Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

June 21, 2021

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**
52 Stadley Rough Road, Danbury, 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 facility consists of antennas and remote radio heads attached to a tower and related equipment on the ground, near the base of the tower. The tower was approved by the Council in April 2009 (Docket No. 366). Cellco's shared use of the tower was approved in January 2012 (TS-VER-034-111214). A copy of the Council's Docket No. 366 Decision and Order and the approval letter for TS-VER-034-111214 are included in Attachment 1.

Cellco now intends to modify its facility by removing nine (9) of its existing antennas and installing three (3) Samsung MT6407-77A antennas and six (6) MX06FRO660-03 on its existing T-Arm supports. Cellco also intends to remove six (6) of its remote radio heads ("RRHs") and install six (6) new RRHs behind its antennas. A set of project plans showing Cellco's proposed facility modifications and new antennas and RRHs specifications are included in Attachment 2. In accordance with the Connecticut Superior Court's Stipulation for Judgment dated January 6, 2010 (the "Stipulation"), Cellco's antennas will remain flush-mounted to the tower, utilizing the previously approved T-Arm supports and all new antennas, RRHs and support structures will be painted brown.

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

with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Danbury's Chief Elected Official and Land Use Officer. In accordance with the Stipulation, a copy of this filing is also being sent to the City of Danbury's Corporation Counsel's office and Jose and Christina Carvalheiro.

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 replacement antennas and RRHs will be installed on Cellco's existing T-Arm supports.

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. A Cumulative General Power Density table for the modified facility is included in Attachment 3. 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 T-Arm antenna mounting structure, with certain modifications, can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 4. Also included in Attachment 4 is a separate letter prepared by the consulting engineer responsible for the preparation of the SA and MA verifying that the antenna model described in the SA and MA, respectively, as a nL-Sub6 Antenna or L-Sub6 Antenna, is the Samsung 64T64R model antenna.

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:

Joseph M. Cavo, Danbury Mayor
Sharon Calitro, Director Planning and Zoning
Robert Yamin, Esq., Chief Legal Officer
Jose and Christina Carvalheiro
Christ The Shepherd Church PCA
Karla Hanna

ATTACHMENT 1

DOCKET NO. 366 - Optasite Towers LLC and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 52 Stadley Rough Road in Danbury, Connecticut.	}	Connecticut
	}	Siting
	}	Council

April 23, 2009

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 Public Need, as provided by General Statutes § 16-50k, be issued to Optasite Towers LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 52 Stadley Rough Road, Danbury, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Omnipoint Communications, Inc. and other entities, both public and private, but such tower shall not exceed a height of 140 feet above ground level. All antennas attached to the monopole shall be flush-mounted.

2. The Certificate Holder shall shift, to the extent feasible, the compound to the north and east to help retain the existing vegetative buffer.

3. The Certificate Holder shall incorporate an architectural treatment for the fence of the facility compound and any equipment shelters therein that is consistent with and amenable to adjacent land uses.

4. 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 Danbury for comment, 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, antennas, equipment compound, radio equipment, access road, utility line, and landscaping that will provide additional vegetative buffering for the adjacent properties; and

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

5. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of the 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 the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

6. 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.

7. 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.

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

9. Unless otherwise approved by the Council, 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.

10. Any request for extension of the time period referred to in Condition 9 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the City of Danbury. Any proposed modifications to this Decision and Order shall likewise be so served.

11. 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.

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

13. 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 site 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, the Council hereby directs 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 Danbury News-Times.

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

The parties and intervenors to this proceeding are:

APPLICANT	**ITS REPRESENTATIVE**
Optasite Towers LLC and Omnipoint Communications, Inc. One Research Drive, Suite 200C Westborough, MA 01581	Christopher B. Fisher, Esq. Lucia Chiocchio, Esq. Cuddy & Feder LLP 445 Hamilton Avenue, 14th Floor White Plains, New York 10601
City of Danbury	Laszlo L. Pinter, Esq. Robin Edwards, Esq. City of Danbury 155 Deer Hill Avenue Danbury, CT 06810

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

August 8, 2012

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

RE: **TS-VER-034-111214** - Cellco Partnership d/b/a Verizon Wireless tower share at an existing telecommunications facility located 52 Stadley Rough Road, Danbury, 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 with the following condition:

- That Verizon notify the Council when the temporary propane tank is removed and the natural gas-fired backup generator is installed.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated January 27, 2012. 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. Thank you for your attention and cooperation.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Mark D. Boughton, Mayor, City of Danbury
Dennis Elpern, City Planner, City of Danbury

ATTACHMENT 2

WIRELESS COMMUNICATIONS FACILITY

BROOKFIELD WEST CT
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

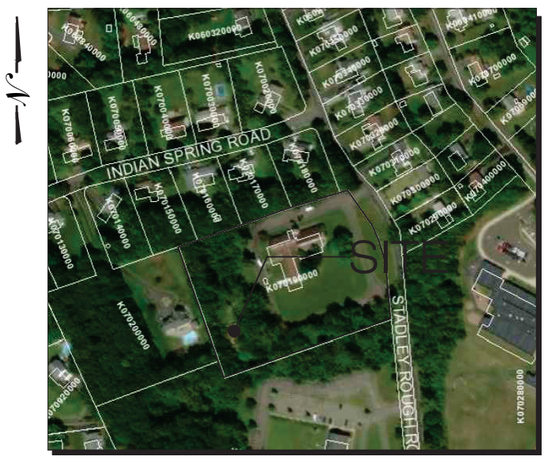
DRAWING INDEX

SITE DIRECTIONS

START: 20 ALEXANDER DRIVE
WALLINGFORD, CONNECTICUT 06492

END: 52 STADLEY ROUGH ROAD
DANBURY, CT 06811

1.	HEAD SOUTH TOWARD ALEXANDER DRIVE	279 FT
2.	SLIGHT RIGHT TOWARDS ALEXANDER DRIVE	289 FT
3.	TURN RIGHT TOWARD ALEXANDER DRIVE	167 FT
4.	TURN RIGHT ONTO ALEXANDER DRIVE	0.3 MI
5.	TURN RIGHT ONTO BARNES INDUSTRIAL ROAD S.	0.1 MI
6.	TURN LEFT AT THE 1ST CROSS STREET ONTO CT-68W	0.4 MI
7.	TURN RIGHT	0.2 MI
8.	TURN RIGHT TO MERGE ONTO CT-15 N TOWARD HARTFORD	0.5 MI
9.	MERGE ONTO CT-15 N	3.1 MI
10.	USE THE MIDDLE LANE TO STAY ON CT-15 N	0.1 MI
11.	TAKE EXIT 68W TO MERGE ONTO I-691 W TOWARD MERIDEN/WATERBURY	7.9 MI
12.	USE LEFT 2 LANES TO TAKE EXIT 1 FOR I-84 W TOWARD WATERBURY/DANBURY	1.0 MI
13.	MERGE ONTO I-84	32.1 MI
14.	TAKE EXIT 7 TO MERGE ONTO US-202 E/ US-7 N TOWARD NEW MILFORD/BROOKFIELD	0.7 MI
15.	TAKE EXIT 11 FOR US-202 E TOWARDS FEDERAL ROAD	0.4 MI
16.	TAKE CANDLEWOOD LAKE ROAD, NABBY ROAD & STADLEY ROUGH ROAD TO YOUR DESTINATION IN DANBURY	2.6 MI



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

SITE INFORMATION

VZ SITE NAME: BROOKFIELD WEST CT
VZ PROJ FUZE I.D.: 16244180
VZ LOCATION CODE: 468687
VZ PROJECT CODE: 20202219542
LOCATION: 52 STADLEY ROUGH ROAD
DANBURY, CT 06811

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

MAP/BLOCK/LOT: K07/19/1

ZONING DISTRICT: RA-40 (SINGLE FAMILY RESIDENTIAL)

LATITUDE: 41° 25' 59.167" N (41.433102° N)

LONGITUDE: 73° 25' 54.898" W (73.431916° W)

SITE COORDINATES & GROUND ELEVATION OBTAINED FROM STRUCTURAL ANALYSIS REPORT PREPARED BY TOWER ENGINEERING SOLUTIONS DATED 2/26/19.

GROUND ELEVATION: 550'± AMSL

PROPERTY OWNER: CHRIST THE SHEPHERD CHURCH PCA
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

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 CORP., P.C.
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385
(860) 663-1697

VERIZON SMART TOOL PROJECT # 10032205

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	02/24/21	FOR REVIEW: JRM
1	04/07/21	FOR CONSTRUCTION: JRM
2		
3		
4		
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: CHRIST THE SHEPHERD CHURCH PCA,
ADDRESS: 52 STADLEY ROUGH ROAD DANBURY, CT 06811

BROOKFIELD WEST CT

SITE ADDRESS: 52 STADLEY ROUGH ROAD DANBURY, CT 06811

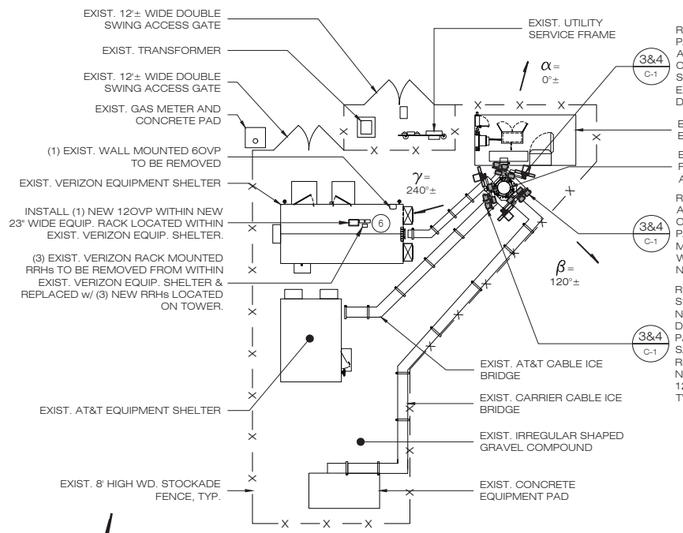
APT FILING NUMBER: CT141_11920

DRAWN BY: DRA
DATE: 02/24/21 **CHECKED BY:** JRM

VZ PROJECT CODE: 20202219542
VZ LOCATION CODE: 468687
VZ FUZE ID: 16244180

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1



1 COMPOUND PLAN
C-1 SCALE : 1" = 15'-0"

(IN FEET) 1 inch = 15ft.

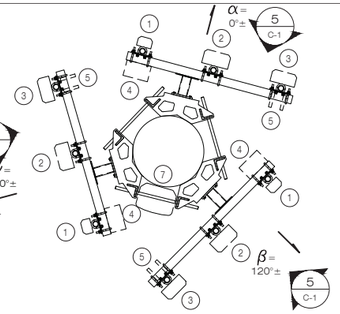
REPLACE TWO (2) EXIST. VERIZON ALPHA SECTOR PANEL ANTENNAS W/ TWO (2) NEW PANEL ANTENNAS (0°) ON NEW DUAL-MOUNTS. REPLACE ONE (1) EXIST. PANEL ANTENNA W/ ONE (1) NEW SAMSUNG MT6407-77A ANTENNA. REPLACE ONE (1) EXIST. RRH W/ TWO (2) NEW RRHs & (2) EXIST. DIPLEXERS w/ (1) NEW TWIN IN-BAND DIPLEXER.

EXIST. T-MOBILE EQUIP. MOUNTED ON EXIST. CONCRETE PAD

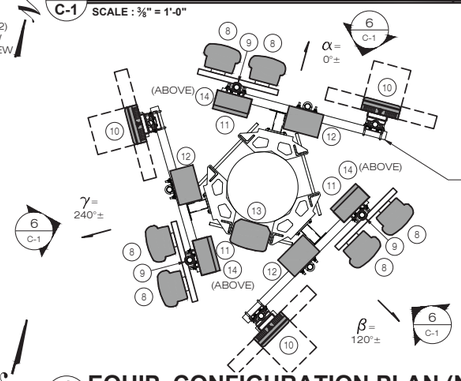
EXIST. 139'± AGL MONOPOLE TOWER REFER TO TOWER STRUCTURAL ANALYSIS NOTE #1 THIS SHEET.

REPLACE TWO (2) EXIST. VERIZON BETA SECTOR PANEL ANTENNAS W/ TWO (2) NEW PANEL ANTENNAS (120°) ON NEW DUAL-MOUNTS. REPLACE ONE (1) EXIST. PANEL ANTENNA W/ ONE (1) NEW SAMSUNG MT6407-77A ANTENNA. REPLACE ONE (1) EXIST. RRH W/ TWO (2) NEW RRHs & (2) EXIST. DIPLEXERS W/ (1) NEW TWIN IN-BAND DIPLEXER.

REPLACE TWO (2) EXIST. VERIZON GAMMA SECTOR PANEL ANTENNAS W/ TWO (2) NEW PANEL ANTENNAS (240°) ON NEW DUAL-MOUNTS. REPLACE ONE (1) EXIST. PANEL ANTENNA W/ ONE (1) NEW SAMSUNG MT6407-77A ANTENNA. REPLACE ONE (1) EXIST. RRH W/ TWO (2) NEW RRHs, (1) EXIST. 6OVP W/ (1) NEW 12OVP & (2) EXIST. DIPLEXERS W/ (1) NEW TWIN IN-BAND DIPLEXER.

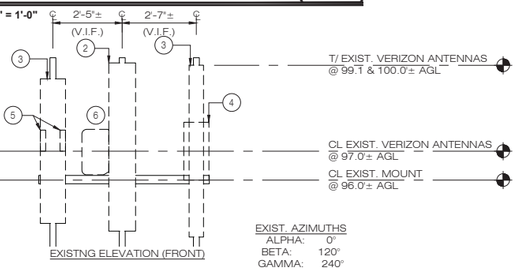


3 EQUIP. CONFIGURATION PLAN (EXIST.)
C-1 SCALE : 3/8" = 1'-0"



MOUNT REINFORCMENT NOTE:
EXIST. T-ARM MOUNT ASSEMBLY REQUIRES REINFORCMENT PRIOR TO THE INSTALLATION OF THE NEW EQUIPMENT. REFER TO MOUNT ANALYSIS, POST MOD MOUNT ANALYSIS REPORT, PMI REQUIREMENTS & MOUNT MODIFICATION DESIGN DRAWING NOTES 2 & 3 THIS SHEET FOR INFORMATION.

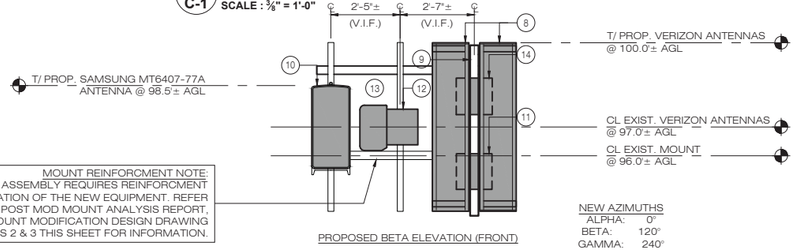
4 EQUIP. CONFIGURATION PLAN (NEW)
C-1 SCALE : 3/8" = 1'-0"



EXISTNG ELEVATION (FRONT)

EXIST. AZIMUTHS
ALPHA: 0°
BETA: 120°
GAMMA: 240°

5 EQUIP. MOUNTING CONFIG. (EXIST.)
C-1 SCALE : 3/8" = 1'-0"

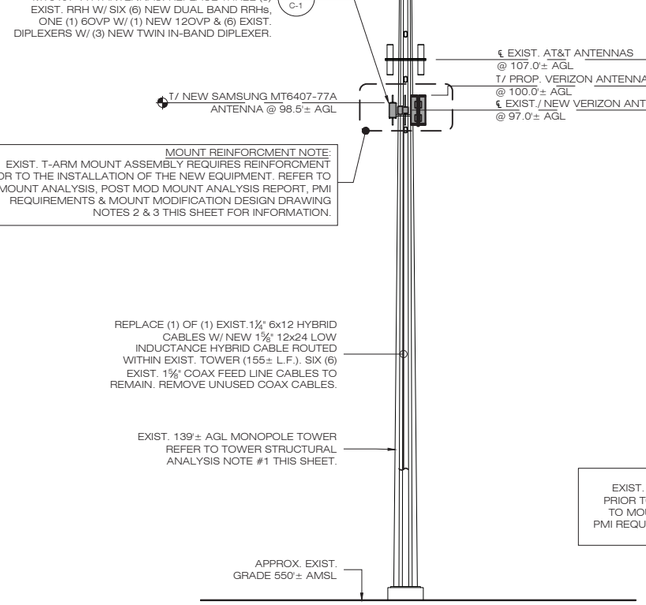


MOUNT REINFORCMENT NOTE:
EXIST. T-ARM MOUNT ASSEMBLY REQUIRES REINFORCMENT PRIOR TO THE INSTALLATION OF THE NEW EQUIPMENT. REFER TO MOUNT ANALYSIS, POST MOD MOUNT ANALYSIS REPORT, PMI REQUIREMENTS & MOUNT MODIFICATION DESIGN DRAWING NOTES 2 & 3 THIS SHEET FOR INFORMATION.

