0.00	0.00
41	90.00	Andrew - VHLP2-11	2	7.475	8.222	0.75	0.75	8.23	132.78	0.000	0.000	67.68	0.00	0.00
							Totals:		**28,574.76**			**5,283.43**		

Total Applied Force Summary

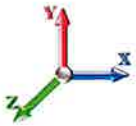
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 37	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		50.26	564.52	0.00	0.00
4.00		50.03	569.06	0.00	0.00
6.00		49.75	570.65	0.00	0.00
8.00		49.45	570.95	0.00	0.00
10.00		49.13	570.52	0.00	0.00
10.25		6.12	71.17	0.00	0.00
12.00		42.69	498.27	0.00	0.00
14.00		48.49	568.36	0.00	0.00
16.00		48.76	566.85	0.00	0.00
18.00		49.64	565.15	0.00	0.00
20.00		50.40	563.28	0.00	0.00
20.50		12.61	140.46	0.00	0.00
22.00		38.25	420.73	0.00	0.00
24.00		51.63	561.07	0.00	0.00
25.96		51.07	551.44	0.00	0.00
26.00		1.04	11.23	0.00	0.00
26.88		22.97	246.84	0.00	0.00
27.88		26.22	279.98	0.00	0.00
28.00		3.14	33.56	0.00	0.00
30.00		52.93	558.15	0.00	0.00
32.00		53.26	553.21	0.00	0.00
34.00		53.53	549.90	0.00	0.00
36.00		53.77	547.41	0.00	0.00
38.00		53.97	544.87	0.00	0.00
40.00		54.13	542.28	0.00	0.00
40.50		13.50	135.17	0.00	0.00
40.71		5.67	56.72	0.00	0.00
42.00		34.95	347.79	0.00	0.00
43.33		36.17	358.31	0.00	0.00
44.00		18.31	256.84	0.00	0.00
46.00		55.16	767.33	0.00	0.00
48.00		55.22	762.60	0.00	0.00
48.12		3.30	28.74	0.00	0.00
50.00		51.92	449.04	0.00	0.00
52.00		55.26	470.79	0.00	0.00
54.00		55.24	466.90	0.00	0.00
56.00		55.21	464.56	0.00	0.00
58.00		55.16	462.19	0.00	0.00
60.00		55.09	459.80	0.00	0.00
60.71		19.49	162.70	0.00	0.00
60.75		1.10	9.16	0.00	0.00
62.00		34.32	285.64	0.00	0.00
64.00		54.90	452.82	0.00	0.00
66.00		54.78	446.06	0.00	0.00
68.00		54.64	443.58	0.00	0.00
70.00		54.50	441.09	0.00	0.00

Total Applied Force Summary

Structure:	CT13064-A-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Middletown 2, CT		**Exposure:**	C	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 38

Tower Engineering Solutions

72.00		54.33	438.58	0.00	0.00
74.00		54.16	436.06	0.00	0.00
76.00		53.97	433.53	0.00	0.00
78.00		53.78	430.98	0.00	0.00
78.25		6.69	53.72	0.00	0.00
80.00		46.84	374.76	0.00	0.00
82.00		53.35	420.65	0.00	0.00
84.00		53.11	412.84	0.00	0.00
86.00		52.87	410.22	0.00	0.00
87.42		37.27	289.05	0.00	0.00
88.00		15.48	160.89	0.00	0.00
90.00	(19) attachments	1318.36	6624.90	0.00	0.00
91.33		35.15	356.88	0.00	0.00
92.00		17.52	116.19	0.00	0.00
94.00		52.44	346.94	0.00	0.00
96.00		52.16	344.78	0.00	0.00
98.00		51.86	342.62	0.00	0.00
100.00	(21) attachments	1000.25	6291.38	0.00	0.00
102.00		51.25	315.39	0.00	0.00
104.00		50.94	313.20	0.00	0.00
106.00		50.61	311.02	0.00	0.00
108.00		50.28	308.82	0.00	0.00
110.00	(19) attachments	548.28	3935.50	0.00	6.01
112.00		49.59	271.82	0.00	0.00
114.00		49.24	269.61	0.00	0.00
116.00		48.88	267.40	0.00	0.00
118.00		48.51	265.17	0.00	0.00
120.00	(11) attachments	902.39	4337.80	0.00	0.00
122.00		36.74	232.67	0.00	0.00
124.00		36.87	232.79	0.00	0.00
126.00		37.00	232.90	0.00	0.00
128.00		37.13	233.02	0.00	0.00
130.00	(41) attachments	1754.04	9077.04	0.00	2.54
	Totals:	**8,608.44**	**57,836.87**	**0.00**	**8.55**

Linear Appurtenance Segment Forces (Factored)

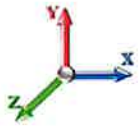
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 39	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
2.00	2" Conduit	Yes	2.00	0.000	2.00	0.59	0.00	0.070	0.000	5.133	0.00	22.04
2.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.42	0.00	0.070	0.000	5.133	0.00	6.76
2.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.070	0.000	5.133	0.00	6.76
4.00	2" Conduit	Yes	2.00	0.000	2.00	0.60	0.00	0.070	0.000	5.133	0.00	22.75
4.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.44	0.00	0.070	0.000	5.133	0.00	7.31
4.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.070	0.000	5.133	0.00	7.31
6.00	2" Conduit	Yes	2.00	0.000	2.00	0.61	0.00	0.071	0.000	5.133	0.00	23.20
6.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.45	0.00	0.071	0.000	5.133	0.00	7.65
6.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.071	0.000	5.133	0.00	7.65
8.00	2" Conduit	Yes	2.00	0.000	2.00	0.62	0.00	0.071	0.000	5.133	0.00	23.54
8.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.46	0.00	0.071	0.000	5.133	0.00	7.91
8.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.071	0.000	5.133	0.00	7.91
10.00	2" Conduit	Yes	2.00	0.000	2.00	0.63	0.00	0.072	0.000	5.133	0.00	23.80
10.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.46	0.00	0.072	0.000	5.133	0.00	8.11
10.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.072	0.000	5.133	0.00	8.11
10.25	2" Conduit	Yes	0.25	0.000	2.00	0.08	0.00	0.072	0.000	5.133	0.00	2.98
10.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.06	0.00	0.072	0.000	5.133	0.00	1.02
10.25	1" Reinforcing plate	Yes	0.25	0.000	0.00	0.00	0.00	0.072	0.000	5.133	0.00	1.02
12.00	2" Conduit	Yes	1.75	0.000	2.00	0.56	0.00	0.072	0.000	5.133	0.00	21.02
12.00	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.41	0.00	0.072	0.000	5.133	0.00	7.25
12.00	1" Reinforcing plate	Yes	1.75	0.000	0.00	0.00	0.00	0.072	0.000	5.133	0.00	7.25
14.00	2" Conduit	Yes	2.00	0.000	2.00	0.64	0.00	0.073	0.000	5.133	0.00	24.22
14.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.47	0.00	0.073	0.000	5.133	0.00	8.44
14.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.073	0.000	5.133	0.00	8.44
16.00	2" Conduit	Yes	2.00	0.000	2.00	0.64	0.00	0.074	0.000	5.196	0.00	24.39
16.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.48	0.00	0.074	0.000	5.196	0.00	8.57
16.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.074	0.000	5.196	0.00	8.57
18.00	2" Conduit	Yes	2.00	0.000	2.00	0.65	0.00	0.074	0.000	5.327	0.00	24.54
18.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.48	0.00	0.074	0.000	5.327	0.00	8.69
18.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.074	0.000	5.327	0.00	8.69
20.00	2" Conduit	Yes	2.00	0.000	2.00	0.65	0.00	0.075	0.000	5.446	0.00	24.68
20.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.48	0.00	0.075	0.000	5.446	0.00	8.80
20.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.075	0.000	5.446	0.00	8.80
20.50	2" Conduit	Yes	0.50	0.000	2.00	0.16	0.00	0.075	0.000	5.474	0.00	6.18
20.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.12	0.00	0.075	0.000	5.474	0.00	2.21
20.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.075	0.000	5.474	0.00	2.21
22.00	2" Conduit	Yes	1.50	0.000	2.00	0.49	0.00	0.075	0.000	5.556	0.00	18.61
22.00	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.37	0.00	0.075	0.000	5.556	0.00	6.67
22.00	1" Reinforcing plate	Yes	1.50	0.000	0.00	0.00	0.00	0.075	0.000	5.556	0.00	6.67
24.00	2" Conduit	Yes	2.00	0.000	2.00	0.66	0.00	0.076	0.000	5.659	0.00	24.93
24.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.49	0.00	0.076	0.000	5.659	0.00	8.99
24.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.076	0.000	5.659	0.00	1.89
24.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.076	0.000	5.659	0.00	8.99
25.96	2" Conduit	Yes	1.96	0.000	2.00	0.65	0.00	0.076	0.000	5.753	0.00	24.54
25.96	1" Reinforcing plate	Yes	1.96	0.000	1.00	0.48	0.00	0.076	0.000	5.753	0.00	8.89
25.96	1" Reinforcing plate	Yes	1.96	0.000	0.00	0.00	0.00	0.076	0.000	5.753	0.00	5.59
25.96	1" Reinforcing plate	Yes	1.96	0.000	0.00	0.00	0.00	0.076	0.000	5.753	0.00	8.89

Linear Appurtenance Segment Forces (Factored)

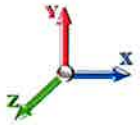
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 40	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
26.00	2" Conduit	Yes	0.04	0.000	2.00	0.01	0.00	0.077	0.000	5.755	0.00	0.50
26.00	1" Reinforcing plate	Yes	0.04	0.000	1.00	0.01	0.00	0.077	0.000	5.755	0.00	0.18
26.00	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.077	0.000	5.755	0.00	0.11
26.00	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.077	0.000	5.755	0.00	0.18
26.88	2" Conduit	Yes	0.88	0.000	2.00	0.29	0.00	0.077	0.000	5.796	0.00	11.04
26.88	1" Reinforcing plate	Yes	0.88	0.000	1.00	0.22	0.00	0.077	0.000	5.796	0.00	4.01
26.88	1" Reinforcing plate	Yes	0.88	0.000	0.00	0.00	0.00	0.077	0.000	5.796	0.00	2.52
26.88	1" Reinforcing plate	Yes	0.88	0.000	0.00	0.00	0.00	0.077	0.000	5.796	0.00	4.01
27.88	2" Conduit	Yes	1.00	0.000	2.00	0.33	0.00	0.077	0.000	5.841	0.00	12.57
27.88	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.25	0.00	0.077	0.000	5.841	0.00	4.57
27.88	1" Reinforcing plate	Yes	1.00	0.000	0.00	0.00	0.00	0.077	0.000	5.841	0.00	2.88
27.88	1" Reinforcing plate	Yes	1.00	0.000	0.00	0.00	0.00	0.077	0.000	5.841	0.00	4.57
28.00	2" Conduit	Yes	0.12	0.000	2.00	0.04	0.00	0.077	0.000	5.846	0.00	1.51
28.00	1" Reinforcing plate	Yes	0.12	0.000	1.00	0.03	0.00	0.077	0.000	5.846	0.00	0.55
28.00	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.077	0.000	5.846	0.00	0.35
28.00	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.077	0.000	5.846	0.00	0.55
30.00	2" Conduit	Yes	2.00	0.000	2.00	0.66	0.00	0.078	0.000	5.931	0.00	25.24
30.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.50	0.00	0.078	0.000	5.931	0.00	9.23
30.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	5.931	0.00	5.81
30.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	5.931	0.00	9.23
32.00	2" Conduit	Yes	2.00	0.000	2.00	0.67	0.00	0.078	0.000	6.013	0.00	25.33
32.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.50	0.00	0.078	0.000	6.013	0.00	9.30
32.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	6.013	0.00	5.86
32.00	1" Reinforcing plate	Yes	1.50	0.000	0.00	0.00	0.00	0.078	0.000	6.013	0.00	4.40
32.00	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.078	0.000	6.013	0.00	2.32
34.00	2" Conduit	Yes	2.00	0.000	2.00	0.67	0.00	0.079	0.000	6.090	0.00	25.41
34.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.50	0.00	0.079	0.000	6.090	0.00	9.37
34.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.079	0.000	6.090	0.00	5.91
34.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.079	0.000	6.090	0.00	5.91
36.00	2" Conduit	Yes	2.00	0.000	2.00	0.67	0.00	0.080	0.000	6.163	0.00	25.50
36.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.50	0.00	0.080	0.000	6.163	0.00	9.43
36.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	6.163	0.00	5.96
36.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	6.163	0.00	5.96
38.00	2" Conduit	Yes	2.00	0.000	2.00	0.67	0.00	0.080	0.000	6.234	0.00	25.57
38.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.50	0.00	0.080	0.000	6.234	0.00	9.49
38.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	6.234	0.00	6.00
38.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	6.234	0.00	6.00
40.00	2" Conduit	Yes	2.00	0.000	2.00	0.67	0.00	0.081	0.000	6.302	0.00	25.65
40.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.51	0.00	0.081	0.000	6.302	0.00	9.55
40.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.081	0.000	6.302	0.00	6.04
40.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.081	0.000	6.302	0.00	6.04
40.50	2" Conduit	Yes	0.50	0.000	2.00	0.17	0.00	0.082	0.000	6.318	0.00	6.42
40.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.13	0.00	0.082	0.000	6.318	0.00	2.39
40.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.082	0.000	6.318	0.00	1.51
40.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.082	0.000	6.318	0.00	1.51
40.71	2" Conduit	Yes	0.21	0.000	2.00	0.07	0.00	0.082	0.000	6.325	0.00	2.70
40.71	1" Reinforcing plate	Yes	0.21	0.000	1.00	0.05	0.00	0.082	0.000	6.325	0.00	1.00

Linear Appurtenance Segment Forces (Factored)

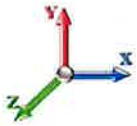
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 41	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
40.71	1" Reinforcing plate	Yes	0.21	0.000	0.00	0.00	0.00	0.082	0.000	6.325	0.00	0.64
40.71	1" Reinforcing plate	Yes	0.21	0.000	0.00	0.00	0.00	0.082	0.000	6.325	0.00	0.64
42.00	2" Conduit	Yes	1.29	0.000	2.00	0.44	0.00	0.082	0.000	6.367	0.00	16.59
42.00	1" Reinforcing plate	Yes	1.29	0.000	1.00	0.33	0.00	0.082	0.000	6.367	0.00	6.20
42.00	1" Reinforcing plate	Yes	1.29	0.000	0.00	0.00	0.00	0.082	0.000	6.367	0.00	3.92
42.00	1" Reinforcing plate	Yes	1.29	0.000	0.00	0.00	0.00	0.082	0.000	6.367	0.00	3.92
43.33	2" Conduit	Yes	1.33	0.000	2.00	0.45	0.00	0.082	0.000	6.409	0.00	17.18
43.33	1" Reinforcing plate	Yes	1.33	0.000	1.00	0.34	0.00	0.082	0.000	6.409	0.00	6.43
43.33	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.082	0.000	6.409	0.00	4.07
43.33	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.082	0.000	6.409	0.00	4.07
44.00	2" Conduit	Yes	0.67	0.000	2.00	0.23	0.00	0.083	0.000	6.429	0.00	8.60
44.00	1" Reinforcing plate	Yes	0.67	0.000	1.00	0.17	0.00	0.083	0.000	6.429	0.00	3.22
44.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.083	0.000	6.429	0.00	2.04
44.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.083	0.000	6.429	0.00	2.04
46.00	2" Conduit	Yes	2.00	0.000	2.00	0.68	0.00	0.083	0.000	6.490	0.00	25.85
46.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.51	0.00	0.083	0.000	6.490	0.00	9.71
46.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.083	0.000	6.490	0.00	6.16
46.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.083	0.000	6.490	0.00	6.16
48.00	2" Conduit	Yes	2.00	0.000	2.00	0.68	0.00	0.084	0.000	6.548	0.00	25.92
48.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.51	0.00	0.084	0.000	6.548	0.00	9.76
48.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	6.548	0.00	6.20
48.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	6.548	0.00	6.20
48.12	2" Conduit	Yes	0.12	0.000	2.00	0.04	0.00	0.083	0.000	6.552	0.00	1.56
48.12	1" Reinforcing plate	Yes	0.12	0.000	1.00	0.03	0.00	0.083	0.000	6.552	0.00	0.59
48.12	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.083	0.000	6.552	0.00	0.37
48.12	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.083	0.000	6.552	0.00	0.37
50.00	2" Conduit	Yes	1.88	0.000	2.00	0.64	0.00	0.084	0.000	6.605	0.00	24.42
50.00	1" Reinforcing plate	Yes	1.88	0.000	1.00	0.48	0.00	0.084	0.000	6.605	0.00	9.22
50.00	1" Reinforcing plate	Yes	1.88	0.000	0.00	0.00	0.00	0.084	0.000	6.605	0.00	5.86
50.00	1" Reinforcing plate	Yes	1.88	0.000	0.00	0.00	0.00	0.084	0.000	6.605	0.00	5.86
52.00	2" Conduit	Yes	2.00	0.000	2.00	0.68	0.00	0.084	0.000	6.660	0.00	26.04
52.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.52	0.00	0.084	0.000	6.660	0.00	9.86
52.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	6.660	0.00	6.27
52.00	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.084	0.000	6.660	0.00	1.57
54.00	2" Conduit	Yes	2.00	0.000	2.00	0.68	0.00	0.085	0.000	6.713	0.00	26.10
54.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.52	0.00	0.085	0.000	6.713	0.00	9.90
54.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.085	0.000	6.713	0.00	6.30
56.00	2" Conduit	Yes	2.00	0.000	2.00	0.68	0.00	0.086	0.000	6.764	0.00	26.15
56.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.52	0.00	0.086	0.000	6.764	0.00	9.94
56.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.086	0.000	6.764	0.00	6.33
58.00	2" Conduit	Yes	2.00	0.000	2.00	0.69	0.00	0.087	0.000	6.814	0.00	26.20
58.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.52	0.00	0.087	0.000	6.814	0.00	9.99
58.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.087	0.000	6.814	0.00	6.36
60.00	2" Conduit	Yes	2.00	0.000	2.00	0.69	0.00	0.087	0.000	6.863	0.00	26.26
60.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.52	0.00	0.087	0.000	6.863	0.00	10.03
60.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.087	0.000	6.863	0.00	6.39
60.71	2" Conduit	Yes	0.71	0.000	2.00	0.24	0.00	0.088	0.000	6.880	0.00	9.33

Linear Appurtenance Segment Forces (Factored)

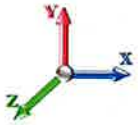
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 42	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
60.71	1" Reinforcing plate	Yes	0.71	0.000	1.00	0.18	0.00	0.088	0.000	6.880	0.00	3.56
60.71	1" Reinforcing plate	Yes	0.71	0.000	0.00	0.00	0.00	0.088	0.000	6.880	0.00	2.27
60.75	2" Conduit	Yes	0.04	0.000	2.00	0.01	0.00	0.088	0.000	6.881	0.00	0.53
60.75	1" Reinforcing plate	Yes	0.04	0.000	1.00	0.01	0.00	0.088	0.000	6.881	0.00	0.20
60.75	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.088	0.000	6.881	0.00	0.13
62.00	2" Conduit	Yes	1.25	0.000	2.00	0.43	0.00	0.088	0.000	6.911	0.00	16.44
62.00	1" Reinforcing plate	Yes	1.25	0.000	1.00	0.33	0.00	0.088	0.000	6.911	0.00	6.29
62.00	1" Reinforcing plate	Yes	1.25	0.000	0.00	0.00	0.00	0.088	0.000	6.911	0.00	4.01
64.00	2" Conduit	Yes	2.00	0.000	2.00	0.69	0.00	0.089	0.000	6.957	0.00	26.36
64.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.52	0.00	0.089	0.000	6.957	0.00	10.11
64.00	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.089	0.000	6.957	0.00	4.29
66.00	2" Conduit	Yes	2.00	0.000	2.00	0.69	0.00	0.090	0.000	7.002	0.00	26.40
66.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.52	0.00	0.090	0.000	7.002	0.00	10.14
68.00	2" Conduit	Yes	2.00	0.000	2.00	0.69	0.00	0.091	0.000	7.047	0.00	26.45
68.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.52	0.00	0.091	0.000	7.047	0.00	10.18
70.00	2" Conduit	Yes	2.00	0.000	2.00	0.69	0.00	0.092	0.000	7.090	0.00	26.50
70.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.53	0.00	0.092	0.000	7.090	0.00	10.22
72.00	2" Conduit	Yes	2.00	0.000	2.00	0.69	0.00	0.092	0.000	7.132	0.00	26.54
72.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.53	0.00	0.092	0.000	7.132	0.00	10.25
74.00	2" Conduit	Yes	2.00	0.000	2.00	0.69	0.00	0.093	0.000	7.173	0.00	26.59
74.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.53	0.00	0.093	0.000	7.173	0.00	10.28
76.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.094	0.000	7.213	0.00	26.63
76.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.53	0.00	0.094	0.000	7.213	0.00	10.32
78.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.095	0.000	7.253	0.00	26.67
78.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.53	0.00	0.095	0.000	7.253	0.00	10.35
78.25	2" Conduit	Yes	0.25	0.000	2.00	0.09	0.00	0.096	0.000	7.258	0.00	3.33
78.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.07	0.00	0.096	0.000	7.258	0.00	1.29
80.00	2" Conduit	Yes	1.75	0.000	2.00	0.61	0.00	0.096	0.000	7.292	0.00	23.37
80.00	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.46	0.00	0.096	0.000	7.292	0.00	9.09
82.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.081	0.000	7.330	0.00	26.75
82.00	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.27	0.00	0.081	0.000	7.330	0.00	5.21
84.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.065	0.000	7.367	0.00	26.79
86.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.066	0.000	7.404	0.00	26.83
87.42	2" Conduit	Yes	1.42	0.000	2.00	0.50	0.00	0.067	0.000	7.429	0.00	19.02
88.00	2" Conduit	Yes	0.58	0.000	2.00	0.20	0.00	0.067	0.000	7.440	0.00	7.84
90.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.068	0.000	7.475	0.00	26.90
91.33	2" Conduit	Yes	1.33	0.000	2.00	0.47	0.00	0.068	0.000	7.498	0.00	17.95
92.00	2" Conduit	Yes	0.67	0.000	2.00	0.23	0.00	0.068	0.000	7.510	0.00	8.98
94.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.068	0.000	7.544	0.00	26.97
96.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.069	0.000	7.577	0.00	27.01
98.00	2" Conduit	Yes	2.00	0.000	2.00	0.70	0.00	0.070	0.000	7.610	0.00	27.04
100.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.070	0.000	7.642	0.00	27.07
102.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.071	0.000	7.674	0.00	27.11
104.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.072	0.000	7.706	0.00	27.14
106.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.073	0.000	7.737	0.00	27.17
108.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.074	0.000	7.767	0.00	27.20
110.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.074	0.000	7.797	0.00	27.23

Linear Appurtenance Segment Forces (Factored)

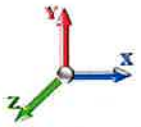
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 43	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
112.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.075	0.000	7.827	0.00	27.26
114.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.076	0.000	7.856	0.00	27.29
116.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.077	0.000	7.885	0.00	27.32
118.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.078	0.000	7.913	0.00	27.35
120.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.079	0.000	7.942	0.00	27.38
122.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.111	1.033	7.969	0.00	27.41
124.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.111	1.033	7.997	0.00	27.43
126.00	2" Conduit	Yes	2.00	0.000	2.00	0.71	0.00	0.111	1.033	8.024	0.00	27.46
128.00	2" Conduit	Yes	2.00	0.000	2.00	0.72	0.00	0.111	1.033	8.050	0.00	27.49
130.00	2" Conduit	Yes	2.00	0.000	2.00	0.72	0.00	0.111	1.033	8.077	0.00	27.51
										Totals:	**0.0**	**2,383.2**

Calculated Forces

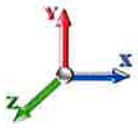
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 44	

TES Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-57.83	-8.62	0.00	-860.34	0.00	860.34	2818.94	734.35	2570.40	2448.04	0.00	0.000	0.000	0.176
2.00	-57.27	-8.59	0.00	-843.10	0.00	843.10	2805.89	728.94	2532.69	2418.63	0.01	-0.024	0.000	0.173
4.00	-56.69	-8.57	0.00	-825.91	0.00	825.91	2792.73	723.54	2495.26	2389.30	0.02	-0.049	0.000	0.171
6.00	-56.12	-8.54	0.00	-808.77	0.00	808.77	2779.45	718.13	2458.11	2360.04	0.05	-0.073	0.000	0.169
8.00	-55.55	-8.51	0.00	-791.69	0.00	791.69	2766.06	712.72	2421.24	2330.86	0.08	-0.097	0.000	0.167
10.00	-54.97	-8.48	0.00	-774.67	0.00	774.67	2752.56	707.32	2384.65	2301.75	0.13	-0.121	0.000	0.165
10.25	-54.90	-8.48	0.00	-772.55	0.00	772.55	2750.86	706.64	2380.10	2298.12	0.13	-0.124	0.000	0.172
12.00	-54.40	-8.46	0.00	-757.70	0.00	757.70	2738.94	701.91	2348.34	2272.72	0.18	-0.146	0.000	0.170
14.00	-53.83	-8.43	0.00	-740.78	0.00	740.78	2725.20	696.50	2312.30	2243.77	0.25	-0.171	0.000	0.168
16.00	-53.26	-8.41	0.00	-723.91	0.00	723.91	2711.35	691.10	2276.54	2214.91	0.33	-0.196	0.000	0.166
18.00	-52.69	-8.38	0.00	-707.10	0.00	707.10	2697.39	685.69	2241.07	2186.13	0.42	-0.221	0.000	0.163
20.00	-52.12	-8.34	0.00	-690.34	0.00	690.34	2683.32	680.29	2205.87	2157.44	0.51	-0.246	0.000	0.161
20.50	-51.98	-8.34	0.00	-686.17	0.00	686.17	2679.78	678.93	2197.11	2150.28	0.54	-0.252	0.000	0.160
22.00	-51.56	-8.32	0.00	-673.66	0.00	673.66	2669.12	674.88	2170.95	2128.84	0.62	-0.271	0.000	0.158
24.00	-50.99	-8.28	0.00	-657.03	0.00	657.03	2654.82	669.47	2136.30	2100.34	0.74	-0.295	0.000	0.156
25.96	-50.44	-8.24	0.00	-640.79	0.00	640.79	2640.69	664.18	2102.62	2072.49	0.87	-0.319	0.000	0.135
26.00	-50.43	-8.24	0.00	-640.47	0.00	640.47	2640.40	664.07	2101.94	2071.92	0.87	-0.319	0.000	0.135
26.88	-50.18	-8.23	0.00	-633.21	0.00	633.21	2634.02	661.69	2086.91	2059.45	0.93	-0.329	0.000	0.160
27.88	-49.90	-8.21	0.00	-624.98	0.00	624.98	2626.74	658.99	2069.89	2045.30	1.00	-0.342	0.000	0.159
28.00	-49.86	-8.22	0.00	-624.00	0.00	624.00	2625.87	658.66	2067.85	2043.61	1.01	-0.343	0.000	0.159
30.00	-49.30	-8.18	0.00	-607.56	0.00	607.56	2611.22	653.25	2034.05	2015.39	1.16	-0.369	0.000	0.156
32.00	-48.74	-8.15	0.00	-591.20	0.00	591.20	2596.46	647.85	2000.52	1987.27	1.32	-0.394	0.000	0.153
34.00	-48.19	-8.11	0.00	-574.91	0.00	574.91	2581.58	642.44	1967.27	1959.26	1.49	-0.419	0.000	0.151
36.00	-47.64	-8.07	0.00	-558.69	0.00	558.69	2566.59	637.04	1934.30	1931.36	1.67	-0.444	0.000	0.148
38.00	-47.09	-8.03	0.00	-542.55	0.00	542.55	2551.48	631.63	1901.61	1903.56	1.86	-0.468	0.000	0.145
40.00	-46.55	-7.99	0.00	-526.48	0.00	526.48	2536.26	626.22	1869.20	1875.87	2.06	-0.493	0.000	0.142
40.50	-46.41	-7.98	0.00	-522.49	0.00	522.49	2532.44	624.87	1861.14	1868.96	2.11	-0.499	0.000	0.141
40.71	-46.36	-7.98	0.00	-520.81	0.00	520.81	2530.83	624.30	1857.76	1866.07	2.14	-0.501	0.000	0.141
42.00	-46.01	-7.95	0.00	-510.52	0.00	510.52	2520.93	620.82	1837.06	1848.29	2.27	-0.517	0.000	0.139
43.33	-45.65	-7.92	0.00	-499.92	0.00	499.92	2510.64	617.21	1815.79	1829.97	2.42	-0.533	0.000	0.137
44.00	-45.39	-7.91	0.00	-494.64	0.00	494.64	2505.48	615.41	1805.20	1820.83	2.49	-0.541	0.000	0.135
46.00	-44.62	-7.87	0.00	-478.81	0.00	478.81	2489.92	610.00	1773.63	1793.48	2.73	-0.564	0.000	0.132
48.00	-43.85	-7.82	0.00	-463.07	0.00	463.07	1854.44	491.51	1439.37	1347.80	2.97	-0.587	0.000	0.141
48.12	-43.82	-7.82	0.00	-462.13	0.00	462.13	1853.85	491.25	1437.86	1346.66	2.98	-0.589	0.000	0.180
50.00	-43.37	-7.79	0.00	-447.42	0.00	447.42	1844.56	487.19	1414.16	1328.74	3.22	-0.616	0.000	0.176
52.00	-42.90	-7.75	0.00	-431.85	0.00	431.85	1834.56	482.86	1389.16	1309.72	3.48	-0.645	0.000	0.172
54.00	-42.43	-7.71	0.00	-416.35	0.00	416.35	1824.45	478.54	1364.38	1290.76	3.76	-0.673	0.000	0.167
56.00	-41.96	-7.67	0.00	-400.93	0.00	400.93	1814.23	474.21	1339.83	1271.84	4.05	-0.701	0.000	0.163
58.00	-41.49	-7.63	0.00	-385.60	0.00	385.60	1803.89	469.89	1315.50	1252.97	4.35	-0.728	0.000	0.158
60.00	-41.03	-7.58	0.00	-370.34	0.00	370.34	1793.44	465.56	1291.40	1234.16	4.66	-0.755	0.000	0.154
60.71	-40.87	-7.56	0.00	-364.96	0.00	364.96	1789.70	464.03	1282.90	1227.50	4.77	-0.765	0.000	0.192
60.75	-40.86	-7.57	0.00	-364.66	0.00	364.66	1789.49	463.94	1282.42	1227.12	4.78	-0.765	0.000	0.192
62.00	-40.57	-7.55	0.00	-355.20	0.00	355.20	1782.87	461.24	1267.52	1215.41	4.98	-0.786	0.000	0.189
64.00	-40.11	-7.51	0.00	-340.10	0.00	340.10	1772.19	456.91	1243.86	1196.72	5.32	-0.819	0.000	0.183
66.00	-39.67	-7.47	0.00	-325.08	0.00	325.08	1761.39	452.59	1220.42	1178.08	5.67	-0.851	0.000	0.177
68.00	-39.22	-7.43	0.00	-310.14	0.00	310.14	1750.48	448.26	1197.21	1159.51	6.03	-0.883	0.000	0.171
70.00	-38.77	-7.39	0.00	-295.28	0.00	295.28	1739.46	443.94	1174.22	1141.01	6.41	-0.913	0.000	0.165
72.00	-38.33	-7.35	0.00	-280.50	0.00	280.50	1728.32	439.61	1151.45	1122.57	6.80	-0.943	0.000	0.159

Calculated Forces

Structure: CT13064-A-SBA
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1 **Topography:** 1

Code: TIA-222-H
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/4/2022

TES Tower Engineering Solutions

74.00	-37.89	-7.31	0.00	-265.80	0.00	265.80	1717.07	435.29	1128.90	1104.20	7.20	-0.972	0.000	0.153
76.00	-37.46	-7.26	0.00	-251.19	0.00	251.19	1705.70	430.96	1106.58	1085.91	7.61	-1.001	0.000	0.147
78.00	-37.03	-7.21	0.00	-236.66	0.00	236.66	1694.22	426.64	1084.48	1067.69	8.04	-1.028	0.000	0.141
78.25	-36.97	-7.21	0.00	-234.86	0.00	234.86	1692.78	426.10	1081.74	1065.41	8.09	-1.031	0.000	0.140
78.25	-36.97	-7.21	0.00	-234.86	0.00	234.86	1692.78	426.10	1081.74	1065.41	8.09	-1.031	0.000	0.140
80.00	-36.59	-7.18	0.00	-222.24	0.00	222.24	1682.63	422.31	1062.61	1049.54	8.47	-1.054	0.000	0.234
82.00	-36.17	-7.15	0.00	-207.88	0.00	207.88	1670.92	417.99	1040.95	1031.48	8.92	-1.098	0.000	0.223
84.00	-35.75	-7.11	0.00	-193.59	0.00	193.59	1659.09	413.66	1019.52	1013.49	9.39	-1.140	0.000	0.213
86.00	-35.34	-7.07	0.00	-179.37	0.00	179.37	1647.16	409.34	998.31	995.59	9.88	-1.181	0.000	0.202
87.42	-35.05	-7.04	0.00	-169.35	0.00	169.35	1638.63	406.27	983.43	982.97	10.24	-1.208	0.000	0.194
88.00	-34.88	-7.03	0.00	-165.25	0.00	165.25	1635.10	405.01	977.33	977.78	10.38	-1.220	0.000	0.191
90.00	-28.29	-5.59	0.00	-151.18	0.00	151.18	1622.94	400.69	956.57	960.05	10.90	-1.256	0.000	0.175
91.33	-27.93	-5.55	0.00	-143.73	0.00	143.73	1099.39	302.92	728.96	657.00	11.26	-1.279	0.000	0.244
92.00	-27.81	-5.55	0.00	-140.02	0.00	140.02	1097.24	301.84	723.77	653.36	11.44	-1.291	0.000	0.240
94.00	-27.46	-5.51	0.00	-128.93	0.00	128.93	1090.71	298.60	708.30	642.45	11.99	-1.333	0.000	0.226
96.00	-27.11	-5.46	0.00	-117.92	0.00	117.92	1084.06	295.35	692.99	631.55	12.55	-1.373	0.000	0.212
98.00	-26.77	-5.42	0.00	-106.99	0.00	106.99	1077.30	292.11	677.85	620.68	13.14	-1.411	0.000	0.198
100.00	-20.50	-4.28	0.00	-96.15	0.00	96.15	1070.43	288.87	662.88	609.82	13.74	-1.446	0.000	0.177
102.00	-20.19	-4.23	0.00	-87.60	0.00	87.60	1063.44	285.62	648.08	598.99	14.35	-1.479	0.000	0.165
104.00	-19.87	-4.18	0.00	-79.14	0.00	79.14	1056.34	282.38	633.44	588.19	14.98	-1.510	0.000	0.154
106.00	-19.56	-4.13	0.00	-70.78	0.00	70.78	1049.12	279.13	618.97	577.41	15.61	-1.538	0.000	0.141
108.00	-19.25	-4.08	0.00	-62.52	0.00	62.52	1041.79	275.89	604.67	566.67	16.27	-1.565	0.000	0.129
110.00	-15.33	-3.43	0.00	-54.36	0.00	54.36	1034.34	272.65	590.53	555.96	16.93	-1.589	0.000	0.113
112.00	-15.06	-3.38	0.00	-47.50	0.00	47.50	1026.79	269.40	576.57	545.28	17.60	-1.610	0.000	0.102
114.00	-14.79	-3.33	0.00	-40.74	0.00	40.74	1019.11	266.16	562.77	534.64	18.28	-1.630	0.000	0.091
116.00	-14.52	-3.27	0.00	-34.09	0.00	34.09	1011.32	262.92	549.13	524.04	18.96	-1.647	0.000	0.080
118.00	-14.26	-3.22	0.00	-27.55	0.00	27.55	1003.42	259.67	535.67	513.49	19.66	-1.662	0.000	0.068
120.00	-9.95	-2.19	0.00	-21.11	0.00	21.11	995.40	256.43	522.37	502.97	20.35	-1.674	0.000	0.052
120.00	-9.95	-2.19	0.00	-21.11	0.00	21.11	735.22	244.66	14507.7	335.79	20.35	-1.674	0.000	0.076
122.00	-9.72	-2.15	0.00	-16.72	0.00	16.72	735.22	244.66	14507.7	335.79	21.06	-1.683	0.000	0.063
124.00	-9.48	-2.11	0.00	-12.41	0.00	12.41	735.22	244.66	14507.7	335.79	21.77	-1.698	0.000	0.050
126.00	-9.25	-2.07	0.00	-8.19	0.00	8.19	735.22	244.66	14507.7	335.79	22.48	-1.709	0.000	0.037
128.00	-9.02	-2.03	0.00	-4.05	0.00	4.05	735.22	244.66	14507.7	335.79	23.20	-1.715	0.000	0.024
130.00	0.00	-1.75	0.00	0.00	0.00	0.00	735.22	244.66	14507.7	335.79	23.92	-1.717	0.000	0.000

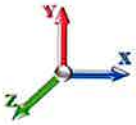
Seismic Segment Forces (Factored)

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 46	

TES Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.23	**Iterations**	21
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.21
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.24	**SA**	0.02	**S1**	0.06
						Seismic Importance Factor	1.00



R: 1.50

Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)
0.00	RB1 RB2	0.00	0.00	0.00	0.00
2.00		403.31	1.00	18.15	0.00
4.00		401.22	3.00	18.06	0.00
6.00		399.12	5.00	17.97	0.00
8.00		397.03	7.00	17.87	0.00
10.00		394.93	9.00	17.78	0.01
10.25	RT2 RB3 RB4	49.22	10.13	2.22	0.00
12.00		343.61	11.13	15.47	0.01
14.00		390.74	13.00	17.59	0.01
16.00		388.64	15.00	17.49	0.02
18.00		386.54	17.00	17.40	0.02
20.00		384.45	19.00	17.31	0.03
20.50	RT1 RB5	95.78	20.25	4.31	0.00
22.00		286.57	21.25	12.90	0.02
24.00		380.25	23.00	17.12	0.04
25.96	RB6	370.62	24.98	16.68	0.04
26.00		7.54	25.98	0.34	0.00
26.88	RT4	165.73	26.44	7.46	0.01
27.88	RT3 RB7	187.83	27.38	8.45	0.01
28.00		22.50	27.94	1.01	0.00
30.00		373.96	29.00	16.83	0.06
32.00		371.87	31.00	16.74	0.07
34.00		369.77	33.00	16.64	0.08
36.00		367.68	35.00	16.55	0.08
38.00		365.58	37.00	16.46	0.09
40.00		363.48	39.00	16.36	0.10
40.50	RT5 RB8	90.54	40.25	4.08	0.01
40.71	RT6 RB9	37.99	40.61	1.71	0.00
42.00		232.85	41.36	10.48	0.05
43.33	Bot - Section 2	239.76	42.67	10.79	0.05
44.00		184.27	43.67	8.29	0.03
46.00		550.31	45.00	24.77	0.31
48.00	Top - Section 1	546.53	47.00	24.60	0.33
48.12	RT7	18.61	48.06	0.84	0.00
50.00		290.75	49.06	13.09	0.10
52.00		307.68	51.00	13.85	0.12
54.00		306.00	53.00	13.77	0.13
56.00		304.33	55.00	13.70	0.14
58.00		302.65	57.00	13.62	0.15
60.00		300.97	59.00	13.55	0.16
60.71	RT9	106.44	60.36	4.79	0.02
60.75	RT8 RB10	5.99	60.73	0.27	0.00
62.00		186.86	61.38	8.41	0.07
64.00		297.62	63.00	13.40	0.18
66.00		295.94	65.00	13.32	0.19
68.00		294.26	67.00	13.25	0.20

Seismic Segment Forces (Factored)

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 47	

70.00			292.59	69.00	13.17	0.21		
72.00			290.91	71.00	13.09	0.22		
74.00			289.23	73.00	13.02	0.23		
76.00			287.55	75.00	12.94	0.23		
78.00			285.88	77.00	12.87	0.24		
78.25	RT10		35.62	78.13	1.60	0.00		
80.00			248.58	79.13	11.19	0.20		
82.00			282.52	81.00	12.72	0.26		
84.00			280.85	83.00	12.64	0.27		
86.00			279.17	85.00	12.57	0.28		
87.42	Bot - Section 3		196.73	86.71	8.86	0.15		
88.00			115.69	87.71	5.21	0.05		
90.00	Appurtenance(s)		3955.9	89.00	178.07	62.57		
91.33	Top - Section 2		254.84	90.67	11.47	0.27		
92.00			75.61	91.67	3.40	0.02		
94.00			225.98	93.00	10.17	0.22		
96.00			224.72	95.00	10.12	0.23		
98.00			223.46	97.00	10.06	0.24		
100.00	Appurtenance(s)		3520.7	99.00	158.48	61.32		
102.00			198.05	101.00	8.91	0.20		
104.00			196.79	103.00	8.86	0.21		
106.00			195.54	105.00	8.80	0.21		
108.00			194.28	107.00	8.75	0.22		
110.00	Appurtenance(s)		2151.4	109.00	96.84	27.76		
112.00			159.17	111.00	7.16	0.16		
114.00			157.91	113.00	7.11	0.16		
116.00			156.65	115.00	7.05	0.16		
118.00			155.40	117.00	6.99	0.17		
120.00	Top - Section 3		2513.2	119.00	113.13	45.15		
122.00			144.58	121.00	6.51	0.15		
124.00			144.58	123.00	6.51	0.16		
126.00			144.58	125.00	6.51	0.16		
128.00			144.58	127.00	6.51	0.17		
130.00	Appurtenance(s)		5001.8	129.00	225.15	210.14		
		Totals:	**35,593.5**		**1,602.2**	**415.4**	**Total Wind:**	**32,965.7**

Calculated Forces

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 48	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.23			**Iterations**	21
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09			**Ss**	0.21
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.24	**SA**	0.02			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.94	-0.41	0.00	-50.70	0.00	50.70	2818.94	734.35	2570.40	2448.04		0.00	0.00	0.017
2.00	-42.46	-0.42	0.00	-49.87	0.00	49.87	2805.89	728.94	2532.69	2418.63		0.00	0.00	0.016
4.00	-41.98	-0.42	0.00	-49.04	0.00	49.04	2792.73	723.54	2495.26	2389.30		0.00	0.00	0.016
6.00	-41.51	-0.42	0.00	-48.21	0.00	48.21	2779.45	718.13	2458.11	2360.04		0.00	0.00	0.016
8.00	-41.04	-0.42	0.00	-47.37	0.00	47.37	2766.06	712.72	2421.24	2330.86		0.00	-0.01	0.016
10.00	-40.57	-0.42	0.00	-46.54	0.00	46.54	2752.56	707.32	2384.65	2301.75		0.01	-0.01	0.016
10.25	-40.51	-0.42	0.00	-46.43	0.00	46.43	2750.86	706.64	2380.10	2298.12		0.01	-0.01	0.017
12.00	-40.11	-0.42	0.00	-45.70	0.00	45.70	2738.94	701.91	2348.34	2272.72		0.01	-0.01	0.016
14.00	-39.65	-0.42	0.00	-44.86	0.00	44.86	2725.20	696.50	2312.30	2243.77		0.01	-0.01	0.016
16.00	-39.19	-0.42	0.00	-44.01	0.00	44.01	2711.35	691.10	2276.54	2214.91		0.02	-0.01	0.016
18.00	-38.73	-0.42	0.00	-43.17	0.00	43.17	2697.39	685.69	2241.07	2186.13		0.02	-0.01	0.016
20.00	-38.27	-0.42	0.00	-42.32	0.00	42.32	2683.32	680.29	2205.87	2157.44		0.03	-0.01	0.016
20.50	-38.16	-0.42	0.00	-42.11	0.00	42.11	2679.78	678.93	2197.11	2150.28		0.03	-0.02	0.016
22.00	-37.82	-0.42	0.00	-41.47	0.00	41.47	2669.12	674.88	2170.95	2128.84		0.04	-0.02	0.016
24.00	-37.37	-0.43	0.00	-40.62	0.00	40.62	2654.82	669.47	2136.30	2100.34		0.04	-0.02	0.015
25.96	-36.93	-0.43	0.00	-39.79	0.00	39.79	2640.69	664.18	2102.62	2072.49		0.05	-0.02	0.013
26.00	-36.92	-0.43	0.00	-39.77	0.00	39.77	2640.40	664.07	2101.94	2071.92		0.05	-0.02	0.013
26.88	-36.73	-0.43	0.00	-39.40	0.00	39.40	2634.02	661.69	2086.91	2059.45		0.06	-0.02	0.016
27.88	-36.51	-0.43	0.00	-38.97	0.00	38.97	2626.74	658.99	2069.89	2045.30		0.06	-0.02	0.015
28.00	-36.48	-0.43	0.00	-38.92	0.00	38.92	2625.87	658.66	2067.85	2043.61		0.06	-0.02	0.015
30.00	-36.04	-0.43	0.00	-38.07	0.00	38.07	2611.22	653.25	2034.05	2015.39		0.07	-0.02	0.015
32.00	-35.60	-0.43	0.00	-37.21	0.00	37.21	2596.46	647.85	2000.52	1987.27		0.08	-0.02	0.015
34.00	-35.16	-0.43	0.00	-36.35	0.00	36.35	2581.58	642.44	1967.27	1959.26		0.09	-0.03	0.015
36.00	-34.73	-0.43	0.00	-35.49	0.00	35.49	2566.59	637.04	1934.30	1931.36		0.10	-0.03	0.015
38.00	-34.30	-0.43	0.00	-34.63	0.00	34.63	2551.48	631.63	1901.61	1903.56		0.11	-0.03	0.014
40.00	-33.87	-0.43	0.00	-33.77	0.00	33.77	2536.26	626.22	1869.20	1875.87		0.12	-0.03	0.014
40.50	-33.76	-0.43	0.00	-33.55	0.00	33.55	2532.44	624.87	1861.14	1868.96		0.13	-0.03	0.014
40.71	-33.72	-0.43	0.00	-33.46	0.00	33.46	2530.83	624.30	1857.76	1866.07		0.13	-0.03	0.014
42.00	-33.44	-0.43	0.00	-32.91	0.00	32.91	2520.93	620.82	1837.06	1848.29		0.14	-0.03	0.014
43.33	-33.16	-0.43	0.00	-32.33	0.00	32.33	2510.64	617.21	1815.79	1829.97		0.15	-0.03	0.014
44.00	-32.94	-0.43	0.00	-32.04	0.00	32.04	2505.48	615.41	1805.20	1820.83		0.15	-0.03	0.014
46.00	-32.28	-0.43	0.00	-31.18	0.00	31.18	2489.92	610.00	1773.63	1793.48		0.17	-0.03	0.014
48.00	-31.62	-0.43	0.00	-30.31	0.00	30.31	1854.44	491.51	1439.37	1347.80		0.18	-0.04	0.015
48.12	-31.60	-0.43	0.00	-30.26	0.00	30.26	1853.85	491.25	1437.86	1346.66		0.18	-0.04	0.019
50.00	-31.26	-0.43	0.00	-29.45	0.00	29.45	1844.56	487.19	1414.16	1328.74		0.20	-0.04	0.018
52.00	-30.90	-0.43	0.00	-28.58	0.00	28.58	1834.56	482.86	1389.16	1309.72		0.21	-0.04	0.018
54.00	-30.54	-0.44	0.00	-27.71	0.00	27.71	1824.45	478.54	1364.38	1290.76		0.23	-0.04	0.018
56.00	-30.19	-0.44	0.00	-26.84	0.00	26.84	1814.23	474.21	1339.83	1271.84		0.25	-0.04	0.017
58.00	-29.84	-0.44	0.00	-25.97	0.00	25.97	1803.89	469.89	1315.50	1252.97		0.27	-0.05	0.017
60.00	-29.49	-0.44	0.00	-25.10	0.00	25.10	1793.44	465.56	1291.40	1234.16		0.29	-0.05	0.017
60.71	-29.36	-0.44	0.00	-24.79	0.00	24.79	1789.70	464.03	1282.90	1227.50		0.29	-0.05	0.021
60.75	-29.35	-0.44	0.00	-24.77	0.00	24.77	1789.49	463.94	1282.42	1227.12		0.29	-0.05	0.021
62.00	-29.14	-0.44	0.00	-24.22	0.00	24.22	1782.87	461.24	1267.52	1215.41		0.31	-0.05	0.021
64.00	-28.79	-0.44	0.00	-23.35	0.00	23.35	1772.19	456.91	1243.86	1196.72		0.33	-0.05	0.020
66.00	-28.45	-0.44	0.00	-22.47	0.00	22.47	1761.39	452.59	1220.42	1178.08		0.35	-0.05	0.020
68.00	-28.10	-0.44	0.00	-21.59	0.00	21.59	1750.48	448.26	1197.21	1159.51		0.37	-0.06	0.019
70.00	-27.76	-0.44	0.00	-20.72	0.00	20.72	1739.46	443.94	1174.22	1141.01		0.40	-0.06	0.019

Calculated Forces

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 49	

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72.00	-27.42	-0.44	0.00	-19.84	0.00	19.84	1728.32	439.61	1151.45	1122.57	0.42	-0.06	0.019
74.00	-27.09	-0.44	0.00	-18.96	0.00	18.96	1717.07	435.29	1128.90	1104.20	0.45	-0.06	0.018
76.00	-26.75	-0.44	0.00	-18.07	0.00	18.07	1705.70	430.96	1106.58	1085.91	0.47	-0.06	0.018
78.00	-26.42	-0.44	0.00	-17.19	0.00	17.19	1694.22	426.64	1084.48	1067.69	0.50	-0.07	0.017
78.25	-26.38	-0.44	0.00	-17.08	0.00	17.08	1692.78	426.10	1081.74	1065.41	0.51	-0.07	0.017
78.25	-26.38	-0.44	0.00	-17.08	0.00	17.08	1692.78	426.10	1081.74	1065.41	0.51	-0.07	0.017
80.00	-26.09	-0.44	0.00	-16.31	0.00	16.31	1682.63	422.31	1062.61	1049.54	0.53	-0.07	0.031
82.00	-25.76	-0.44	0.00	-15.43	0.00	15.43	1670.92	417.99	1040.95	1031.48	0.56	-0.07	0.030
84.00	-25.44	-0.44	0.00	-14.54	0.00	14.54	1659.09	413.66	1019.52	1013.49	0.59	-0.07	0.030
86.00	-25.11	-0.44	0.00	-13.65	0.00	13.65	1647.16	409.34	998.31	995.59	0.62	-0.08	0.029
87.42	-24.89	-0.44	0.00	-13.02	0.00	13.02	1638.63	406.27	983.43	982.97	0.65	-0.08	0.028
88.00	-24.75	-0.44	0.00	-12.77	0.00	12.77	1635.10	405.01	977.33	977.78	0.66	-0.08	0.028
90.00	-19.85	-0.38	0.00	-11.88	0.00	11.88	1622.94	400.69	956.57	960.05	0.69	-0.08	0.025
91.33	-19.55	-0.38	0.00	-11.37	0.00	11.37	1099.39	302.92	728.96	657.00	0.71	-0.09	0.035
92.00	-19.46	-0.38	0.00	-11.12	0.00	11.12	1097.24	301.84	723.77	653.36	0.73	-0.09	0.035
94.00	-19.20	-0.38	0.00	-10.37	0.00	10.37	1090.71	298.60	708.30	642.45	0.76	-0.09	0.034
96.00	-18.94	-0.38	0.00	-9.62	0.00	9.62	1084.06	295.35	692.99	631.55	0.80	-0.09	0.033
98.00	-18.69	-0.38	0.00	-8.86	0.00	8.86	1077.30	292.11	677.85	620.68	0.84	-0.10	0.032
100.00	-14.32	-0.31	0.00	-8.11	0.00	8.11	1070.43	288.87	662.88	609.82	0.88	-0.10	0.027
102.00	-14.09	-0.31	0.00	-7.49	0.00	7.49	1063.44	285.62	648.08	598.99	0.92	-0.10	0.026
104.00	-13.87	-0.31	0.00	-6.87	0.00	6.87	1056.34	282.38	633.44	588.19	0.97	-0.10	0.025
106.00	-13.64	-0.31	0.00	-6.25	0.00	6.25	1049.12	279.13	618.97	577.41	1.01	-0.11	0.024
108.00	-13.42	-0.31	0.00	-5.63	0.00	5.63	1041.79	275.89	604.67	566.67	1.06	-0.11	0.023
110.00	-10.76	-0.28	0.00	-5.01	0.00	5.01	1034.34	272.65	590.53	555.96	1.10	-0.11	0.019
112.00	-10.57	-0.28	0.00	-4.46	0.00	4.46	1026.79	269.40	576.57	545.28	1.15	-0.11	0.018
114.00	-10.38	-0.28	0.00	-3.90	0.00	3.90	1019.11	266.16	562.77	534.64	1.20	-0.12	0.017
116.00	-10.20	-0.28	0.00	-3.35	0.00	3.35	1011.32	262.92	549.13	524.04	1.25	-0.12	0.016
118.00	-10.02	-0.28	0.00	-2.80	0.00	2.80	1003.42	259.67	535.67	513.49	1.30	-0.12	0.015
120.00	-6.90	-0.23	0.00	-2.24	0.00	2.24	995.40	256.43	522.37	502.97	1.35	-0.12	0.011
120.00	-6.90	-0.23	0.00	-2.24	0.00	2.24	735.22	244.66	14507.7	335.79	1.35	-0.12	0.016
122.00	-6.73	-0.22	0.00	-1.79	0.00	1.79	735.22	244.66	14507.7	335.79	1.40	-0.12	0.014
124.00	-6.56	-0.22	0.00	-1.34	0.00	1.34	735.22	244.66	14507.7	335.79	1.45	-0.12	0.013
126.00	-6.39	-0.22	0.00	-0.90	0.00	0.90	735.22	244.66	14507.7	335.79	1.50	-0.12	0.011
128.00	-6.22	-0.22	0.00	-0.45	0.00	0.45	735.22	244.66	14507.7	335.79	1.55	-0.12	0.010
130.00	0.00	-0.21	0.00	0.00	0.00	0.00	735.22	244.66	14507.7	335.79	1.60	-0.12	0.000

Seismic Segment Forces (Factored)

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 50	

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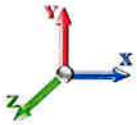
Load Case: 0.9D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.23			**Iterations**	21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09			**Ss**	0.21
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.24	**SA**	0.02			**S1**	0.06
								Seismic Importance Factor	1.00



Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	
2.00		373.42	1.00	16.81	0.00	
4.00		371.32	3.00	16.71	0.00	
6.00		369.22	5.00	16.62	0.00	
8.00		367.13	7.00	16.53	0.00	
10.00		365.03	9.00	16.43	0.01	
10.25	RT2 RB3 RB4	45.48	10.13	2.05	0.00	
12.00		317.45	11.13	14.29	0.01	
14.00		360.84	13.00	16.24	0.01	
16.00		358.74	15.00	16.15	0.01	
18.00		356.64	17.00	16.05	0.02	
20.00		354.55	19.00	15.96	0.02	
20.50	RT1 RB5	88.31	20.25	3.98	0.00	
22.00		264.14	21.25	11.89	0.02	
24.00		350.35	23.00	15.77	0.03	
25.96	RB6	341.31	24.98	15.36	0.04	
26.00		6.94	25.98	0.31	0.00	
26.88	RT4	152.57	26.44	6.87	0.01	
27.88	RT3 RB7	172.88	27.38	7.78	0.01	
28.00		20.71	27.94	0.93	0.00	
30.00		344.07	29.00	15.49	0.05	
32.00		341.97	31.00	15.39	0.06	
34.00		339.87	33.00	15.30	0.06	
36.00		337.78	35.00	15.20	0.07	
38.00		335.68	37.00	15.11	0.08	
40.00		333.58	39.00	15.02	0.09	
40.50	RT5 RB8	83.07	40.25	3.74	0.01	
40.71	RT6 RB9	34.85	40.61	1.57	0.00	
42.00		213.57	41.36	9.61	0.04	
43.33	Bot - Section 2	219.83	42.67	9.90	0.04	
44.00		174.31	43.67	7.85	0.03	
46.00		520.41	45.00	23.43	0.28	
48.00	Top - Section 1	516.64	47.00	23.26	0.30	
48.12	RT7	16.81	48.06	0.76	0.00	
50.00		262.64	49.06	11.82	0.08	
52.00		277.78	51.00	12.50	0.10	
54.00		276.10	53.00	12.43	0.11	
56.00		274.43	55.00	12.35	0.12	
58.00		272.75	57.00	12.28	0.12	
60.00		271.07	59.00	12.20	0.13	
60.71	RT9	95.83	60.36	4.31	0.02	
60.75	RT8 RB10	5.39	60.73	0.24	0.00	
62.00		168.18	61.38	7.57	0.05	
64.00		267.72	63.00	12.05	0.15	
66.00		266.04	65.00	11.98	0.15	
68.00		264.36	67.00	11.90	0.16	

Seismic Segment Forces (Factored)

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 51	

70.00			262.69	69.00	11.82	0.17		
72.00			261.01	71.00	11.75	0.18		
74.00			259.33	73.00	11.67	0.18		
76.00			257.65	75.00	11.60	0.19		
78.00			255.98	77.00	11.52	0.20		
78.25	RT10		31.88	78.13	1.43	0.00		
80.00			222.42	79.13	10.01	0.16		
82.00			252.62	81.00	11.37	0.21		
84.00			250.95	83.00	11.30	0.22		
86.00			249.27	85.00	11.22	0.23		
87.42	Bot - Section 3		175.55	86.71	7.90	0.12		
88.00			106.97	87.71	4.81	0.05		
90.00	Appurtenance(s)		3926.0	89.00	176.72	62.45		
91.33	Top - Section 2		236.58	90.67	10.65	0.24		
92.00			66.48	91.67	2.99	0.02		
94.00			198.59	93.00	8.94	0.17		
96.00			197.33	95.00	8.88	0.18		
98.00			196.07	97.00	8.83	0.19		
100.00	Appurtenance(s)		3493.3	99.00	157.25	61.18		
102.00			176.39	101.00	7.94	0.16		
104.00			175.13	103.00	7.88	0.17		
106.00			173.87	105.00	7.83	0.17		
108.00			172.61	107.00	7.77	0.17		
110.00	Appurtenance(s)		2129.7	109.00	95.87	27.57		
112.00			145.65	111.00	6.56	0.13		
114.00			144.39	113.00	6.50	0.14		
116.00			143.14	115.00	6.44	0.14		
118.00			141.88	117.00	6.39	0.14		
120.00	Top - Section 3		2499.7	119.00	112.52	45.26		
122.00			132.15	121.00	5.95	0.13		
124.00			132.15	123.00	5.95	0.14		
126.00			132.15	125.00	5.95	0.14		
128.00			132.15	127.00	5.95	0.14		
130.00	Appurtenance(s)		4989.4	129.00	224.59	211.91		
		Totals:	**33,873.0**		**1,524.7**	**415.4**	**Total Wind:**	**32,965.7**

Calculated Forces

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 52	

Tower Engineering Solutions

Load Case: 0.9D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.23			**Iterations**	21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09			**Ss**	0.21
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.24	**SA**	0.02	**Seismic Importance Factor**	1.00	**S1**	0.06