PROPOSED BETA ELEVATION (FRONT)

NEW AZIMUTHS
ALPHA: 0°
BETA: 120°
GAMMA: 240°

6 EQUIP. MOUNTING CONFIG. (NEW)
C-1 SCALE : 3/8" = 1'-0"



MOUNT REINFORCMENT NOTE:
EXIST. T-ARM MOUNT ASSEMBLY REQUIRES REINFORCMENT PRIOR TO THE INSTALLATION OF THE NEW EQUIPMENT. REFER TO MOUNT ANALYSIS, POST MOD MOUNT ANALYSIS REPORT, PMI REQUIREMENTS & MOUNT MODIFICATION DESIGN DRAWING NOTES 2 & 3 THIS SHEET FOR INFORMATION.

2 TOWER ELEVATION
C-1 SCALE : 1" = 20'-0"

(IN FEET) 1 inch = 20 ft.

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

SCOPE OF WORK (ALL) SECTORS

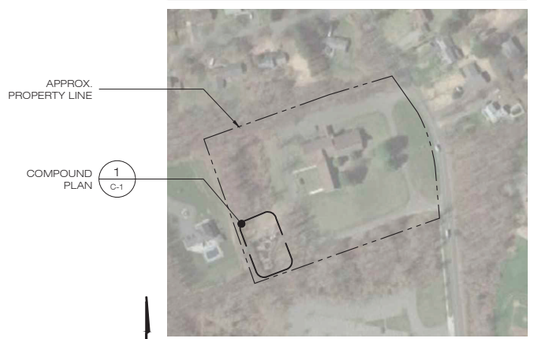
1. EXIST. ANTENNA (TO BE REPLACED) MODEL: ANTEL BXA-70063-6CF
2. EXIST. ANTENNA (TO BE REPLACED) MODEL: AMPHENOL BXA-171063-12CF
3. EXIST. ANTENNA (TO BE REPLACED) MODEL: ANDREW DBXNH-6565A-VTM
4. EXIST. RRH (TO BE REPLACED) MODEL: NOKIA B4 2x40W AWS RRH
5. EXIST. DIPLEXER (TO BE REPLACED) MODEL: RFS FDR6004/2C-3L
6. (3) EXIST. RRHs (TO BE REMOVED FROM WITHIN EXIST. EQUIP. SHELTER) MODEL: NOKIA B13 RRH 4x30
7. EXIST. 6 OVP (TO BE REPLACED) (GAMMA) MODEL: RAYCAP RRFDC-3315-PF-48 (V.I.F.)
8. NEW ANTENNA MODEL: JMA MX06FRO660-03 MOUNTED ON NEW JMA DUAL MOUNT (P/N 91900314-2).
9. NEW P2.5 STD X7' LG. ANTENNA PIPE MAST (GALV.), UTILIZE NEW PIPE TO RAIL HARDWARE.
10. NEW ANTENNA MODEL: SAMSUNG MT6407-77A
11. NEW DUAL BAND RRH MODEL: SAMSUNG B13/B5 RRH-BR04C (RFV01U-D2A)
12. NEW DUAL BAND RRH MODEL: SAMSUNG B66/B2A RRH-BR049 (RFV01U-D1A)
13. NEW 12OVP MODEL: RAYCAP RVZDC-6627-PF-48
14. NEW TWIN IN-BAND DIPLEXER MODEL: COMMSCOPE TD-850B-LTE78-43

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 PREPARED BY OTHERS AVAILABLE UNDER SEPERATE COVER.
2. REFER TO MOUNT ANALYSIS REPORT PREPARED BY PAUL J. FORD COMPANY, PROJECT #22721-0005.001.7190 MARKED REV0, DATED 01/26/21 AVAILABLE UNDER SEPARATE COVER.
3. REFER TO POST MOD MOUNT ANAYLSIS REPORT AND PMI REQUIREMENTS & MOUNT MODIFICATION DESIGN DRAWINGS PREPARED BY PAUL J. FORD COMPANY, PROJECT #A22721-0005.002.7191 DATED 02/28/21 PER MASER CONSULTING P.A., PROJECT NUMBER 2077630 AVAILABLE UNDER SEPERATE COVER.
4. PROJECT SCOPE INCLUDES THE FOLLOWING:
   - REPLACEMENT OF NINE (9) EXIST. PANEL ANTENNAS w/ SIX (6) NEW PANEL ANTENNAS MOUNTED VIA NEW SIDE-BY-SIDE BRACKETS (JMA 91900314-02) & THREE (3) NEW SAMSUNG MT6407-77A ANTENNAS.
   - REPLACEMENT OF SIX (6) EXIST. RRHs (3) WITHIN SHELTER & (3) ON TOWER w/ SIX (6) NEW DUAL- BAND RRHs.
   - REPLACEMENT OF ONE (1) EXIST. 6OVP W/ ONE (1) NEW 12OVP.
   - REPLACEMENT OF ONE (1) EXIST. 1⅝" 6x12 HYBRID FEED-LINE CABLES w/ ONE (1) NEW 1⅝" 12x24 LOW INDUCTANCE HYBRID FEED-LINE CABLES.
   - REPLACEMENT OF (6) EXIST. DIPLEXERS w/ (3) NEW TWIN IN-BAND DIPLEXERS.
5. ALL EXPOSED STEEL AND HARDWARE TO BE HOT DIP GALV. (HDG). PAINT TO MATCH EXIST. (WHERE APPLICABLE)
6. CAP & WEATHERPROOF ALL UN-USED CABLE ENTRY PORTS (WHERE APPLICABLE).
7. MOUNT & GROUND ALL NEW EQUIPMENT IN ACCORDANCE WITH NEC (NFPA-70), NESC AND MANUFACTURERS SPECIFICATION.
8. SECURE ALL NEW ANTENNA CABLES PER MANUFACTURER RECOMMENDATIONS.
9. BOND NEW ANTENNA MOUNTING PIPES TO ANTENNA SECTOR GROUND BAR w/ # 2 AWG, BCW, (WHERE APPLICABLE).
10. 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.
11. ANTENNA CONFIGURATIONS SHOWN HEREIN ARE FRONT ELEVATIONS.
12. ANTENNA SPACING DIMENSIONS ARE TO THE CENTER OF THE EXIST. ANTENNA AND PROP. ANTENNA FACE.
13. REFER TO THE FINAL RFDS PROVIDED BY VERIZON FOR THE LATEST INFORMATION REGARDING EQUIPMENT MODELS, REQUIRED CABLING & DOWN-TILT INFORMATION.
14. APPLY 3M FILM OVER ALL EXPOSED MMWAVE ANTENNAS COLOR TO MATCH EXIST. STRUCTURE (WHERE APPLICABLE) COORDINATE WITH VERIZON CONSTRUCTION MANAGER AND LL.
15. PAINT ALL NEW NON SAMSUNG MT6407-77A ANTENNAS & APPURTENANCES TO MATCH EXIST. STRUCTURE (WHERE APPLICABLE) COORDINATE W/ VERIZON CONSTRUCTION MANAGER & BUILDING OWNER.



LOCATION PLAN
SCALE: 1" = 200'

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	02/24/21	FOR REVIEW: JRM
1	04/07/21	FOR CONSTRUCTION: JRM
2		
3		
4		
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: CHRIST THE SHEPHERD CHURCH PCA,
ADDRESS: 52 STADLEY ROUGH ROAD DANBURY, CT 06811

BROOKFIELD WEST CT

SITE ADDRESS: 52 STADLEY ROUGH ROAD DANBURY, CT 06811

APT FILING NUMBER: CT141_11920

DRAWN BY: DRA
DATE: 02/24/21 CHECKED BY: JRM

VZ PROJECT CODE: 20202219542
VZ LOCATION CODE: 468687
VZ FUZE ID: 16244180

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

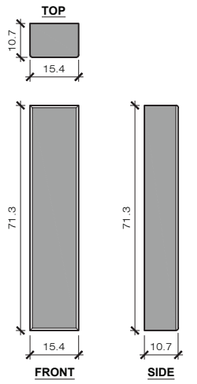
SHEET NUMBER:
C-1

EQUIPMENT DATA

EQUIPMENT SPECIFICATIONS

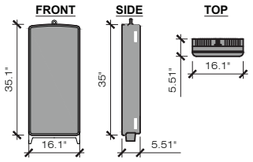
SECTOR	ANTENNA MAKE/MODEL	QTY	AZIMUTH	EQUIPMENT STATUS	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LBS)
ALPHA	700/850/1900/2100: JMA MX06FRO660-03	1	0°	NEW	71.3	15.4	10.7	60.0(2)
	700/850/1900/2100: JMA MX06FRO660-03	1	0°	NEW	71.3	15.4	10.7	60.0(2)
	SAMSUNG MT6407-77A	1	0°	NEW	35.0(5)	19.7(5)	10.0(5)	99.2(2)(5)
BETA	700/850/1900/2100: JMA MX06FRO660-03	1	120°	NEW	71.3	15.4	10.7	60.0(2)
	700/850/1900/2100: JMA MX06FRO660-03	1	120°	NEW	71.3	15.4	10.7	60.0(2)
	SAMSUNG MT6407-77A	1	120°	NEW	35.0(5)	19.7(5)	10.0(5)	99.2(2)(5)
GAMMA	700/850/1900/2100: JMA MX06FRO660-03	1	240°	NEW	71.3	15.4	10.7	60.0(2)
	700/850/1900/2100: JMA MX06FRO660-03	1	240°	NEW	71.3	15.4	10.7	60.0(2)
	SAMSUNG MT6407-77A	1	240°	NEW	35.0(5)	19.7(5)	10.0(5)	99.2(2)(5)
	APPURTENANCE MAKE/MODEL							
	SAMSUNG B2/B66A RRH-BR049 (RFV01U-D1A)	3	-	NEW	14.9	14.9	10.04	97.5
	SAMSUNG B5/B13 RRH-BR04C (RFV01U-D2A)	3	-	NEW	14.9	14.9	8.14	82.0
	COMMSCOPE (TD-850B-LTE-43)	3	-	NEW	15.4	15.2	6.4	52.9
	RAYCAP RCMDC-6627-PF-48	1	-	NEW	29.5	16.5	12.6	32

(1) 'ETR' DENOTES EXIST. TO REMAIN
(2) WEIGHT WITHOUT MOUNTING BRACKET.
(3) ANTENNA DATA BASED ON RFDS REV1 DATED 02/19/21
(4) EQUIPMENT CONFIGURATION INDICATED ABOVE VIEWED FROM BEHIND.
(5) NOT TO EXCEED



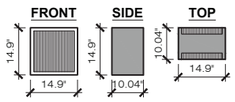
JMA MX06FRO660-03
HxWxD=71.3"x15.4"x10.7 60.0 Lbs)

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

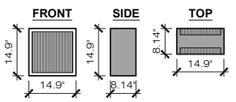


SAMSUNG MT6407-77A
HxWxD=35.1"x16.1"x5.51"
WT=87.1 Lbs
(NOT TO EXCEED)

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



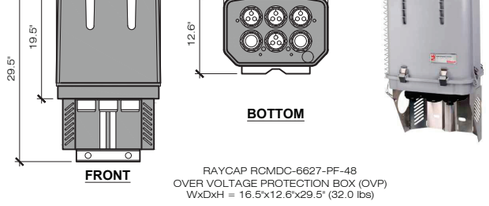
SAMSUNG DUAL HIGH BAND B2/B66A
RRH-BR049 (RFV01U-D1A)
RRH PCS/AWS
REMOTE RADIO HEAD (RRH)
WxDxH=14.9"x14.9"x10.04" (97.5 Lbs)



SAMSUNG DUAL LOW BAND B5/B13
RRH-BR04C (RFV01U-D2A)
RRH 850/700
REMOTE RADIO HEAD (RRH)
WxDxH=14.9"x14.9"x8.14" (82.0 Lbs)

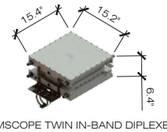
NOTE: WEIGHTS INCLUDE SOLAR SHEILD & MOUNTING BRACKET

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



RAYCAP RCMDC-6627-PF-48
OVER VOLTAGE PROTECTION BOX (OVP)
WxDxH = 16.5"x12.6"x29.5" (32.0 lbs)

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

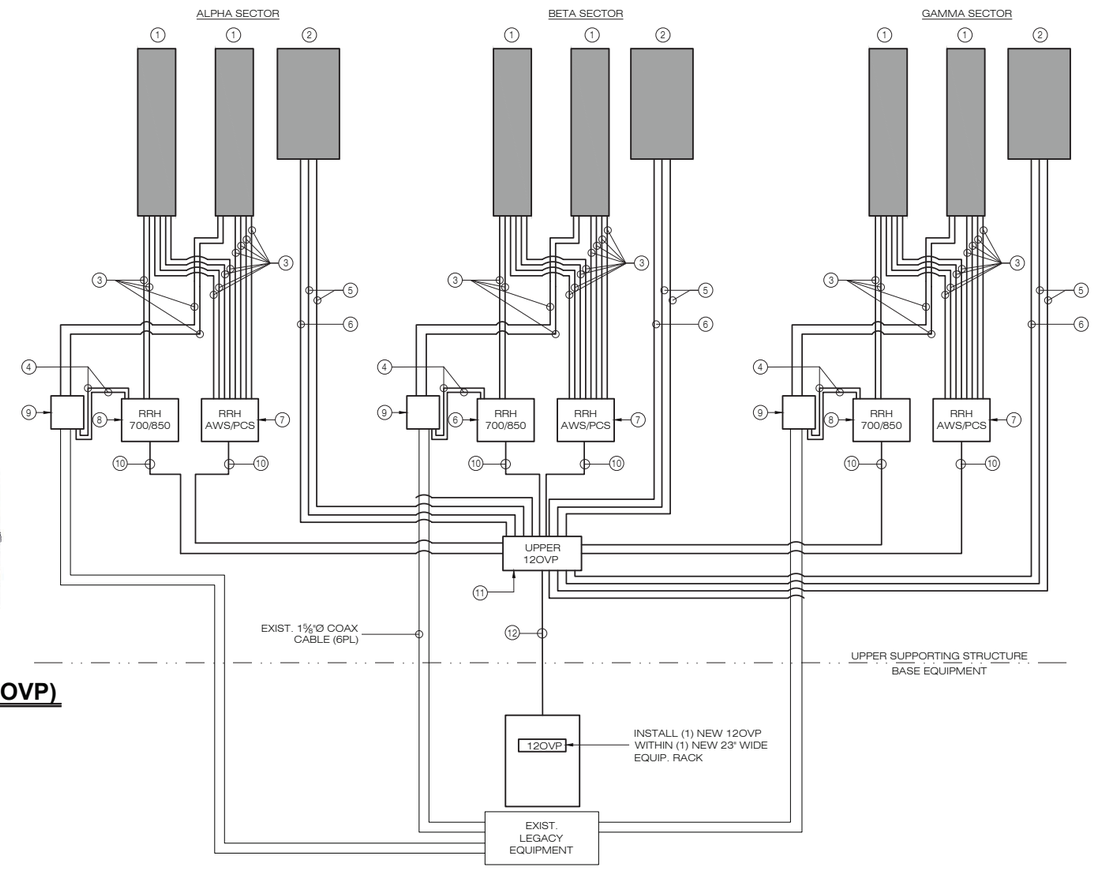


COMMSCOPE TWIN IN-BAND DIPLEXER
(850 MHz) WxDxH = 15.4"x15.2"x6.4"
(52.9 lbs)

6 B-1 TWIN IN-BAND DIPLEXER DETAIL
SCALE : ½" = 1'-0"

BILL OF MATERIALS				
		QUANTITY	LENGTH	COMMENTS
1	700/850/1900/2100	6		(JMA MX06FRO660-03) MOUNTED W/ NEW JMA DUAL MOUNT (P/N 91900314-02)
2	SAMSUNG MT6407-77A	3		MOUNTED ON EXIST. PIPE MAST
3	1/2" JUMPER CABLE	36	15 FT	ROUTE FROM RRH TO ANTENNAS & FROM DIPLEXERS TO RRH
4	1/2" JUMPER CABLE	6	6 FT	ROUTE FROM RRH TO DIPLEXERS
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/B66 RRH-BR049 (RFV01U-D1A) MOUNTED TO EXIST. PIPE MAST
8	700/850 RRH	3		SAMSUNG B5/B13 RRH-BR04C (RFV01U-D2A) MOUNTED TO EXIST. PIPE MAST
9	TWIN IN-BAND DIPLEXER (850 MHz)	3		COMMSCOPE TD0-850B-LTE-43
10	RRH CABLES	6	15M	PROPRIETARY POWER & FIBER CABLES
11	UPPER 12OVP	1		(RAYCAP RCMDC-6627-PF-48)
12	HYBRID CABLE	1	155'± FT	12x24 LOW INDUCTANCE HYBRID CABLE (1⅝"Ø)

NOTES:
1. INFORMATION SHOWN HEREON IS FOR USE BY VERIZON EQUIPMENT OPERATIONS.
2. INFORMATION IS BASED ON RFDS REV1 DATED 02/19/21.
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 MASTS REQUIRE REPLACEMENT TO SUPPORT THE NEW MOUNT BRACKETS.