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	-32.53	-0.41	0.00	-50.13	0.00	50.13	2818.94	734.35	2570.40	2448.04		0.00	0.00	0.015
2.00	-32.16	-0.42	0.00	-49.30	0.00	49.30	2805.89	728.94	2532.69	2418.63		0.00	0.00	0.015
4.00	-31.80	-0.42	0.00	-48.47	0.00	48.47	2792.73	723.54	2495.26	2389.30		0.00	0.00	0.015
6.00	-31.45	-0.42	0.00	-47.64	0.00	47.64	2779.45	718.13	2458.11	2360.04		0.00	0.00	0.014
8.00	-31.09	-0.42	0.00	-46.81	0.00	46.81	2766.06	712.72	2421.24	2330.86		0.00	-0.01	0.014
10.00	-30.74	-0.42	0.00	-45.97	0.00	45.97	2752.56	707.32	2384.65	2301.75		0.01	-0.01	0.014
10.25	-30.69	-0.42	0.00	-45.87	0.00	45.87	2750.86	706.64	2380.10	2298.12		0.01	-0.01	0.015
12.00	-30.39	-0.42	0.00	-45.14	0.00	45.14	2738.94	701.91	2348.34	2272.72		0.01	-0.01	0.015
14.00	-30.04	-0.42	0.00	-44.30	0.00	44.30	2725.20	696.50	2312.30	2243.77		0.01	-0.01	0.014
16.00	-29.69	-0.42	0.00	-43.46	0.00	43.46	2711.35	691.10	2276.54	2214.91		0.02	-0.01	0.014
18.00	-29.34	-0.42	0.00	-42.62	0.00	42.62	2697.39	685.69	2241.07	2186.13		0.02	-0.01	0.014
20.00	-29.00	-0.42	0.00	-41.78	0.00	41.78	2683.32	680.29	2205.87	2157.44		0.03	-0.01	0.014
20.50	-28.91	-0.42	0.00	-41.57	0.00	41.57	2679.78	678.93	2197.11	2150.28		0.03	-0.01	0.014
22.00	-28.66	-0.42	0.00	-40.93	0.00	40.93	2669.12	674.88	2170.95	2128.84		0.04	-0.02	0.014
24.00	-28.31	-0.42	0.00	-40.09	0.00	40.09	2654.82	669.47	2136.30	2100.34		0.04	-0.02	0.014
25.96	-27.98	-0.42	0.00	-39.26	0.00	39.26	2640.69	664.18	2102.62	2072.49		0.05	-0.02	0.012
26.00	-27.98	-0.42	0.00	-39.24	0.00	39.24	2640.40	664.07	2101.94	2071.92		0.05	-0.02	0.012
26.88	-27.83	-0.42	0.00	-38.87	0.00	38.87	2634.02	661.69	2086.91	2059.45		0.06	-0.02	0.014
27.88	-27.66	-0.42	0.00	-38.45	0.00	38.45	2626.74	658.99	2069.89	2045.30		0.06	-0.02	0.014
28.00	-27.64	-0.42	0.00	-38.40	0.00	38.40	2625.87	658.66	2067.85	2043.61		0.06	-0.02	0.014
30.00	-27.31	-0.42	0.00	-37.55	0.00	37.55	2611.22	653.25	2034.05	2015.39		0.07	-0.02	0.014
32.00	-26.97	-0.43	0.00	-36.70	0.00	36.70	2596.46	647.85	2000.52	1987.27		0.08	-0.02	0.014
34.00	-26.64	-0.43	0.00	-35.85	0.00	35.85	2581.58	642.44	1967.27	1959.26		0.09	-0.03	0.013
36.00	-26.32	-0.43	0.00	-35.00	0.00	35.00	2566.59	637.04	1934.30	1931.36		0.10	-0.03	0.013
38.00	-25.99	-0.43	0.00	-34.14	0.00	34.14	2551.48	631.63	1901.61	1903.56		0.11	-0.03	0.013
40.00	-25.67	-0.43	0.00	-33.29	0.00	33.29	2536.26	626.22	1869.20	1875.87		0.12	-0.03	0.013
40.50	-25.59	-0.43	0.00	-33.08	0.00	33.08	2532.44	624.87	1861.14	1868.96		0.13	-0.03	0.013
40.71	-25.55	-0.43	0.00	-32.99	0.00	32.99	2530.83	624.30	1857.76	1866.07		0.13	-0.03	0.013
42.00	-25.34	-0.43	0.00	-32.44	0.00	32.44	2520.93	620.82	1837.06	1848.29		0.14	-0.03	0.013
43.33	-25.13	-0.43	0.00	-31.87	0.00	31.87	2510.64	617.21	1815.79	1829.97		0.14	-0.03	0.012
44.00	-24.96	-0.43	0.00	-31.58	0.00	31.58	2505.48	615.41	1805.20	1820.83		0.15	-0.03	0.012
46.00	-24.46	-0.43	0.00	-30.73	0.00	30.73	2489.92	610.00	1773.63	1793.48		0.16	-0.03	0.012
48.00	-23.96	-0.43	0.00	-29.87	0.00	29.87	1854.44	491.51	1439.37	1347.80		0.18	-0.04	0.013
48.12	-23.95	-0.43	0.00	-29.82	0.00	29.82	1853.85	491.25	1437.86	1346.66		0.18	-0.04	0.017
50.00	-23.69	-0.43	0.00	-29.01	0.00	29.01	1844.56	487.19	1414.16	1328.74		0.19	-0.04	0.016
52.00	-23.42	-0.43	0.00	-28.16	0.00	28.16	1834.56	482.86	1389.16	1309.72		0.21	-0.04	0.016
54.00	-23.15	-0.43	0.00	-27.30	0.00	27.30	1824.45	478.54	1364.38	1290.76		0.23	-0.04	0.016
56.00	-22.88	-0.43	0.00	-26.44	0.00	26.44	1814.23	474.21	1339.83	1271.84		0.24	-0.04	0.015
58.00	-22.61	-0.43	0.00	-25.58	0.00	25.58	1803.89	469.89	1315.50	1252.97		0.26	-0.05	0.015
60.00	-22.35	-0.43	0.00	-24.72	0.00	24.72	1793.44	465.56	1291.40	1234.16		0.28	-0.05	0.015
60.71	-22.26	-0.43	0.00	-24.41	0.00	24.41	1789.70	464.03	1282.90	1227.50		0.29	-0.05	0.019
60.75	-22.25	-0.43	0.00	-24.40	0.00	24.40	1789.49	463.94	1282.42	1227.12		0.29	-0.05	0.019
62.00	-22.09	-0.43	0.00	-23.86	0.00	23.86	1782.87	461.24	1267.52	1215.41		0.30	-0.05	0.018
64.00	-21.82	-0.43	0.00	-22.99	0.00	22.99	1772.19	456.91	1243.86	1196.72		0.32	-0.05	0.018
66.00	-21.56	-0.43	0.00	-22.13	0.00	22.13	1761.39	452.59	1220.42	1178.08		0.35	-0.05	0.018
68.00	-21.30	-0.43	0.00	-21.27	0.00	21.27	1750.48	448.26	1197.21	1159.51		0.37	-0.06	0.017
70.00	-21.05	-0.43	0.00	-20.40	0.00	20.40	1739.46	443.94	1174.22	1141.01		0.39	-0.06	0.017

Calculated Forces

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 53	

TES Tower Engineering Solutions

72.00	-20.79	-0.43	0.00	-19.53	0.00	19.53	1728.32	439.61	1151.45	1122.57	0.42	-0.06	0.016
74.00	-20.54	-0.43	0.00	-18.67	0.00	18.67	1717.07	435.29	1128.90	1104.20	0.44	-0.06	0.016
76.00	-20.29	-0.43	0.00	-17.80	0.00	17.80	1705.70	430.96	1106.58	1085.91	0.47	-0.06	0.016
78.00	-20.03	-0.43	0.00	-16.93	0.00	16.93	1694.22	426.64	1084.48	1067.69	0.50	-0.07	0.015
78.25	-20.00	-0.43	0.00	-16.82	0.00	16.82	1692.78	426.10	1081.74	1065.41	0.50	-0.07	0.015
78.25	-20.00	-0.43	0.00	-16.82	0.00	16.82	1692.78	426.10	1081.74	1065.41	0.50	-0.07	0.015
80.00	-19.79	-0.43	0.00	-16.06	0.00	16.06	1682.63	422.31	1062.61	1049.54	0.52	-0.07	0.027
82.00	-19.54	-0.44	0.00	-15.19	0.00	15.19	1670.92	417.99	1040.95	1031.48	0.55	-0.07	0.026
84.00	-19.29	-0.44	0.00	-14.32	0.00	14.32	1659.09	413.66	1019.52	1013.49	0.58	-0.07	0.026
86.00	-19.05	-0.44	0.00	-13.45	0.00	13.45	1647.16	409.34	998.31	995.59	0.61	-0.08	0.025
87.42	-18.87	-0.44	0.00	-12.83	0.00	12.83	1638.63	406.27	983.43	982.97	0.64	-0.08	0.025
88.00	-18.77	-0.44	0.00	-12.58	0.00	12.58	1635.10	405.01	977.33	977.78	0.65	-0.08	0.024
90.00	-15.05	-0.37	0.00	-11.71	0.00	11.71	1622.94	400.69	956.57	960.05	0.68	-0.08	0.021
91.33	-14.82	-0.37	0.00	-11.21	0.00	11.21	1099.39	302.92	728.96	657.00	0.70	-0.08	0.031
92.00	-14.76	-0.37	0.00	-10.97	0.00	10.97	1097.24	301.84	723.77	653.36	0.72	-0.09	0.030
94.00	-14.56	-0.37	0.00	-10.23	0.00	10.23	1090.71	298.60	708.30	642.45	0.75	-0.09	0.029
96.00	-14.37	-0.37	0.00	-9.49	0.00	9.49	1084.06	295.35	692.99	631.55	0.79	-0.09	0.028
98.00	-14.17	-0.37	0.00	-8.75	0.00	8.75	1077.30	292.11	677.85	620.68	0.83	-0.09	0.027
100.00	-10.86	-0.30	0.00	-8.01	0.00	8.01	1070.43	288.87	662.88	609.82	0.87	-0.10	0.023
102.00	-10.69	-0.30	0.00	-7.40	0.00	7.40	1063.44	285.62	648.08	598.99	0.91	-0.10	0.022
104.00	-10.52	-0.30	0.00	-6.79	0.00	6.79	1056.34	282.38	633.44	588.19	0.95	-0.10	0.021
106.00	-10.35	-0.30	0.00	-6.18	0.00	6.18	1049.12	279.13	618.97	577.41	1.00	-0.11	0.021
108.00	-10.18	-0.30	0.00	-5.57	0.00	5.57	1041.79	275.89	604.67	566.67	1.04	-0.11	0.020
110.00	-8.16	-0.27	0.00	-4.96	0.00	4.96	1034.34	272.65	590.53	555.96	1.09	-0.11	0.017
112.00	-8.02	-0.27	0.00	-4.41	0.00	4.41	1026.79	269.40	576.57	545.28	1.14	-0.11	0.016
114.00	-7.88	-0.27	0.00	-3.86	0.00	3.86	1019.11	266.16	562.77	534.64	1.18	-0.11	0.015
116.00	-7.74	-0.27	0.00	-3.32	0.00	3.32	1011.32	262.92	549.13	524.04	1.23	-0.12	0.014
118.00	-7.60	-0.27	0.00	-2.77	0.00	2.77	1003.42	259.67	535.67	513.49	1.28	-0.12	0.013
120.00	-5.23	-0.22	0.00	-2.23	0.00	2.23	995.40	256.43	522.37	502.97	1.33	-0.12	0.010
120.00	-5.23	-0.22	0.00	-2.23	0.00	2.23	735.22	244.66	14507.7	335.79	1.33	-0.12	0.014
122.00	-5.10	-0.22	0.00	-1.78	0.00	1.78	735.22	244.66	14507.7	335.79	1.38	-0.12	0.012
124.00	-4.98	-0.22	0.00	-1.33	0.00	1.33	735.22	244.66	14507.7	335.79	1.43	-0.12	0.011
126.00	-4.85	-0.22	0.00	-0.89	0.00	0.89	735.22	244.66	14507.7	335.79	1.48	-0.12	0.009
128.00	-4.72	-0.22	0.00	-0.44	0.00	0.44	735.22	244.66	14507.7	335.79	1.53	-0.12	0.008
130.00	0.00	-0.21	0.00	0.00	0.00	0.00	735.22	244.66	14507.7	335.79	1.58	-0.12	0.000

Wind Loading - Shaft

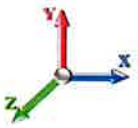
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 54	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	6.613	7.27	198.26	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		1.00	0.85	6.613	7.27	196.81	0.730	0.000	2.00	7.166	5.23	38.1	0.0	283.7
4.00		1.00	0.85	6.613	7.27	195.36	0.730	0.000	2.00	7.114	5.19	37.8	0.0	281.6
6.00		1.00	0.85	6.613	7.27	193.91	0.730	0.000	2.00	7.061	5.15	37.5	0.0	279.5
8.00		1.00	0.85	6.613	7.27	192.46	0.730	0.000	2.00	7.009	5.12	37.2	0.0	277.4
10.00		1.00	0.85	6.613	7.27	191.01	0.730	0.000	2.00	6.956	5.08	36.9	0.0	275.3
10.25	RT2 RB3 RB4	1.00	0.85	6.613	7.27	190.83	0.730	0.000	0.25	0.866	0.63	4.6	0.0	34.3
12.00		1.00	0.85	6.613	7.27	189.57	0.730	0.000	1.75	6.038	4.41	32.1	0.0	239.0
14.00		1.00	0.85	6.613	7.27	188.12	0.730	0.000	2.00	6.851	5.00	36.4	0.0	271.1
16.00		1.00	0.86	6.695	7.36	187.82	0.730	0.000	2.00	6.798	4.96	36.5	0.0	269.0
18.00		1.00	0.88	6.863	7.55	188.68	0.730	0.000	2.00	6.746	4.92	37.2	0.0	266.9
20.00		1.00	0.90	7.017	7.72	189.30	0.730	0.000	2.00	6.693	4.89	37.7	0.0	264.9
20.50	RT1 RB5	1.00	0.91	7.053	7.76	189.41	0.730	0.000	0.50	1.665	1.22	9.4	0.0	65.9
22.00		1.00	0.92	7.159	7.87	189.70	0.730	0.000	1.50	4.976	3.63	28.6	0.0	196.9
24.00		1.00	0.94	7.291	8.02	189.92	0.730	0.000	2.00	6.588	4.81	38.6	0.0	260.7
25.96	RB6	1.00	0.95	7.413	8.15	189.99	0.730	0.000	1.96	6.405	4.68	38.1	0.0	253.4
26.00		1.00	0.95	7.415	8.16	189.99	0.730	0.000	0.04	0.130	0.10	0.8	0.0	5.2
26.88	RT4	1.00	0.96	7.467	8.21	189.98	0.730	0.000	0.88	2.859	2.09	17.1	0.0	113.1
27.88	RT3 RB7	1.00	0.97	7.525	8.28	189.94	0.730	0.000	1.00	3.237	2.36	19.6	0.0	128.0
28.00		1.00	0.97	7.532	8.29	189.94	0.730	0.000	0.12	0.387	0.28	2.3	0.0	15.3
30.00		1.00	0.98	7.642	8.41	189.76	0.730	0.000	2.00	6.430	4.69	39.5	0.0	254.4
32.00		1.00	1.00	7.747	8.52	189.49	0.730	0.000	2.00	6.378	4.66	39.7	0.0	252.3
34.00		1.00	1.01	7.846	8.63	189.12	0.730	0.000	2.00	6.325	4.62	39.9	0.0	250.2
36.00		1.00	1.02	7.941	8.74	188.68	0.730	0.000	2.00	6.273	4.58	40.0	0.0	248.1
38.00		1.00	1.03	8.032	8.84	188.16	0.730	0.000	2.00	6.220	4.54	40.1	0.0	246.0
40.00		1.00	1.04	8.119	8.93	187.57	0.730	0.000	2.00	6.168	4.50	40.2	0.0	243.9
40.50	RT5 RB8	1.00	1.05	8.141	8.95	187.41	0.730	0.000	0.50	1.534	1.12	10.0	0.0	60.6
40.71	RT6 RB9	1.00	1.05	8.149	8.96	187.35	0.730	0.000	0.21	0.643	0.47	4.2	0.0	25.4
42.00		1.00	1.05	8.203	9.02	186.92	0.730	0.000	1.29	3.938	2.87	25.9	0.0	155.7
43.33	Bot - Section 2	1.00	1.06	8.257	9.08	186.46	0.730	0.000	1.33	4.048	2.95	26.8	0.0	160.0
44.00		1.00	1.06	8.284	9.11	186.22	0.730	0.000	0.67	2.043	1.49	13.6	0.0	144.4
46.00		1.00	1.07	8.362	9.20	185.46	0.730	0.000	2.00	6.095	4.45	40.9	0.0	430.7
48.00	Top - Section 1	1.00	1.08	8.437	9.28	184.66	0.730	0.000	2.00	6.042	4.41	40.9	0.0	426.9
48.12	RT7	1.00	1.08	8.441	9.29	187.24	0.730	0.000	0.12	0.361	0.26	2.4	0.0	11.4
50.00		1.00	1.09	8.510	9.36	186.46	0.730	0.000	1.88	5.629	4.11	38.5	0.0	178.3
52.00		1.00	1.10	8.580	9.44	185.58	0.730	0.000	2.00	5.937	4.33	40.9	0.0	188.1
54.00		1.00	1.11	8.649	9.51	184.66	0.730	0.000	2.00	5.884	4.30	40.9	0.0	186.4
56.00		1.00	1.12	8.715	9.59	183.70	0.730	0.000	2.00	5.832	4.26	40.8	0.0	184.7
58.00		1.00	1.13	8.780	9.66	182.71	0.730	0.000	2.00	5.779	4.22	40.7	0.0	183.1
60.00		1.00	1.14	8.843	9.73	181.69	0.730	0.000	2.00	5.727	4.18	40.7	0.0	181.4
60.71	RT9	1.00	1.14	8.865	9.75	181.32	0.730	0.000	0.71	2.020	1.47	14.4	0.0	64.0
60.75	RT8 RB10	1.00	1.14	8.866	9.75	181.30	0.730	0.000	0.04	0.114	0.08	0.8	0.0	3.6
62.00		1.00	1.14	8.904	9.79	180.64	0.730	0.000	1.25	3.540	2.58	25.3	0.0	112.1
64.00		1.00	1.15	8.964	9.86	179.56	0.730	0.000	2.00	5.622	4.10	40.5	0.0	178.0
66.00		1.00	1.16	9.022	9.92	178.45	0.730	0.000	2.00	5.569	4.07	40.3	0.0	176.3
68.00		1.00	1.17	9.079	9.99	177.31	0.730	0.000	2.00	5.516	4.03	40.2	0.0	174.7
70.00		1.00	1.17	9.134	10.05	176.15	0.730	0.000	2.00	5.464	3.99	40.1	0.0	173.0

Wind Loading - Shaft

Structure: CT13064-A-SBA
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: TIA-222-H
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/4/2022

Tower Engineering Solutions

72.00	1.00	1.18	9.189	10.11	174.97	0.730	0.000	2.00	5.411	3.95	39.9	0.0	171.3
74.00	1.00	1.19	9.242	10.17	173.76	0.730	0.000	2.00	5.359	3.91	39.8	0.0	169.6
76.00	1.00	1.19	9.294	10.22	172.53	0.730	0.000	2.00	5.306	3.87	39.6	0.0	168.0
78.00	1.00	1.20	9.345	10.28	171.28	0.730	0.000	2.00	5.254	3.84	39.4	0.0	166.3
78.25 RT10	1.00	1.20	9.351	10.29	171.12	0.730	0.000	0.25	0.653	0.48	4.9	0.0	20.7
80.00	1.00	1.21	9.395	10.33	170.01	0.730	0.000	1.75	4.548	3.32	34.3	0.0	143.9
82.00	1.00	1.21	9.444	10.39	168.72	0.730	0.000	2.00	5.148	3.76	39.0	0.0	162.9
84.00	1.00	1.22	9.492	10.44	167.41	0.730	0.000	2.00	5.096	3.72	38.8	0.0	161.2
86.00	1.00	1.23	9.539	10.49	166.09	0.730	0.000	2.00	5.043	3.68	38.6	0.0	159.6
87.42 Bot - Section 3	1.00	1.23	9.572	10.53	165.14	0.730	0.000	1.42	3.541	2.58	27.2	0.0	112.0
88.00	1.00	1.23	9.585	10.54	164.75	0.730	0.000	0.58	1.469	1.07	11.3	0.0	80.8
90.00 Appurtenance(s)	1.00	1.24	9.631	10.59	163.39	0.730	0.000	2.00	5.002	3.65	38.7	0.0	275.2
91.33 Top - Section 2	1.00	1.24	9.661	10.63	162.47	0.730	0.000	1.33	3.305	2.41	25.6	0.0	181.8
92.00	1.00	1.24	9.675	10.64	164.13	0.730	0.000	0.67	1.644	1.20	12.8	0.0	39.1
94.00	1.00	1.25	9.719	10.69	162.75	0.730	0.000	2.00	4.897	3.57	38.2	0.0	116.4
96.00	1.00	1.25	9.762	10.74	161.35	0.730	0.000	2.00	4.844	3.54	38.0	0.0	115.2
98.00	1.00	1.26	9.805	10.79	159.93	0.730	0.000	2.00	4.791	3.50	37.7	0.0	113.9
100.00 Appurtenance(s)	1.00	1.27	9.847	10.83	158.51	0.730	0.000	2.00	4.739	3.46	37.5	0.0	112.6
102.00	1.00	1.27	9.888	10.88	157.06	0.730	0.000	2.00	4.686	3.42	37.2	0.0	111.4
104.00	1.00	1.28	9.928	10.92	155.61	0.730	0.000	2.00	4.634	3.38	36.9	0.0	110.1
106.00	1.00	1.28	9.968	10.97	154.14	0.730	0.000	2.00	4.581	3.34	36.7	0.0	108.9
108.00	1.00	1.29	10.008	11.01	152.67	0.730	0.000	2.00	4.529	3.31	36.4	0.0	107.6
110.00 Appurtenance(s)	1.00	1.29	10.046	11.05	151.18	0.730	0.000	2.00	4.476	3.27	36.1	0.0	106.4
112.00	1.00	1.30	10.085	11.09	149.67	0.730	0.000	2.00	4.423	3.23	35.8	0.0	105.1
114.00	1.00	1.30	10.122	11.13	148.16	0.730	0.000	2.00	4.371	3.19	35.5	0.0	103.8
116.00	1.00	1.31	10.159	11.18	146.64	0.730	0.000	2.00	4.318	3.15	35.2	0.0	102.6
118.00	1.00	1.31	10.196	11.22	145.10	0.730	0.000	2.00	4.266	3.11	34.9	0.0	101.3
120.00 Top - Section 3	1.00	1.32	10.232	11.26	143.56	0.730	0.000	2.00	4.213	3.08	34.6	0.0	100.1
122.00	1.00	1.32	10.268	11.29	103.04	0.620 *	0.000	2.00	3.000	1.86	21.0	0.0	94.9
124.00	1.00	1.32	10.303	11.33	103.21	0.620 *	0.000	2.00	3.000	1.86	21.1	0.0	94.9
126.00	1.00	1.33	10.338	11.37	103.39	0.620 *	0.000	2.00	3.000	1.86	21.2	0.0	94.9
128.00	1.00	1.33	10.372	11.41	103.56	0.620 *	0.000	2.00	3.000	1.86	21.2	0.0	94.9
130.00 Appurtenance(s)	1.00	1.34	10.406	11.45	103.73	0.620 *	0.000	2.00	3.000	1.86	21.3	0.0	94.9
* Cf Adjusted by Linear Load Ra Effect							**Totals:**	**130.00**			**2,421.4**		**12,677.2**

Discrete Appurtenance Forces

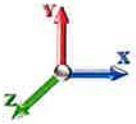
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 56	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	DC6-48-60-18-8F	2	10.406	11.447	0.75	0.75	1.38	63.60	0.000	0.000	15.80	0.00	0.00
2	130.00	6' Lightning rod	1	10.456	11.502	1.00	1.00	0.38	6.50	0.000	3.000	4.37	0.00	13.11
3	130.00	Cci DMP65R-BU6DA	3	10.406	11.447	0.54	0.75	20.62	189.90	0.000	0.000	236.01	0.00	0.00
4	130.00	RRUS 32	6	10.406	11.447	0.38	0.75	3.71	462.00	0.000	0.000	42.50	0.00	0.00
5	130.00	RRUS 4478 B14	3	10.406	11.447	0.38	0.75	1.86	178.20	0.000	0.000	21.25	0.00	0.00
6	130.00	B2 B66A 8843	3	10.406	11.447	0.38	0.75	1.84	210.00	0.000	0.000	21.12	0.00	0.00
7	130.00	4449 B5/B12	3	10.406	11.447	0.38	0.75	2.22	213.00	0.000	0.000	25.37	0.00	0.00
8	130.00	RRUS E2 B29	3	10.406	11.447	0.38	0.75	3.54	178.20	0.000	0.000	40.56	0.00	0.00
9	130.00	Additional mount pipe	3	10.406	11.447	0.56	0.75	2.95	51.00	0.000	0.000	33.80	0.00	0.00
10	130.00	Quinte QD6616-7	3	10.406	11.447	0.56	0.75	22.92	177.30	0.000	0.000	262.31	0.00	0.00
11	130.00	(3) Horizontal bracing	1	10.406	11.447	0.75	0.75	4.45	137.25	0.000	0.000	50.97	0.00	0.00
12	130.00	Ericsson AIR6419	3	10.439	11.483	0.57	0.75	6.50	198.30	0.000	2.000	74.62	0.00	149.24
13	130.00	DC6-48-60-0-8C	2	10.406	11.447	0.75	0.75	7.17	32.00	0.000	0.000	82.07	0.00	0.00
14	130.00	Ericcson AIR6449	3	10.372	11.409	0.64	0.75	7.90	264.00	0.000	-2.000	90.12	0.00	-180.23
15	130.00	Angle Reinforcement kit	1	10.406	11.447	1.00	1.00	5.80	250.00	0.000	0.000	66.39	0.00	0.00
16	130.00	MTC3607 Platform + HR &	1	10.406	11.447	1.00	1.00	51.70	2246.00	0.000	0.000	591.79	0.00	0.00
17	120.00	MC-PK8-DSH	1	10.232	11.255	1.00	1.00	37.59	1727.00	0.000	0.000	423.09	0.00	0.00
18	120.00	RDIDC-9181-OF-48	1	10.232	11.255	0.75	0.75	1.51	21.90	0.000	0.000	16.97	0.00	0.00
19	120.00	TA08025-B604	3	10.232	11.255	0.38	0.75	2.21	191.70	0.000	0.000	24.82	0.00	0.00
20	120.00	TA08025-B605	3	10.232	11.255	0.38	0.75	2.21	225.00	0.000	0.000	24.82	0.00	0.00
21	120.00	MX08FRO665-21	3	10.232	11.255	0.55	0.75	20.80	193.50	0.000	0.000	234.06	0.00	0.00
22	110.00	SAMSUNG	3	10.046	11.051	0.40	0.80	2.24	224.10	0.000	0.000	24.80	0.00	0.00
23	110.00	RFS RVZDC-6627-PF-48	1	10.046	11.051	0.40	0.80	1.62	32.00	0.000	0.000	17.95	0.00	0.00
24	110.00	SAMSUNG MT6407-77A	3	10.046	11.051	0.56	0.80	7.88	261.30	0.000	0.000	87.07	0.00	0.00
25	110.00	JMA MX10FIT665-02	3	10.046	11.051	0.67	0.80	16.27	160.20	0.000	0.000	179.81	0.00	0.00
26	110.00	T-Arm (Round)	3	10.046	11.051	0.56	0.75	13.50	1050.00	0.000	0.000	149.19	0.00	0.00
27	110.00	COMMSCOPE	3	10.065	11.072	0.40	0.80	0.48	19.80	0.000	1.000	5.31	0.00	5.31
28	110.00	SAMSUNG	3	10.046	11.051	0.40	0.80	2.24	210.99	0.000	0.000	24.80	0.00	0.00
29	100.00	Kathrein 782 11056	3	9.847	10.831	0.40	0.80	0.16	5.40	0.000	0.000	1.69	0.00	0.00
30	100.00	Ericsson AIR21 B2A B4P	3	9.847	10.831	0.64	0.80	11.69	274.50	0.000	0.000	126.65	0.00	0.00
31	100.00	Ericsson AIR21 B4A B2P	3	9.847	10.831	0.64	0.80	11.69	271.20	0.000	0.000	126.65	0.00	0.00
32	100.00	T-Arm (Round)	6	9.847	10.831	0.56	0.75	27.00	2100.00	0.000	0.000	292.45	0.00	0.00
33	100.00	RFS	3	9.847	10.831	0.58	0.80	35.46	368.40	0.000	0.000	384.09	0.00	0.00
34	100.00	Ericsson 4480 B71 + B85	3	9.847	10.831	0.59	0.80	5.06	279.00	0.000	0.000	54.82	0.00	0.00
35	90.00	F3P-10W	1	9.631	10.594	1.00	1.00	51.77	2122.00	0.000	0.000	548.44	0.00	0.00
36	90.00	NNVV-65B-R4	3	9.631	10.594	0.55	0.75	20.43	232.20	0.000	0.000	216.43	0.00	0.00
37	90.00	AAHC	3	9.631	10.594	0.56	0.75	7.09	312.00	0.000	0.000	75.08	0.00	0.00
38	90.00	F3P-HRK10	1	9.631	10.594	1.00	1.00	7.12	391.00	0.000	0.000	75.43	0.00	0.00
39	90.00	ALU - 800 MHz - RRU	6	9.631	10.594	0.38	0.75	5.60	318.00	0.000	0.000	59.35	0.00	0.00
40	90.00	ALU - 1900MHz - RRU	3	9.631	10.594	0.38	0.75	4.27	132.00	0.000	0.000	45.29	0.00	0.00
41	90.00	Andrew - VHLP2-11	2	9.631	10.594	0.75	0.75	7.02	54.00	0.000	0.000	74.37	0.00	0.00
							Totals:		**16,034.44**			**4,952.46**		

Total Applied Force Summary

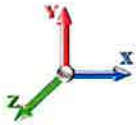
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 57	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

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
2.00		38.06	383.38	0.00	0.00
4.00		37.78	381.29	0.00	0.00
6.00		37.50	379.19	0.00	0.00
8.00		37.22	377.09	0.00	0.00
10.00		36.94	375.00	0.00	0.00
10.25		4.60	46.73	0.00	0.00
12.00		32.06	326.17	0.00	0.00
14.00		36.38	370.80	0.00	0.00
16.00		36.55	368.71	0.00	0.00
18.00		37.18	366.61	0.00	0.00
20.00		37.71	364.51	0.00	0.00
20.50		9.43	90.80	0.00	0.00
22.00		28.60	271.62	0.00	0.00
24.00		38.57	360.32	0.00	0.00
25.96		38.13	351.08	0.00	0.00
26.00		0.78	7.14	0.00	0.00
26.88		17.14	156.95	0.00	0.00
27.88		19.56	177.87	0.00	0.00
28.00		2.34	21.31	0.00	0.00
30.00		39.46	354.03	0.00	0.00
32.00		39.67	351.94	0.00	0.00
34.00		39.85	349.84	0.00	0.00
36.00		40.00	347.74	0.00	0.00
38.00		40.12	345.65	0.00	0.00
40.00		40.21	343.55	0.00	0.00
40.50		10.03	85.56	0.00	0.00
40.71		4.21	35.90	0.00	0.00
42.00		25.94	220.00	0.00	0.00
43.33		26.84	226.47	0.00	0.00
44.00		13.59	177.63	0.00	0.00
46.00		40.92	530.38	0.00	0.00
48.00		40.93	526.60	0.00	0.00
48.12		2.45	17.41	0.00	0.00
50.00		38.46	272.01	0.00	0.00
52.00		40.91	287.75	0.00	0.00
54.00		40.87	286.07	0.00	0.00
56.00		40.81	284.39	0.00	0.00
58.00		40.74	282.72	0.00	0.00
60.00		40.66	281.04	0.00	0.00
60.71		14.38	99.37	0.00	0.00
60.75		0.81	5.59	0.00	0.00
62.00		25.31	174.40	0.00	0.00
64.00		40.46	277.68	0.00	0.00
66.00		40.35	276.01	0.00	0.00
68.00		40.22	274.33	0.00	0.00
70.00		40.08	272.65	0.00	0.00

Total Applied Force Summary

Structure:	CT13064-A-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Middletown 2, CT		**Exposure:**	C	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 58

Tower Engineering Solutions

72.00		39.93	270.98	0.00	0.00
74.00		39.77	269.30	0.00	0.00
76.00		39.60	267.62	0.00	0.00
78.00		39.42	265.94	0.00	0.00
78.25		4.90	33.13	0.00	0.00
80.00		34.31	231.14	0.00	0.00
82.00		39.04	262.59	0.00	0.00
84.00		38.84	260.91	0.00	0.00
86.00		38.63	259.24	0.00	0.00
87.42		27.21	182.61	0.00	0.00
88.00		11.30	109.87	0.00	0.00
90.00	(19) attachments	1133.07	3936.02	0.00	0.00
91.33		25.64	242.67	0.00	0.00
92.00		12.77	69.52	0.00	0.00
94.00		38.22	207.72	0.00	0.00
96.00		37.97	206.46	0.00	0.00
98.00		37.72	205.20	0.00	0.00
100.00	(21) attachments	1023.82	3502.45	0.00	0.00
102.00		37.21	183.61	0.00	0.00
104.00		36.94	182.35	0.00	0.00
106.00		36.67	181.09	0.00	0.00
108.00		36.39	179.83	0.00	0.00
110.00	(19) attachments	525.03	2136.97	0.00	5.31
112.00		35.82	150.16	0.00	0.00
114.00		35.53	148.90	0.00	0.00
116.00		35.23	147.64	0.00	0.00
118.00		34.93	146.38	0.00	0.00
120.00	(11) attachments	758.37	2504.23	0.00	0.00
122.00		21.01	136.30	0.00	0.00
124.00		21.08	136.30	0.00	0.00
126.00		21.15	136.30	0.00	0.00
128.00		21.22	136.30	0.00	0.00
130.00	(41) attachments	1680.34	4993.55	0.00	-17.88
	Totals:	**7,373.90**	**34,446.52**	**0.00**	**-12.57**

Linear Appurtenance Segment Forces (Factored)

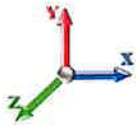
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 59	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
2.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	6.613	0.00	9.66
2.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.070	0.000	6.613	0.00	0.00
2.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.070	0.000	6.613	0.00	0.00
4.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	6.613	0.00	9.66
4.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.070	0.000	6.613	0.00	0.00
4.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.070	0.000	6.613	0.00	0.00
6.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	6.613	0.00	9.66
6.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.071	0.000	6.613	0.00	0.00
6.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.071	0.000	6.613	0.00	0.00
8.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	6.613	0.00	9.66
8.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.071	0.000	6.613	0.00	0.00
8.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.071	0.000	6.613	0.00	0.00
10.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.072	0.000	6.613	0.00	9.66
10.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.072	0.000	6.613	0.00	0.00
10.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.072	0.000	6.613	0.00	0.00
10.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.072	0.000	6.613	0.00	1.21
10.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.072	0.000	6.613	0.00	0.00
10.25	1" Reinforcing plate	Yes	0.25	0.000	0.00	0.00	0.00	0.072	0.000	6.613	0.00	0.00
12.00	2" Conduit	Yes	1.75	0.000	2.00	0.29	0.00	0.072	0.000	6.613	0.00	8.45
12.00	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.072	0.000	6.613	0.00	0.00
12.00	1" Reinforcing plate	Yes	1.75	0.000	0.00	0.00	0.00	0.072	0.000	6.613	0.00	0.00
14.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.073	0.000	6.613	0.00	9.66
14.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.073	0.000	6.613	0.00	0.00
14.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.073	0.000	6.613	0.00	0.00
16.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	6.695	0.00	9.66
16.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.074	0.000	6.695	0.00	0.00
16.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.074	0.000	6.695	0.00	0.00
18.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	6.863	0.00	9.66
18.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.074	0.000	6.863	0.00	0.00
18.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.074	0.000	6.863	0.00	0.00
20.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.075	0.000	7.017	0.00	9.66
20.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.075	0.000	7.017	0.00	0.00
20.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.075	0.000	7.017	0.00	0.00
20.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.075	0.000	7.053	0.00	2.42
20.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.075	0.000	7.053	0.00	0.00
20.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.075	0.000	7.053	0.00	0.00
22.00	2" Conduit	Yes	1.50	0.000	2.00	0.25	0.00	0.075	0.000	7.159	0.00	7.25
22.00	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.075	0.000	7.159	0.00	0.00
22.00	1" Reinforcing plate	Yes	1.50	0.000	0.00	0.00	0.00	0.075	0.000	7.159	0.00	0.00
24.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.076	0.000	7.291	0.00	9.66
24.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.076	0.000	7.291	0.00	0.00
24.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.076	0.000	7.291	0.00	0.00
24.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.076	0.000	7.291	0.00	0.00
25.96	2" Conduit	Yes	1.96	0.000	2.00	0.33	0.00	0.076	0.000	7.413	0.00	9.47
25.96	1" Reinforcing plate	Yes	1.96	0.000	1.00	0.16	0.00	0.076	0.000	7.413	0.00	0.00
25.96	1" Reinforcing plate	Yes	1.96	0.000	0.00	0.00	0.00	0.076	0.000	7.413	0.00	0.00
25.96	1" Reinforcing plate	Yes	1.96	0.000	0.00	0.00	0.00	0.076	0.000	7.413	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

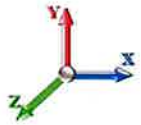
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 60	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
26.00	2" Conduit	Yes	0.04	0.000	2.00	0.01	0.00	0.077	0.000	7.415	0.00	0.19
26.00	1" Reinforcing plate	Yes	0.04	0.000	1.00	0.00	0.00	0.077	0.000	7.415	0.00	0.00
26.00	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.077	0.000	7.415	0.00	0.00
26.00	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.077	0.000	7.415	0.00	0.00
26.88	2" Conduit	Yes	0.88	0.000	2.00	0.15	0.00	0.077	0.000	7.467	0.00	4.25
26.88	1" Reinforcing plate	Yes	0.88	0.000	1.00	0.07	0.00	0.077	0.000	7.467	0.00	0.00
26.88	1" Reinforcing plate	Yes	0.88	0.000	0.00	0.00	0.00	0.077	0.000	7.467	0.00	0.00
26.88	1" Reinforcing plate	Yes	0.88	0.000	0.00	0.00	0.00	0.077	0.000	7.467	0.00	0.00
27.88	2" Conduit	Yes	1.00	0.000	2.00	0.17	0.00	0.077	0.000	7.525	0.00	4.83
27.88	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.077	0.000	7.525	0.00	0.00
27.88	1" Reinforcing plate	Yes	1.00	0.000	0.00	0.00	0.00	0.077	0.000	7.525	0.00	0.00
27.88	1" Reinforcing plate	Yes	1.00	0.000	0.00	0.00	0.00	0.077	0.000	7.525	0.00	0.00
28.00	2" Conduit	Yes	0.12	0.000	2.00	0.02	0.00	0.077	0.000	7.532	0.00	0.58
28.00	1" Reinforcing plate	Yes	0.12	0.000	1.00	0.01	0.00	0.077	0.000	7.532	0.00	0.00
28.00	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.077	0.000	7.532	0.00	0.00
28.00	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.077	0.000	7.532	0.00	0.00
30.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	7.642	0.00	9.66
30.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.078	0.000	7.642	0.00	0.00
30.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	7.642	0.00	0.00
30.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	7.642	0.00	0.00
32.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	7.747	0.00	9.66
32.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.078	0.000	7.747	0.00	0.00
32.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.078	0.000	7.747	0.00	0.00
32.00	1" Reinforcing plate	Yes	1.50	0.000	0.00	0.00	0.00	0.078	0.000	7.747	0.00	0.00
32.00	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.078	0.000	7.747	0.00	0.00
34.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.079	0.000	7.846	0.00	9.66
34.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.079	0.000	7.846	0.00	0.00
34.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.079	0.000	7.846	0.00	0.00
34.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.079	0.000	7.846	0.00	0.00
36.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.080	0.000	7.941	0.00	9.66
36.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.080	0.000	7.941	0.00	0.00
36.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	7.941	0.00	0.00
36.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	7.941	0.00	0.00
38.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.080	0.000	8.032	0.00	9.66
38.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.080	0.000	8.032	0.00	0.00
38.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	8.032	0.00	0.00
38.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.080	0.000	8.032	0.00	0.00
40.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.081	0.000	8.119	0.00	9.66
40.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.081	0.000	8.119	0.00	0.00
40.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.081	0.000	8.119	0.00	0.00
40.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.081	0.000	8.119	0.00	0.00
40.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.082	0.000	8.141	0.00	2.42
40.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.082	0.000	8.141	0.00	0.00
40.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.082	0.000	8.141	0.00	0.00
40.50	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.082	0.000	8.141	0.00	0.00
40.71	2" Conduit	Yes	0.21	0.000	2.00	0.04	0.00	0.082	0.000	8.149	0.00	1.01
40.71	1" Reinforcing plate	Yes	0.21	0.000	1.00	0.02	0.00	0.082	0.000	8.149	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

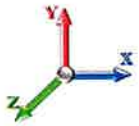
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 61	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
40.71	1" Reinforcing plate	Yes	0.21	0.000	0.00	0.00	0.00	0.082	0.000	8.149	0.00	0.00
40.71	1" Reinforcing plate	Yes	0.21	0.000	0.00	0.00	0.00	0.082	0.000	8.149	0.00	0.00
42.00	2" Conduit	Yes	1.29	0.000	2.00	0.21	0.00	0.082	0.000	8.203	0.00	6.23
42.00	1" Reinforcing plate	Yes	1.29	0.000	1.00	0.11	0.00	0.082	0.000	8.203	0.00	0.00
42.00	1" Reinforcing plate	Yes	1.29	0.000	0.00	0.00	0.00	0.082	0.000	8.203	0.00	0.00
42.00	1" Reinforcing plate	Yes	1.29	0.000	0.00	0.00	0.00	0.082	0.000	8.203	0.00	0.00
43.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.082	0.000	8.257	0.00	6.44
43.33	1" Reinforcing plate	Yes	1.33	0.000	1.00	0.11	0.00	0.082	0.000	8.257	0.00	0.00
43.33	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.082	0.000	8.257	0.00	0.00
43.33	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.082	0.000	8.257	0.00	0.00
44.00	2" Conduit	Yes	0.67	0.000	2.00	0.11	0.00	0.083	0.000	8.284	0.00	3.22
44.00	1" Reinforcing plate	Yes	0.67	0.000	1.00	0.06	0.00	0.083	0.000	8.284	0.00	0.00
44.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.083	0.000	8.284	0.00	0.00
44.00	1" Reinforcing plate	Yes	0.67	0.000	0.00	0.00	0.00	0.083	0.000	8.284	0.00	0.00
46.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.083	0.000	8.362	0.00	9.66
46.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.083	0.000	8.362	0.00	0.00
46.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.083	0.000	8.362	0.00	0.00
46.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.083	0.000	8.362	0.00	0.00
48.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.084	0.000	8.437	0.00	9.66
48.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.084	0.000	8.437	0.00	0.00
48.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	8.437	0.00	0.00
48.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	8.437	0.00	0.00
48.12	2" Conduit	Yes	0.12	0.000	2.00	0.02	0.00	0.083	0.000	8.441	0.00	0.58
48.12	1" Reinforcing plate	Yes	0.12	0.000	1.00	0.01	0.00	0.083	0.000	8.441	0.00	0.00
48.12	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.083	0.000	8.441	0.00	0.00
48.12	1" Reinforcing plate	Yes	0.12	0.000	0.00	0.00	0.00	0.083	0.000	8.441	0.00	0.00
50.00	2" Conduit	Yes	1.88	0.000	2.00	0.31	0.00	0.084	0.000	8.510	0.00	9.08
50.00	1" Reinforcing plate	Yes	1.88	0.000	1.00	0.16	0.00	0.084	0.000	8.510	0.00	0.00
50.00	1" Reinforcing plate	Yes	1.88	0.000	0.00	0.00	0.00	0.084	0.000	8.510	0.00	0.00
50.00	1" Reinforcing plate	Yes	1.88	0.000	0.00	0.00	0.00	0.084	0.000	8.510	0.00	0.00
52.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.084	0.000	8.580	0.00	9.66
52.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.084	0.000	8.580	0.00	0.00
52.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.084	0.000	8.580	0.00	0.00
52.00	1" Reinforcing plate	Yes	0.50	0.000	0.00	0.00	0.00	0.084	0.000	8.580	0.00	0.00
54.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.085	0.000	8.649	0.00	9.66
54.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.085	0.000	8.649	0.00	0.00
54.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.085	0.000	8.649	0.00	0.00
56.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.086	0.000	8.715	0.00	9.66
56.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.086	0.000	8.715	0.00	0.00
56.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.086	0.000	8.715	0.00	0.00
58.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.087	0.000	8.780	0.00	9.66
58.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.087	0.000	8.780	0.00	0.00
58.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.087	0.000	8.780	0.00	0.00
60.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.087	0.000	8.843	0.00	9.66
60.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.087	0.000	8.843	0.00	0.00
60.00	1" Reinforcing plate	Yes	2.00	0.000	0.00	0.00	0.00	0.087	0.000	8.843	0.00	0.00
60.71	2" Conduit	Yes	0.71	0.000	2.00	0.12	0.00	0.088	0.000	8.865	0.00	3.43

Linear Appurtenance Segment Forces (Factored)

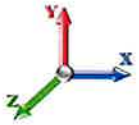
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 62	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
60.71	1" Reinforcing plate	Yes	0.71	0.000	1.00	0.06	0.00	0.088	0.000	8.865	0.00	0.00
60.71	1" Reinforcing plate	Yes	0.71	0.000	0.00	0.00	0.00	0.088	0.000	8.865	0.00	0.00
60.75	2" Conduit	Yes	0.04	0.000	2.00	0.01	0.00	0.088	0.000	8.866	0.00	0.19
60.75	1" Reinforcing plate	Yes	0.04	0.000	1.00	0.00	0.00	0.088	0.000	8.866	0.00	0.00
60.75	1" Reinforcing plate	Yes	0.04	0.000	0.00	0.00	0.00	0.088	0.000	8.866	0.00	0.00
62.00	2" Conduit	Yes	1.25	0.000	2.00	0.21	0.00	0.088	0.000	8.904	0.00	6.04
62.00	1" Reinforcing plate	Yes	1.25	0.000	1.00	0.10	0.00	0.088	0.000	8.904	0.00	0.00
62.00	1" Reinforcing plate	Yes	1.25	0.000	0.00	0.00	0.00	0.088	0.000	8.904	0.00	0.00
64.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.089	0.000	8.964	0.00	9.66
64.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.089	0.000	8.964	0.00	0.00
64.00	1" Reinforcing plate	Yes	1.33	0.000	0.00	0.00	0.00	0.089	0.000	8.964	0.00	0.00
66.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.090	0.000	9.022	0.00	9.66
66.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.090	0.000	9.022	0.00	0.00
68.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.091	0.000	9.079	0.00	9.66
68.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.091	0.000	9.079	0.00	0.00
70.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.092	0.000	9.134	0.00	9.66
70.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.092	0.000	9.134	0.00	0.00
72.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.092	0.000	9.189	0.00	9.66
72.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.092	0.000	9.189	0.00	0.00
74.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.093	0.000	9.242	0.00	9.66
74.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.093	0.000	9.242	0.00	0.00
76.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.094	0.000	9.294	0.00	9.66
76.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.094	0.000	9.294	0.00	0.00
78.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.095	0.000	9.345	0.00	9.66
78.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.095	0.000	9.345	0.00	0.00
78.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.096	0.000	9.351	0.00	1.21
78.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.096	0.000	9.351	0.00	0.00
80.00	2" Conduit	Yes	1.75	0.000	2.00	0.29	0.00	0.096	0.000	9.395	0.00	8.45
80.00	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.096	0.000	9.395	0.00	0.00
82.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.081	0.000	9.444	0.00	9.66
82.00	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.081	0.000	9.444	0.00	0.00
84.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.065	0.000	9.492	0.00	9.66
86.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.066	0.000	9.539	0.00	9.66
87.42	2" Conduit	Yes	1.42	0.000	2.00	0.24	0.00	0.067	0.000	9.572	0.00	6.84
88.00	2" Conduit	Yes	0.58	0.000	2.00	0.10	0.00	0.067	0.000	9.585	0.00	2.82
90.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.068	0.000	9.631	0.00	9.66
91.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.068	0.000	9.661	0.00	6.44
92.00	2" Conduit	Yes	0.67	0.000	2.00	0.11	0.00	0.068	0.000	9.675	0.00	3.22
94.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.068	0.000	9.719	0.00	9.66
96.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.069	0.000	9.762	0.00	9.66
98.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	9.805	0.00	9.66
100.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.070	0.000	9.847	0.00	9.66
102.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.071	0.000	9.888	0.00	9.66
104.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.072	0.000	9.928	0.00	9.66
106.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.073	0.000	9.968	0.00	9.66
108.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	10.008	0.00	9.66
110.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.074	0.000	10.046	0.00	9.66

Linear Appurtenance Segment Forces (Factored)

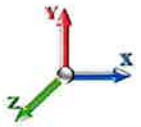
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 63	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
112.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.075	0.000	10.085	0.00	9.66
114.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.076	0.000	10.122	0.00	9.66
116.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.077	0.000	10.159	0.00	9.66
118.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.078	0.000	10.196	0.00	9.66
120.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.079	0.000	10.232	0.00	9.66
122.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	10.268	0.00	9.66
124.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	10.303	0.00	9.66
126.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	10.338	0.00	9.66
128.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	10.372	0.00	9.66
130.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.111	1.033	10.406	0.00	9.66
										Totals:	**0.0**	**627.9**

Calculated Forces

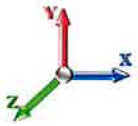
Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 64	

TES Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-34.45	-7.38	0.00	-734.10	0.00	734.10	2818.94	734.35	2570.40	2448.04	0.00	0.000	0.000	0.147
2.00	-34.06	-7.35	0.00	-719.34	0.00	719.34	2805.89	728.94	2532.69	2418.63	0.00	-0.021	0.000	0.146
4.00	-33.68	-7.33	0.00	-704.64	0.00	704.64	2792.73	723.54	2495.26	2389.30	0.02	-0.042	0.000	0.144
6.00	-33.29	-7.30	0.00	-689.99	0.00	689.99	2779.45	718.13	2458.11	2360.04	0.04	-0.062	0.000	0.142
8.00	-32.91	-7.27	0.00	-675.39	0.00	675.39	2766.06	712.72	2421.24	2330.86	0.07	-0.083	0.000	0.140
10.00	-32.54	-7.24	0.00	-660.84	0.00	660.84	2752.56	707.32	2384.65	2301.75	0.11	-0.103	0.000	0.138
10.25	-32.49	-7.25	0.00	-659.03	0.00	659.03	2750.86	706.64	2380.10	2298.12	0.11	-0.106	0.000	0.145
12.00	-32.16	-7.22	0.00	-646.35	0.00	646.35	2738.94	701.91	2348.34	2272.72	0.16	-0.125	0.000	0.143
14.00	-31.79	-7.20	0.00	-631.90	0.00	631.90	2725.20	696.50	2312.30	2243.77	0.21	-0.146	0.000	0.141
16.00	-31.42	-7.17	0.00	-617.50	0.00	617.50	2711.35	691.10	2276.54	2214.91	0.28	-0.167	0.000	0.139
18.00	-31.05	-7.15	0.00	-603.16	0.00	603.16	2697.39	685.69	2241.07	2186.13	0.35	-0.189	0.000	0.137
20.00	-30.68	-7.11	0.00	-588.87	0.00	588.87	2683.32	680.29	2205.87	2157.44	0.44	-0.210	0.000	0.135
20.50	-30.59	-7.11	0.00	-585.31	0.00	585.31	2679.78	678.93	2197.11	2150.28	0.46	-0.215	0.000	0.134
22.00	-30.31	-7.09	0.00	-574.65	0.00	574.65	2669.12	674.88	2170.95	2128.84	0.53	-0.231	0.000	0.133
24.00	-29.95	-7.06	0.00	-560.47	0.00	560.47	2654.82	669.47	2136.30	2100.34	0.63	-0.252	0.000	0.131
25.96	-29.60	-7.03	0.00	-546.63	0.00	546.63	2640.69	664.18	2102.62	2072.49	0.74	-0.272	0.000	0.113
26.00	-29.59	-7.03	0.00	-546.35	0.00	546.35	2640.40	664.07	2101.94	2071.92	0.74	-0.273	0.000	0.113
26.88	-29.43	-7.01	0.00	-540.17	0.00	540.17	2634.02	661.69	2086.91	2059.45	0.79	-0.281	0.000	0.134
27.88	-29.26	-7.00	0.00	-533.15	0.00	533.15	2626.74	658.99	2069.89	2045.30	0.85	-0.292	0.000	0.133
28.00	-29.23	-7.00	0.00	-532.31	0.00	532.31	2625.87	658.66	2067.85	2043.61	0.86	-0.293	0.000	0.133
30.00	-28.88	-6.97	0.00	-518.31	0.00	518.31	2611.22	653.25	2034.05	2015.39	0.99	-0.314	0.000	0.131
32.00	-28.52	-6.94	0.00	-504.37	0.00	504.37	2596.46	647.85	2000.52	1987.27	1.12	-0.336	0.000	0.129
34.00	-28.17	-6.91	0.00	-490.49	0.00	490.49	2581.58	642.44	1967.27	1959.26	1.27	-0.357	0.000	0.126
36.00	-27.82	-6.88	0.00	-476.68	0.00	476.68	2566.59	637.04	1934.30	1931.36	1.42	-0.378	0.000	0.124
38.00	-27.47	-6.84	0.00	-462.93	0.00	462.93	2551.48	631.63	1901.61	1903.56	1.59	-0.400	0.000	0.122
40.00	-27.13	-6.81	0.00	-449.24	0.00	449.24	2536.26	626.22	1869.20	1875.87	1.76	-0.420	0.000	0.119
40.50	-27.04	-6.80	0.00	-445.84	0.00	445.84	2532.44	624.87	1861.14	1868.96	1.80	-0.426	0.000	0.119
40.71	-27.00	-6.80	0.00	-444.41	0.00	444.41	2530.83	624.30	1857.76	1866.07	1.82	-0.428	0.000	0.118
42.00	-26.78	-6.78	0.00	-435.65	0.00	435.65	2520.93	620.82	1837.06	1848.29	1.94	-0.441	0.000	0.117
43.33	-26.56	-6.75	0.00	-426.61	0.00	426.61	2510.64	617.21	1815.79	1829.97	2.06	-0.455	0.000	0.115
44.00	-26.38	-6.74	0.00	-422.11	0.00	422.11	2505.48	615.41	1805.20	1820.83	2.13	-0.462	0.000	0.113
46.00	-25.84	-6.71	0.00	-408.63	0.00	408.63	2489.92	610.00	1773.63	1793.48	2.33	-0.481	0.000	0.110
48.00	-25.32	-6.67	0.00	-395.21	0.00	395.21	1854.44	491.51	1439.37	1347.80	2.53	-0.501	0.000	0.118
48.12	-25.30	-6.67	0.00	-394.41	0.00	394.41	1853.85	491.25	1437.86	1346.66	2.54	-0.502	0.000	0.151
50.00	-25.02	-6.64	0.00	-381.88	0.00	381.88	1844.56	487.19	1414.16	1328.74	2.75	-0.526	0.000	0.147
52.00	-24.73	-6.60	0.00	-368.60	0.00	368.60	1834.56	482.86	1389.16	1309.72	2.97	-0.550	0.000	0.144
54.00	-24.45	-6.57	0.00	-355.39	0.00	355.39	1824.45	478.54	1364.38	1290.76	3.21	-0.574	0.000	0.140
56.00	-24.16	-6.54	0.00	-342.25	0.00	342.25	1814.23	474.21	1339.83	1271.84	3.45	-0.598	0.000	0.136
58.00	-23.87	-6.50	0.00	-329.17	0.00	329.17	1803.89	469.89	1315.50	1252.97	3.71	-0.621	0.000	0.132
60.00	-23.59	-6.47	0.00	-316.17	0.00	316.17	1793.44	465.56	1291.40	1234.16	3.97	-0.644	0.000	0.128
60.71	-23.49	-6.45	0.00	-311.58	0.00	311.58	1789.70	464.03	1282.90	1227.50	4.07	-0.652	0.000	0.161
60.75	-23.49	-6.46	0.00	-311.32	0.00	311.32	1789.49	463.94	1282.42	1227.12	4.08	-0.653	0.000	0.161
62.00	-23.31	-6.44	0.00	-303.25	0.00	303.25	1782.87	461.24	1267.52	1215.41	4.25	-0.671	0.000	0.158
64.00	-23.03	-6.40	0.00	-290.37	0.00	290.37	1772.19	456.91	1243.86	1196.72	4.54	-0.699	0.000	0.153
66.00	-22.75	-6.37	0.00	-277.57	0.00	277.57	1761.39	452.59	1220.42	1178.08	4.84	-0.726	0.000	0.148
68.00	-22.47	-6.34	0.00	-264.82	0.00	264.82	1750.48	448.26	1197.21	1159.51	5.15	-0.753	0.000	0.143
70.00	-22.20	-6.30	0.00	-252.14	0.00	252.14	1739.46	443.94	1174.22	1141.01	5.47	-0.779	0.000	0.138
72.00	-21.92	-6.27	0.00	-239.54	0.00	239.54	1728.32	439.61	1151.45	1122.57	5.80	-0.805	0.000	0.133

Calculated Forces

Structure:	CT13064-A-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 65

TES Tower Engineering Solutions

74.00	-21.65	-6.24	0.00	-226.99	0.00	226.99	1717.07	435.29	1128.90	1104.20	6.14	-0.830	0.000	0.128
76.00	-21.38	-6.20	0.00	-214.52	0.00	214.52	1705.70	430.96	1106.58	1085.91	6.49	-0.854	0.000	0.122
78.00	-21.12	-6.16	0.00	-202.12	0.00	202.12	1694.22	426.64	1084.48	1067.69	6.86	-0.877	0.000	0.117
78.25	-21.08	-6.16	0.00	-200.58	0.00	200.58	1692.78	426.10	1081.74	1065.41	6.90	-0.880	0.000	0.116
78.25	-21.08	-6.16	0.00	-200.58	0.00	200.58	1692.78	426.10	1081.74	1065.41	6.90	-0.880	0.000	0.116
80.00	-20.85	-6.14	0.00	-189.79	0.00	189.79	1682.63	422.31	1062.61	1049.54	7.23	-0.900	0.000	0.193
82.00	-20.58	-6.10	0.00	-177.52	0.00	177.52	1670.92	417.99	1040.95	1031.48	7.62	-0.937	0.000	0.185
84.00	-20.32	-6.07	0.00	-165.31	0.00	165.31	1659.09	413.66	1019.52	1013.49	8.02	-0.973	0.000	0.176
86.00	-20.06	-6.04	0.00	-153.17	0.00	153.17	1647.16	409.34	998.31	995.59	8.43	-1.008	0.000	0.166
87.42	-19.87	-6.02	0.00	-144.61	0.00	144.61	1638.63	406.27	983.43	982.97	8.73	-1.031	0.000	0.159
88.00	-19.76	-6.01	0.00	-141.10	0.00	141.10	1635.10	405.01	977.33	977.78	8.86	-1.041	0.000	0.157
90.00	-15.85	-4.81	0.00	-129.08	0.00	129.08	1622.94	400.69	956.57	960.05	9.30	-1.072	0.000	0.144
91.33	-15.60	-4.79	0.00	-122.66	0.00	122.66	1099.39	302.92	728.96	657.00	9.61	-1.092	0.000	0.201
92.00	-15.53	-4.78	0.00	-119.47	0.00	119.47	1097.24	301.84	723.77	653.36	9.76	-1.102	0.000	0.197
94.00	-15.32	-4.75	0.00	-109.91	0.00	109.91	1090.71	298.60	708.30	642.45	10.23	-1.138	0.000	0.185
96.00	-15.11	-4.71	0.00	-100.42	0.00	100.42	1084.06	295.35	692.99	631.55	10.71	-1.172	0.000	0.173
98.00	-14.91	-4.68	0.00	-91.00	0.00	91.00	1077.30	292.11	677.85	620.68	11.21	-1.204	0.000	0.161
100.00	-11.42	-3.59	0.00	-81.65	0.00	81.65	1070.43	288.87	662.88	609.82	11.72	-1.234	0.000	0.145
102.00	-11.24	-3.55	0.00	-74.47	0.00	74.47	1063.44	285.62	648.08	598.99	12.25	-1.262	0.000	0.135
104.00	-11.06	-3.51	0.00	-67.38	0.00	67.38	1056.34	282.38	633.44	588.19	12.78	-1.288	0.000	0.125
106.00	-10.88	-3.48	0.00	-60.35	0.00	60.35	1049.12	279.13	618.97	577.41	13.32	-1.312	0.000	0.115
108.00	-10.70	-3.44	0.00	-53.39	0.00	53.39	1041.79	275.89	604.67	566.67	13.88	-1.335	0.000	0.105
110.00	-8.57	-2.87	0.00	-46.51	0.00	46.51	1034.34	272.65	590.53	555.96	14.44	-1.355	0.000	0.092
112.00	-8.42	-2.83	0.00	-40.77	0.00	40.77	1026.79	269.40	576.57	545.28	15.02	-1.374	0.000	0.083
114.00	-8.27	-2.80	0.00	-35.10	0.00	35.10	1019.11	266.16	562.77	534.64	15.59	-1.391	0.000	0.074
116.00	-8.12	-2.76	0.00	-29.51	0.00	29.51	1011.32	262.92	549.13	524.04	16.18	-1.405	0.000	0.064
118.00	-7.98	-2.72	0.00	-24.00	0.00	24.00	1003.42	259.67	535.67	513.49	16.77	-1.418	0.000	0.055
120.00	-5.49	-1.90	0.00	-18.55	0.00	18.55	995.40	256.43	522.37	502.97	17.37	-1.429	0.000	0.042
120.00	-5.49	-1.90	0.00	-18.55	0.00	18.55	735.22	244.66	14507.7	335.79	17.37	-1.429	0.000	0.063
122.00	-5.36	-1.88	0.00	-14.75	0.00	14.75	735.22	244.66	14507.7	335.79	17.97	-1.437	0.000	0.051
124.00	-5.22	-1.86	0.00	-10.99	0.00	10.99	735.22	244.66	14507.7	335.79	18.57	-1.450	0.000	0.040
126.00	-5.08	-1.83	0.00	-7.28	0.00	7.28	735.22	244.66	14507.7	335.79	19.18	-1.460	0.000	0.029
128.00	-4.95	-1.81	0.00	-3.62	0.00	3.62	735.22	244.66	14507.7	335.79	19.80	-1.466	0.000	0.018
130.00	0.00	-1.68	0.00	0.00	0.00	0.00	735.22	244.66	14507.7	335.79	20.41	-1.467	0.000	0.000