1 B-1 PLUMBING DIAGRAM
SCALE : ½" = 1'-0"

NOTE: EQUIPMENT CONFIGURATION AS VIEWED FROM BEHIND.

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	02/24/21	FOR REVIEW: JRM
1	04/07/21	FOR CONSTRUCTION: JRM
2		
3		
4		
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: CHRIST THE SHEPHERD CHURCH PCA,
ADDRESS: 52 STADLEY ROUGH ROAD DANBURY, CT 06811

BROOKFIELD WEST CT

SITE ADDRESS: 52 STADLEY ROUGH ROAD DANBURY, CT 06811

APT FILING NUMBER: CT141_11920

DRAWN BY: DRA
DATE: 02/24/21 CHECKED BY: JRM
VZ PROJECT CODE: 20202219542
VZ LOCATION CODE: 468687
VZ FUZE ID: 16244180

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

SHEET NUMBER:
B-1

DESIGN BASIS:

GOVERNING CODES/DESIGN STANDARDS:

2015 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2018 CONNECTICUT STATE BUILDING CODE
ASCE 7-10
TIA-222-G (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	UNDERWIRTERS 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 APNEWRIATE 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 OWNER'S 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 BUILDING/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 APNEWRIATE, ALL APNEWRIATE 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 INSURE THAT EVERY CREW MEMBER FOLLOWS SAVE 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.

EXIST. 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 (1-1/4"x3/16" BARS)
EXISTING 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 RE-INSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

THE STEEL STRUCTURE SHALL BE DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTOR'S 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 MANUFACTURER'S 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 APNEWRIATE 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 CIRCUIT'S OVER-CURRENT PROTECTIVE DEVICE (OCPD) SIZE. WHERE THE UNGROUNDED CONDUCTORS ARE INCREASED IN SIZE ABOVE THE STANDARD FOR THE CIRCUIT'S OCPD, INCREASE THE GROUNDING CONDUCTOR NEWORTIONATELY 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.
- IF 2 OR MORE IN-GROUND CONDUCTOS ARE IN THE SAME PATH (2 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 5 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 EQIPMENT 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 RADIAL'S 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 MANUFACTURER'S 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 100 FT.
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 100 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 WATERPROOF 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 CONNECTORS 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 11-15-84.

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

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	02/24/21	FOR REVIEW: JRM
1	04/07/21	FOR CONSTRUCTION: JRM
2		
3		
4		
5		
6		

MICHAEL TRODDEN
33313

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: CHRIST THE SHEPHERD CHURCH PCA,
ADDRESS: 52 STADLEY ROUGH ROAD
DANBURY, CT 06811

BROOKFIELD WEST CT

SITE ADDRESS: 52 STADLEY ROUGH ROAD
DANBURY, CT 06811

APT FILING NUMBER: CT141_11920

DRAWN BY: DRA

DATE: 02/24/21

CHECKED BY: JRM

VZ PROJECT CODE: 20202219542

VZ LOCATION CODE: 468687

VZ FUZE ID: 16244180

SHEET TITLE:

NOTES & SPECIFICATIONS

SHEET NUMBER:

N-1

SAMSUNG

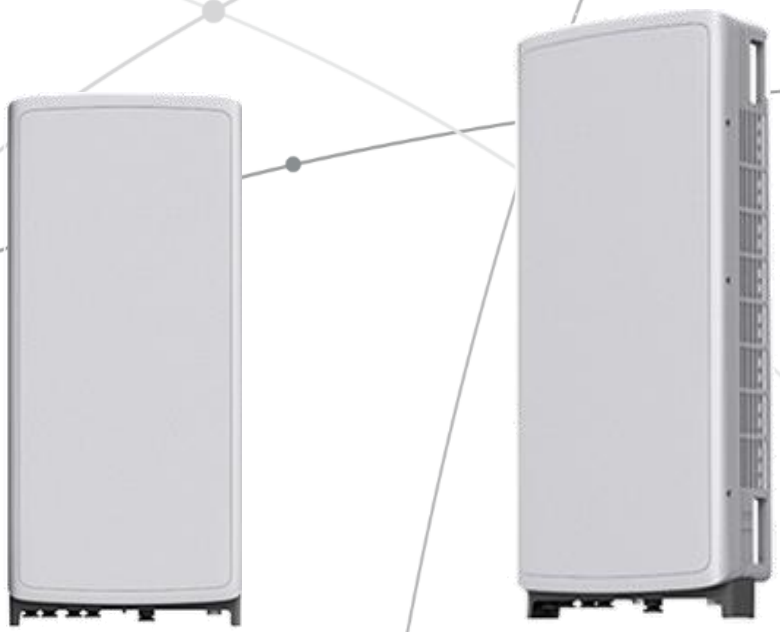
SAMSUNG

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

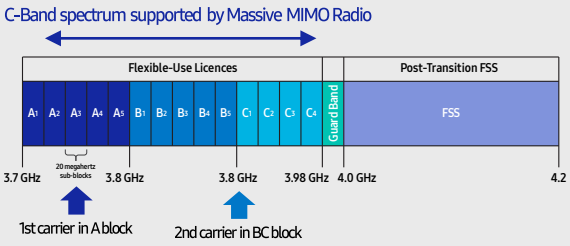


Points of Differentiation

Wide Bandwidth

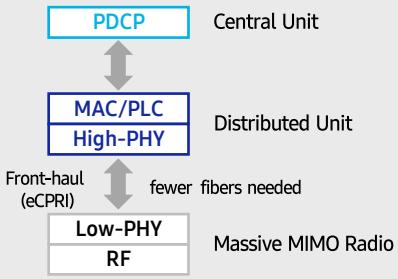
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

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.

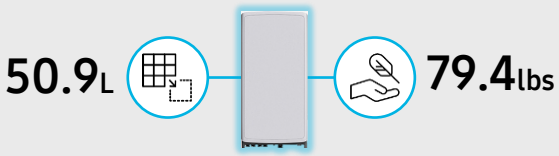
This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

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

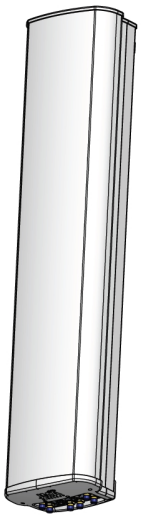
MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

X-Pol Hex-Port 6 ft 60° Fast Roll Off antenna with independent tilt on 700 & 850 MHz:

2 ports 698-798, 824-894 MHz and 4 ports 1695-2180 MHz

- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Compatible with dual band 700/850 MHz radios with independent low band EDT without external diplexers
- Fully integrated (iRETs) with independent RET control for low and high bands for ease of network optimization
- SON-Ready array spacing supports beamforming capabilities
- Suitable for LTE/CDMA/PCS/UMTS/GSM air interface technologies
- Integrated Smart Bias-Ts reduce leasing costs

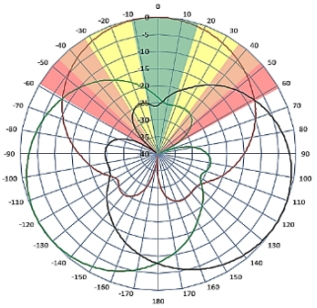


nwav

Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors .

Non-FRO antenna



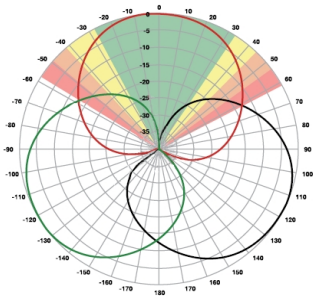
Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

LTE throughput	SINR	Speed (bps/Hz)	Speed increase	CQI
Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.

JMA FRO antenna



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	14.0	17.6	18.0	18.2
Horizontal beamwidth (HBW), degrees	60.5	53.0	55.0	55.0	55.5
Front-to-back ratio, co-polar power @180°± 30°, dB	>24	>24.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>15.0	>14.2	>18	>18	>15
Sector power ratio, percent	<3.5	<3.0	<3.7	<3.8	<3.6
Vertical beamwidth (VBW), degrees[1]	13.1	11.8	6.0	5.5	5.5
Electrical downtilt (EDT) range, degrees	2-14	2-14	0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-15.0	≤-16.5	≤-16.0	≤-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, watts	1500				

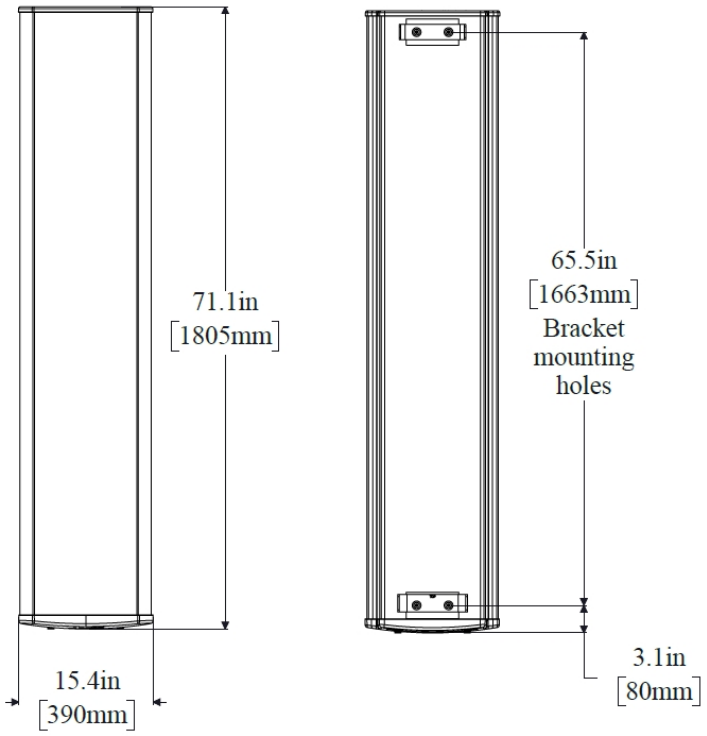
[1] Typical value over frequency and tilt

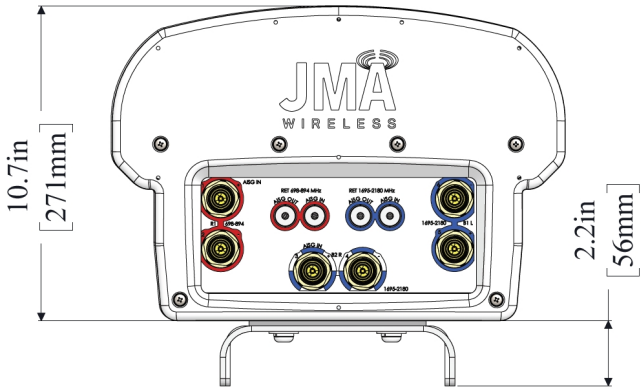
MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	71.3/ 15.4/ 10.7 (1811/ 392/ 273)
Shipping dimensions length/width/height, inches (mm)	82/ 20/ 15 (2083/ 508/ 381)
No. of RF input ports, connector type, and location	6 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)	60 (27.0)
Shipping weight, lb (kg)	90 (41.0)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.18)
Range of mechanical up/down tilt	-2° to 14°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	154 (685), 73 (325), 158 (703)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	2.6

Front view | **Back view** | **Bottom view**





Ordering information	
Antenna model	**Description**
MX06FRO660-03	6F X-Pol HEX FRO 60° independent tilt 700/850 RET, 4.3-10 & SBT
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations

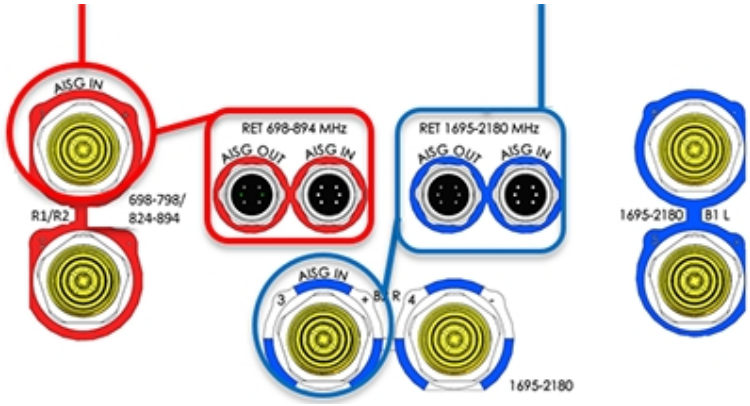
Remote electrical tilt (RET 1000) information	
RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors
RET interface connector location	Bottom of the antenna
Total no. of internal RETs (low bands)	2
Total no. of internal RETs (high bands)	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 port as shown below:

RET device	Band	RF port
R1	698-798	1-2
R2	824-894	1-2

RET device	Band	RF port
B1/B2	1695-2180	3-6

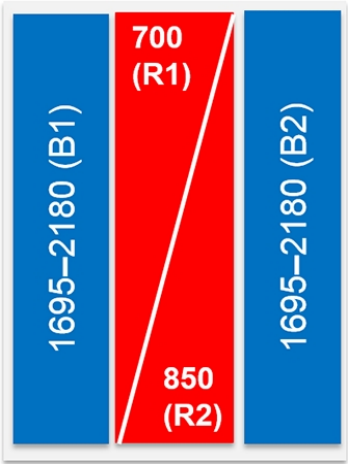


Array topology

3 sets of radiating arrays

R1/R2: 698-894 MHz
B1: 1695-2180 MHz
B2: 1695-2180 MHz

Band	RF port
1695-2180	3-4
698-894	1-2
1695-2180	5-6



SAMSUNG

Dual-Band Radio Unit
AWS/PCS (B66/B2)
RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
    B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)
    B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)
Instantaneous Bandwidth:
    70MHz(B66) + 60MHz(B2)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 255mm (36.8L)
Weight: 38.3kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

SAMSUNG

Dual-Band Radio Unit
700/850MHz (B13/B5)
RFV01U-D2A

Samsung's RFV01U-D2A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D2A RU targets dual-band support across Band 13 (700MHz) and Band 5 (850MHz), making it an ideal product for broad coverage footprints across multiple common low-end, long-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B13: DL(746-756MHz)/UL(777-787MHz)
B5: DL(869-894MHz)/UL(824-849MHz)
Instantaneous Bandwidth: 10MHz(B13) + 25MHz(B5)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 207mm (29.9L)
Weight: 31.9kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

ATTACHMENT 3

	General	Power	Density					
Site Name: Brookfield W (Danbury)								
Tower Height: Verizon @ 97ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*T-Mobile	2	470	137	600	0.0197	0.4000	0.49%	
*T-Mobile	1	1253	137	600	0.0263	0.4000	0.66%	
*T-Mobile	2	515	137	700	0.0216	0.4667	0.46%	
*T-Mobile	2	1833	137	1900	0.0768	1.0000	0.77%	
*T-Mobile	2	1077	137	2100	0.0451	1.0000	0.45%	
*T-Mobile	4	1028	137	1900	0.0862	1.0000	0.86%	
*T-Mobile	2	2057	137	1900	0.0862	1.0000	0.86%	
*T-Mobile	2	2308	137	2100	0.0967	1.0000	0.97%	
*T-Mobile	1	19239	137	2500	0.4032	1.0000	4.03%	
*T-Mobile	1	19239	137	2500	0.4032	1.0000	4.03%	
*AT&T	2	703	107	850	0.0496	0.5667	0.87%	
*AT&T	2	703	107	850	0.0496	0.5667	0.87%	
*AT&T	4	937	107	2100	0.1321	1.0000	1.32%	
*AT&T	4	1280	107	1900	0.1805	1.0000	1.80%	
*AT&T	2	585	107	700	0.0412	0.4667	0.88%	
*AT&T	2	527	107	850	0.0372	0.5667	0.66%	
*AT&T	4	1052	107	2300	0.1483	1.0000	1.48%	
*Dish Wireless	2	1469	87	1900	0.1610	1.0000	1.61%	
* Dish Wireless	2	1469	87	2020	0.1610	1.0000	1.61%	
*Clearwire	2	153	107	2496	0.0108	1.0000	0.11%	
*Clearwire	1	211	109	18 GHz	0.0072	1.0000	0.07%	
*MeteroPCS	3	444	117	2140	0.0388	1.0000	0.39%	
VZW 700	**4**	**532**	**97**	**0.0081**	**751**	**0.5007**	**1.62%**	
VZW CDMA	**2**	**255**	**97**	**0.0019**	**876.03**	**0.5840**	**0.33%**	
VZW Cellular	**4**	**532**	**97**	**0.0081**	**874**	**0.5827**	**1.40%**	
VZW PCS	**4**	**1428**	**97**	**0.0218**	**1980**	**1.0000**	**2.18%**	
VZW AWS	**4**	**1566**	**97**	**0.0239**	**2120**	**1.0000**	**2.39%**	
VZW CBAND	**4**	**6531**	**97**	**0.0999**	**3730.005**	**1.0000**	**9.99%**	
								43.19%
* Source: Siting Council								

ATTACHMENT 4

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

Structural Analysis Report

Existing 139 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13549-S

Customer Site Name: Danbury 1

Carrier Name: Verizon (App#: 146753, V2)