Final Analysis Summary

Structure:	CT13064-A-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Middletown 2, CT		**Exposure:**	C	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 66

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.0W 120 mph Wind	33.0	0.00	41.31	0.00	0.00	3303.52
0.9D + 1.0W 120 mph Wind	33.0	0.00	30.97	0.00	0.00	3264.63
1.2D + 1.0Di + 1.0Wi 50 mph Wind	8.6	0.00	57.83	0.00	0.00	860.34
1.2D + 1.0Ev + 1.0Eh	0.4	0.00	42.94	0.00	0.00	50.70
0.9D + 1.0Ev + 1.0Eh	0.4	0.00	32.53	0.00	0.00	50.13
1.0D + 1.0W 60 mph Wind	7.4	0.00	34.45	0.00	0.00	734.10

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 + 1.0W 120 mph Wind	-17.03	-21.61	0.00	-553.96	0.00	-553.96	1099.39	302.92	728.96	657.00	91.33	0.864
0.9D + 1.0W 120 mph Wind	-12.37	-21.19	0.00	-541.83	0.00	-541.83	1099.39	302.92	728.96	657.00	91.33	0.841
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-27.93	-5.55	0.00	-143.73	0.00	-143.73	1099.39	302.92	728.96	657.00	91.33	0.244
1.2D + 1.0Ev + 1.0Eh	-19.55	-0.38	0.00	-11.37	0.00	-11.37	1099.39	302.92	728.96	657.00	91.33	0.035
0.9D + 1.0Ev + 1.0Eh	-14.82	-0.37	0.00	-11.21	0.00	-11.21	1099.39	302.92	728.96	657.00	91.33	0.031
1.0D + 1.0W 60 mph Wind	-15.60	-4.79	0.00	-122.66	0.00	-122.66	1099.39	302.92	728.96	657.00	91.33	0.201

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	Lower Termination MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Upper Termination MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Max Member Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
0.0	20.5	(4) PLT-6"x1" (1.25" Hole)	236.5	3.78	37.1	244.6	33.4	8	8	234.6	33.4		8	249.11	326.3	281.25	0.886
0.0	10.3	(4) PLT-5.5"x1 1/4"(1.25"hol	244.0	4.39	37.1	281.9	33.4	9	9	267.6	33.4	9	9	281.94	379.1	314.06	0.898
10.3	27.9	(2) LNP-LP6X100-G-20CC	-241.4	-5.79	25.3	249.1	25.3	10	0	216.0	25.3			249.11	297.8	288.75	0.863
10.3	26.9	(2) LNP-LP6X100-G-20CT	227.3	5.46	25.3	234.9	25.3	10	0	195.3	22.7	9	9	234.92	297.8	288.75	0.814
20.5	40.5	(4) PLT-6"x1" (1.25" Hole)	267.7	4.28	37.1	234.6	33.4		8	211.2	33.4		8	235.21	326.3	281.25	0.836
26.0	40.7	(2) LNP-LP6X100-G-20CT	-280.6	-6.73	25.3	189.1	25.3	8	0	220.7	22.7		10	245.97	297.8	288.75	0.852
27.9	48.1	(2) LNP-LP6X100-G-20TT	271.1	6.51	25.3	216.0	22.7		10	192.8	22.7	9	10	216.01	297.8	288.75	0.748
40.5	60.8	(4) PLT-6"x1" (1.25" Hole)	-425.7	-6.81	37.1	211.2	33.4		8	246.8	33.4		8	246.91	326.3	281.25	0.878
40.7	60.7	(2) LNP-LP6X100-G-20TT	-352.4	-8.46	25.3	220.7	22.7		10	204.5	22.7	9	10	238.39	297.8	288.75	0.826
60.8	78.3	(4) PLT-6"x1" (1.25" Hole)	-463.0	-7.41	37.1	246.8	33.4		8	181.0	33.4	6	10	246.78	326.3	281.25	0.877

Base Plate Summary

Structure:	CT13064-A-SB	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Middletown 2, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 67	

TES Tower Engineering Solutions

Reactions		Base Plate		Anchor Bolts	
Original Design		**Yield (ksi):**	50.00	**Bolt Circle:**	47.25
Moment (kip-ft):	1864.44	**Width (in):**	51.75	**Number Bolts:**	14.00
Axial (kip):	38.20	**Style:**	Round	**Bolt Type:**	1.5" F1554 105
Shear (kip):	20.10	**Polygon Sides:**	0.00	**Bolt Diameter (in):**	1.50
Analysis (1.2D + 1.0W)		**Clip Length (in):**	0.00	**Yield (ksi):**	105.00
Moment (kip-ft):	3303.52	**Effective Len (in):**	17.08	**Ultimate (ksi):**	125.00
Axial (kip):	41.31	**Moment (kip-in):**	207.48	**Arrangement:**	Radial
Shear (kip):	33.00	**Allow Stress (ksi):**	67.50	**Cluster Dist (in):**	0.00
		Applied Stress (ksi):	32.40	**Start Angle (deg):**	0.00
		Stress Ratio:	0.48	Compression	
				Force (kip):	85.13
				Allowable (kip):	167.00
				Ratio:	0.51
				Tension	
				Force (kip):	79.23
				Allowable (kip):	132.19
				Ratio:	0.60

Monopole Mat Foundation Design

				Date
				11/29/2022
Customer Name:	Verizon	**TIA Standard:**	TIA-222-H
Site Name:		**Structure Height (Ft.):**	130
Site Number:	CT13064-A-SBA	**Engineer Name:**	C. Zang
Engr. Number:	134991	**Engineer Login ID:**	

Foundation Info Obtained from:	Drawings/Calculations
Structure Type:	Monopole
Analysis or Design?	Analysis

Base Reactions (Factored):

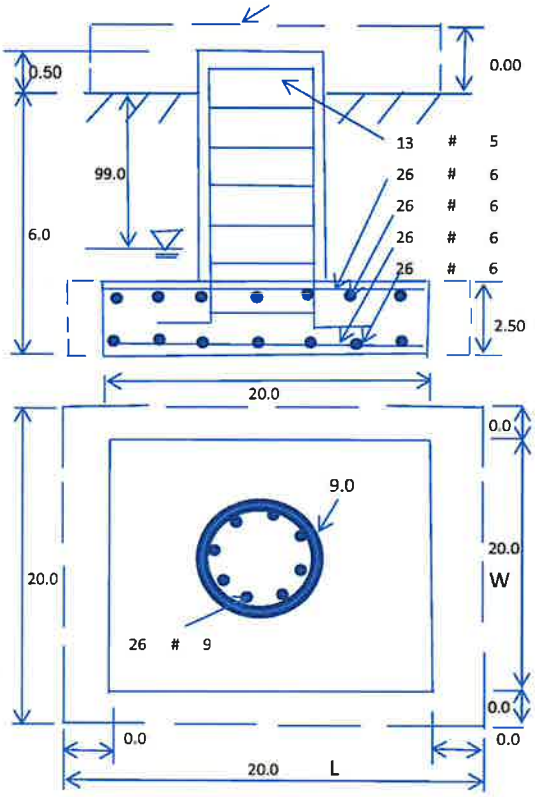
Axial Load (Kips):	41.3	Shear Force (Kips):	33.0
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3300.3

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	9.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	20	Width of Pad (ft.):	20
Final Length of pad (ft)	20.0	Final width of pad (ft):	20.0

Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	26	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	6	
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	



Soil Design Parameters:

Soil Unit Weight (pcf):	130.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	16000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):		No	Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:			1.00	

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

Total Dry Soil Volume (cu. Ft.):	1177.34	Total Dry Soil Weight (Kips):	153.05
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	153.05	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1254.47	Total Dry Concrete Weight (Kips):	188.17
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	188.17	Total Vertical Load on Base (Kips):	382.52

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	5856	<	Allowable Factored Soil Bearing (psf): 12000	0.49	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3484.0	>	Design Factored Momont (kips-ft): 3379	0.97	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.03	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.00		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	5889.6	>	Design Factored Moment (Mu, Kips-F	3432.3	0.58	OK!
Calculated Shear Capacity (Kips):	1404.8	>	Design Factored Shear (Kips):	33.0	0.02	OK!
Calculated Tension Capacity (Tn, Kips):	1404.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	16150.5	>	Design Factored Axial Load (Pu Kips):	41.3	0.00	OK!
Moment & Axial Strength Combination:	0.58	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.003		Reinforcement Ratio is too small			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	606.2	>	One-Way Factored Shear (L-D. Kips):	203.5	0.34	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	606.2	>	One-Way Factored Shear (W-D., Kips)	203.5	0.34	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	450.0	>	One-Way Factored Shear (C-C, Kips):	204.2	0.45	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0018	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0018		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	1349.0	>	Moment at Bottom (L-Dir. K-Ft):	725.7	0.54	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	1349.0	>	Moment at Bottom (W-Dir. K-Ft):	725.7	0.54	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	1893.5	>	Moment at Bottom (C-C Dir. K-Ft):	1026.3	0.54	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0018	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0018		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	1349.0	>	Moment at the top (L-Dir K-Ft):	292.2	0.22	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	1349.0	>	Moment at the top (W-Dir K-Ft):	292.2	0.22	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	1893.5	>	Moment at the top (C-C Dir. K-Ft):	288.7	0.15	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1320.1	k-ft.	Max. factored shear stress v_{u_CD}:		1.2	Psi
Max. factored shear stress v_{u_AB}:	7.3	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	7.3	Psi	Check Usage of Punching Shear Capacity:		0.04	OK!
(4).Check Bending Capacity of the Pad Within the Effective Slab Width:						
Overturning moment to be transferred by flexure:	990.1	k-ft.	Effective Width for resisting OT moment:		16.5	ft.
Calculated number of Rebar in Effective width:	22		Actual number of Rebar in Effective width:		22	
Steel Pad Moment Capacity (L-Direc. Kips-ft):	1141.0	k-ft.	Check Usage of the Flexure Capacity:		0.87	OK!

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Antenna Mount Analysis Report and PMI Requirements

Mount ReAnalysis-VZW

SMART Tool Project #: 10202210
Colliers Engineering & Design Project #: 21777971 (Rev 2)

May 23, 2023

Site Information	*Site ID:*	*5000185987-VZW / SOUTH FARMS CT*
	Site Name:	*SOUTH FARMS CT*
	Carrier Name:	*Verizon Wireless*
	Address:	*67 Fairchild Rd.*
		Middletown, Connecticut 06457
		Middlesex County
	Latitude:	*41.54501111°*
	Longitude:	*-72.62076667°*
Structure Information	*Tower Type:*	*130-Ft Monopole*
	Mount Type:	*4.00-Ft T-Arm*

FUZE ID # 16235710

Analysis Results

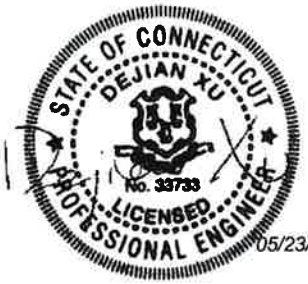
T-Arm: **30.1% Pass***

***Antennas and equipment to be installed in compliance with PMI Requirements of this mount analysis.**

******Contractor PMI Requirements:***
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com

For additional questions and support, please reach out to:
pmisupport@colliersengineering.com

Report Prepared By: Carol Luengas



Executive Summary:

The objective of this report is to determine the capacity of the antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	*Verizon RFDS, Site ID: 675042, dated August 22, 2022*
Desktop Mount Mapping Report	*Colliers Engineering & Design, LLC, Project #: 21777971 dated May 17, 2021*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H 2022 Connecticut State Building Code (CSBC), Effective October 1, 2022	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	120 mph
	Ice Wind Speed (3-sec. Gust):	50 mph
	Design Ice Thickness:	1.00 in
	Risk Category:	II
	Exposure Category:	C
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.993
Seismic Parameters:	S_S:	0.211 g
	S_1:	0.056 g
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Load, Lv:	250 lbs.
	Maintenance Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V17)	

Final Loading Configuration:

The following equipment has been considered for the analysis of the mount:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
109.50	110.00	3	Commscope	SDX1926Q-43	Added
		3	Samsung	MT6407-77A	
		3	JMA Wireless	MX10FIT665-xx	
		3	Samsung	RF4439d-25A	
		3	Samsung	RF4440d-13A	
		1	Raycap	RVZDC-6627-PF-48*	

* Equipment to be flush mounted directly to the Monopole. They are not mounted on the mounts and are not included in this mount analysis.

It is acceptable to install up to any three (3) of the OVP model numbers listed below as required at any location other than the mount face without affecting the structural capacity of the mount. If OVP units are installed on the mount face, a mount re-analysis may be required unless replacing an existing OVP.

Model Number	Ports	AKA
DB-B1-6C-12AB-0Z	6	OVP-6
RVZDC-6627-PF-48	12	OVP-12

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Colliers Engineering & Design and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Colliers Engineering & Design to verify deviation will not adversely impact the analysis.

2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

   Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

   The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped in accordance with the NSTD-446 Standard, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Colliers Engineering & Design is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
   - Channel, Solid Round, Angle, Plate — ASTM A36 (Gr. 36)
   - HSS (Rectangular) — ASTM 500 (Gr. B-46)
   - Pipe — ASTM A53 (Gr. B-35)
   - Threaded Rod — F1554 (Gr. 36)
   - Bolts — ASTM A325

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Colliers Engineering & Design.

Analysis Results:

Component	Utilization %	Pass/Fail
Antenna Pipe	20.4 %	Pass
Standoff Arm	8.3 %	Pass
Face Horizontal	30.1 %	Pass
Mount Connection	20.0 %	Pass

Structure Rating – *(Controlling Utilization of all Components)*	**30.1%**

The mount has been found structurally adequate for all steel and external connection capacities. Serviceability in accordance with TIA-222-H Section 4.9.11.3 has not been considered

Mount Steel (EPA)a per ANSI/TIA-222-H Section 2.6.11.2:

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	1.5	0.3	4.9	3.7
0.5	2.0	0.3	6.9	5.2
1	2.5	0.4	8.8	6.7

Notes:
- (EPA)a values listed above may be used in the absence of more precise information
- (EPA)a values in the table above include 1 sector(s).
- Ka factors included in (EPA)a calculations

Requirements:

The existing mounts are **SUFFICIENT** for the final loading configuration shown in attachment 2 and do not require modifications. Additional requirements are noted below.

Contractor shall install proposed OVP on the existing collar mount.

Contractor shall record all dimensions and member sizes requested in the Mount Geometry Verification Requirements section of the Mount Analysis report. Contact EOR if these documents are not available to the general contractor.

Contractor shall inspect climbing facilities and safety climb, if present, and ensure they are in good condition. Contractor shall install safety climb wire rope guides in locations where wire rope is rubbing against the mount or mount-to-tower connection steel. Wire brush clean any observed corrosion and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote). Contractor shall provide photos of wire rope guide installation as part of PMI documents. Contact EOR if additional guidance is required.

Mounts shall be rotated in order to achieve the proposed azimuths of 340/100/220.

If required, ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other. Separate review fees will apply.

Attachments:

1. **Contractor Required Post Installation Inspection (PMI) Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Photos
4. Desktop Mount Mapping Report (for reference only)
5. Analysis Calculations

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Passing Mount Analysis

Passing Mount Analysis requires a PMI due to a modification in loading.

Electronic pdf version of this can be downloaded at https://pmi.vzwsmart.com.

For additional questions and support, please reach out to pmisupport@colliersengineering.com

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MDG #: 5000185987 SMART Project #: 10202210 Fuze Project ID: 16235710

Purpose – to provide SMART Tool structural vendor the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the installation was completed in accordance with this Passing Mount Analysis.
- Contractor shall relay any data that can impact the performance of the mount, this includes safety issues.

Base Requirements:

- If installation will cause damage to the structure, the climbing facility, or safety climb if present or any installed system, SMART Tool vendor to be notified prior to install. Any special photos outside of the standard requirements will be indicated on the drawings.
- Provide "as built mount drawings" showing contractor's name, contact information, preparer's signature, and date. Any deviations from the drawings (Proposed modification) shall be shown. NOTE: If loading is different than what is conveyed in the passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo should be time and date stamped
- Photos should be high resolution.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope. If there is conflict, contact the SMART Tool engineer for recommendations.
- The PMI can be accessed at the following portal: ***https://pmi.vzwsmart.com***

Photo Requirements:

- *Photos taken at ground level*
  - Photo of Gate Signs showing the tower owner, site name, and number.
  - Overall tower structure after installation.
  - Photos of the mount after installation; if the mounts are at different rad elevations, pictures must be provided for all elevations that equipment was installed.
- *Photos taken at Mount Elevation*
  - Photos showing the safety climb wire rope above and below the mount prior to installation.
  - Photos showing the climbing facility and safety climb if present.
  - Photos showing each individual sector after installation. Each entire sector shall be in one photo to show the interconnection of members.

        - These photos shall also certify that the placement and geometry of the equipment on the mount is as depicted in the antenna placement diagram in this form.
    - Photos that show the model number of each antenna and piece of equipment installed per sector.

Antenna & equipment placement and Geometry Confirmation:

- The contractor shall certify that the antenna & equipment placement and geometry is in accordance with the sketch and table as included in the mount analysis and noted below.

☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the sketch and table included in this form and with the mount analysis provided.

OR

☐ The contractor notes that the equipment on the mount is not in accordance with the sketch and has noted the differences below and provided photo documentation of any alterations.

Special Instructions / Validation as required from the MA or any other information the contractor deems necessary to share that was identified:

Issue:

Contractor shall install proposed OVP on the existing collar mount.

Contractor shall record all dimensions and member sizes requested in the Mount Geometry Verification Requirements section of the Mount Analysis report. Contact EOR if these documents are not available to the general contractor.

Contractor shall inspect climbing facilities and safety climb, if present, and ensure they are in good condition. Contractor shall install safety climb wire rope guides in locations where wire rope is rubbing against the mount or mount-to-tower connection steel. Wire brush clean any observed corrosion and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote). Contractor shall provide photos of wire rope guide installation as part of PMI documents. Contact EOR if additional guidance is required.

Mounts shall be rotated in order to achieve the proposed azimuths of 340/100/220.

Response:

Special Instruction Confirmation:

☐ The contractor has read and acknowledges the above special instructions.

☐ All hardware listed in the Special Instructions above (if applicable) has been properly installed, and the existing hardware was inspected.

☐ The material utilized was as specified in the SMART Tool engineering vendor Special Instructions above (if applicable) and included in the material certification folder is a packing list or invoice for these materials.

OR

☐ The material utilized was approved by a SMART Tool engineering vendor as an "equivalent" and this approval is included as part of the contractor submission.

Comments:

Contractor certifies that the climbing facility / safety climb was not damaged prior to starting work:

☐ Yes ☐ No

Contractor certifies no new damage created during the current installation:

☐ Yes ☐ No

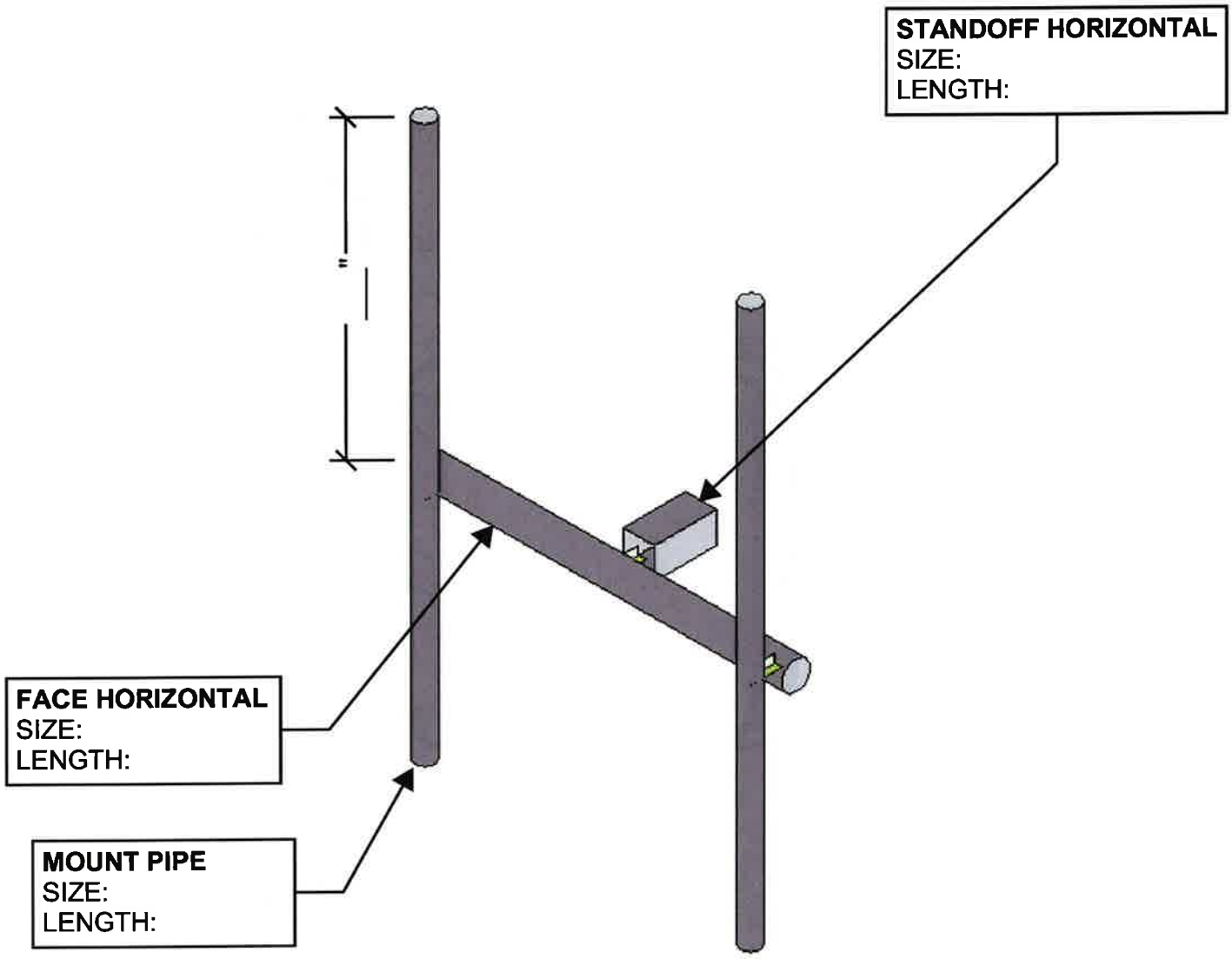
Contractor to certify the condition of the safety climb and verify no damage when leaving the site:

☐ Safety Climb in Good Condition ☐ Safety Climb Damaged

Certifying Individual:

Company:	
Employee Name:	
Contact Phone:	
Email:	
Date:	

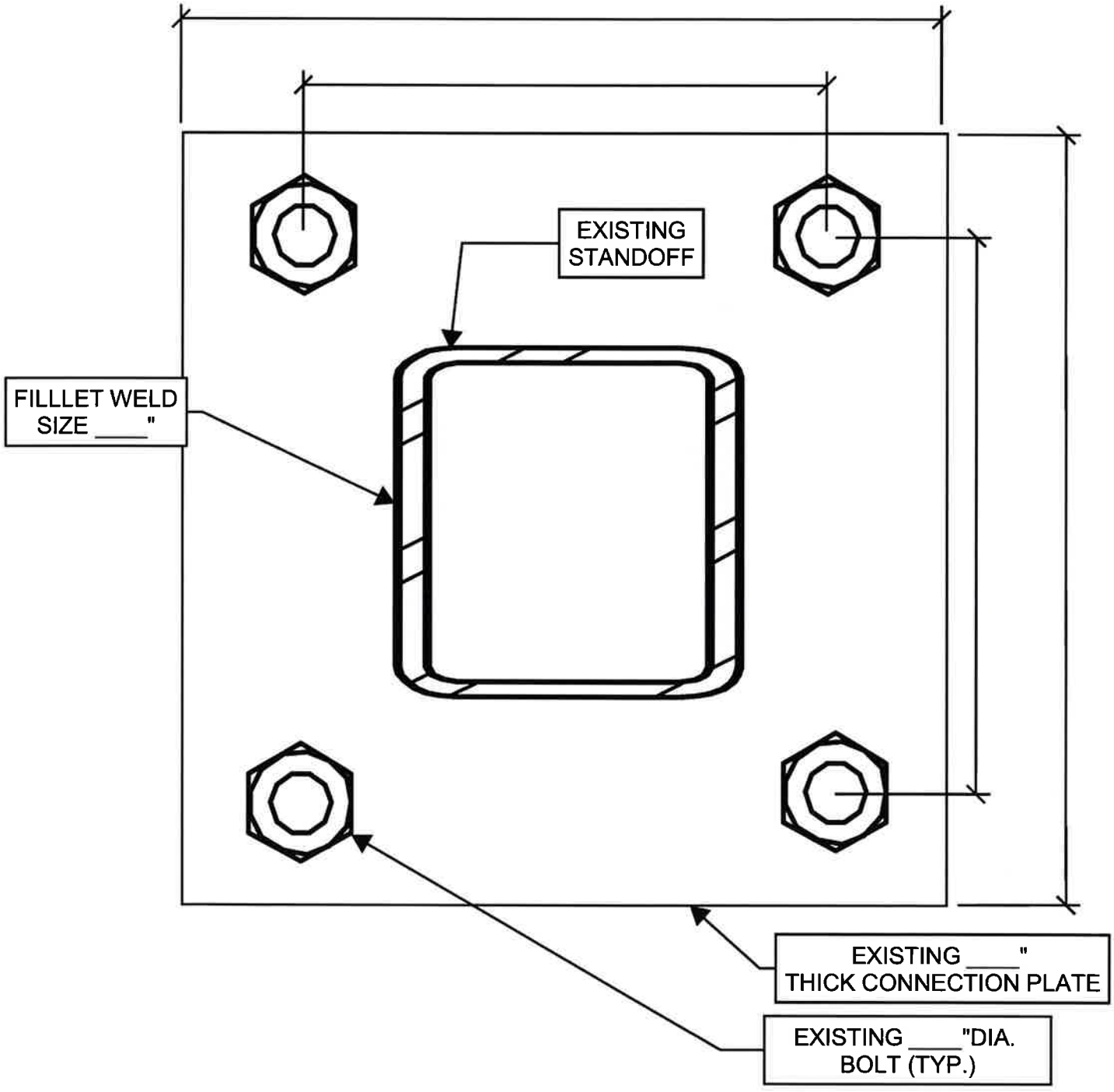
MOUNT GEOMETRY VERIFICATION



MOUNT ISOMETRIC VIEW
N.T.S

CONTRACTOR SHALL MEASURE ALL DIMENSIONS AND MEMBER SIZES REQUESTED ON THIS SKETCH. RECORD VIA PHOTOS AND MARKUPS ON THIS PAGE. PROVIDE PHOTOS AND MARKED-UP SKETCH TO THE EOR FOR EVALUATION.

MOUNT GEOMETRY VERIFICATION



CONNECTION GEOMETRY (TYP. ALL SECTORS)
N.T.S.

CONTRACTOR SHALL MEASURE ALL DIMENSIONS AND MEMBER SIZES REQUESTED ON THIS SKETCH. RECORD VIA PHOTOS AND MARKUPS ON THIS PAGE. PROVIDE PHOTOS AND MARKED-UP SKETCH TO THE EOR FOR EVALUATION.