Carrier Site ID / Name: 468687 / BROOKFIELD_WEST_CT

Site Location: 52 Stadley Rough Road

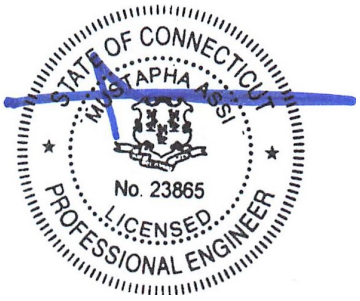
Danbury, Connecticut

Fairfield County

Latitude: 41.433102

Longitude: -73.431916

Exp.10/31/2021



04/26/2021

Analysis Result:

Max Structural Usage: 85.4% [Pass]

Max Foundation Usage: 74.0% [Pass]

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

Report Prepared By : Linfeng Chen

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

Structural Analysis Report

Existing 139 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13549-S

Customer Site Name: Danbury 1

Carrier Name: Verizon (App#: 146753, V2)

Carrier Site ID / Name: 468687 / BROOKFIELD_WEST_CT

Site Location: 52 Stadley Rough Road

Danbury, Connecticut

Fairfield County

Latitude: 41.433102

Longitude: -73.431916

Analysis Result:

Max Structural Usage: 85.4% [Pass]

Max Foundation Usage: 74.0% [Pass]

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

Report Prepared By : Linfeng Chen

Introduction

The purpose of this report is to summarize the analysis results on the 139 ft SABRE Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower Drawings prepared by Sabre Towers and Poles, Job # 10-01206 Dated 01/28/2010
Foundation Drawing	Foundation Drawings prepared by Sabre Towers and Poles, Job # 10-01206 Dated 01/28/2010
Geotechnical Report	Geotechnical Report prepared by Tower Engineering Professionals Project # 091184.01 Dated 05/13/2009
Modification Drawings	N/A
Mount Analysis	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 120.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 93.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.217, S_1 = 0.067

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	137.0	3	RFS - APXVAARR18_43-U-NA20 - Panel	(1) Low Profile Platform with HRK [Sitepro RMQP-4096-HRK]	(9) 1 5/8" Coax (4) 1 5/8" Fiber	T-Mobile
2		3	Ericsson - Air 32 KRD901146_1_B66A_B2A - Panel			
3		3	Ericsson - AIR6449 B41 - Panel			
4		3	Ericsson - KRY 112 144/1 - TMA			
5		3	Commscope - SDX1926Q-43 - Diplexer			
6		3	Ericsson - 4449 B71+B85 - RRU			
7		3	Ericsson - 4415 B25 - RRU			
8	107.0	3	CCI OPA-65R-LCUU-H6	(1) Commscope MC-HPM1250-B (1) Commscope RR-RM1560	(6) 3/4" DC Power (2) 3/8" Fiber (6) 7/8" Coax	AT&T
9		3	KMW EPBQ-652L8H6-L2			
10		3	CCI DTMABP7819VG12A TMA			
11		3	Ericsson RRUS-11 700MHz			
12		3	Ericsson RRUS-12			
13		3	Ericsson RRUS-32			
14		3	Ericsson RRUS 4449 B5/B12			
15		3	Ericsson RRUS 4426 B66			
16		3	Ericsson RRUS-A2			
17		3	Kaelus DBC2055F1V1			
18		3	Raycap DC6-48-60-18-8F			
-	97.0	3	Antel BXA-70063/6CF	(3) Stand off	(12) 1 5/8" (1) 1 5/8" Fiber	Verizon
-		3	Antel BXA-171063/12CF			
-		3	Andrew DBXNH-6565A-VTM			
-		3	Alcatel RRH2x40-AWS			
-		6	RFS FD9R6004/2C-3L			
-		1	RFS DB-T1-6Z-8AB-0Z			

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
19	97.0	6	JMA MX06FRO660-03 - Panel	(3) Standoff	(12) 1 5/8" (1) 1 5/8" Hybrid	Verizon
20		3	Samsung VZS01 - Panel			
21		3	Samsung B5/B13 RRH-BR04C			
22		3	Samsung B2/B66A RRH-BR049			
23		1	Commscope RCMDC-6627-PF-48			

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:	**85.4%**	**68.4%**	**64.9%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2271.5	22.8	51.2

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 1.5062 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/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 85.44% at 53.3ft

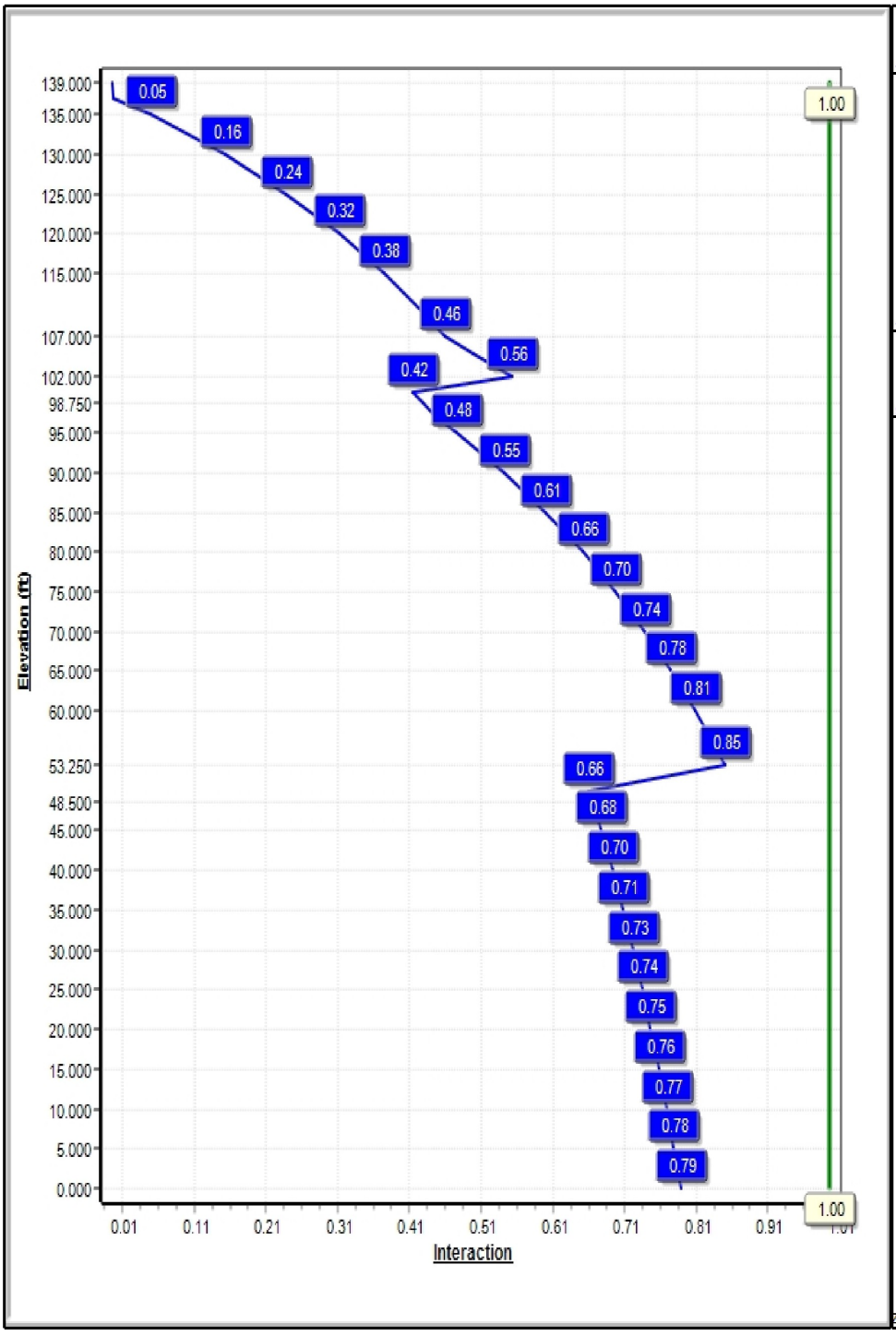
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1	**Exposure:**	C	
Height:	139.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

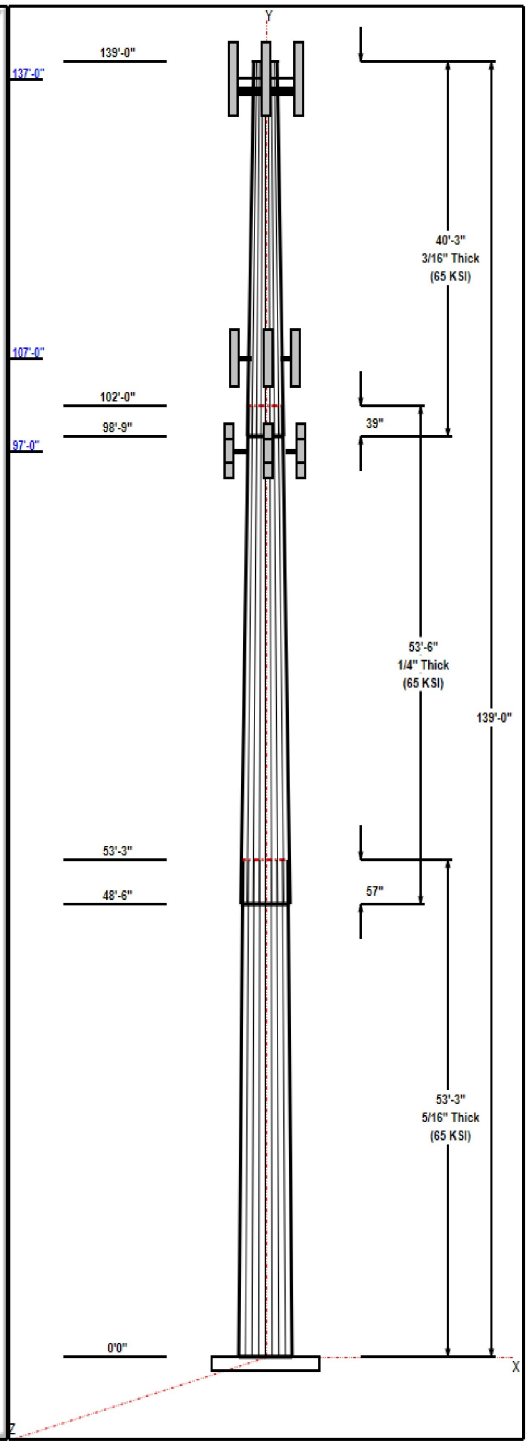
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 93 mph Wind

Iterations: 26





Structure: CT13549-S-SBA

Type: Tapered
Site Name: Danbury 1
Height: 139.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23097

4/26/2021

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	34.93	47.23	0.313		0.23097	65
2	53.50	24.17	36.53	0.250	Slip	0.23097	65
3	40.25	16.00	25.30	0.188	Slip	0.23097	65

Discrete Appurtenances

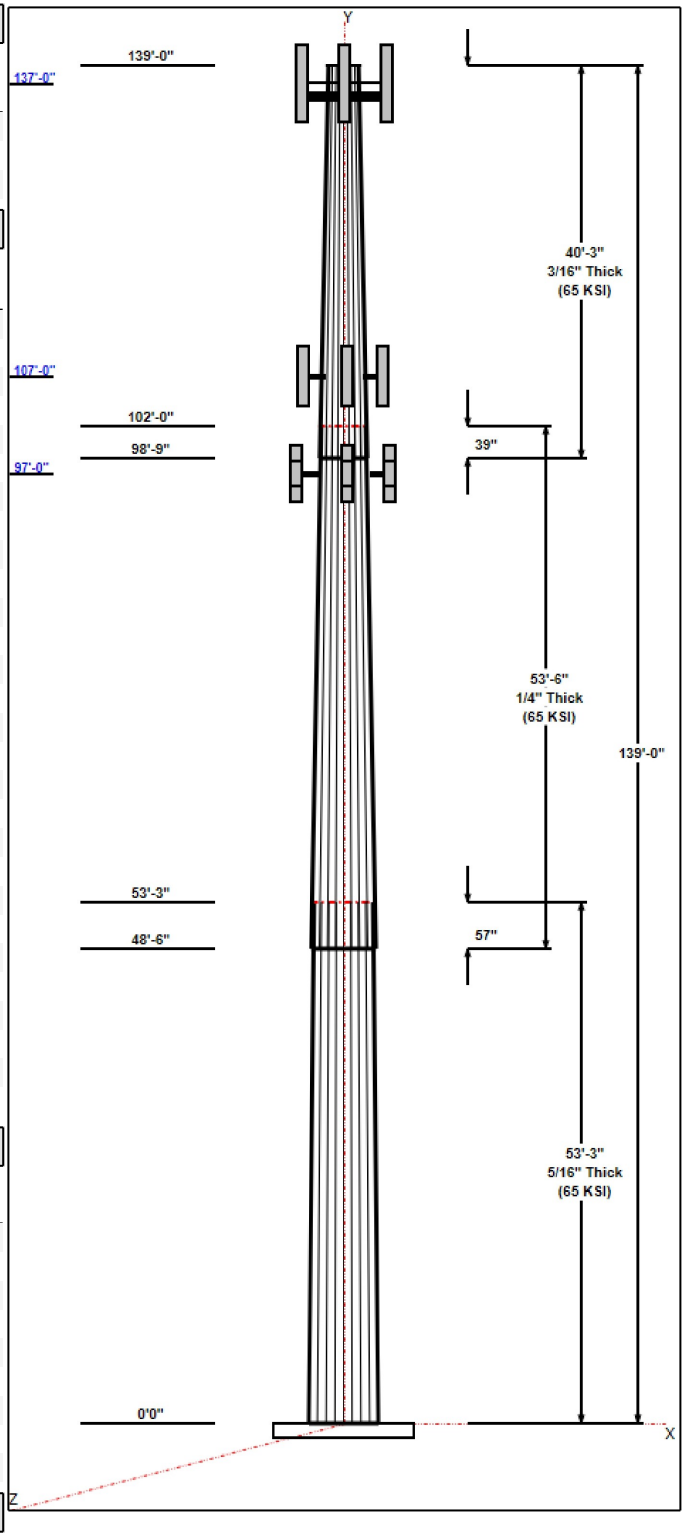
Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
139.00	139.00	1	6' Lightning rod	
137.00	137.00	3	AIR6449 B41	T-Mobile
137.00	137.00	3	KRY 112 144/1	T-Mobile
137.00	137.00	1	SDX1926Q-43	T-Mobile
137.00	137.00	3	RFS	T-Mobile
137.00	137.00	3	Air 32	T-Mobile
137.00	137.00	3	Radio 4449 B71+B12	T-Mobile
137.00	137.00	1	RMQP-4096-HRK	T-Mobile
137.00	137.00	3	4415 B25	T-Mobile
107.00	107.00	3	RRUS-11 700MHz	AT&T
107.00	107.00	3	RRUS 12	AT&T
107.00	107.00	3	RRUS A2	AT&T
107.00	107.00	3	RRUS-32	AT&T
107.00	107.00	3	DC6-48-60-18-8F	AT&T
107.00	107.00	3	OPA-65R-LCUU-H6	AT&T
107.00	107.00	3	EPBQ-652L8H6-L2	AT&T
107.00	107.00	3	DBC20056F1V1	AT&T
107.00	107.00	3	DTMABP7819VG12A	AT&T
107.00	107.00	3	RRUS-E2	AT&T
107.00	107.00	1	Collar Mount Commscope	AT&T
107.00	107.00	3	T-Arm Commscope	AT&T
107.00	107.00	3	RRUS 4449 B5/B12	AT&T
97.00	97.00	6	JMA MX06FRO660-03	Verizon
97.00	97.00	3	Samsung VZS01	Verizon
97.00	97.00	3	Samsung B5/B13	Verizon
97.00	97.00	3	Samsung B2/B66A	Verizon
97.00	97.00	1	Commscope	Verizon
97.00	97.00	3	Standoff	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	139.00	Outside	Safety Cable	
0.00	139.00	Outside	Step bolts (ladder)	
0.00	137.00	Inside	1 5/8" Coax	T-Mobile
0.00	137.00	Inside	1 5/8" Hybrid	T-Mobile
0.00	107.00	Inside	3/4" DC	AT&T
0.00	107.00	Inside	3/8" Fiber	AT&T
0.00	107.00	Inside	7/8" Coax	AT&T
0.00	97.00	Inside	1 5/8" Coax	Verizon
0.00	97.00	Inside	1 5/8" Hybrid	Verizon