MOUNT GEOMETRY VERIFICATION

STANDARD PIPE DIMENSIONS				
		THICKNESS (IN.)		
PIPE SIZE	O.D. (IN.)	STD	XSTR	XXSTR
P1 1/2	1.900	0.145	0.200	0.400
P2	2.375	0.154	0.218	0.436
P2 1/2	2.875	0.203	0.276	0.552
P3	3.500	0.216	0.300	0.600
P3 1/2	4.000	0.226	0.318	0.636
P4	4.500	0.237	0.337	0.674
P4 1/2	5.000	0.247	0.355	0.710
P5	5.563	0.258	0.375	0.750
P6	6.625	0.280	0.432	0.864

CONTRACTOR SHALL USE MEMBER SIZES AND DETAILS TO FACILITATE GEOMETRY VERIFICATION. CONTACT EOR FOR ADDITIONAL CLARIFICATION IF NEEDED

Structure: 5000185987-VZW - SOUTH FARMS CT

Sector: **A**

Structure Type: Monopole

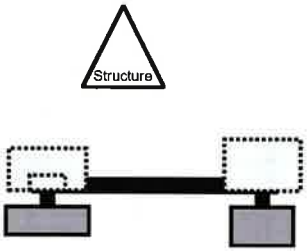
Mount Elev: 109.50

10202210

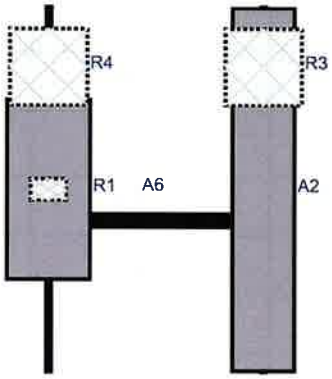
5/23/2023

Colliers Engineering & Design

Plan View



Front View - Looking at Structure

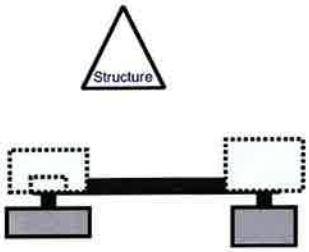


2 1

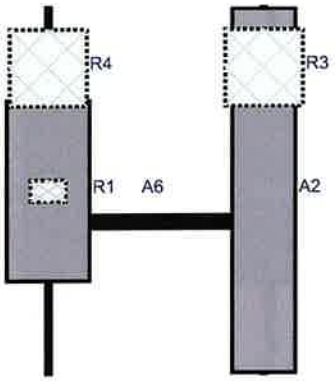
Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A2	MX10FIT665-xx	70.9	12.2	45	1	a	Front	36	0	Added	
R3	RF4439d-25A	15	15	45	1	a	Behind	12	0	Added	
R1	MT6407-77A	35.1	16.1	3	2	a	Front	36	0	Added	
R4	RF4440d-13A	15	15	3	2	a	Behind	12	0	Added	
A6	SDX1926Q-43	4.2	6.9	3	2	a	Behind	36	0	Added	

Colliers Engineering & Design

Plan View



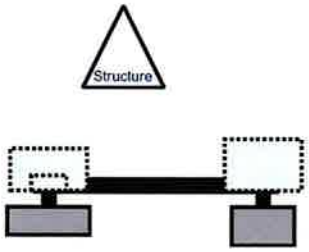
Front View - Looking at Structure



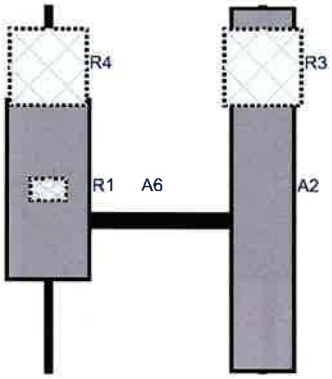
2 1

Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A2	MX10FIT665-xx	70.9	12.2	45	1	a	Front	36	0	Added	
R3	RF4439d-25A	15	15	45	1	a	Behind	12	0	Added	
R1	MT6407-77A	35.1	16.1	3	2	a	Front	36	0	Added	
R4	RF4440d-13A	15	15	3	2	a	Behind	12	0	Added	
A6	SDX1926Q-43	4.2	6.9	3	2	a	Behind	36	0	Added	

Plan View



Front View - Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A2	MX10FIT665-xx	70.9	12.2	45	1	a	Front	36	0	Added	
R3	RF4439d-25A	15	15	45	1	a	Behind	12	0	Added	
R1	MT6407-77A	35.1	16.1	3	2	a	Front	36	0	Added	
R4	RF4440d-13A	15	15	3	2	a	Behind	12	0	Added	
A6	SDX1926Q-43	4.2	6.9	3	2	a	Behind	36	0	Added	

Colliers Engineering & Design

Desktop Mount Mapping Form

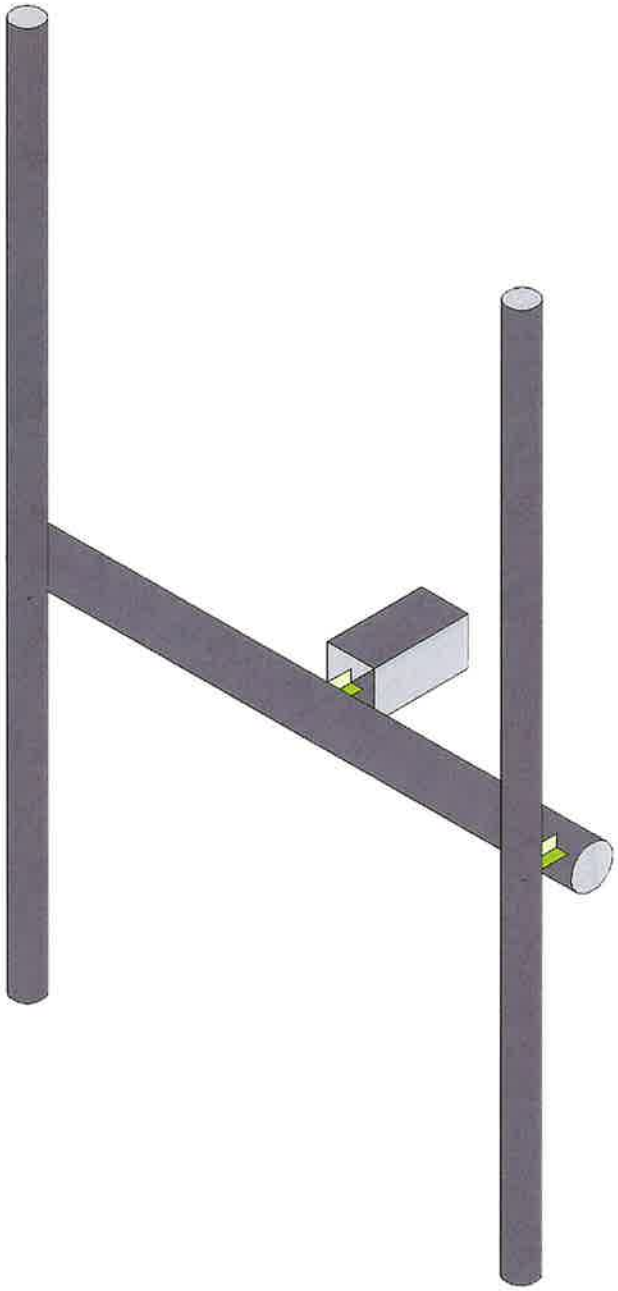
Site Name:	South Farms CT	Tower Type:	Monopole
Site ID:	535834	Tower Owner:	
FUZE Project ID:		Tower Height (Ft.):	130
Customer:	Verizon Wireless	Mount Elevation (Ft.):	110
Colliers Project No.	21777971	Date:	5/17/2021

Document Type	Provided? (Yes/No)	Source Name	Project No.	Dated	Comments/Remarks
Previous Mount Mapping	No				
Previous Mapping Photos	No				
Previous Mount Analysis	No				
Previous Mount Modifications	No				
Previous Structural Analysis	No				
Construction Drawings	Yes	On Air Engineering	Not Provided	1/15/2014	
Closeout Package	No				
Closeout Photos	Yes	Unknown	Not Provided	4/27/2016	
Handover Package	No				
New Build 445 Documentation	No				
Other	No				
Previous PMI	No				

The desktop mount mapping is based on the engineering review of the available site documents in FUZE, as listed above, in place of a full mount mapping. It is assumed that the information provided in the documents listed above, provide an accurate representation of the existing mount. EOR reserves the right and will typically require additional clarification and verification as will be included in the PMI requirements. During the Post Modification Inspection (PMI) process, the GC on site will be required to confirm all questions, confirmations, and validations as posed by the EOR. The engineering review for this desktop mount mapping was performed in accordance to the ANSI/TIA-222-H requirements and Verizon's NSTD446 standard.

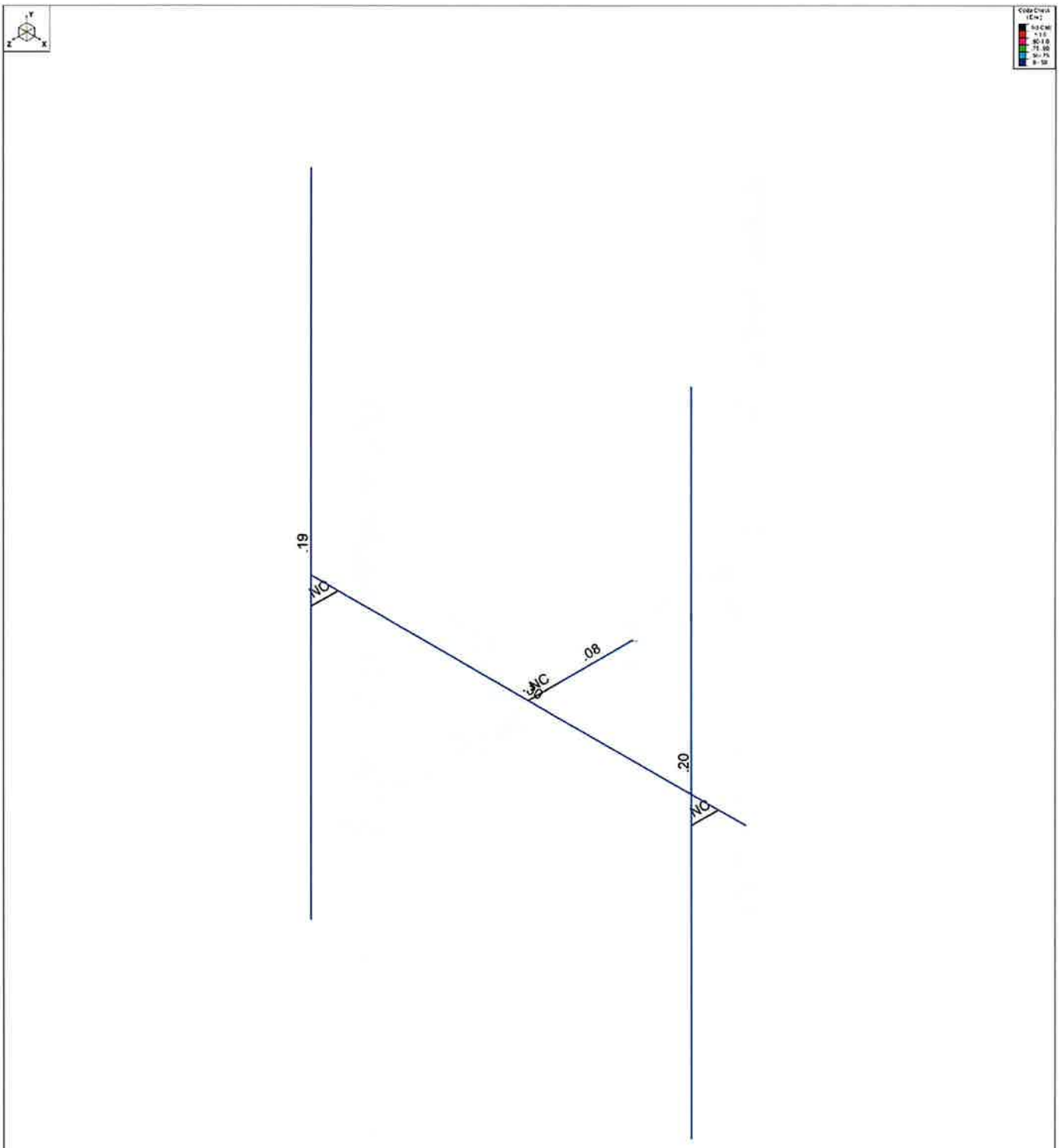
Photo taken from: Closeout Package

Photo taken from: Closeout Package



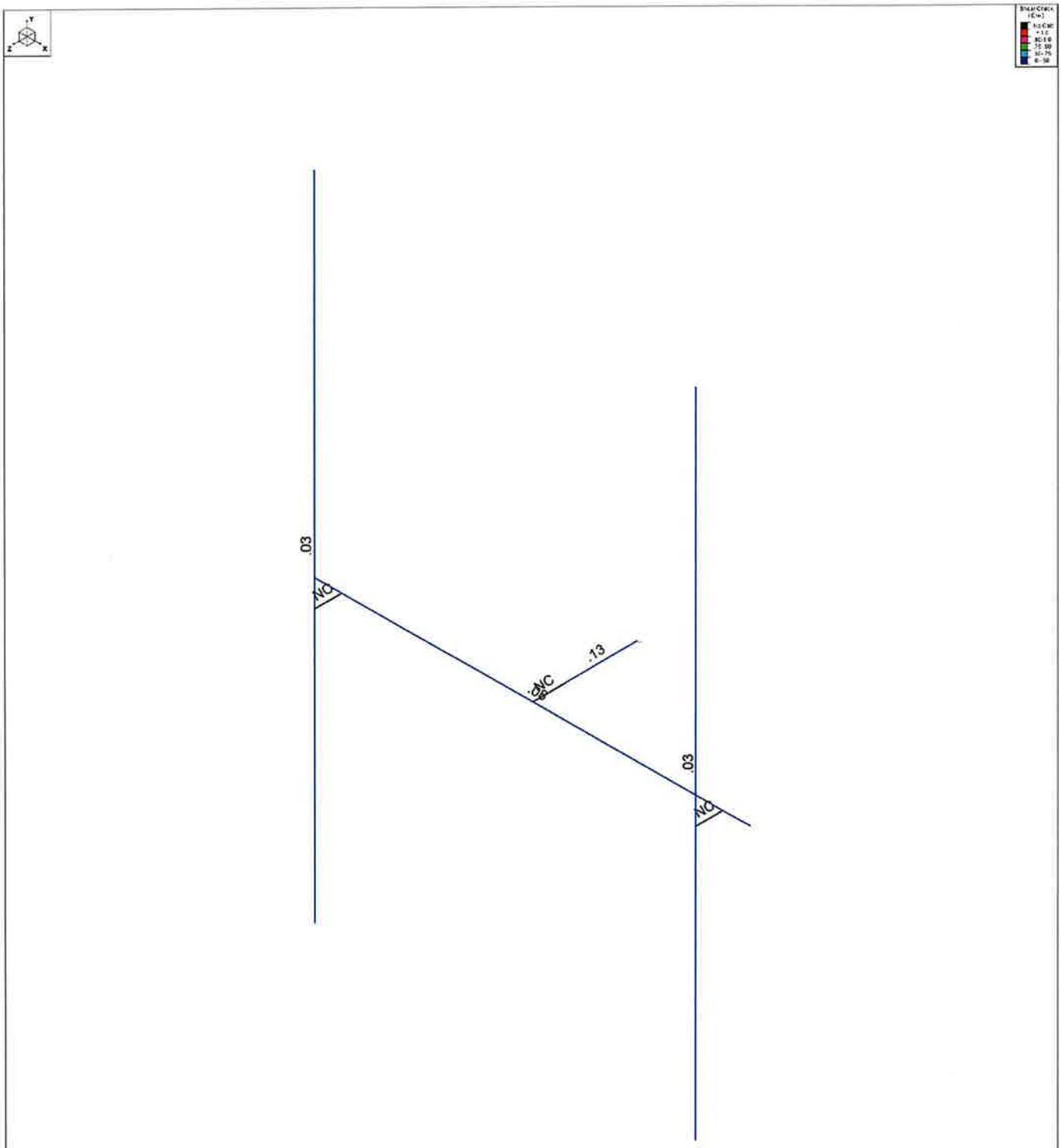
Envelope Only Solution

		SK - 1
		May 19, 2023 at 2:37 PM
		5000185987-VZW_MT_LOT_A_H.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

		SK - 2
		May 19, 2023 at 2:37 PM
		5000185987-VZW_MT_LOT_A_H.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

		SK - 3
		May 19, 2023 at 2:37 PM
		5000185987-VZW_MT_LOT_A_H.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Antenna D	None					21			
2	Antenna Di	None					21			
3	Antenna Wo (0 Deg)	None					21			
4	Antenna Wo (30 Deg)	None					21			
5	Antenna Wo (60 Deg)	None					21			
6	Antenna Wo (90 Deg)	None					21			
7	Antenna Wo (120 Deg)	None					21			
8	Antenna Wo (150 Deg)	None					21			
9	Antenna Wo (180 Deg)	None					21			
10	Antenna Wo (210 Deg)	None					21			
11	Antenna Wo (240 Deg)	None					21			
12	Antenna Wo (270 Deg)	None					21			
13	Antenna Wo (300 Deg)	None					21			
14	Antenna Wo (330 Deg)	None					21			
15	Antenna Wi (0 Deg)	None					21			
16	Antenna Wi (30 Deg)	None					21			
17	Antenna Wi (60 Deg)	None					21			
18	Antenna Wi (90 Deg)	None					21			
19	Antenna Wi (120 Deg)	None					21			
20	Antenna Wi (150 Deg)	None					21			
21	Antenna Wi (180 Deg)	None					21			
22	Antenna Wi (210 Deg)	None					21			
23	Antenna Wi (240 Deg)	None					21			
24	Antenna Wi (270 Deg)	None					21			
25	Antenna Wi (300 Deg)	None					21			
26	Antenna Wi (330 Deg)	None					21			
27	Antenna Wm (0 Deg)	None					21			
28	Antenna Wm (30 Deg)	None					21			
29	Antenna Wm (60 Deg)	None					21			
30	Antenna Wm (90 Deg)	None					21			
31	Antenna Wm (120 Deg)	None					21			
32	Antenna Wm (150 Deg)	None					21			
33	Antenna Wm (180 Deg)	None					21			
34	Antenna Wm (210 Deg)	None					21			
35	Antenna Wm (240 Deg)	None					21			
36	Antenna Wm (270 Deg)	None					21			
37	Antenna Wm (300 Deg)	None					21			
38	Antenna Wm (330 Deg)	None					21			
39	Structure D	None		-1						
40	Structure Di	None						4		
41	Structure Wo (0 Deg)	None						8		
42	Structure Wo (30 Deg)	None						8		
43	Structure Wo (60 Deg)	None						8		
44	Structure Wo (90 Deg)	None						8		
45	Structure Wo (120 D...	None						8		
46	Structure Wo (150 D...	None						8		
47	Structure Wo (180 D...	None						8		
48	Structure Wo (210 D...	None						8		
49	Structure Wo (240 D...	None						8		
50	Structure Wo (270 D...	None						8		
51	Structure Wo (300 D...	None						8		
52	Structure Wo (330 D...	None						8		
53	Structure Wi (0 Deg)	None						8		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
54	Structure Wi (30 Deg)	None						8		
55	Structure Wi (60 Deg)	None						8		
56	Structure Wi (90 Deg)	None						8		
57	Structure Wi (120 De..	None						8		
58	Structure Wi (150 De..	None						8		
59	Structure Wi (180 De..	None						8		
60	Structure Wi (210 De..	None						8		
61	Structure Wi (240 De..	None						8		
62	Structure Wi (270 De..	None						8		
63	Structure Wi (300 De..	None						8		
64	Structure Wi (330 De..	None						8		
65	Structure Wm (0 Deg)	None						8		
66	Structure Wm (30 De...	None						8		
67	Structure Wm (60 De...	None						8		
68	Structure Wm (90 De...	None						8		
69	Structure Wm (120 D...	None						8		
70	Structure Wm (150 D...	None						8		
71	Structure Wm (180 D...	None						8		
72	Structure Wm (210 D...	None						8		
73	Structure Wm (240 D...	None						8		
74	Structure Wm (270 D...	None						8		
75	Structure Wm (300 D...	None						8		
76	Structure Wm (330 D...	None						8		
77	Lm1	None					1			
78	Lm2	None					1			
79	Lv1	None					1			
80	Lv2	None					1			
81	Antenna Ev	None					21			
82	Antenna Eh (0 Deg)	None					14			
83	Antenna Eh (90 Deg)	None					14			
84	Structure Ev	ELY		-.045						
85	Structure Eh (0 Deg)	ELZ			-.113					
86	Structure Eh (90 Deg)	ELX	.113							

Load Combinations

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2D+1.0Wo (0 Deg)	Yes	Y		1	1.2	39	1.2	3	1	41	1														
2	1.2D+1.0Wo (30 Deg)	Yes	Y		1	1.2	39	1.2	4	1	42	1														
3	1.2D+1.0Wo (60 Deg)	Yes	Y		1	1.2	39	1.2	5	1	43	1														
4	1.2D+1.0Wo (90 Deg)	Yes	Y		1	1.2	39	1.2	6	1	44	1														
5	1.2D+1.0Wo (120 Deg)	Yes	Y		1	1.2	39	1.2	7	1	45	1														
6	1.2D+1.0Wo (150 Deg)	Yes	Y		1	1.2	39	1.2	8	1	46	1														
7	1.2D+1.0Wo (180 Deg)	Yes	Y		1	1.2	39	1.2	9	1	47	1														
8	1.2D+1.0Wo (210 Deg)	Yes	Y		1	1.2	39	1.2	10	1	48	1														
9	1.2D+1.0Wo (240 Deg)	Yes	Y		1	1.2	39	1.2	11	1	49	1														
10	1.2D+1.0Wo (270 Deg)	Yes	Y		1	1.2	39	1.2	12	1	50	1														
11	1.2D+1.0Wo (300 Deg)	Yes	Y		1	1.2	39	1.2	13	1	51	1														
12	1.2D+1.0Wo (330 Deg)	Yes	Y		1	1.2	39	1.2	14	1	52	1														
13	1.2D + 1.0Di + 1.0Wi (0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	15	1	53	1										
14	1.2D + 1.0Di + 1.0Wi (3...	Yes	Y		1	1.2	39	1.2	2	1	40	1	16	1	54	1										
15	1.2D + 1.0Di + 1.0Wi (6...	Yes	Y		1	1.2	39	1.2	2	1	40	1	17	1	55	1										
16	1.2D + 1.0Di + 1.0Wi (9...	Yes	Y		1	1.2	39	1.2	2	1	40	1	18	1	56	1										
17	1.2D + 1.0Di + 1.0Wi (1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	19	1	57	1										
18	1.2D + 1.0Di + 1.0Wi (1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	20	1	58	1										
19	1.2D + 1.0Di + 1.0Wi (1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	21	1	59	1										

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
20	1.2D + 1.0Di + 1.0Wi (2...	Yes	Y		1	1.2	39	1.2	2	1	40	1	22	1	60	1								
21	1.2D + 1.0Di + 1.0Wi (2...	Yes	Y		1	1.2	39	1.2	2	1	40	1	23	1	61	1								
22	1.2D + 1.0Di + 1.0Wi (2...	Yes	Y		1	1.2	39	1.2	2	1	40	1	24	1	62	1								
23	1.2D + 1.0Di + 1.0Wi (3...	Yes	Y		1	1.2	39	1.2	2	1	40	1	25	1	63	1								
24	1.2D + 1.0Di + 1.0Wi (3...	Yes	Y		1	1.2	39	1.2	2	1	40	1	26	1	64	1								
25	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	27	1	65	1										
26	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	28	1	66	1										
27	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	29	1	67	1										
28	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	30	1	68	1										
29	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	31	1	69	1										
30	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	32	1	70	1										
31	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	33	1	71	1										
32	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	34	1	72	1										
33	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	35	1	73	1										
34	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	36	1	74	1										
35	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	37	1	75	1										
36	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	38	1	76	1										
37	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	27	1	65	1										
38	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	28	1	66	1										
39	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	29	1	67	1										
40	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	30	1	68	1										
41	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	31	1	69	1										
42	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	32	1	70	1										
43	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	33	1	71	1										
44	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	34	1	72	1										
45	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	35	1	73	1										
46	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	36	1	74	1										
47	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	37	1	75	1										
48	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	38	1	76	1										
49	1.2D + 1.5Lv1	Yes	Y		1	1.2	39	1.2	79	1.5														
50	1.2D + 1.5Lv2	Yes	Y		1	1.2	39	1.2	80	1.5														
51	1.4D	Yes	Y		1	1.4	39	1.4																
52	1.2D + 1.0Ev + 1.0Eh (0...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	1	83		ELZ	1	E...					
53	1.2D + 1.0Ev + 1.0Eh (3...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	.866	83	.5	ELZ	.866	E...	.5				
54	1.2D + 1.0Ev + 1.0Eh (6...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	.5	83	.866	ELZ	.5	E...	.866				
55	1.2D + 1.0Ev + 1.0Eh (9...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82		83	1	ELZ		E...	1				
56	1.2D + 1.0Ev + 1.0Eh (1...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-.5	83	.866	ELZ	-.5	E...	.866				
57	1.2D + 1.0Ev + 1.0Eh (1...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-.866	83	.5	ELZ	-.866	E...	.5				
58	1.2D + 1.0Ev + 1.0Eh (1...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-1	83		ELZ	-1	E...					
59	1.2D + 1.0Ev + 1.0Eh (2...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-.866	83	-.5	ELZ	-.866	E...	-.5				
60	1.2D + 1.0Ev + 1.0Eh (2...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-.5	83	-.866	ELZ	-.5	E...	-.866				
61	1.2D + 1.0Ev + 1.0Eh (2...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82		83	-1	ELZ		E...	-1				
62	1.2D + 1.0Ev + 1.0Eh (3...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	.5	83	-.866	ELZ	.5	E...	-.866				
63	1.2D + 1.0Ev + 1.0Eh (3...	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	.866	83	-.5	ELZ	.866	E...	-.5				
64	0.9D - 1.0Ev + 1.0Eh (0...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	1	83		ELZ	1	E...					
65	0.9D - 1.0Ev + 1.0Eh (3...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	.866	83	.5	ELZ	.866	E...	.5				
66	0.9D - 1.0Ev + 1.0Eh (6...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	.5	83	.866	ELZ	.5	E...	.866				
67	0.9D - 1.0Ev + 1.0Eh (9...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82		83	1	ELZ		E...	1				
68	0.9D - 1.0Ev + 1.0Eh (1...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-.5	83	.866	ELZ	-.5	E...	.866				
69	0.9D - 1.0Ev + 1.0Eh (1...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-.866	83	.5	ELZ	-.866	E...	.5				
70	0.9D - 1.0Ev + 1.0Eh (1...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-1	83		ELZ	-1	E...					
71	0.9D - 1.0Ev + 1.0Eh (2...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-.866	83	-.5	ELZ	-.866	E...	-.5				
72	0.9D - 1.0Ev + 1.0Eh (2...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-.5	83	-.866	ELZ	-.5	E...	-.866				
73	0.9D - 1.0Ev + 1.0Eh (2...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82		83	-1	ELZ		E...	-1				
74	0.9D - 1.0Ev + 1.0Eh (3...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	.5	83	-.866	ELZ	.5	E...	-.866				
75	0.9D - 1.0Ev + 1.0Eh (3...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	.866	83	-.5	ELZ	.866	E...	-.5				

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0	1.239583	0	
2	N2	0	0	1.90625	0	
3	N5	0	0	2.197917	0	
4	N6	2	0	2.197917	0	
5	N7	-2	0	2.197917	0	
6	N11	1.75	0	2.197917	0	
7	N12	1.75	0	2.447917	0	
8	N13	1.75	3.5	2.447917	0	
9	N14	1.75	-2.5	2.447917	0	
10	N15	-1.75	0	2.197917	0	
11	N16	-1.75	0	2.447917	0	
12	N17	-1.75	3.5	2.447917	0	
13	N18	-1.75	-2.5	2.447917	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Antenna Pipe	PIPE_2.0	Column	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
2	Standoff Arm	HSS4X4X4	Beam	Tube	A500 Gr.46	Typical	3.37	7.8	7.8	12.8
3	Standoff Pipe	PIPE_3.0	Column	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
4	Horizontal	PIPE_3.0	Column	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	60	1.2
7	A500 Gr 50	29000	11154	.3	.65	.49	50	1.5	58	1.2

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			Standoff Arm	Beam	Tube	A500 Gr.46	Typical
2	M4	N7	N6			Horizontal	Column	Pipe	A53 Gr. B	Typical
3	MP1A	N13	N14			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
4	M8	N11	N12			RIGID	None	None	RIGID	Typical
5	MP2A	N17	N18			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
6	M10	N15	N16			RIGID	None	None	RIGID	Typical
7	M10A	N2	N5			RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	Default			None
2	M4						Yes	** NA **			None
3	MP1A						Yes	** NA **			None
4	M8						Yes	** NA **			None
5	MP2A						Yes	** NA **			None
6	M10						Yes	** NA **			None
7	M10A						Yes	** NA **			None

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-6.6	3
2	MP1A	My	.002	3
3	MP1A	Mz	0	3
4	MP2A	Y	-43.55	2
5	MP2A	My	-.022	2
6	MP2A	Mz	0	2
7	MP2A	Y	-43.55	4
8	MP2A	My	-.022	4
9	MP2A	Mz	0	4
10	MP1A	Y	-36.85	1.5
11	MP1A	My	-.018	1.5
12	MP1A	Mz	0	1.5
13	MP1A	Y	-36.85	4.5
14	MP1A	My	-.018	4.5
15	MP1A	Mz	0	4.5
16	MP1A	Y	-84.4	1
17	MP1A	My	.042	1
18	MP1A	Mz	0	1
19	MP2A	Y	-70.3	1
20	MP2A	My	.035	1
21	MP2A	Mz	0	1

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-6.48	3
2	MP1A	My	.002	3
3	MP1A	Mz	0	3
4	MP2A	Y	-34.72	2
5	MP2A	My	-.017	2
6	MP2A	Mz	0	2
7	MP2A	Y	-34.72	4
8	MP2A	My	-.017	4
9	MP2A	Mz	0	4
10	MP1A	Y	-60.366	1.5
11	MP1A	My	-.03	1.5
12	MP1A	Mz	0	1.5
13	MP1A	Y	-60.366	4.5
14	MP1A	My	-.03	4.5
15	MP1A	Mz	0	4.5
16	MP1A	Y	-43.757	1
17	MP1A	My	.022	1
18	MP1A	Mz	0	1
19	MP2A	Y	-39.344	1
20	MP2A	My	.02	1
21	MP2A	Mz	0	1

Member Point Loads (BLC 3 : Antenna Wo (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	0	3
2	MP1A	Z	-9.699	3
3	MP1A	Mx	0	3
4	MP2A	X	0	2
5	MP2A	Z	-79.21	2
6	MP2A	Mx	0	2
7	MP2A	X	0	4

Member Point Loads (BLC 3 : Antenna Wo (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
8	MP2A	Z	-79.21	4
9	MP2A	Mx	0	4
10	MP1A	X	0	1.5
11	MP1A	Z	-60.822	1.5
12	MP1A	Mx	0	1.5
13	MP1A	X	0	4.5
14	MP1A	Z	-60.822	4.5
15	MP1A	Mx	0	4.5
16	MP1A	X	0	1
17	MP1A	Z	-62.64	1
18	MP1A	Mx	0	1
19	MP2A	X	0	1
20	MP2A	Z	-62.64	1
21	MP2A	Mx	0	1

Member Point Loads (BLC 4 : Antenna Wo (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	4.15	3
2	MP1A	Z	-7.188	3
3	MP1A	Mx	.001	3
4	MP2A	X	33.114	2
5	MP2A	Z	-57.354	2
6	MP2A	Mx	-.017	2
7	MP2A	X	33.114	4
8	MP2A	Z	-57.354	4
9	MP2A	Mx	-.017	4
10	MP1A	X	29.628	1.5
11	MP1A	Z	-51.317	1.5
12	MP1A	Mx	-.015	1.5
13	MP1A	X	29.628	4.5
14	MP1A	Z	-51.317	4.5
15	MP1A	Mx	-.015	4.5
16	MP1A	X	28.744	1
17	MP1A	Z	-49.786	1
18	MP1A	Mx	.014	1
19	MP2A	X	27.784	1
20	MP2A	Z	-48.123	1
21	MP2A	Mx	.014	1

Member Point Loads (BLC 5 : Antenna Wo (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	4.764	3
2	MP1A	Z	-2.751	3
3	MP1A	Mx	.001	3
4	MP2A	X	34.868	2
5	MP2A	Z	-20.131	2
6	MP2A	Mx	-.017	2
7	MP2A	X	34.868	4
8	MP2A	Z	-20.131	4
9	MP2A	Mx	-.017	4
10	MP1A	X	48.605	1.5
11	MP1A	Z	-28.062	1.5
12	MP1A	Mx	-.024	1.5
13	MP1A	X	48.605	4.5
14	MP1A	Z	-28.062	4.5
15	MP1A	Mx	-.024	4.5

Member Point Loads (BLC 5 : Antenna Wo (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
16	MP1A	X	40.861	1
17	MP1A	Z	-23.591	1
18	MP1A	Mx	.02	1
19	MP2A	X	35.874	1
20	MP2A	Z	-20.712	1
21	MP2A	Mx	.018	1

Member Point Loads (BLC 6 : Antenna Wo (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	4.102	3
2	MP1A	Z	0	3
3	MP1A	Mx	.001	3
4	MP2A	X	27.279	2
5	MP2A	Z	0	2
6	MP2A	Mx	-.014	2
7	MP2A	X	27.279	4
8	MP2A	Z	0	4
9	MP2A	Mx	-.014	4
10	MP1A	X	54.558	1.5
11	MP1A	Z	0	1.5
12	MP1A	Mx	-.027	1.5
13	MP1A	X	54.558	4.5
14	MP1A	Z	0	4.5
15	MP1A	Mx	-.027	4.5
16	MP1A	X	42.03	1
17	MP1A	Z	0	1
18	MP1A	Mx	.021	1
19	MP2A	X	34.351	1
20	MP2A	Z	0	1
21	MP2A	Mx	.017	1

Member Point Loads (BLC 7 : Antenna Wo (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	4.764	3
2	MP1A	Z	2.751	3
3	MP1A	Mx	.001	3
4	MP2A	X	34.868	2
5	MP2A	Z	20.131	2
6	MP2A	Mx	-.017	2
7	MP2A	X	34.868	4
8	MP2A	Z	20.131	4
9	MP2A	Mx	-.017	4
10	MP1A	X	48.605	1.5
11	MP1A	Z	28.062	1.5
12	MP1A	Mx	-.024	1.5
13	MP1A	X	48.605	4.5
14	MP1A	Z	28.062	4.5
15	MP1A	Mx	-.024	4.5
16	MP1A	X	40.861	1
17	MP1A	Z	23.591	1
18	MP1A	Mx	.02	1
19	MP2A	X	35.874	1
20	MP2A	Z	20.712	1
21	MP2A	Mx	.018	1

Member Point Loads (BLC 8 : Antenna Wo (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	4.15	3
2	MP1A	Z	7.188	3
3	MP1A	Mx	.001	3
4	MP2A	X	33.114	2
5	MP2A	Z	57.354	2
6	MP2A	Mx	-.017	2
7	MP2A	X	33.114	4
8	MP2A	Z	57.354	4
9	MP2A	Mx	-.017	4
10	MP1A	X	29.628	1.5
11	MP1A	Z	51.317	1.5
12	MP1A	Mx	-.015	1.5
13	MP1A	X	29.628	4.5
14	MP1A	Z	51.317	4.5
15	MP1A	Mx	-.015	4.5
16	MP1A	X	28.744	1
17	MP1A	Z	49.786	1
18	MP1A	Mx	.014	1
19	MP2A	X	27.784	1
20	MP2A	Z	48.123	1
21	MP2A	Mx	.014	1

Member Point Loads (BLC 9 : Antenna Wo (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	0	3
2	MP1A	Z	9.699	3
3	MP1A	Mx	0	3
4	MP2A	X	0	2
5	MP2A	Z	79.21	2
6	MP2A	Mx	0	2
7	MP2A	X	0	4
8	MP2A	Z	79.21	4
9	MP2A	Mx	0	4
10	MP1A	X	0	1.5
11	MP1A	Z	60.822	1.5
12	MP1A	Mx	0	1.5
13	MP1A	X	0	4.5
14	MP1A	Z	60.822	4.5
15	MP1A	Mx	0	4.5
16	MP1A	X	0	1
17	MP1A	Z	62.64	1
18	MP1A	Mx	0	1
19	MP2A	X	0	1
20	MP2A	Z	62.64	1
21	MP2A	Mx	0	1

Member Point Loads (BLC 10 : Antenna Wo (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-4.15	3
2	MP1A	Z	7.188	3
3	MP1A	Mx	-.001	3
4	MP2A	X	-33.114	2
5	MP2A	Z	57.354	2
6	MP2A	Mx	.017	2
7	MP2A	X	-33.114	4
8	MP2A	Z	57.354	4

Member Point Loads (BLC 10 : Antenna Wo (210 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
9	MP2A	Mx	.017	4
10	MP1A	X	-29.628	1.5
11	MP1A	Z	51.317	1.5
12	MP1A	Mx	.015	1.5
13	MP1A	X	-29.628	4.5
14	MP1A	Z	51.317	4.5
15	MP1A	Mx	.015	4.5
16	MP1A	X	-28.744	1
17	MP1A	Z	49.786	1
18	MP1A	Mx	-.014	1
19	MP2A	X	-27.784	1
20	MP2A	Z	48.123	1
21	MP2A	Mx	-.014	1

Member Point Loads (BLC 11 : Antenna Wo (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-4.764	3
2	MP1A	Z	2.751	3
3	MP1A	Mx	-.001	3
4	MP2A	X	-34.868	2
5	MP2A	Z	20.131	2
6	MP2A	Mx	.017	2
7	MP2A	X	-34.868	4
8	MP2A	Z	20.131	4
9	MP2A	Mx	.017	4
10	MP1A	X	-48.605	1.5
11	MP1A	Z	28.062	1.5
12	MP1A	Mx	.024	1.5
13	MP1A	X	-48.605	4.5
14	MP1A	Z	28.062	4.5
15	MP1A	Mx	.024	4.5
16	MP1A	X	-40.861	1
17	MP1A	Z	23.591	1
18	MP1A	Mx	-.02	1
19	MP2A	X	-35.874	1
20	MP2A	Z	20.712	1
21	MP2A	Mx	-.018	1

Member Point Loads (BLC 12 : Antenna Wo (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-4.102	3
2	MP1A	Z	0	3
3	MP1A	Mx	-.001	3
4	MP2A	X	-27.279	2
5	MP2A	Z	0	2
6	MP2A	Mx	.014	2
7	MP2A	X	-27.279	4
8	MP2A	Z	0	4
9	MP2A	Mx	.014	4
10	MP1A	X	-54.558	1.5
11	MP1A	Z	0	1.5
12	MP1A	Mx	.027	1.5
13	MP1A	X	-54.558	4.5
14	MP1A	Z	0	4.5
15	MP1A	Mx	.027	4.5
16	MP1A	X	-42.03	1

Member Point Loads (BLC 12 : Antenna Wo (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP1A	Z	0	1
18	MP1A	Mx	-.021	1
19	MP2A	X	-34.351	1
20	MP2A	Z	0	1
21	MP2A	Mx	-.017	1

Member Point Loads (BLC 13 : Antenna Wo (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-4.764	3
2	MP1A	Z	-2.751	3
3	MP1A	Mx	-.001	3
4	MP2A	X	-34.868	2
5	MP2A	Z	-20.131	2
6	MP2A	Mx	.017	2
7	MP2A	X	-34.868	4
8	MP2A	Z	-20.131	4
9	MP2A	Mx	.017	4
10	MP1A	X	-48.605	1.5
11	MP1A	Z	-28.062	1.5
12	MP1A	Mx	.024	1.5
13	MP1A	X	-48.605	4.5
14	MP1A	Z	-28.062	4.5
15	MP1A	Mx	.024	4.5
16	MP1A	X	-40.861	1
17	MP1A	Z	-23.591	1
18	MP1A	Mx	-.02	1
19	MP2A	X	-35.874	1
20	MP2A	Z	-20.712	1
21	MP2A	Mx	-.018	1

Member Point Loads (BLC 14 : Antenna Wo (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-4.15	3
2	MP1A	Z	-7.188	3
3	MP1A	Mx	-.001	3
4	MP2A	X	-33.114	2
5	MP2A	Z	-57.354	2
6	MP2A	Mx	.017	2
7	MP2A	X	-33.114	4
8	MP2A	Z	-57.354	4
9	MP2A	Mx	.017	4
10	MP1A	X	-29.628	1.5
11	MP1A	Z	-51.317	1.5
12	MP1A	Mx	.015	1.5
13	MP1A	X	-29.628	4.5
14	MP1A	Z	-51.317	4.5
15	MP1A	Mx	.015	4.5
16	MP1A	X	-28.744	1
17	MP1A	Z	-49.786	1
18	MP1A	Mx	-.014	1
19	MP2A	X	-27.784	1
20	MP2A	Z	-48.123	1
21	MP2A	Mx	-.014	1

Member Point Loads (BLC 15 : Antenna Wi (0 Deg))

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

Member Point Loads (BLC 15 : Antenna Wi (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	0	3
2	MP1A	Z	-2.722	3
3	MP1A	Mx	0	3
4	MP2A	X	0	2
5	MP2A	Z	-18.577	2
6	MP2A	Mx	0	2
7	MP2A	X	0	4
8	MP2A	Z	-18.577	4
9	MP2A	Mx	0	4
10	MP1A	X	0	1.5
11	MP1A	Z	-31.236	1.5
12	MP1A	Mx	0	1.5
13	MP1A	X	0	4.5
14	MP1A	Z	-31.236	4.5
15	MP1A	Mx	0	4.5
16	MP1A	X	0	1
17	MP1A	Z	-15.637	1
18	MP1A	Mx	0	1
19	MP2A	X	0	1
20	MP2A	Z	-15.637	1
21	MP2A	Mx	0	1

Member Point Loads (BLC 16 : Antenna Wi (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	1.2	3
2	MP1A	Z	-2.078	3
3	MP1A	Mx	.0003	3
4	MP2A	X	7.954	2
5	MP2A	Z	-13.776	2
6	MP2A	Mx	-.004	2
7	MP2A	X	7.954	4
8	MP2A	Z	-13.776	4
9	MP2A	Mx	-.004	4
10	MP1A	X	14.457	1.5
11	MP1A	Z	-25.04	1.5
12	MP1A	Mx	-.007	1.5
13	MP1A	X	14.457	4.5
14	MP1A	Z	-25.04	4.5
15	MP1A	Mx	-.007	4.5
16	MP1A	X	7.222	1
17	MP1A	Z	-12.509	1
18	MP1A	Mx	.004	1
19	MP2A	X	6.996	1
20	MP2A	Z	-12.117	1
21	MP2A	Mx	.003	1

Member Point Loads (BLC 17 : Antenna Wi (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	1.519	3
2	MP1A	Z	-.877	3
3	MP1A	Mx	.00038	3
4	MP2A	X	9.152	2
5	MP2A	Z	-5.284	2
6	MP2A	Mx	-.005	2
7	MP2A	X	9.152	4
8	MP2A	Z	-5.284	4

Member Point Loads (BLC 17 : Antenna Wi (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
9	MP2A	Mx	-.005	4
10	MP1A	X	21.017	1.5
11	MP1A	Z	-12.134	1.5
12	MP1A	Mx	-.011	1.5
13	MP1A	X	21.017	4.5
14	MP1A	Z	-12.134	4.5
15	MP1A	Mx	-.011	4.5
16	MP1A	X	10.444	1
17	MP1A	Z	-6.03	1
18	MP1A	Mx	.005	1
19	MP2A	X	9.267	1
20	MP2A	Z	-5.35	1
21	MP2A	Mx	.005	1

Member Point Loads (BLC 18 : Antenna Wi (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	1.432	3
2	MP1A	Z	0	3
3	MP1A	Mx	.000358	3
4	MP2A	X	7.898	2
5	MP2A	Z	0	2
6	MP2A	Mx	-.004	2
7	MP2A	X	7.898	4
8	MP2A	Z	0	4
9	MP2A	Mx	-.004	4
10	MP1A	X	21.947	1.5
11	MP1A	Z	0	1.5
12	MP1A	Mx	-.011	1.5
13	MP1A	X	21.947	4.5
14	MP1A	Z	0	4.5
15	MP1A	Mx	-.011	4.5
16	MP1A	X	10.867	1
17	MP1A	Z	0	1
18	MP1A	Mx	.005	1
19	MP2A	X	9.055	1
20	MP2A	Z	0	1
21	MP2A	Mx	.005	1

Member Point Loads (BLC 19 : Antenna Wi (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	1.519	3
2	MP1A	Z	.877	3
3	MP1A	Mx	.00038	3
4	MP2A	X	9.152	2
5	MP2A	Z	5.284	2
6	MP2A	Mx	-.005	2
7	MP2A	X	9.152	4
8	MP2A	Z	5.284	4
9	MP2A	Mx	-.005	4
10	MP1A	X	21.017	1.5
11	MP1A	Z	12.134	1.5
12	MP1A	Mx	-.011	1.5
13	MP1A	X	21.017	4.5
14	MP1A	Z	12.134	4.5
15	MP1A	Mx	-.011	4.5
16	MP1A	X	10.444	1

Member Point Loads (BLC 19 : Antenna Wi (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP1A	Z	6.03	1
18	MP1A	Mx	.005	1
19	MP2A	X	9.267	1
20	MP2A	Z	5.35	1
21	MP2A	Mx	.005	1

Member Point Loads (BLC 20 : Antenna Wi (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	1.2	3
2	MP1A	Z	2.078	3
3	MP1A	Mx	.0003	3
4	MP2A	X	7.954	2
5	MP2A	Z	13.776	2
6	MP2A	Mx	-.004	2
7	MP2A	X	7.954	4
8	MP2A	Z	13.776	4
9	MP2A	Mx	-.004	4
10	MP1A	X	14.457	1.5
11	MP1A	Z	25.04	1.5
12	MP1A	Mx	-.007	1.5
13	MP1A	X	14.457	4.5
14	MP1A	Z	25.04	4.5
15	MP1A	Mx	-.007	4.5
16	MP1A	X	7.222	1
17	MP1A	Z	12.509	1
18	MP1A	Mx	.004	1
19	MP2A	X	6.996	1
20	MP2A	Z	12.117	1
21	MP2A	Mx	.003	1

Member Point Loads (BLC 21 : Antenna Wi (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	0	3
2	MP1A	Z	2.722	3
3	MP1A	Mx	0	3
4	MP2A	X	0	2
5	MP2A	Z	18.577	2
6	MP2A	Mx	0	2
7	MP2A	X	0	4
8	MP2A	Z	18.577	4
9	MP2A	Mx	0	4
10	MP1A	X	0	1.5
11	MP1A	Z	31.236	1.5
12	MP1A	Mx	0	1.5
13	MP1A	X	0	4.5
14	MP1A	Z	31.236	4.5
15	MP1A	Mx	0	4.5
16	MP1A	X	0	1
17	MP1A	Z	15.637	1
18	MP1A	Mx	0	1
19	MP2A	X	0	1
20	MP2A	Z	15.637	1
21	MP2A	Mx	0	1

Member Point Loads (BLC 22 : Antenna Wi (210 Deg))

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

Member Point Loads (BLC 22 : Antenna Wi (210 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-1.2	3
2	MP1A	Z	2.078	3
3	MP1A	Mx	-.0003	3
4	MP2A	X	-7.954	2
5	MP2A	Z	13.776	2
6	MP2A	Mx	.004	2
7	MP2A	X	-7.954	4
8	MP2A	Z	13.776	4
9	MP2A	Mx	.004	4
10	MP1A	X	-14.457	1.5
11	MP1A	Z	25.04	1.5
12	MP1A	Mx	.007	1.5
13	MP1A	X	-14.457	4.5
14	MP1A	Z	25.04	4.5
15	MP1A	Mx	.007	4.5
16	MP1A	X	-7.222	1
17	MP1A	Z	12.509	1
18	MP1A	Mx	-.004	1
19	MP2A	X	-6.996	1
20	MP2A	Z	12.117	1
21	MP2A	Mx	-.003	1

Member Point Loads (BLC 23 : Antenna Wi (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-1.519	3
2	MP1A	Z	.877	3
3	MP1A	Mx	-.00038	3
4	MP2A	X	-9.152	2
5	MP2A	Z	5.284	2
6	MP2A	Mx	.005	2
7	MP2A	X	-9.152	4
8	MP2A	Z	5.284	4
9	MP2A	Mx	.005	4
10	MP1A	X	-21.017	1.5
11	MP1A	Z	12.134	1.5
12	MP1A	Mx	.011	1.5
13	MP1A	X	-21.017	4.5
14	MP1A	Z	12.134	4.5
15	MP1A	Mx	.011	4.5
16	MP1A	X	-10.444	1
17	MP1A	Z	6.03	1
18	MP1A	Mx	-.005	1
19	MP2A	X	-9.267	1
20	MP2A	Z	5.35	1
21	MP2A	Mx	-.005	1

Member Point Loads (BLC 24 : Antenna Wi (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-1.432	3
2	MP1A	Z	0	3
3	MP1A	Mx	-.000358	3
4	MP2A	X	-7.898	2
5	MP2A	Z	0	2
6	MP2A	Mx	.004	2
7	MP2A	X	-7.898	4
8	MP2A	Z	0	4

Member Point Loads (BLC 24 : Antenna Wi (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
9	MP2A	Mx	.004	4
10	MP1A	X	-21.947	1.5
11	MP1A	Z	0	1.5
12	MP1A	Mx	.011	1.5
13	MP1A	X	-21.947	4.5
14	MP1A	Z	0	4.5
15	MP1A	Mx	.011	4.5
16	MP1A	X	-10.867	1
17	MP1A	Z	0	1
18	MP1A	Mx	-.005	1
19	MP2A	X	-9.055	1
20	MP2A	Z	0	1
21	MP2A	Mx	-.005	1

Member Point Loads (BLC 25 : Antenna Wi (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-1.519	3
2	MP1A	Z	-.877	3
3	MP1A	Mx	-.00038	3
4	MP2A	X	-9.152	2
5	MP2A	Z	-5.284	2
6	MP2A	Mx	.005	2
7	MP2A	X	-9.152	4
8	MP2A	Z	-5.284	4
9	MP2A	Mx	.005	4
10	MP1A	X	-21.017	1.5
11	MP1A	Z	-12.134	1.5
12	MP1A	Mx	.011	1.5
13	MP1A	X	-21.017	4.5
14	MP1A	Z	-12.134	4.5
15	MP1A	Mx	.011	4.5
16	MP1A	X	-10.444	1
17	MP1A	Z	-6.03	1
18	MP1A	Mx	-.005	1
19	MP2A	X	-9.267	1
20	MP2A	Z	-5.35	1
21	MP2A	Mx	-.005	1

Member Point Loads (BLC 26 : Antenna Wi (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-1.2	3
2	MP1A	Z	-2.078	3
3	MP1A	Mx	-.0003	3
4	MP2A	X	-7.954	2
5	MP2A	Z	-13.776	2
6	MP2A	Mx	.004	2
7	MP2A	X	-7.954	4
8	MP2A	Z	-13.776	4
9	MP2A	Mx	.004	4
10	MP1A	X	-14.457	1.5
11	MP1A	Z	-25.04	1.5
12	MP1A	Mx	.007	1.5
13	MP1A	X	-14.457	4.5
14	MP1A	Z	-25.04	4.5
15	MP1A	Mx	.007	4.5
16	MP1A	X	-7.222	1

Member Point Loads (BLC 26 : Antenna Wi (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP1A	Z	-12.509	1
18	MP1A	Mx	-.004	1
19	MP2A	X	-6.996	1
20	MP2A	Z	-12.117	1
21	MP2A	Mx	-.003	1

Member Point Loads (BLC 27 : Antenna Wm (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	0	3
2	MP1A	Z	-.606	3
3	MP1A	Mx	0	3
4	MP2A	X	0	2
5	MP2A	Z	-4.951	2
6	MP2A	Mx	0	2
7	MP2A	X	0	4
8	MP2A	Z	-4.951	4
9	MP2A	Mx	0	4
10	MP1A	X	0	1.5
11	MP1A	Z	-3.801	1.5
12	MP1A	Mx	0	1.5
13	MP1A	X	0	4.5
14	MP1A	Z	-3.801	4.5
15	MP1A	Mx	0	4.5
16	MP1A	X	0	1
17	MP1A	Z	-3.915	1
18	MP1A	Mx	0	1
19	MP2A	X	0	1
20	MP2A	Z	-3.915	1
21	MP2A	Mx	0	1

Member Point Loads (BLC 28 : Antenna Wm (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	.259	3
2	MP1A	Z	-.449	3
3	MP1A	Mx	6.5e-5	3
4	MP2A	X	2.07	2
5	MP2A	Z	-3.585	2
6	MP2A	Mx	-.001	2
7	MP2A	X	2.07	4
8	MP2A	Z	-3.585	4
9	MP2A	Mx	-.001	4
10	MP1A	X	1.852	1.5
11	MP1A	Z	-3.207	1.5
12	MP1A	Mx	-.000926	1.5
13	MP1A	X	1.852	4.5
14	MP1A	Z	-3.207	4.5
15	MP1A	Mx	-.000926	4.5
16	MP1A	X	1.796	1
17	MP1A	Z	-3.112	1
18	MP1A	Mx	.000898	1
19	MP2A	X	1.737	1
20	MP2A	Z	-3.008	1
21	MP2A	Mx	.000868	1

Member Point Loads (BLC 29 : Antenna Wm (60 Deg))

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

Member Point Loads (BLC 29 : Antenna Wm (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	.298	3
2	MP1A	Z	-.172	3
3	MP1A	Mx	7.4e-5	3
4	MP2A	X	2.179	2
5	MP2A	Z	-1.258	2
6	MP2A	Mx	-.001	2
7	MP2A	X	2.179	4
8	MP2A	Z	-1.258	4
9	MP2A	Mx	-.001	4
10	MP1A	X	3.038	1.5
11	MP1A	Z	-1.754	1.5
12	MP1A	Mx	-.002	1.5
13	MP1A	X	3.038	4.5
14	MP1A	Z	-1.754	4.5
15	MP1A	Mx	-.002	4.5
16	MP1A	X	2.554	1
17	MP1A	Z	-1.474	1
18	MP1A	Mx	.001	1
19	MP2A	X	2.242	1
20	MP2A	Z	-1.294	1
21	MP2A	Mx	.001	1

Member Point Loads (BLC 30 : Antenna Wm (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	.256	3
2	MP1A	Z	0	3
3	MP1A	Mx	6.4e-5	3
4	MP2A	X	1.705	2
5	MP2A	Z	0	2
6	MP2A	Mx	-.000853	2
7	MP2A	X	1.705	4
8	MP2A	Z	0	4
9	MP2A	Mx	-.000853	4
10	MP1A	X	3.41	1.5
11	MP1A	Z	0	1.5
12	MP1A	Mx	-.002	1.5
13	MP1A	X	3.41	4.5
14	MP1A	Z	0	4.5
15	MP1A	Mx	-.002	4.5
16	MP1A	X	2.627	1
17	MP1A	Z	0	1
18	MP1A	Mx	.001	1
19	MP2A	X	2.147	1
20	MP2A	Z	0	1
21	MP2A	Mx	.001	1

Member Point Loads (BLC 31 : Antenna Wm (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	.298	3
2	MP1A	Z	.172	3
3	MP1A	Mx	7.4e-5	3
4	MP2A	X	2.179	2
5	MP2A	Z	1.258	2
6	MP2A	Mx	-.001	2
7	MP2A	X	2.179	4
8	MP2A	Z	1.258	4

Member Point Loads (BLC 31 : Antenna Wm (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
9	MP2A	Mx	-.001	4
10	MP1A	X	3.038	1.5
11	MP1A	Z	1.754	1.5
12	MP1A	Mx	-.002	1.5
13	MP1A	X	3.038	4.5
14	MP1A	Z	1.754	4.5
15	MP1A	Mx	-.002	4.5
16	MP1A	X	2.554	1
17	MP1A	Z	1.474	1
18	MP1A	Mx	.001	1
19	MP2A	X	2.242	1
20	MP2A	Z	1.294	1
21	MP2A	Mx	.001	1

Member Point Loads (BLC 32 : Antenna Wm (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	.259	3
2	MP1A	Z	.449	3
3	MP1A	Mx	6.5e-5	3
4	MP2A	X	2.07	2
5	MP2A	Z	3.585	2
6	MP2A	Mx	-.001	2
7	MP2A	X	2.07	4
8	MP2A	Z	3.585	4
9	MP2A	Mx	-.001	4
10	MP1A	X	1.852	1.5
11	MP1A	Z	3.207	1.5
12	MP1A	Mx	-.000926	1.5
13	MP1A	X	1.852	4.5
14	MP1A	Z	3.207	4.5
15	MP1A	Mx	-.000926	4.5
16	MP1A	X	1.796	1
17	MP1A	Z	3.112	1
18	MP1A	Mx	.000898	1
19	MP2A	X	1.737	1
20	MP2A	Z	3.008	1
21	MP2A	Mx	.000868	1

Member Point Loads (BLC 33 : Antenna Wm (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	0	3
2	MP1A	Z	.606	3
3	MP1A	Mx	0	3
4	MP2A	X	0	2
5	MP2A	Z	4.951	2
6	MP2A	Mx	0	2
7	MP2A	X	0	4
8	MP2A	Z	4.951	4
9	MP2A	Mx	0	4
10	MP1A	X	0	1.5
11	MP1A	Z	3.801	1.5
12	MP1A	Mx	0	1.5
13	MP1A	X	0	4.5
14	MP1A	Z	3.801	4.5
15	MP1A	Mx	0	4.5
16	MP1A	X	0	1

Member Point Loads (BLC 33 : Antenna Wm (180 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP1A	Z	3.915	1
18	MP1A	Mx	0	1
19	MP2A	X	0	1
20	MP2A	Z	3.915	1
21	MP2A	Mx	0	1

Member Point Loads (BLC 34 : Antenna Wm (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-.259	3
2	MP1A	Z	.449	3
3	MP1A	Mx	-6.5e-5	3
4	MP2A	X	-2.07	2
5	MP2A	Z	3.585	2
6	MP2A	Mx	.001	2
7	MP2A	X	-2.07	4
8	MP2A	Z	3.585	4
9	MP2A	Mx	.001	4
10	MP1A	X	-1.852	1.5
11	MP1A	Z	3.207	1.5
12	MP1A	Mx	.000926	1.5
13	MP1A	X	-1.852	4.5
14	MP1A	Z	3.207	4.5
15	MP1A	Mx	.000926	4.5
16	MP1A	X	-1.796	1
17	MP1A	Z	3.112	1
18	MP1A	Mx	-.000898	1
19	MP2A	X	-1.737	1
20	MP2A	Z	3.008	1
21	MP2A	Mx	-.000868	1

Member Point Loads (BLC 35 : Antenna Wm (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-.298	3
2	MP1A	Z	.172	3
3	MP1A	Mx	-7.4e-5	3
4	MP2A	X	-2.179	2
5	MP2A	Z	1.258	2
6	MP2A	Mx	.001	2
7	MP2A	X	-2.179	4
8	MP2A	Z	1.258	4
9	MP2A	Mx	.001	4
10	MP1A	X	-3.038	1.5
11	MP1A	Z	1.754	1.5
12	MP1A	Mx	.002	1.5
13	MP1A	X	-3.038	4.5
14	MP1A	Z	1.754	4.5
15	MP1A	Mx	.002	4.5
16	MP1A	X	-2.554	1
17	MP1A	Z	1.474	1
18	MP1A	Mx	-.001	1
19	MP2A	X	-2.242	1
20	MP2A	Z	1.294	1
21	MP2A	Mx	-.001	1

Member Point Loads (BLC 36 : Antenna Wm (270 Deg))