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Cluster



Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	51.5	50.0	Clipped

Reactions

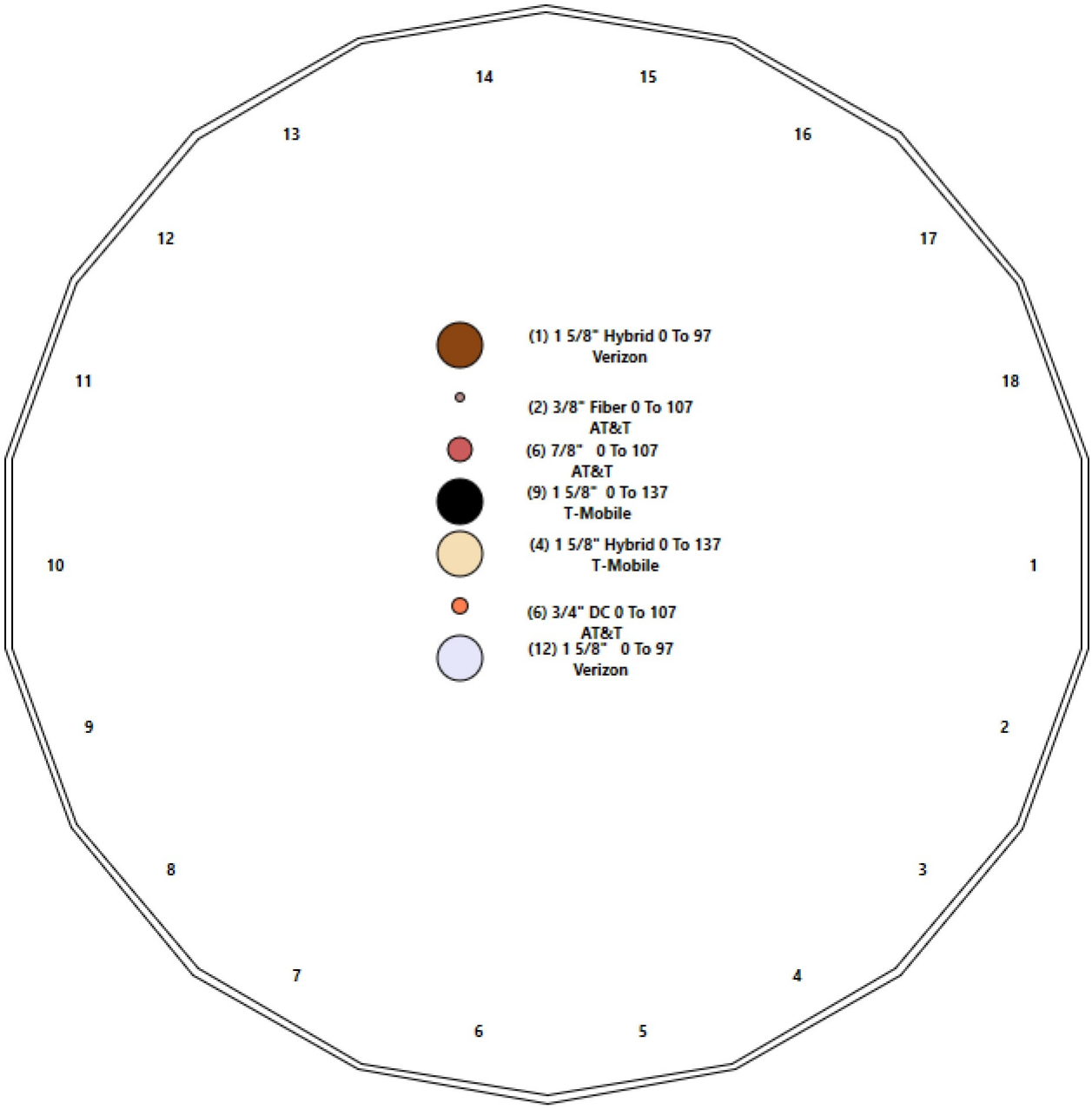
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 93 mph Wind	2271.5	22.8	30.8
0.9D + 1.6W 93 mph Wind	2240.6	22.8	23.1
1.2D + 1.0Di + 1.0Wi 50 mph Wind	697.7	7.0	51.2
1.2D + 1.0E	185.4	1.6	30.9
0.9D + 1.0E	182.4	1.6	23.2
1.0D + 1.0W 60 mph Wind	586.7	5.9	25.7

Structure: CT13549-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Danbury 1
Height: 139.00 (ft)

4/26/2021

Tower Engineering Solutions



Shaft Properties

Structure:	CT13549-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.250	0.3125	65		0.00	7,327
2	18	53.500	0.2500	65	Slip	57.00	4,348
3	18	40.250	0.1875	65	Slip	39.00	1,668
					Total Shaft Weight:		**13,342**

	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	47.23	0.00	46.53	12941.93	25.24	151.14	34.93	53.25	34.34	5198.89	18.30	111.7	0.230971
2	36.53	48.50	28.79	4786.42	24.35	146.11	24.17	102.00	18.98	1372.20	15.64	96.68	0.230971
3	25.30	98.75	14.94	1190.25	22.38	134.92	16.00	139.00	9.41	297.27	13.64	85.33	0.230971

Load Summary

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	139.00	6' Lightning rod	1	6.50	0.38	1.00	42.53	1.459	1.00	0.00	0.00
2	137.00	AIR6449 B41	3	103.00	5.65	0.71	238.88	6.592	0.71	0.00	0.00
3	137.00	KRY 112 144/1	3	11.00	0.41	0.67	21.68	0.881	0.67	0.00	0.00
4	137.00	SDX1926Q-43	1	7.00	0.38	0.67	16.60	0.832	0.67	0.00	0.00
5	137.00	RFS APXVAARR18_43-U-NA20	3	128.00	20.24	0.70	541.69	22.122	0.70	0.00	0.00
6	137.00	Air 32 KRD901146_1_B66A_B2A	3	132.20	6.51	0.87	314.61	7.679	0.87	0.00	0.00
7	137.00	Radio 4449 B71+B12	3	70.00	1.65	0.67	137.47	2.182	0.67	0.00	0.00
8	137.00	RMQP-4096-HRK	1	2449.00	46.00	1.00	4990.28	77.822	1.00	0.00	0.00
9	137.00	4415 B25	3	46.30	1.86	0.67	106.37	2.419	0.67	0.00	0.00
10	107.00	RRUS-11 700MHz	3	50.70	2.52	0.67	136.29	3.148	0.67	0.00	0.00
11	107.00	RRUS 12	3	58.00	3.15	0.67	149.55	3.838	0.67	0.00	0.00
12	107.00	RRUS A2	3	21.20	1.86	0.67	56.11	2.801	0.67	0.00	0.00
13	107.00	RRUS-32	3	77.00	3.87	0.67	186.06	4.078	0.67	0.00	0.00
14	107.00	DC6-48-60-18-8F	3	31.80	1.47	0.67	91.57	2.147	0.67	0.00	0.00
15	107.00	OPA-65R-LCUU-H6	3	80.00	9.66	0.79	302.78	10.978	0.79	0.00	0.00
16	107.00	EPBQ-652L8H6-L2	3	72.80	9.66	0.85	343.47	14.704	0.85	0.00	0.00
17	107.00	DBC20056F1V1	3	6.60	0.41	0.67	19.83	0.720	0.67	0.00	0.00
18	107.00	DTMABP7819VG12A	3	19.20	1.14	0.67	43.87	1.884	0.67	0.00	0.00
19	107.00	RRUS-E2	3	77.00	1.65	0.67	123.37	2.209	0.67	0.00	0.00
20	107.00	Collar Mount Commscope	1	122.40	5.00	1.00	411.53	13.436	1.00	0.00	0.00
21	107.00	T-Arm Commscope MC-HPM1250-B	3	178.00	10.00	0.75	298.13	18.436	0.75	0.00	0.00
22	107.00	RRUS 4449 B5/B12	3	85.00	1.65	0.67	198.76	4.261	0.67	0.00	0.00
23	97.00	JMA MX06FRO660-03	6	46.00	9.87	0.87	301.82	11.184	0.87	0.00	0.00
24	97.00	Samsung VZS01	3	87.10	4.30	0.69	192.41	5.144	0.75	0.00	0.00
25	97.00	Samsung B5/B13 RRH-BR04C	3	84.40	1.88	0.67	133.47	2.408	0.67	0.00	0.00
26	97.00	Samsung B2/B66A RRH-BR049	3	70.30	1.88	0.67	116.86	2.408	0.67	0.00	0.00
27	97.00	Commscope RCMDC-6627-PF-48	1	20.00	5.60	1.00	130.14	7.191	1.00	0.00	0.00
28	97.00	Standoff	3	350.00	8.00	0.75	583.91	14.683	0.75	0.00	0.00
		Totals:	**77**	**8,399.70**			**20,413.42**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	139.00	(1) Safety Cable	0.00	Outside
0.00	139.00	(1) Step bolts (ladder)	0.00	Outside
0.00	137.00	(9) 1 5/8" Coax	0.00	Inside
0.00	137.00	(4) 1 5/8" Hybrid	0.00	Inside
0.00	107.00	(6) 3/4" DC	0.00	Inside
0.00	107.00	(2) 3/8" Fiber	0.00	Inside
0.00	107.00	(6) 7/8" Coax	0.00	Inside
0.00	97.00	(12) 1 5/8" Coax	0.00	Inside
0.00	97.00	(1) 1 5/8" Hybrid	0.00	Inside

Shaft Section Properties

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3125	47.230	46.535	12941.9	25.24	151.14	71.7	539.7	0.0
5.00		0.3125	46.075	45.389	12009.6	24.59	147.44	72.5	513.4	782.0
10.00		0.3125	44.920	44.244	11123.1	23.94	143.74	73.2	487.7	762.5
15.00		0.3125	43.765	43.098	10281.4	23.28	140.05	74.0	462.7	743.0
20.00		0.3125	42.611	41.953	9483.2	22.63	136.35	74.8	438.3	723.5
25.00		0.3125	41.456	40.807	8727.5	21.98	132.66	75.5	414.7	704.0
30.00		0.3125	40.301	39.662	8013.0	21.33	128.96	76.3	391.6	684.5
35.00		0.3125	39.146	38.517	7338.6	20.68	125.27	77.1	369.2	665.1
40.00		0.3125	37.991	37.371	6703.2	20.03	121.57	77.8	347.5	645.6
45.00		0.3125	36.836	36.226	6105.5	19.37	117.88	78.6	326.5	626.1
48.50	Bot - Section 2	0.3125	36.028	35.424	5709.0	18.92	115.29	79.1	312.1	426.7
50.00		0.3125	35.681	35.080	5544.5	18.72	114.18	79.4	306.1	326.2
53.25	Top - Section 1	0.2500	35.431	27.915	4365.2	23.58	141.72	0.0	0.0	695.8
55.00		0.2500	35.027	27.594	4216.4	23.29	140.11	74.0	237.1	165.3
60.00		0.2500	33.872	26.678	3810.2	22.48	135.49	75.0	221.6	461.7
65.00		0.2500	32.717	25.762	3430.9	21.66	130.87	75.9	206.5	446.1
70.00		0.2500	31.562	24.845	3077.6	20.85	126.25	76.9	192.1	430.5
75.00		0.2500	30.407	23.929	2749.5	20.04	121.63	77.8	178.1	414.9
80.00		0.2500	29.252	23.012	2445.6	19.22	117.01	78.8	164.7	399.3
85.00		0.2500	28.097	22.096	2164.9	18.41	112.39	79.8	151.8	383.7
90.00		0.2500	26.943	21.180	1906.6	17.59	107.77	80.7	139.4	368.1
95.00		0.2500	25.788	20.263	1669.7	16.78	103.15	81.7	127.5	352.6
97.00		0.2500	25.326	19.897	1580.7	16.45	101.30	82.1	122.9	136.7
98.75	Bot - Section 3	0.2500	24.922	19.576	1505.5	16.17	99.69	82.4	119.0	117.5
100.00		0.2500	24.633	19.347	1453.2	15.96	98.53	82.5	116.2	146.0
102.00	Top - Section 2	0.1875	24.546	14.496	1086.7	21.67	130.91	0.0	0.0	230.0
105.00		0.1875	23.853	14.083	996.5	21.02	127.22	76.7	82.3	145.9
107.00		0.1875	23.391	13.809	939.3	20.59	124.75	77.2	79.1	94.9
110.00		0.1875	22.698	13.396	857.7	19.93	121.06	78.0	74.4	138.9
115.00		0.1875	21.543	12.709	732.3	18.85	114.90	79.2	67.0	222.1
120.00		0.1875	20.388	12.022	619.8	17.76	108.74	80.5	59.9	210.4
125.00		0.1875	19.234	11.334	519.5	16.68	102.58	81.8	53.2	198.7
130.00		0.1875	18.079	10.647	430.6	15.59	96.42	82.5	46.9	187.0
135.00		0.1875	16.924	9.960	352.5	14.50	90.26	82.5	41.0	175.3
137.00		0.1875	16.462	9.685	324.1	14.07	87.80	82.5	38.8	66.8
139.00		0.1875	16.000	9.410	297.3	13.64	85.33	82.5	36.6	65.0
										13342.3

Wind Loading - Shaft

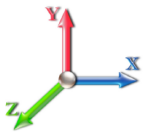
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	17.879	19.67	342.67	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	334.29	0.650	0.000	5.00	19.738	12.83	403.7	0.0	938.4
10.00		1.00	0.85	17.879	19.67	325.91	0.650	0.000	5.00	19.250	12.51	393.7	0.0	915.0
15.00		1.00	0.85	17.879	19.67	317.53	0.650	0.000	5.00	18.761	12.19	383.7	0.0	891.6
20.00		1.00	0.90	18.971	20.87	318.45	0.650	0.000	5.00	18.273	11.88	396.6	0.0	868.2
25.00		1.00	0.95	19.883	21.87	317.18	0.650	0.000	5.00	17.784	11.56	404.5	0.0	844.8
30.00		1.00	0.98	20.661	22.73	314.32	0.650	0.000	5.00	17.295	11.24	408.8	0.0	821.5
35.00		1.00	1.01	21.343	23.48	310.31	0.650	0.000	5.00	16.807	10.92	410.4	0.0	798.1
40.00		1.00	1.04	21.951	24.15	305.42	0.650	0.000	5.00	16.318	10.61	409.8	0.0	774.7
45.00		1.00	1.07	22.502	24.75	299.83	0.650	0.000	5.00	15.830	10.29	407.5	0.0	751.3
48.50	Bot - Section 2	1.00	1.09	22.860	25.15	295.57	0.650	0.000	3.50	10.790	7.01	282.2	0.0	512.0
50.00		1.00	1.09	23.007	25.31	293.67	0.650	0.000	1.50	4.614	3.00	121.5	0.0	391.4
53.25	Top - Section 1	1.00	1.11	23.314	25.65	289.40	0.650	0.000	3.25	9.847	6.40	262.6	0.0	835.0
55.00		1.00	1.12	23.473	25.82	291.19	0.650	0.000	1.75	5.217	3.39	140.1	0.0	198.3
60.00		1.00	1.14	23.907	26.30	284.18	0.650	0.000	5.00	14.575	9.47	398.6	0.0	554.0
65.00		1.00	1.16	24.313	26.74	276.81	0.650	0.000	5.00	14.087	9.16	391.8	0.0	535.3
70.00		1.00	1.17	24.696	27.17	269.13	0.650	0.000	5.00	13.598	8.84	384.2	0.0	516.6
75.00		1.00	1.19	25.057	27.56	261.17	0.650	0.000	5.00	13.109	8.52	375.8	0.0	497.9
80.00		1.00	1.21	25.400	27.94	252.97	0.650	0.000	5.00	12.621	8.20	366.7	0.0	479.2
85.00		1.00	1.22	25.726	28.30	244.53	0.650	0.000	5.00	12.132	7.89	357.1	0.0	460.5
90.00		1.00	1.24	26.037	28.64	235.90	0.650	0.000	5.00	11.644	7.57	346.8	0.0	441.8
95.00		1.00	1.25	26.336	28.97	227.08	0.650	0.000	5.00	11.155	7.25	336.1	0.0	423.1
97.00	Appurtenance(s)	1.00	1.26	26.451	29.10	223.50	0.650	0.000	2.00	4.325	2.81	130.9	0.0	164.0
98.75	Bot - Section 3	1.00	1.26	26.551	29.21	220.34	0.650	0.000	1.75	3.720	2.42	113.0	0.0	141.0
100.00		1.00	1.27	26.621	29.28	218.08	0.650	0.000	1.25	2.660	1.73	81.0	0.0	175.2
102.00	Top - Section 2	1.00	1.27	26.733	29.41	214.44	0.650	0.000	2.00	4.193	2.73	128.2	0.0	276.0
105.00		1.00	1.28	26.896	29.59	212.26	0.650	0.000	3.00	6.143	3.99	189.0	0.0	175.0
107.00	Appurtenance(s)	1.00	1.28	27.003	29.70	208.57	0.650	0.000	2.00	3.998	2.60	123.5	0.0	113.9
110.00		1.00	1.29	27.161	29.88	202.98	0.650	0.000	3.00	5.850	3.80	181.8	0.0	166.6
115.00		1.00	1.30	27.416	30.16	193.55	0.650	0.000	5.00	9.359	6.08	293.5	0.0	266.5
120.00		1.00	1.32	27.663	30.43	184.00	0.650	0.000	5.00	8.871	5.77	280.7	0.0	252.5
125.00		1.00	1.33	27.902	30.69	174.33	0.650	0.000	5.00	8.382	5.45	267.5	0.0	238.4
130.00		1.00	1.34	28.133	30.95	164.54	0.650	0.000	5.00	7.893	5.13	254.0	0.0	224.4
135.00		1.00	1.35	28.358	31.19	154.64	0.650	0.000	5.00	7.405	4.81	240.2	0.0	210.4
137.00	Appurtenance(s)	1.00	1.35	28.446	31.29	150.65	0.650	0.000	2.00	2.825	1.84	91.9	0.0	80.2
139.00	Appurtenance(s)	1.00	1.36	28.533	31.39	146.65	0.650	0.000	2.00	2.747	1.79	89.7	0.0	78.0
								Totals:	**139.00**			**9,847.2**		**16,010.8**

Discrete Appurtenance Forces

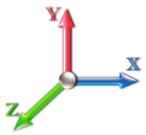
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

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	139.00	6' Lightning rod	1	28.533	31.386	1.00	1.00	0.38	7.80	0.000	0.000	19.08	0.00	0.00
2	137.00	Air 32	3	28.446	31.290	0.65	0.75	12.74	475.92	0.000	0.000	637.99	0.00	0.00
3	137.00	AIR6449 B41	3	28.446	31.290	0.53	0.75	9.03	370.80	0.000	0.000	451.87	0.00	0.00
4	137.00	KRY 112 144/1	3	28.446	31.290	0.50	0.75	0.62	39.60	0.000	0.000	30.94	0.00	0.00
5	137.00	RFS	3	28.446	31.290	0.52	0.75	31.88	460.80	0.000	0.000	1595.95	0.00	0.00
6	137.00	Radio 4449 B71+B12	3	28.446	31.290	0.50	0.75	2.49	252.00	0.000	0.000	124.53	0.00	0.00
7	137.00	SDX1926Q-43	1	28.446	31.290	0.50	0.75	0.19	8.40	0.000	0.000	9.56	0.00	0.00
8	137.00	RMQP-4096-HRK	1	28.446	31.290	1.00	1.00	46.00	2938.80	0.000	0.000	2302.96	0.00	0.00
9	137.00	4415 B25	3	28.446	31.290	0.50	0.75	2.80	166.68	0.000	0.000	140.38	0.00	0.00
10	107.00	RRUS 4449 B5/B12	3	27.003	29.704	0.54	0.80	2.65	306.00	0.000	0.000	126.10	0.00	0.00
11	107.00	RRUS-E2	3	27.003	29.704	0.54	0.80	2.65	277.20	0.000	0.000	126.10	0.00	0.00
12	107.00	DTMABP7819VG12A	3	27.003	29.704	0.54	0.80	1.83	69.12	0.000	0.000	87.12	0.00	0.00
13	107.00	DBC20056F1V1	3	27.003	29.704	0.54	0.80	0.66	23.76	0.000	0.000	31.33	0.00	0.00
14	107.00	EPBQ-652L8H6-L2	3	27.003	29.704	0.68	0.80	19.71	262.08	0.000	0.000	936.57	0.00	0.00
15	107.00	OPA-65R-LCUU-H6	3	27.003	29.704	0.63	0.80	18.32	288.00	0.000	0.000	870.46	0.00	0.00
16	107.00	RRUS-11 700MHz	3	27.003	29.704	0.54	0.80	4.05	182.52	0.000	0.000	192.58	0.00	0.00
17	107.00	Collar Mount Commscope	1	27.003	29.704	1.00	1.00	5.00	146.88	0.000	0.000	237.63	0.00	0.00
18	107.00	T-Arm Commscope	3	27.003	29.704	0.56	0.75	16.88	640.80	0.000	0.000	802.00	0.00	0.00
19	107.00	DC6-48-60-18-8F	3	27.003	29.704	0.54	0.80	2.36	114.48	0.000	0.000	112.34	0.00	0.00
20	107.00	RRUS 12	3	27.003	29.704	0.54	0.80	5.07	208.80	0.000	0.000	240.73	0.00	0.00
21	107.00	RRUS A2	3	27.003	29.704	0.54	0.80	2.99	76.32	0.000	0.000	142.14	0.00	0.00
22	107.00	RRUS-32	3	27.003	29.704	0.54	0.80	6.22	277.20	0.000	0.000	295.75	0.00	0.00
23	97.00	Commscope	1	26.451	29.096	1.00	1.00	5.60	24.00	0.000	0.000	260.70	0.00	0.00
24	97.00	Samsung B2/B66A	3	26.451	29.096	0.54	0.80	3.02	253.08	0.000	0.000	140.74	0.00	0.00
25	97.00	Samsung B5/B13	3	26.451	29.096	0.54	0.80	3.02	303.84	0.000	0.000	140.74	0.00	0.00
26	97.00	Samsung VZS01	3	26.451	29.096	0.55	0.80	7.12	313.56	0.000	0.000	331.50	0.00	0.00
27	97.00	JMA MX06FRO660-03	6	26.451	29.096	0.70	0.80	41.22	331.20	0.000	0.000	1918.84	0.00	0.00
28	97.00	Standoff	3	26.451	29.096	0.56	0.75	13.50	1260.00	0.000	0.000	628.48	0.00	0.00
							Totals:		**10,079.64**			**12,935.11**		

Total Applied Force Summary

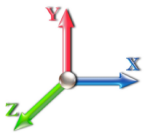
Structure:	CT13549-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

TES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		403.73	1144.15	0.00	0.00
10.00		393.73	1120.76	0.00	0.00
15.00		383.74	1097.38	0.00	0.00
20.00		396.56	1073.99	0.00	0.00
25.00		404.52	1050.60	0.00	0.00
30.00		408.80	1027.22	0.00	0.00
35.00		410.35	1003.83	0.00	0.00
40.00		409.78	980.45	0.00	0.00
45.00		407.49	957.06	0.00	0.00
48.50		282.17	656.03	0.00	0.00
50.00		121.45	453.12	0.00	0.00
53.25		262.63	968.75	0.00	0.00
55.00		140.09	270.34	0.00	0.00
60.00		398.63	759.79	0.00	0.00
65.00		391.81	741.08	0.00	0.00
70.00		384.17	722.37	0.00	0.00
75.00		375.78	703.66	0.00	0.00
80.00		366.73	684.95	0.00	0.00
85.00		357.06	666.24	0.00	0.00
90.00		346.83	647.53	0.00	0.00
95.00		336.08	628.82	0.00	0.00
97.00	(19) attachments	3551.88	2731.97	0.00	0.00
98.75		113.00	184.53	0.00	0.00
100.00		81.02	206.24	0.00	0.00
102.00		128.24	325.72	0.00	0.00
105.00		189.02	249.61	0.00	0.00
107.00	(37) attachments	4324.34	3036.76	0.00	0.00
110.00		181.77	220.89	0.00	0.00
115.00		293.54	356.93	0.00	0.00
120.00		280.72	342.90	0.00	0.00
125.00		267.55	328.86	0.00	0.00
130.00		254.04	314.83	0.00	0.00
135.00		240.22	300.80	0.00	0.00
137.00	(20) attachments	5386.11	4829.39	0.00	0.00
139.00	(1) attachments	108.74	88.92	0.00	0.00
	Totals:	**22,782.35**	**30,876.48**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

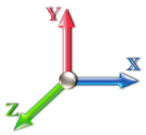
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	1.64
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	6.24
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	1.64
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	6.24
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	1.64
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	6.24
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	18.971	0.00	1.64
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	18.971	0.00	6.24
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.883	0.00	1.64
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.883	0.00	6.24
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.661	0.00	1.64
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.661	0.00	6.24
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.343	0.00	1.64
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.343	0.00	6.24
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.951	0.00	1.64
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.951	0.00	6.24
45.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.502	0.00	1.64
45.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.502	0.00	6.24
48.50	Safety Cable	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	22.860	0.00	1.15
48.50	Step bolts (ladder)	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	22.860	0.00	4.37
50.00	Safety Cable	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	23.007	0.00	0.49
50.00	Step bolts (ladder)	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	23.007	0.00	1.87
53.25	Safety Cable	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	23.314	0.00	1.06
53.25	Step bolts (ladder)	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	23.314	0.00	4.06
55.00	Safety Cable	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	23.473	0.00	0.57
55.00	Step bolts (ladder)	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	23.473	0.00	2.18
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.907	0.00	1.64
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.907	0.00	6.24
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.313	0.00	1.64
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.313	0.00	6.24
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.696	0.00	1.64
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.696	0.00	6.24
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.057	0.00	1.64
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.057	0.00	6.24
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.400	0.00	1.64
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.400	0.00	6.24
85.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.726	0.00	1.64
85.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.726	0.00	6.24
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.037	0.00	1.64
90.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.037	0.00	6.24
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.336	0.00	1.64
95.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.336	0.00	6.24
97.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	26.451	0.00	0.66
97.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	26.451	0.00	2.50
98.75	Safety Cable	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	26.551	0.00	0.57
98.75	Step bolts (ladder)	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	26.551	0.00	2.18
100.00	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	26.621	0.00	0.41

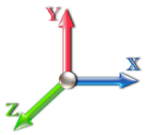
Linear Appurtenance Segment Forces (Factored)

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (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	

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

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)
100.00	Step bolts (ladder)	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	26.621	0.00	1.56
102.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	26.733	0.00	0.66
102.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	26.733	0.00	2.50
105.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	26.896	0.00	0.98
105.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	26.896	0.00	3.74
107.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	27.003	0.00	0.66
107.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	27.003	0.00	2.50
110.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.161	0.00	0.98
110.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.161	0.00	3.74
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.416	0.00	1.64
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.416	0.00	6.24
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.663	0.00	1.64
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.663	0.00	6.24
125.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.902	0.00	1.64
125.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.902	0.00	6.24
130.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.133	0.00	1.64
130.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.133	0.00	6.24
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.358	0.00	1.64
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.358	0.00	6.24
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.446	0.00	0.66
137.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.446	0.00	2.50
139.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.533	0.00	0.66
139.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.533	0.00	2.50
										Totals:	**0.0**	**219.0**

Calculated Forces

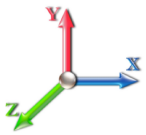
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-30.83	-22.85	0.00	-2271.5	0.00	2271.51	3003.53	1501.76	5797.25	2902.93	0.00	0.000	0.000	0.793
5.00	-29.59	-22.57	0.00	-2157.2	0.00	2157.27	2960.91	1480.45	5573.38	2790.83	0.13	-0.243	0.000	0.783
10.00	-28.37	-22.29	0.00	-2044.4	0.00	2044.42	2916.70	1458.35	5350.68	2679.32	0.52	-0.492	0.000	0.773
15.00	-27.18	-22.02	0.00	-1932.9	0.00	1932.96	2870.92	1435.46	5129.40	2568.51	1.17	-0.747	0.000	0.762
20.00	-26.01	-21.73	0.00	-1822.8	0.00	1822.86	2823.56	1411.78	4909.74	2458.52	2.09	-1.006	0.000	0.751
25.00	-24.87	-21.42	0.00	-1714.2	0.00	1714.23	2774.61	1387.31	4691.94	2349.46	3.29	-1.272	0.000	0.739
30.00	-23.75	-21.10	0.00	-1607.1	0.00	1607.14	2724.09	1362.04	4476.23	2241.44	4.77	-1.542	0.000	0.726
35.00	-22.66	-20.77	0.00	-1501.6	0.00	1501.66	2671.99	1335.99	4262.83	2134.58	6.53	-1.818	0.000	0.712
40.00	-21.59	-20.43	0.00	-1397.8	0.00	1397.82	2618.30	1309.15	4051.97	2029.00	8.58	-2.099	0.000	0.697
45.00	-20.57	-20.08	0.00	-1295.6	0.00	1295.66	2563.04	1281.52	3843.87	1924.79	10.93	-2.385	0.000	0.681
48.50	-19.87	-19.82	0.00	-1225.3	0.00	1225.39	2523.41	1261.71	3699.97	1852.74	12.76	-2.591	0.000	0.670
50.00	-19.38	-19.72	0.00	-1195.6	0.00	1195.67	2506.19	1253.10	3638.77	1822.09	13.59	-2.681	0.000	0.664
53.25	-18.37	-19.46	0.00	-1131.5	0.00	1131.57	1850.79	925.39	2677.47	1340.72	15.48	-2.875	0.000	0.854
55.00	-18.03	-19.38	0.00	-1097.5	0.00	1097.51	1837.85	918.92	2627.99	1315.95	16.56	-2.982	0.000	0.844
60.00	-17.18	-19.05	0.00	-1000.6	0.00	1000.61	1799.82	899.91	2487.54	1245.62	19.87	-3.336	0.000	0.813
65.00	-16.34	-18.71	0.00	-905.37	0.00	905.37	1760.21	880.10	2348.61	1176.05	23.55	-3.692	0.000	0.780
70.00	-15.54	-18.38	0.00	-811.80	0.00	811.80	1719.02	859.51	2211.45	1107.37	27.61	-4.048	0.000	0.743
75.00	-14.75	-18.04	0.00	-719.91	0.00	719.91	1676.25	838.13	2076.26	1039.67	32.03	-4.402	0.000	0.702
80.00	-13.99	-17.71	0.00	-629.70	0.00	629.70	1631.90	815.95	1943.29	973.09	36.83	-4.751	0.000	0.656
85.00	-13.26	-17.37	0.00	-541.17	0.00	541.17	1585.97	792.99	1812.75	907.72	41.98	-5.091	0.000	0.605
90.00	-12.55	-17.04	0.00	-454.31	0.00	454.31	1538.46	769.23	1684.87	843.69	47.48	-5.418	0.000	0.547
95.00	-11.90	-16.68	0.00	-369.13	0.00	369.13	1489.37	744.69	1559.88	781.10	53.32	-5.726	0.000	0.481
97.00	-9.51	-12.89	0.00	-335.76	0.00	335.76	1469.29	734.65	1510.75	756.50	55.74	-5.846	0.000	0.451
98.75	-9.32	-12.78	0.00	-313.20	0.00	313.20	1451.52	725.76	1468.18	735.18	57.90	-5.948	0.000	0.433
100.00	-9.10	-12.69	0.00	-297.23	0.00	297.23	1437.39	718.70	1436.71	719.42	59.46	-6.020	0.000	0.420
102.00	-8.76	-12.55	0.00	-271.85	0.00	271.85	990.34	495.17	991.38	496.43	62.00	-6.131	0.000	0.557
105.00	-8.50	-12.35	0.00	-234.21	0.00	234.21	971.88	485.94	945.01	473.21	65.90	-6.289	0.000	0.504
107.00	-5.94	-7.74	0.00	-209.50	0.00	209.50	959.26	479.63	914.39	457.88	68.56	-6.415	0.000	0.464
110.00	-5.72	-7.55	0.00	-186.29	0.00	186.29	939.85	469.93	868.93	435.11	72.64	-6.595	0.000	0.434
115.00	-5.36	-7.25	0.00	-148.52	0.00	148.52	906.24	453.12	794.52	397.85	79.68	-6.873	0.000	0.379
120.00	-5.03	-6.95	0.00	-112.30	0.00	112.30	871.06	435.53	722.01	361.54	87.00	-7.126	0.000	0.317
125.00	-4.71	-6.65	0.00	-77.57	0.00	77.57	834.29	417.15	651.64	326.30	94.57	-7.344	0.000	0.244
130.00	-4.42	-6.37	0.00	-44.30	0.00	44.30	791.03	395.51	580.02	290.44	102.34	-7.511	0.000	0.158
135.00	-4.15	-6.10	0.00	-12.43	0.00	12.43	739.97	369.98	507.20	253.97	110.24	-7.605	0.000	0.055
137.00	-0.07	-0.12	0.00	-0.24	0.00	0.24	719.55	359.77	479.43	240.07	113.42	-7.615	0.000	0.001
139.00	0.00	-0.11	0.00	0.00	0.00	0.00	699.12	349.56	452.45	226.56	116.60	-7.615	0.000	0.000