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

Member Point Loads (BLC 36 : Antenna Wm (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-.256	3
2	MP1A	Z	0	3
3	MP1A	Mx	-6.4e-5	3
4	MP2A	X	-1.705	2
5	MP2A	Z	0	2
6	MP2A	Mx	.000853	2
7	MP2A	X	-1.705	4
8	MP2A	Z	0	4
9	MP2A	Mx	.000853	4
10	MP1A	X	-3.41	1.5
11	MP1A	Z	0	1.5
12	MP1A	Mx	.002	1.5
13	MP1A	X	-3.41	4.5
14	MP1A	Z	0	4.5
15	MP1A	Mx	.002	4.5
16	MP1A	X	-2.627	1
17	MP1A	Z	0	1
18	MP1A	Mx	-.001	1
19	MP2A	X	-2.147	1
20	MP2A	Z	0	1
21	MP2A	Mx	-.001	1

Member Point Loads (BLC 37 : Antenna Wm (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-.298	3
2	MP1A	Z	-.172	3
3	MP1A	Mx	-7.4e-5	3
4	MP2A	X	-2.179	2
5	MP2A	Z	-1.258	2
6	MP2A	Mx	.001	2
7	MP2A	X	-2.179	4
8	MP2A	Z	-1.258	4
9	MP2A	Mx	.001	4
10	MP1A	X	-3.038	1.5
11	MP1A	Z	-1.754	1.5
12	MP1A	Mx	.002	1.5
13	MP1A	X	-3.038	4.5
14	MP1A	Z	-1.754	4.5
15	MP1A	Mx	.002	4.5
16	MP1A	X	-2.554	1
17	MP1A	Z	-1.474	1
18	MP1A	Mx	-.001	1
19	MP2A	X	-2.242	1
20	MP2A	Z	-1.294	1
21	MP2A	Mx	-.001	1

Member Point Loads (BLC 38 : Antenna Wm (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	-.259	3
2	MP1A	Z	-.449	3
3	MP1A	Mx	-6.5e-5	3
4	MP2A	X	-2.07	2
5	MP2A	Z	-3.585	2
6	MP2A	Mx	.001	2
7	MP2A	X	-2.07	4
8	MP2A	Z	-3.585	4

Member Point Loads (BLC 38 : Antenna Wm (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
9	MP2A	Mx	.001	4
10	MP1A	X	-1.852	1.5
11	MP1A	Z	-3.207	1.5
12	MP1A	Mx	.000926	1.5
13	MP1A	X	-1.852	4.5
14	MP1A	Z	-3.207	4.5
15	MP1A	Mx	.000926	4.5
16	MP1A	X	-1.796	1
17	MP1A	Z	-3.112	1
18	MP1A	Mx	-.000898	1
19	MP2A	X	-1.737	1
20	MP2A	Z	-3.008	1
21	MP2A	Mx	-.000868	1

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M8	Y	-500	0

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M10	Y	-500	0

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-250	0

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-250	%50

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-.297	3
2	MP1A	My	7.4e-5	3
3	MP1A	Mz	0	3
4	MP2A	Y	-1.96	2
5	MP2A	My	-.00098	2
6	MP2A	Mz	0	2
7	MP2A	Y	-1.96	4
8	MP2A	My	-.00098	4
9	MP2A	Mz	0	4
10	MP1A	Y	-1.659	1.5
11	MP1A	My	-.000829	1.5
12	MP1A	Mz	0	1.5
13	MP1A	Y	-1.659	4.5
14	MP1A	My	-.000829	4.5
15	MP1A	Mz	0	4.5
16	MP1A	Y	-3.799	1
17	MP1A	My	.002	1
18	MP1A	Mz	0	1
19	MP2A	Y	-3.164	1
20	MP2A	My	.002	1
21	MP2A	Mz	0	1

Member Point Loads (BLC 82 : Antenna Eh (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-.743	3
2	MP1A	Mx	0	3
3	MP2A	Z	-4.901	2
4	MP2A	Mx	0	2
5	MP2A	Z	-4.901	4
6	MP2A	Mx	0	4
7	MP1A	Z	-4.147	1.5
8	MP1A	Mx	0	1.5
9	MP1A	Z	-4.147	4.5
10	MP1A	Mx	0	4.5
11	MP1A	Z	-9.498	1
12	MP1A	Mx	0	1
13	MP2A	Z	-7.911	1
14	MP2A	Mx	0	1

Member Point Loads (BLC 83 : Antenna Eh (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	.743	3
2	MP1A	Mx	.000186	3
3	MP2A	X	4.901	2
4	MP2A	Mx	-.002	2
5	MP2A	X	4.901	4
6	MP2A	Mx	-.002	4
7	MP1A	X	4.147	1.5
8	MP1A	Mx	-.002	1.5
9	MP1A	X	4.147	4.5
10	MP1A	Mx	-.002	4.5
11	MP1A	X	9.498	1
12	MP1A	Mx	.005	1
13	MP2A	X	7.911	1
14	MP2A	Mx	.004	1

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/...
No Data to Print ...			

Member Distributed Loads (BLC 40 : Structure Di)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-9.345	-9.345	0	%100
2	M4	Y	-6.374	-6.374	0	%100
3	MP1A	Y	-4.824	-4.824	0	%100
4	MP2A	Y	-4.824	-4.824	0	%100

Member Distributed Loads (BLC 41 : Structure Wo (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	-11.059	-11.059	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	-9.589	-9.589	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	-9.589	-9.589	0	%100

Member Distributed Loads (BLC 42 : Structure Wo (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.43	1.43	0	%100
2	M1	Z	-2.477	-2.477	0	%100
3	M4	X	4.147	4.147	0	%100
4	M4	Z	-7.183	-7.183	0	%100
5	MP1A	X	4.794	4.794	0	%100
6	MP1A	Z	-8.304	-8.304	0	%100
7	MP2A	X	4.794	4.794	0	%100
8	MP2A	Z	-8.304	-8.304	0	%100

Member Distributed Loads (BLC 43 : Structure Wo (60 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	7.43	7.43	0	%100
2	M1	Z	-4.29	-4.29	0	%100
3	M4	X	2.394	2.394	0	%100
4	M4	Z	-1.382	-1.382	0	%100
5	MP1A	X	8.304	8.304	0	%100
6	MP1A	Z	-4.794	-4.794	0	%100
7	MP2A	X	8.304	8.304	0	%100
8	MP2A	Z	-4.794	-4.794	0	%100

Member Distributed Loads (BLC 44 : Structure Wo (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	11.439	11.439	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	0	0	0	%100
5	MP1A	X	9.589	9.589	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	9.589	9.589	0	%100
8	MP2A	Z	0	0	0	%100

Member Distributed Loads (BLC 45 : Structure Wo (120 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	7.43	7.43	0	%100
2	M1	Z	4.29	4.29	0	%100
3	M4	X	2.394	2.394	0	%100
4	M4	Z	1.382	1.382	0	%100
5	MP1A	X	8.304	8.304	0	%100
6	MP1A	Z	4.794	4.794	0	%100
7	MP2A	X	8.304	8.304	0	%100
8	MP2A	Z	4.794	4.794	0	%100

Member Distributed Loads (BLC 46 : Structure Wo (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.43	1.43	0	%100
2	M1	Z	2.477	2.477	0	%100
3	M4	X	4.147	4.147	0	%100
4	M4	Z	7.183	7.183	0	%100
5	MP1A	X	4.794	4.794	0	%100
6	MP1A	Z	8.304	8.304	0	%100
7	MP2A	X	4.794	4.794	0	%100
8	MP2A	Z	8.304	8.304	0	%100

Member Distributed Loads (BLC 47 : Structure Wo (180 Deg))

Member Label	Direction	Start Magnitude[lb/ft	End Magnitude[lb/ft,F	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 47 : Structure Wo (180 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	11.059	11.059	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	9.589	9.589	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	9.589	9.589	0	%100

Member Distributed Loads (BLC 48 : Structure Wo (210 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.43	-1.43	0	%100
2	M1	Z	2.477	2.477	0	%100
3	M4	X	-4.147	-4.147	0	%100
4	M4	Z	7.183	7.183	0	%100
5	MP1A	X	-4.794	-4.794	0	%100
6	MP1A	Z	8.304	8.304	0	%100
7	MP2A	X	-4.794	-4.794	0	%100
8	MP2A	Z	8.304	8.304	0	%100

Member Distributed Loads (BLC 49 : Structure Wo (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-7.43	-7.43	0	%100
2	M1	Z	4.29	4.29	0	%100
3	M4	X	-2.394	-2.394	0	%100
4	M4	Z	1.382	1.382	0	%100
5	MP1A	X	-8.304	-8.304	0	%100
6	MP1A	Z	4.794	4.794	0	%100
7	MP2A	X	-8.304	-8.304	0	%100
8	MP2A	Z	4.794	4.794	0	%100

Member Distributed Loads (BLC 50 : Structure Wo (270 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-11.439	-11.439	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	0	0	0	%100
5	MP1A	X	-9.589	-9.589	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	-9.589	-9.589	0	%100
8	MP2A	Z	0	0	0	%100

Member Distributed Loads (BLC 51 : Structure Wo (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-7.43	-7.43	0	%100
2	M1	Z	-4.29	-4.29	0	%100
3	M4	X	-2.394	-2.394	0	%100
4	M4	Z	-1.382	-1.382	0	%100
5	MP1A	X	-8.304	-8.304	0	%100
6	MP1A	Z	-4.794	-4.794	0	%100
7	MP2A	X	-8.304	-8.304	0	%100
8	MP2A	Z	-4.794	-4.794	0	%100

Member Distributed Loads (BLC 52 : Structure Wo (330 Deg))

Member Label	Direction	Start Magnitude[lb/ft	End Magnitude[lb/ft,F	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 52 : Structure Wo (330 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.43	-1.43	0	%100
2	M1	Z	-2.477	-2.477	0	%100
3	M4	X	-4.147	-4.147	0	%100
4	M4	Z	-7.183	-7.183	0	%100
5	MP1A	X	-4.794	-4.794	0	%100
6	MP1A	Z	-8.304	-8.304	0	%100
7	MP2A	X	-4.794	-4.794	0	%100
8	MP2A	Z	-8.304	-8.304	0	%100

Member Distributed Loads (BLC 53 : Structure Wi (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	-3.416	-3.416	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	-3.248	-3.248	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	-3.248	-3.248	0	%100

Member Distributed Loads (BLC 54 : Structure Wi (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.368	.368	0	%100
2	M1	Z	-.637	-.637	0	%100
3	M4	X	1.281	1.281	0	%100
4	M4	Z	-2.219	-2.219	0	%100
5	MP1A	X	1.624	1.624	0	%100
6	MP1A	Z	-2.813	-2.813	0	%100
7	MP2A	X	1.624	1.624	0	%100
8	MP2A	Z	-2.813	-2.813	0	%100

Member Distributed Loads (BLC 55 : Structure Wi (60 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.911	1.911	0	%100
2	M1	Z	-1.103	-1.103	0	%100
3	M4	X	.74	.74	0	%100
4	M4	Z	-.427	-.427	0	%100
5	MP1A	X	2.813	2.813	0	%100
6	MP1A	Z	-1.624	-1.624	0	%100
7	MP2A	X	2.813	2.813	0	%100
8	MP2A	Z	-1.624	-1.624	0	%100

Member Distributed Loads (BLC 56 : Structure Wi (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	2.941	2.941	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	0	0	0	%100
5	MP1A	X	3.248	3.248	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	3.248	3.248	0	%100
8	MP2A	Z	0	0	0	%100

Member Distributed Loads (BLC 57 : Structure Wi (120 Deg))

Member Label	Direction	Start Magnitude[lb/ft	End Magnitude[lb/ft,F	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 57 : Structure Wi (120 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.911	1.911	0	%100
2	M1	Z	1.103	1.103	0	%100
3	M4	X	.74	.74	0	%100
4	M4	Z	.427	.427	0	%100
5	MP1A	X	2.813	2.813	0	%100
6	MP1A	Z	1.624	1.624	0	%100
7	MP2A	X	2.813	2.813	0	%100
8	MP2A	Z	1.624	1.624	0	%100

Member Distributed Loads (BLC 58 : Structure Wi (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.368	.368	0	%100
2	M1	Z	.637	.637	0	%100
3	M4	X	1.281	1.281	0	%100
4	M4	Z	2.219	2.219	0	%100
5	MP1A	X	1.624	1.624	0	%100
6	MP1A	Z	2.813	2.813	0	%100
7	MP2A	X	1.624	1.624	0	%100
8	MP2A	Z	2.813	2.813	0	%100

Member Distributed Loads (BLC 59 : Structure Wi (180 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	3.416	3.416	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	3.248	3.248	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	3.248	3.248	0	%100

Member Distributed Loads (BLC 60 : Structure Wi (210 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.368	-.368	0	%100
2	M1	Z	.637	.637	0	%100
3	M4	X	-1.281	-1.281	0	%100
4	M4	Z	2.219	2.219	0	%100
5	MP1A	X	-1.624	-1.624	0	%100
6	MP1A	Z	2.813	2.813	0	%100
7	MP2A	X	-1.624	-1.624	0	%100
8	MP2A	Z	2.813	2.813	0	%100

Member Distributed Loads (BLC 61 : Structure Wi (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.911	-1.911	0	%100
2	M1	Z	1.103	1.103	0	%100
3	M4	X	-.74	-.74	0	%100
4	M4	Z	.427	.427	0	%100
5	MP1A	X	-2.813	-2.813	0	%100
6	MP1A	Z	1.624	1.624	0	%100
7	MP2A	X	-2.813	-2.813	0	%100
8	MP2A	Z	1.624	1.624	0	%100

Member Distributed Loads (BLC 62 : Structure Wi (270 Deg))

Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 62 : Structure Wi (270 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-2.941	-2.941	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	0	0	0	%100
5	MP1A	X	-3.248	-3.248	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	-3.248	-3.248	0	%100
8	MP2A	Z	0	0	0	%100

Member Distributed Loads (BLC 63 : Structure Wi (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.911	-1.911	0	%100
2	M1	Z	-1.103	-1.103	0	%100
3	M4	X	-.74	-.74	0	%100
4	M4	Z	-.427	-.427	0	%100
5	MP1A	X	-2.813	-2.813	0	%100
6	MP1A	Z	-1.624	-1.624	0	%100
7	MP2A	X	-2.813	-2.813	0	%100
8	MP2A	Z	-1.624	-1.624	0	%100

Member Distributed Loads (BLC 64 : Structure Wi (330 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.368	-.368	0	%100
2	M1	Z	-.637	-.637	0	%100
3	M4	X	-1.281	-1.281	0	%100
4	M4	Z	-2.219	-2.219	0	%100
5	MP1A	X	-1.624	-1.624	0	%100
6	MP1A	Z	-2.813	-2.813	0	%100
7	MP2A	X	-1.624	-1.624	0	%100
8	MP2A	Z	-2.813	-2.813	0	%100

Member Distributed Loads (BLC 65 : Structure Wm (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	-.692	-.692	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	-.6	-.6	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	-.6	-.6	0	%100

Member Distributed Loads (BLC 66 : Structure Wm (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.089	.089	0	%100
2	M1	Z	-.155	-.155	0	%100
3	M4	X	.259	.259	0	%100
4	M4	Z	-.449	-.449	0	%100
5	MP1A	X	.3	.3	0	%100
6	MP1A	Z	-.52	-.52	0	%100
7	MP2A	X	.3	.3	0	%100
8	MP2A	Z	-.52	-.52	0	%100

Member Distributed Loads (BLC 67 : Structure Wm (60 Deg))

Member Label	Direction	Start Magnitude[lb/ft	End Magnitude[lb/ft,F	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 67 : Structure Wm (60 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.465	.465	0	%100
2	M1	Z	-.268	-.268	0	%100
3	M4	X	.15	.15	0	%100
4	M4	Z	-.086	-.086	0	%100
5	MP1A	X	.52	.52	0	%100
6	MP1A	Z	-.3	-.3	0	%100
7	MP2A	X	.52	.52	0	%100
8	MP2A	Z	-.3	-.3	0	%100

Member Distributed Loads (BLC 68 : Structure Wm (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.716	.716	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	0	0	0	%100
5	MP1A	X	.6	.6	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	.6	.6	0	%100
8	MP2A	Z	0	0	0	%100

Member Distributed Loads (BLC 69 : Structure Wm (120 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.465	.465	0	%100
2	M1	Z	.268	.268	0	%100
3	M4	X	.15	.15	0	%100
4	M4	Z	.086	.086	0	%100
5	MP1A	X	.52	.52	0	%100
6	MP1A	Z	.3	.3	0	%100
7	MP2A	X	.52	.52	0	%100
8	MP2A	Z	.3	.3	0	%100

Member Distributed Loads (BLC 70 : Structure Wm (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.089	.089	0	%100
2	M1	Z	.155	.155	0	%100
3	M4	X	.259	.259	0	%100
4	M4	Z	.449	.449	0	%100
5	MP1A	X	.3	.3	0	%100
6	MP1A	Z	.52	.52	0	%100
7	MP2A	X	.3	.3	0	%100
8	MP2A	Z	.52	.52	0	%100

Member Distributed Loads (BLC 71 : Structure Wm (180 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	.692	.692	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	.6	.6	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	.6	.6	0	%100

Member Distributed Loads (BLC 72 : Structure Wm (210 Deg))

Member Label	Direction	Start Magnitude[lb/ft	End Magnitude[lb/ft,F	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 72 : Structure Wm (210 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.089	-.089	0	%100
2	M1	Z	.155	.155	0	%100
3	M4	X	-.259	-.259	0	%100
4	M4	Z	.449	.449	0	%100
5	MP1A	X	-.3	-.3	0	%100
6	MP1A	Z	.52	.52	0	%100
7	MP2A	X	-.3	-.3	0	%100
8	MP2A	Z	.52	.52	0	%100

Member Distributed Loads (BLC 73 : Structure Wm (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.465	-.465	0	%100
2	M1	Z	.268	.268	0	%100
3	M4	X	-.15	-.15	0	%100
4	M4	Z	.086	.086	0	%100
5	MP1A	X	-.52	-.52	0	%100
6	MP1A	Z	.3	.3	0	%100
7	MP2A	X	-.52	-.52	0	%100
8	MP2A	Z	.3	.3	0	%100

Member Distributed Loads (BLC 74 : Structure Wm (270 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.716	-.716	0	%100
2	M1	Z	0	0	0	%100
3	M4	X	0	0	0	%100
4	M4	Z	0	0	0	%100
5	MP1A	X	-.6	-.6	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	-.6	-.6	0	%100
8	MP2A	Z	0	0	0	%100

Member Distributed Loads (BLC 75 : Structure Wm (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.465	-.465	0	%100
2	M1	Z	-.268	-.268	0	%100
3	M4	X	-.15	-.15	0	%100
4	M4	Z	-.086	-.086	0	%100
5	MP1A	X	-.52	-.52	0	%100
6	MP1A	Z	-.3	-.3	0	%100
7	MP2A	X	-.52	-.52	0	%100
8	MP2A	Z	-.3	-.3	0	%100

Member Distributed Loads (BLC 76 : Structure Wm (330 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.089	-.089	0	%100
2	M1	Z	-.155	-.155	0	%100
3	M4	X	-.259	-.259	0	%100
4	M4	Z	-.449	-.449	0	%100
5	MP1A	X	-.3	-.3	0	%100
6	MP1A	Z	-.52	-.52	0	%100
7	MP2A	X	-.3	-.3	0	%100
8	MP2A	Z	-.52	-.52	0	%100

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k..	LC	MY [k-ft]	LC	MZ [k..	LC
1	N1	m...	366.85	10	1229.484	48	574.346	1	-.047	1	.513	9	1.35	28
2		min	-366.85	4	341.627	68	-574.346	7	-1.316	43	-.513	3	-1.319	46
3	Totals:	m...	366.85	10	1229.484	48	574.346	1						
4		min	-366.85	4	341.627	68	-574.346	7						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	L...	Dir	LC	phi*Pn...	phi*P...	phi*Mn y...	phi*Mn ...	...	Eqn
1	M1	HSS4...	.083	0	6	.131	0	y	28	13925...	139518	16.181	16.181	...	H1-...
2	M4	PIPE_...	.301	2	28	.084	2		7	59852...	65205	5.749	5.749	...	H1-...
3	MP1A	PIPE_...	.204	3.5	1	.030	3.5		4	20866...	32130	1.872	1.872	...	H1-...
4	MP2A	PIPE_...	.191	3.5	1	.026	3.5		8	20866...	32130	1.872	1.872	...	H1-...

VzW SMART Tool© Vendor

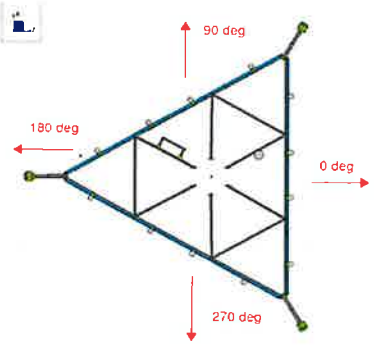
Client:	Verizon Wireless	Date:	5/19/2023
Site Name:	South Farms CT		
MDG #:	5000185987		
Fuze ID #:	16235710	Page:	1

Version 1.01

I. Mount-to-Tower Connection Check

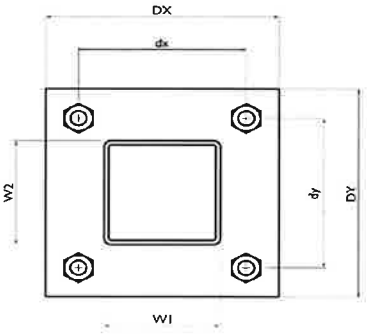
Custom Orientation Required	Yes

Nodes (labeled per Risa)	Orientation (per graphic of typical platform)
N1	0



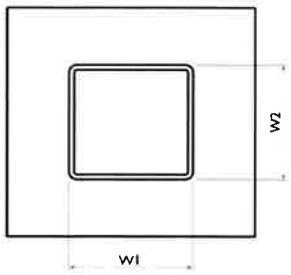
Tower Connection Bolt Checks	Yes
Bolt Orientation	Parallel

Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)* :	6
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	6
Bolt Type:	A325N
Bolt Diameter (in):	0.625
Required Tensile Strength / bolt (kips):	1.3
Required Shear Strength / bolt (kips):	1.2
Tensile Capacity / bolt (kips):	20.7
Shear Capacity / bolt (kips):	12.4
Bolt Overall Utilization:	**9.6%**



Tower Connection Baseplate Checks	Yes

Connecting Standoff Member Shape:	Rect Tube
Weld Stiffener Configuration:	No Stiffeners
Plate Width, D_x (in):	8
Plate Height, D_y (in):	8
W1(in):	4
W2 (in):	4
Member Thickness (in):	0.25
Stiffener location a_1 (in):	
Stiffener location b_1 (in):	
Stiffener location a_2 (in):	
Stiffener location b_2 (in):	
F_y (ksi, plate):	36
Plate Thickness (in):	0.5
Length of Yield Line, L_y (in):	5.85
Bolt Eccentricity, e (in):	1.65
M_u (kip-in):	2.37
Phi*M_n (kip-in):	11.85
Plate Bending Utilization:	**20.0%**



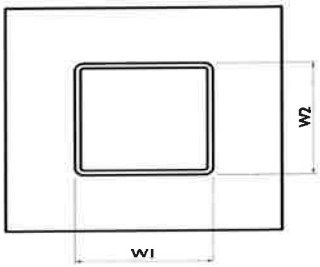
VzW SMART Tool© Vendor

Client:	Verizon Wireless	Date:	5/19/2023
Site Name:	South Farms CT		
PSLC #:	5000185987		
Fuze ID #:	16235710	Page:	2

Version 1.01

Tower Connection Weld Checks

	Yes
Weld Shape:	Rectangle
Weld Stiffener Configuration:	None
Weld Size (1/16 in):	4
W1 (in):	4
W2 (in):	4
Weld Total Length (in):	16.00
Z_x (in^3/in):	21.33
Z_y (in^3/in):	21.33
J_p (in^4/in):	85.33
c_x (in)	2.25
c_y (in)	2.25
Required combined strength (kip/in):	0.73
Weld Capacity (kip/in):	5.57
Weld Utilization:	**13.2%**



ATTACHMENT 5


67 fairchild
Show search results for 67 f...
67 FAIRCHILD RD
Account Number: R15245
Parcel ID: 15236
Map-Lot: 42-0118
Street Address: 67 FAIRCHILD RD
Owner Name: BORRELLI STEPHEN G & BARBARA L
Zone: R-30
View Complete Property Record Card
Zoom to
Fairchild Road
Bartholomew Road
Virginia Drive
Middlesex Hospital Outpatient Center

67 FAIRCHILD RD

Location	67 FAIRCHILD RD	**Map-Lot**	42/ / 0118/ /
Acct#	R15245	**Owner**	BORRELLI STEPHEN G & BARBARA L
Municipality		**Assessment**	$578,330
Appraisal	$826,190	**PID**	15236
Building Count	2	**Assessing District**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$489,970	$336,220	$826,190
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$342,980	$235,350	$578,330

Parcel Addreses

Additional Addresses
No Additional Addresses available for this parcel

Owner of Record

Owner	BORRELLI STEPHEN G & BARBARA L	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	67 FAIRCHILD RD MIDDLETOWN, CT 06457	**Book & Page**	1091/0136
		Sale Date	02/28/1996
		Instrument	29

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
BORRELLI STEPHEN G & BARBARA L	$0		1091/0136	29	02/28/1996

Building Information

Building 1 : Section 1

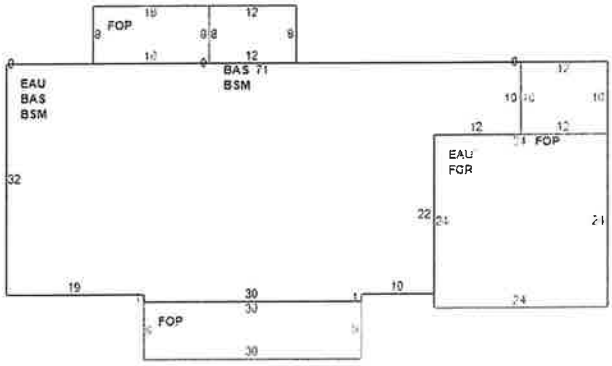
Year Built: 2012
Living Area: 2,134
Replacement Cost: $390,930
Building Percent Good: 90
Replacement Cost Less Depreciation: $351,840

Building Attributes	
Field	**Description**
Style	Cape Cod
Model	Residential
Grade	B-
Stories	1.25
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	
Heat Fuel	Propane
Heat Type	Forced Air
Ac Type	
Bedrooms	3
Full Baths	2
Half Baths	0
Extra Fixtures	2
Total Rooms	5
Bath Remodel	Not Updated
Kitchen Remodel	Not Updated
Extra Kitchens	
Fireplaces	0
Extra Openings	
Gas Fireplace	1
Int vs Ext	Same
A/C Type	Central
A/C %	100
Fireplaces 1	2137

Building Photo

(https://images.vgsi.com/photos/MiddletownCTPhotos/\0046\IMG_1129_4

Building Layout



(ParcelSketch.ashx?pid=15236&bid=15236)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	2,134	2,134
BSM	Basement	2,134	0
EAU	Expansion Attic Unfinished	2,614	0
FGR	Garage	576	0
FOP	Framed Open Porch	488	0
		7,946	2,134

Fin Bsmt Area	
FBM grade	
Bsmt Garage	
Fndtn Cndtn	
In Law	

Building 2 : Section 1

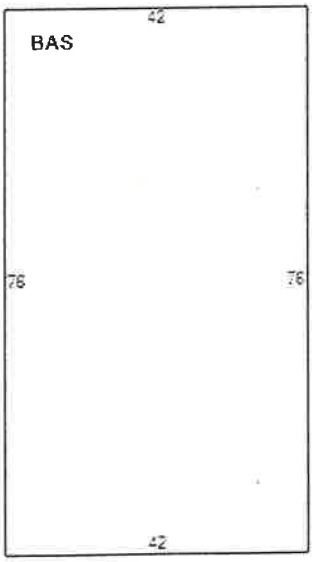
Year Built: 2000
Living Area: 3,192
Replacement Cost: $87,537
Building Percent Good: 82
Replacement Cost Less Depreciation: $71,780

Building Attributes : Bldg 2 of 2	
Field	**Description**
Style	Equip Garage
Model	Commercial
Grade	D
Stories	1
Occupancy	1.00
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Metal/Tin
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete
Interior Floor 2	
Heating Fuel	None
Heating Type	None
AC Type	None
Struct Class	
Bldg Use	Res / Comm MDL 94
Cov Parking	
Uncov Parking	
Percent Fin	
1st Floor Use	
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Walls	None
Rooms/Prtns	None

Building Photo

(https://images.vgsi.com/photos/MiddletownCTPhotos/\0048\IMG_1129_4

Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**

Wall Height	14.00

BAS	First Floor	3,192	3,192
		3,192	3,192

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	101
Description	Single Family
Zone	R-30
Neighborhood	13
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	18.89
Assessed Value	$235,350
Appraised Value	$336,220

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CSHD	Cell Shed			240.00 UNITS	$16,320	2
CSHD	Cell Shed			240.00 UNITS	$16,320	2
SHD1	Shed	MS	Masonry	143.00 UNITS	$1,430	1
CSHD	Cell Shed			360.00 UNITS	$24,480	2
FN4	Fence-8' Chain			280.00 UNITS	$4,200	2
PTO	Patio	ST	Stone	480.00 UNITS	$3,600	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$489,970	$336,220	$826,190
2020	$394,130	$313,650	$707,780
2019	$394,130	$313,650	$707,780

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$342,980	$235,350	$578,330
2020	$275,890	$219,560	$495,450
2019	$275,890	$219,560	$495,450

ATTACHMENT 6

Verizon/South Farms

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	OLD STATE HOUSE STATION 06103 JUN 25 2023 neopost 06/26/2023 US POSTAGE $003.19⁰ USPS ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)* K.O		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Benjamin Florsheim, Mayor City of Middletown 245 deKoven Drive Middletown, CT 06457				
2.	Marek Kozikowski, Director of Land Use City of Middletown 245 deKoven Drive Middletown, CT 06457				
3.	Stephen and Barbara Borrelli 67 Fairchild Road Middletown, CT 06457				
4.					
5.					
6.					