Wind Loading - Shaft

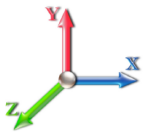
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	17.879	19.67	342.67	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	334.29	0.650	0.000	5.00	19.738	12.83	403.7	0.0	703.8
10.00		1.00	0.85	17.879	19.67	325.91	0.650	0.000	5.00	19.250	12.51	393.7	0.0	686.3
15.00		1.00	0.85	17.879	19.67	317.53	0.650	0.000	5.00	18.761	12.19	383.7	0.0	668.7
20.00		1.00	0.90	18.971	20.87	318.45	0.650	0.000	5.00	18.273	11.88	396.6	0.0	651.2
25.00		1.00	0.95	19.883	21.87	317.18	0.650	0.000	5.00	17.784	11.56	404.5	0.0	633.6
30.00		1.00	0.98	20.661	22.73	314.32	0.650	0.000	5.00	17.295	11.24	408.8	0.0	616.1
35.00		1.00	1.01	21.343	23.48	310.31	0.650	0.000	5.00	16.807	10.92	410.4	0.0	598.6
40.00		1.00	1.04	21.951	24.15	305.42	0.650	0.000	5.00	16.318	10.61	409.8	0.0	581.0
45.00		1.00	1.07	22.502	24.75	299.83	0.650	0.000	5.00	15.830	10.29	407.5	0.0	563.5
48.50	Bot - Section 2	1.00	1.09	22.860	25.15	295.57	0.650	0.000	3.50	10.790	7.01	282.2	0.0	384.0
50.00		1.00	1.09	23.007	25.31	293.67	0.650	0.000	1.50	4.614	3.00	121.5	0.0	293.5
53.25	Top - Section 1	1.00	1.11	23.314	25.65	289.40	0.650	0.000	3.25	9.847	6.40	262.6	0.0	626.3
55.00		1.00	1.12	23.473	25.82	291.19	0.650	0.000	1.75	5.217	3.39	140.1	0.0	148.7
60.00		1.00	1.14	23.907	26.30	284.18	0.650	0.000	5.00	14.575	9.47	398.6	0.0	415.5
65.00		1.00	1.16	24.313	26.74	276.81	0.650	0.000	5.00	14.087	9.16	391.8	0.0	401.5
70.00		1.00	1.17	24.696	27.17	269.13	0.650	0.000	5.00	13.598	8.84	384.2	0.0	387.5
75.00		1.00	1.19	25.057	27.56	261.17	0.650	0.000	5.00	13.109	8.52	375.8	0.0	373.4
80.00		1.00	1.21	25.400	27.94	252.97	0.650	0.000	5.00	12.621	8.20	366.7	0.0	359.4
85.00		1.00	1.22	25.726	28.30	244.53	0.650	0.000	5.00	12.132	7.89	357.1	0.0	345.4
90.00		1.00	1.24	26.037	28.64	235.90	0.650	0.000	5.00	11.644	7.57	346.8	0.0	331.3
95.00		1.00	1.25	26.336	28.97	227.08	0.650	0.000	5.00	11.155	7.25	336.1	0.0	317.3
97.00	Appurtenance(s)	1.00	1.26	26.451	29.10	223.50	0.650	0.000	2.00	4.325	2.81	130.9	0.0	123.0
98.75	Bot - Section 3	1.00	1.26	26.551	29.21	220.34	0.650	0.000	1.75	3.720	2.42	113.0	0.0	105.8
100.00		1.00	1.27	26.621	29.28	218.08	0.650	0.000	1.25	2.660	1.73	81.0	0.0	131.4
102.00	Top - Section 2	1.00	1.27	26.733	29.41	214.44	0.650	0.000	2.00	4.193	2.73	128.2	0.0	207.0
105.00		1.00	1.28	26.896	29.59	212.26	0.650	0.000	3.00	6.143	3.99	189.0	0.0	131.3
107.00	Appurtenance(s)	1.00	1.28	27.003	29.70	208.57	0.650	0.000	2.00	3.998	2.60	123.5	0.0	85.4
110.00		1.00	1.29	27.161	29.88	202.98	0.650	0.000	3.00	5.850	3.80	181.8	0.0	125.0
115.00		1.00	1.30	27.416	30.16	193.55	0.650	0.000	5.00	9.359	6.08	293.5	0.0	199.9
120.00		1.00	1.32	27.663	30.43	184.00	0.650	0.000	5.00	8.871	5.77	280.7	0.0	189.3
125.00		1.00	1.33	27.902	30.69	174.33	0.650	0.000	5.00	8.382	5.45	267.5	0.0	178.8
130.00		1.00	1.34	28.133	30.95	164.54	0.650	0.000	5.00	7.893	5.13	254.0	0.0	168.3
135.00		1.00	1.35	28.358	31.19	154.64	0.650	0.000	5.00	7.405	4.81	240.2	0.0	157.8
137.00	Appurtenance(s)	1.00	1.35	28.446	31.29	150.65	0.650	0.000	2.00	2.825	1.84	91.9	0.0	60.2
139.00	Appurtenance(s)	1.00	1.36	28.533	31.39	146.65	0.650	0.000	2.00	2.747	1.79	89.7	0.0	58.5
								Totals:	**139.00**			**9,847.2**		**12,008.1**

Discrete Appurtenance Forces

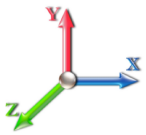
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

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	139.00	6' Lightning rod	1	28.533	31.386	1.00	1.00	0.38	5.85	0.000	0.000	19.08	0.00	0.00
2	137.00	Air 32	3	28.446	31.290	0.65	0.75	12.74	356.94	0.000	0.000	637.99	0.00	0.00
3	137.00	AIR6449 B41	3	28.446	31.290	0.53	0.75	9.03	278.10	0.000	0.000	451.87	0.00	0.00
4	137.00	KRY 112 144/1	3	28.446	31.290	0.50	0.75	0.62	29.70	0.000	0.000	30.94	0.00	0.00
5	137.00	RFS	3	28.446	31.290	0.52	0.75	31.88	345.60	0.000	0.000	1595.95	0.00	0.00
6	137.00	Radio 4449 B71+B12	3	28.446	31.290	0.50	0.75	2.49	189.00	0.000	0.000	124.53	0.00	0.00
7	137.00	SDX1926Q-43	1	28.446	31.290	0.50	0.75	0.19	6.30	0.000	0.000	9.56	0.00	0.00
8	137.00	RMQP-4096-HRK	1	28.446	31.290	1.00	1.00	46.00	2204.10	0.000	0.000	2302.96	0.00	0.00
9	137.00	4415 B25	3	28.446	31.290	0.50	0.75	2.80	125.01	0.000	0.000	140.38	0.00	0.00
10	107.00	RRUS 4449 B5/B12	3	27.003	29.704	0.54	0.80	2.65	229.50	0.000	0.000	126.10	0.00	0.00
11	107.00	RRUS-E2	3	27.003	29.704	0.54	0.80	2.65	207.90	0.000	0.000	126.10	0.00	0.00
12	107.00	DTMABP7819VG12A	3	27.003	29.704	0.54	0.80	1.83	51.84	0.000	0.000	87.12	0.00	0.00
13	107.00	DBC20056F1V1	3	27.003	29.704	0.54	0.80	0.66	17.82	0.000	0.000	31.33	0.00	0.00
14	107.00	EPBQ-652L8H6-L2	3	27.003	29.704	0.68	0.80	19.71	196.56	0.000	0.000	936.57	0.00	0.00
15	107.00	OPA-65R-LCUU-H6	3	27.003	29.704	0.63	0.80	18.32	216.00	0.000	0.000	870.46	0.00	0.00
16	107.00	RRUS-11 700MHz	3	27.003	29.704	0.54	0.80	4.05	136.89	0.000	0.000	192.58	0.00	0.00
17	107.00	Collar Mount Commscope	1	27.003	29.704	1.00	1.00	5.00	110.16	0.000	0.000	237.63	0.00	0.00
18	107.00	T-Arm Commscope	3	27.003	29.704	0.56	0.75	16.88	480.60	0.000	0.000	802.00	0.00	0.00
19	107.00	DC6-48-60-18-8F	3	27.003	29.704	0.54	0.80	2.36	85.86	0.000	0.000	112.34	0.00	0.00
20	107.00	RRUS 12	3	27.003	29.704	0.54	0.80	5.07	156.60	0.000	0.000	240.73	0.00	0.00
21	107.00	RRUS A2	3	27.003	29.704	0.54	0.80	2.99	57.24	0.000	0.000	142.14	0.00	0.00
22	107.00	RRUS-32	3	27.003	29.704	0.54	0.80	6.22	207.90	0.000	0.000	295.75	0.00	0.00
23	97.00	Commscope	1	26.451	29.096	1.00	1.00	5.60	18.00	0.000	0.000	260.70	0.00	0.00
24	97.00	Samsung B2/B66A	3	26.451	29.096	0.54	0.80	3.02	189.81	0.000	0.000	140.74	0.00	0.00
25	97.00	Samsung B5/B13	3	26.451	29.096	0.54	0.80	3.02	227.88	0.000	0.000	140.74	0.00	0.00
26	97.00	Samsung VZS01	3	26.451	29.096	0.55	0.80	7.12	235.17	0.000	0.000	331.50	0.00	0.00
27	97.00	JMA MX06FRO660-03	6	26.451	29.096	0.70	0.80	41.22	248.40	0.000	0.000	1918.84	0.00	0.00
28	97.00	Standoff	3	26.451	29.096	0.56	0.75	13.50	945.00	0.000	0.000	628.48	0.00	0.00
							Totals:		**7,559.73**			**12,935.11**		

Total Applied Force Summary

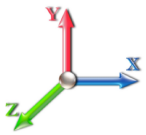
Structure:	CT13549-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 16

TES Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		403.73	858.11	0.00	0.00
10.00		393.73	840.57	0.00	0.00
15.00		383.74	823.03	0.00	0.00
20.00		396.56	805.49	0.00	0.00
25.00		404.52	787.95	0.00	0.00
30.00		408.80	770.41	0.00	0.00
35.00		410.35	752.87	0.00	0.00
40.00		409.78	735.33	0.00	0.00
45.00		407.49	717.79	0.00	0.00
48.50		282.17	492.02	0.00	0.00
50.00		121.45	339.84	0.00	0.00
53.25		262.63	726.57	0.00	0.00
55.00		140.09	202.76	0.00	0.00
60.00		398.63	569.84	0.00	0.00
65.00		391.81	555.81	0.00	0.00
70.00		384.17	541.78	0.00	0.00
75.00		375.78	527.74	0.00	0.00
80.00		366.73	513.71	0.00	0.00
85.00		357.06	499.68	0.00	0.00
90.00		346.83	485.65	0.00	0.00
95.00		336.08	471.62	0.00	0.00
97.00	(19) attachments	3551.88	2048.98	0.00	0.00
98.75		113.00	138.40	0.00	0.00
100.00		81.02	154.68	0.00	0.00
102.00		128.24	244.29	0.00	0.00
105.00		189.02	187.21	0.00	0.00
107.00	(37) attachments	4324.34	2277.57	0.00	0.00
110.00		181.77	165.67	0.00	0.00
115.00		293.54	267.70	0.00	0.00
120.00		280.72	257.17	0.00	0.00
125.00		267.55	246.65	0.00	0.00
130.00		254.04	236.12	0.00	0.00
135.00		240.22	225.60	0.00	0.00
137.00	(20) attachments	5386.11	3622.04	0.00	0.00
139.00	(1) attachments	108.74	66.69	0.00	0.00
	Totals:	**22,782.35**	**23,157.36**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

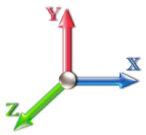
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	1.23
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	4.68
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	1.23
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	4.68
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	1.23
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	17.879	0.00	4.68
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	18.971	0.00	1.23
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	18.971	0.00	4.68
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.883	0.00	1.23
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.883	0.00	4.68
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.661	0.00	1.23
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.661	0.00	4.68
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.343	0.00	1.23
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.343	0.00	4.68
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.951	0.00	1.23
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.951	0.00	4.68
45.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.502	0.00	1.23
45.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.502	0.00	4.68
48.50	Safety Cable	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	22.860	0.00	0.86
48.50	Step bolts (ladder)	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	22.860	0.00	3.28
50.00	Safety Cable	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	23.007	0.00	0.37
50.00	Step bolts (ladder)	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	23.007	0.00	1.40
53.25	Safety Cable	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	23.314	0.00	0.80
53.25	Step bolts (ladder)	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	23.314	0.00	3.04
55.00	Safety Cable	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	23.473	0.00	0.43
55.00	Step bolts (ladder)	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	23.473	0.00	1.64
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.907	0.00	1.23
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.907	0.00	4.68
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.313	0.00	1.23
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.313	0.00	4.68
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.696	0.00	1.23
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.696	0.00	4.68
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.057	0.00	1.23
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.057	0.00	4.68
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.400	0.00	1.23
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.400	0.00	4.68
85.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.726	0.00	1.23
85.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.726	0.00	4.68
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.037	0.00	1.23
90.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.037	0.00	4.68
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.336	0.00	1.23
95.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.336	0.00	4.68
97.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	26.451	0.00	0.49
97.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	26.451	0.00	1.87
98.75	Safety Cable	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	26.551	0.00	0.43
98.75	Step bolts (ladder)	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	26.551	0.00	1.64
100.00	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	26.621	0.00	0.31

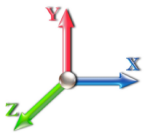
Linear Appurtenance Segment Forces (Factored)

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

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)
100.00	Step bolts (ladder)	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	26.621	0.00	1.17
102.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	26.733	0.00	0.49
102.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	26.733	0.00	1.87
105.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	26.896	0.00	0.74
105.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	26.896	0.00	2.81
107.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	27.003	0.00	0.49
107.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	27.003	0.00	1.87
110.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.161	0.00	0.74
110.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.161	0.00	2.81
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.416	0.00	1.23
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.416	0.00	4.68
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.663	0.00	1.23
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.663	0.00	4.68
125.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.902	0.00	1.23
125.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.902	0.00	4.68
130.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.133	0.00	1.23
130.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.133	0.00	4.68
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.358	0.00	1.23
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.358	0.00	4.68
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.446	0.00	0.49
137.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.446	0.00	1.87
139.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.533	0.00	0.49
139.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.533	0.00	1.87
										Totals:	**0.0**	**164.3**

Calculated Forces

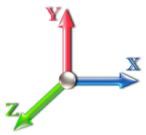
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-23.11	-22.83	0.00	-2240.6	0.00	2240.63	3003.53	1501.76	5797.25	2902.93	0.00	0.000	0.000	0.780
5.00	-22.16	-22.52	0.00	-2126.4	0.00	2126.48	2960.91	1480.45	5573.38	2790.83	0.13	-0.240	0.000	0.770
10.00	-21.22	-22.21	0.00	-2013.8	0.00	2013.88	2916.70	1458.35	5350.68	2679.32	0.51	-0.485	0.000	0.759
15.00	-20.31	-21.91	0.00	-1902.8	0.00	1902.82	2870.92	1435.46	5129.40	2568.51	1.15	-0.736	0.000	0.748
20.00	-19.41	-21.59	0.00	-1793.2	0.00	1793.27	2823.56	1411.78	4909.74	2458.52	2.06	-0.991	0.000	0.737
25.00	-18.53	-21.25	0.00	-1685.3	0.00	1685.33	2774.61	1387.31	4691.94	2349.46	3.24	-1.252	0.000	0.724
30.00	-17.67	-20.91	0.00	-1579.0	0.00	1579.05	2724.09	1362.04	4476.23	2241.44	4.69	-1.518	0.000	0.711
35.00	-16.84	-20.56	0.00	-1474.5	0.00	1474.50	2671.99	1335.99	4262.83	2134.58	6.43	-1.789	0.000	0.697
40.00	-16.02	-20.20	0.00	-1371.7	0.00	1371.71	2618.30	1309.15	4051.97	2029.00	8.45	-2.065	0.000	0.682
45.00	-15.23	-19.83	0.00	-1270.7	0.00	1270.70	2563.04	1281.52	3843.87	1924.79	10.76	-2.346	0.000	0.666
48.50	-14.70	-19.57	0.00	-1201.2	0.00	1201.28	2523.41	1261.71	3699.97	1852.74	12.56	-2.547	0.000	0.654
50.00	-14.32	-19.46	0.00	-1171.9	0.00	1171.94	2506.19	1253.10	3638.77	1822.09	13.37	-2.636	0.000	0.649
53.25	-13.56	-19.20	0.00	-1108.6	0.00	1108.68	1850.79	925.39	2677.47	1340.72	15.23	-2.826	0.000	0.835
55.00	-13.29	-19.11	0.00	-1075.0	0.00	1075.07	1837.85	918.92	2627.99	1315.95	16.29	-2.931	0.000	0.825
60.00	-12.63	-18.75	0.00	-979.55	0.00	979.55	1799.82	899.91	2487.54	1245.62	19.54	-3.277	0.000	0.794
65.00	-11.98	-18.40	0.00	-885.78	0.00	885.78	1760.21	880.10	2348.61	1176.05	23.16	-3.625	0.000	0.760
70.00	-11.36	-18.05	0.00	-793.77	0.00	793.77	1719.02	859.51	2211.45	1107.37	27.14	-3.974	0.000	0.724
75.00	-10.75	-17.70	0.00	-703.51	0.00	703.51	1676.25	838.13	2076.26	1039.67	31.49	-4.320	0.000	0.684
80.00	-10.17	-17.36	0.00	-614.99	0.00	614.99	1631.90	815.95	1943.29	973.09	36.19	-4.661	0.000	0.639
85.00	-9.60	-17.02	0.00	-528.20	0.00	528.20	1585.97	792.99	1812.75	907.72	41.25	-4.993	0.000	0.588
90.00	-9.06	-16.68	0.00	-443.13	0.00	443.13	1538.46	769.23	1684.87	843.69	46.65	-5.312	0.000	0.532
95.00	-8.57	-16.33	0.00	-359.75	0.00	359.75	1489.37	744.69	1559.88	781.10	52.37	-5.612	0.000	0.467
97.00	-6.86	-12.60	0.00	-327.10	0.00	327.10	1469.29	734.65	1510.75	756.50	54.74	-5.729	0.000	0.437
98.75	-6.71	-12.49	0.00	-305.05	0.00	305.05	1451.52	725.76	1468.18	735.18	56.85	-5.828	0.000	0.420
100.00	-6.55	-12.40	0.00	-289.44	0.00	289.44	1437.39	718.70	1436.71	719.42	58.39	-5.899	0.000	0.407
102.00	-6.29	-12.26	0.00	-264.64	0.00	264.64	990.34	495.17	991.38	496.43	60.88	-6.007	0.000	0.540
105.00	-6.09	-12.07	0.00	-227.85	0.00	227.85	971.88	485.94	945.01	473.21	64.70	-6.160	0.000	0.488
107.00	-4.28	-7.53	0.00	-203.72	0.00	203.72	959.26	479.63	914.39	457.88	67.30	-6.283	0.000	0.450
110.00	-4.10	-7.35	0.00	-181.12	0.00	181.12	939.85	469.93	868.93	435.11	71.30	-6.458	0.000	0.421
115.00	-3.84	-7.05	0.00	-144.36	0.00	144.36	906.24	453.12	794.52	397.85	78.19	-6.728	0.000	0.367
120.00	-3.59	-6.75	0.00	-109.13	0.00	109.13	871.06	435.53	722.01	361.54	85.36	-6.974	0.000	0.306
125.00	-3.36	-6.47	0.00	-75.37	0.00	75.37	834.29	417.15	651.64	326.30	92.76	-7.186	0.000	0.235
130.00	-3.14	-6.19	0.00	-43.04	0.00	43.04	791.03	395.51	580.02	290.44	100.36	-7.348	0.000	0.152
135.00	-2.95	-5.93	0.00	-12.09	0.00	12.09	739.97	369.98	507.20	253.97	108.09	-7.439	0.000	0.052
137.00	-0.05	-0.12	0.00	-0.23	0.00	0.23	719.55	359.77	479.43	240.07	111.21	-7.449	0.000	0.001
139.00	0.00	-0.11	0.00	0.00	0.00	0.00	699.12	349.56	452.45	226.56	114.32	-7.449	0.000	0.000

Wind Loading - Shaft

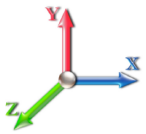
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	20.773	24.93	141.7	368.1	1306.5
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	20.359	24.43	138.9	385.7	1300.7
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	19.916	23.90	135.9	392.1	1283.7
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	19.462	23.35	140.9	393.5	1261.8
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	19.000	22.80	144.1	392.1	1237.0
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	18.534	22.24	146.1	388.9	1210.3
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	18.064	21.68	147.1	384.2	1182.3
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	17.592	21.11	147.3	378.5	1153.2
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	17.119	20.54	147.0	371.9	1123.2
48.50	Bot - Section 2	1.00	1.09	6.608	7.27	0.00	1.200	1.559	3.50	11.699	14.04	102.0	256.9	768.9
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	1.50	5.005	6.01	43.9	110.9	502.3
53.25	Top - Section 1	1.00	1.11	6.739	7.41	0.00	1.200	1.574	3.25	10.699	12.84	95.2	237.0	1072.0
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	1.75	5.677	6.81	50.8	126.7	325.0
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	15.902	19.08	145.1	353.7	907.7
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	15.424	18.51	143.1	345.0	880.3
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	14.946	17.93	140.8	336.0	852.6
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	14.466	17.36	138.3	326.6	824.5
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	13.987	16.78	135.5	317.0	796.2
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	13.506	16.21	132.6	307.1	767.6
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	13.025	15.63	129.4	297.0	738.7
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	12.544	15.05	126.0	286.6	709.7
97.00	Appurtenance(s)	1.00	1.26	7.646	8.41	0.00	1.200	1.671	2.00	4.882	5.86	49.3	113.0	276.9
98.75	Bot - Section 3	1.00	1.26	7.675	8.44	0.00	1.200	1.674	1.75	4.209	5.05	42.6	97.5	238.6
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	1.25	3.010	3.61	30.6	70.0	245.2
102.00	Top - Section 2	1.00	1.27	7.727	8.50	0.00	1.200	1.679	2.00	4.753	5.70	48.5	110.3	386.3
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	3.00	6.985	8.38	71.7	161.5	336.6
107.00	Appurtenance(s)	1.00	1.28	7.805	8.59	0.00	1.200	1.687	2.00	4.560	5.47	47.0	106.0	219.8
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	3.00	6.696	8.04	69.4	155.0	321.6
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	10.775	12.93	112.7	247.3	513.7
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	10.293	12.35	108.6	236.0	488.5
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	9.810	11.77	104.4	224.7	463.1
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	5.00	9.327	11.19	100.1	213.2	437.6
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	8.844	10.61	95.7	201.6	411.9
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	1.729	2.00	3.402	4.08	36.9	78.7	159.0
139.00	Appurtenance(s)	1.00	1.36	8.247	9.07	0.00	1.200	1.732	2.00	3.324	3.99	36.2	76.9	154.8
								Totals:	**139.00**			**3,625.6**		**24,857.8**

Discrete Appurtenance Forces

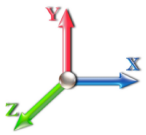
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	139.00	6' Lightning rod	1	8.247	9.072	1.00	1.00	1.46	38.53	0.000	0.000	13.24	0.00	0.00
2	137.00	Air 32	3	8.222	9.044	0.65	0.75	15.03	1023.15	0.000	0.000	135.96	0.00	0.00
3	137.00	AIR6449 B41	3	8.222	9.044	0.53	0.75	10.53	683.34	0.000	0.000	95.24	0.00	0.00
4	137.00	KRY 112 144/1	3	8.222	9.044	0.50	0.75	1.33	62.35	0.000	0.000	12.01	0.00	0.00
5	137.00	RFS	3	8.222	9.044	0.52	0.75	34.84	1701.86	0.000	0.000	315.13	0.00	0.00
6	137.00	Radio 4449 B71+B12	3	8.222	9.044	0.50	0.75	3.29	454.42	0.000	0.000	29.75	0.00	0.00
7	137.00	SDX1926Q-43	1	8.222	9.044	0.50	0.75	0.42	15.20	0.000	0.000	3.78	0.00	0.00
8	137.00	RMQP-4096-HRK	1	8.222	9.044	1.00	1.00	77.82	4690.08	0.000	0.000	703.86	0.00	0.00
9	137.00	4415 B25	3	8.222	9.044	0.50	0.75	3.65	346.89	0.000	0.000	32.98	0.00	0.00
10	107.00	RRUS 4449 B5/B12	3	7.805	8.586	0.54	0.80	6.85	647.28	0.000	0.000	58.82	0.00	0.00
11	107.00	RRUS-E2	3	7.805	8.586	0.54	0.80	3.55	416.30	0.000	0.000	30.49	0.00	0.00
12	107.00	DTMABP7819VG12A	3	7.805	8.586	0.54	0.80	3.03	121.24	0.000	0.000	26.01	0.00	0.00
13	107.00	DBC20056F1V1	3	7.805	8.586	0.54	0.80	1.16	55.05	0.000	0.000	9.94	0.00	0.00
14	107.00	EPBQ-652L8H6-L2	3	7.805	8.586	0.68	0.80	30.00	1074.08	0.000	0.000	257.55	0.00	0.00
15	107.00	OPA-65R-LCUU-H6	3	7.805	8.586	0.63	0.80	20.81	956.35	0.000	0.000	178.71	0.00	0.00
16	107.00	RRUS-11 700MHz	3	7.805	8.586	0.54	0.80	5.06	439.28	0.000	0.000	43.46	0.00	0.00
17	107.00	Collar Mount Commscope	1	7.805	8.586	1.00	1.00	13.44	398.01	0.000	0.000	115.36	0.00	0.00
18	107.00	T-Arm Commscope	3	7.805	8.586	0.56	0.75	31.11	875.20	0.000	0.000	267.12	0.00	0.00
19	107.00	DC6-48-60-18-8F	3	7.805	8.586	0.54	0.80	3.45	240.69	0.000	0.000	29.64	0.00	0.00
20	107.00	RRUS 12	3	7.805	8.586	0.54	0.80	6.17	483.44	0.000	0.000	52.99	0.00	0.00
21	107.00	RRUS A2	3	7.805	8.586	0.54	0.80	4.50	150.45	0.000	0.000	38.68	0.00	0.00
22	107.00	RRUS-32	3	7.805	8.586	0.54	0.80	6.56	604.39	0.000	0.000	56.30	0.00	0.00
23	97.00	Commscope	1	7.646	8.410	1.00	1.00	7.19	101.14	0.000	0.000	60.48	0.00	0.00
24	97.00	Samsung B2/B66A	3	7.646	8.410	0.54	0.80	3.87	357.96	0.000	0.000	32.56	0.00	0.00
25	97.00	Samsung B5/B13	3	7.646	8.410	0.54	0.80	3.87	345.46	0.000	0.000	32.56	0.00	0.00
26	97.00	Samsung VZS01	3	7.646	8.410	0.60	0.80	9.26	629.50	0.000	0.000	77.87	0.00	0.00
27	97.00	JMA MX06FRO660-03	6	7.646	8.410	0.70	0.80	46.70	1866.12	0.000	0.000	392.80	0.00	0.00
28	97.00	Standoff	3	7.646	8.410	0.56	0.75	24.78	1751.72	0.000	0.000	208.39	0.00	0.00
							Totals:		**20,529.46**			**3,311.69**		

Total Applied Force Summary

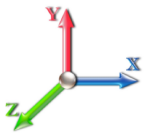
Structure:	CT13549-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

IES 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 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		141.71	1536.19	0.00	0.00
10.00		138.89	1533.47	0.00	0.00
15.00		135.87	1518.53	0.00	0.00
20.00		140.87	1498.17	0.00	0.00
25.00		144.14	1474.65	0.00	0.00
30.00		146.10	1449.04	0.00	0.00
35.00		147.10	1421.93	0.00	0.00
40.00		147.34	1393.66	0.00	0.00
45.00		146.98	1364.49	0.00	0.00
48.50		102.04	938.08	0.00	0.00
50.00		43.94	574.85	0.00	0.00
53.25		95.18	1229.56	0.00	0.00
55.00		50.85	409.89	0.00	0.00
60.00		145.06	1150.84	0.00	0.00
65.00		143.09	1124.03	0.00	0.00
70.00		140.83	1096.82	0.00	0.00
75.00		138.30	1069.25	0.00	0.00
80.00		135.55	1041.37	0.00	0.00
85.00		132.57	1013.19	0.00	0.00
90.00		129.40	984.76	0.00	0.00
95.00		126.05	956.09	0.00	0.00
97.00	(19) attachments	853.94	5427.48	0.00	0.00
98.75		42.63	296.41	0.00	0.00
100.00		30.57	286.49	0.00	0.00
102.00		48.48	452.48	0.00	0.00
105.00		71.68	436.01	0.00	0.00
107.00	(37) attachments	1212.06	6747.93	0.00	0.00
110.00		69.39	400.95	0.00	0.00
115.00		112.72	646.30	0.00	0.00
120.00		108.64	621.38	0.00	0.00
125.00		104.44	596.30	0.00	0.00
130.00		100.12	571.08	0.00	0.00
135.00		95.69	545.73	0.00	0.00
137.00	(20) attachments	1365.64	9189.83	0.00	0.00
139.00	(1) attachments	49.43	213.96	0.00	0.00
	Totals:	**6,937.25**	**51,211.19**	**0.00**	**0.00**

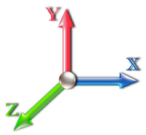
Linear Appurtenance Segment Forces (Factored)

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	12.93
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	18.85
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	14.46
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	20.46
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	15.46
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	21.51
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	16.21
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	22.31
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	16.83
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	22.95
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	17.35
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	23.50
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	17.80
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	23.98
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	18.21
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	24.40
45.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	18.58
45.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	24.79
48.50	Safety Cable	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	6.608	0.00	13.17
48.50	Step bolts (ladder)	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	6.608	0.00	17.53
50.00	Safety Cable	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	5.67
50.00	Step bolts (ladder)	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	7.54
53.25	Safety Cable	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	6.739	0.00	12.43
53.25	Step bolts (ladder)	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	6.739	0.00	16.48
55.00	Safety Cable	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	6.73
55.00	Step bolts (ladder)	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	8.91
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	19.51
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	25.76
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	19.78
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	26.04
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	20.03
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	26.31
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	20.27
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	26.56
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	20.49
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	26.79
85.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	20.71
85.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	27.02
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	20.91
90.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	27.23
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	21.11
95.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	27.44
97.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.646	0.00	8.47
97.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.646	0.00	11.01
98.75	Safety Cable	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	7.675	0.00	7.44
98.75	Step bolts (ladder)	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	7.675	0.00	9.65
100.00	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	5.32

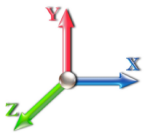
Linear Appurtenance Segment Forces (Factored)

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (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	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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)
100.00	Step bolts (ladder)	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	6.91
102.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.727	0.00	8.55
102.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.727	0.00	11.08
105.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	12.89
105.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	16.69
107.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.805	0.00	8.62
107.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.805	0.00	11.16
110.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	12.99
110.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	16.80
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	21.82
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	28.18
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	21.98
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	28.34
125.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	22.14
125.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	28.51
130.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	22.29
130.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	28.67
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	22.43
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	28.82
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.222	0.00	9.00
137.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.222	0.00	11.55
139.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.247	0.00	9.02
139.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.247	0.00	11.57
									Totals:		**0.0**	**1,256.9**

Calculated Forces

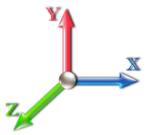
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-51.21	-6.97	0.00	-697.66	0.00	697.66	3003.53	1501.76	5797.25	2902.93	0.00	0.000	0.000	0.257
5.00	-49.66	-6.89	0.00	-662.81	0.00	662.81	2960.91	1480.45	5573.38	2790.83	0.04	-0.075	0.000	0.254
10.00	-48.12	-6.82	0.00	-628.34	0.00	628.34	2916.70	1458.35	5350.68	2679.32	0.16	-0.151	0.000	0.251
15.00	-46.59	-6.74	0.00	-594.26	0.00	594.26	2870.92	1435.46	5129.40	2568.51	0.36	-0.229	0.000	0.248
20.00	-45.08	-6.66	0.00	-560.55	0.00	560.55	2823.56	1411.78	4909.74	2458.52	0.64	-0.309	0.000	0.244
25.00	-43.60	-6.57	0.00	-527.28	0.00	527.28	2774.61	1387.31	4691.94	2349.46	1.01	-0.391	0.000	0.240
30.00	-42.14	-6.47	0.00	-494.45	0.00	494.45	2724.09	1362.04	4476.23	2241.44	1.46	-0.474	0.000	0.236
35.00	-40.71	-6.37	0.00	-462.10	0.00	462.10	2671.99	1335.99	4262.83	2134.58	2.01	-0.559	0.000	0.232
40.00	-39.31	-6.27	0.00	-430.24	0.00	430.24	2618.30	1309.15	4051.97	2029.00	2.64	-0.646	0.000	0.227
45.00	-37.94	-6.16	0.00	-398.90	0.00	398.90	2563.04	1281.52	3843.87	1924.79	3.36	-0.734	0.000	0.222
48.50	-37.00	-6.07	0.00	-377.35	0.00	377.35	2523.41	1261.71	3699.97	1852.74	3.92	-0.797	0.000	0.218
50.00	-36.42	-6.05	0.00	-368.25	0.00	368.25	2506.19	1253.10	3638.77	1822.09	4.18	-0.825	0.000	0.217
53.25	-35.19	-5.96	0.00	-348.60	0.00	348.60	1850.79	925.39	2677.47	1340.72	4.76	-0.884	0.000	0.279
55.00	-34.77	-5.95	0.00	-338.16	0.00	338.16	1837.85	918.92	2627.99	1315.95	5.09	-0.917	0.000	0.276
60.00	-33.61	-5.85	0.00	-308.43	0.00	308.43	1799.82	899.91	2487.54	1245.62	6.11	-1.026	0.000	0.266
65.00	-32.48	-5.75	0.00	-279.19	0.00	279.19	1760.21	880.10	2348.61	1176.05	7.24	-1.136	0.000	0.256
70.00	-31.38	-5.64	0.00	-250.47	0.00	250.47	1719.02	859.51	2211.45	1107.37	8.49	-1.246	0.000	0.244
75.00	-30.30	-5.54	0.00	-222.26	0.00	222.26	1676.25	838.13	2076.26	1039.67	9.86	-1.355	0.000	0.232
80.00	-29.25	-5.43	0.00	-194.58	0.00	194.58	1631.90	815.95	1943.29	973.09	11.34	-1.463	0.000	0.218
85.00	-28.23	-5.32	0.00	-167.43	0.00	167.43	1585.97	792.99	1812.75	907.72	12.92	-1.568	0.000	0.202
90.00	-27.24	-5.21	0.00	-140.82	0.00	140.82	1538.46	769.23	1684.87	843.69	14.62	-1.670	0.000	0.185
95.00	-26.29	-5.09	0.00	-114.77	0.00	114.77	1489.37	744.69	1559.88	781.10	16.42	-1.765	0.000	0.165
97.00	-20.89	-4.08	0.00	-104.60	0.00	104.60	1469.29	734.65	1510.75	756.50	17.17	-1.802	0.000	0.153
98.75	-20.59	-4.03	0.00	-97.46	0.00	97.46	1451.52	725.76	1468.18	735.18	17.84	-1.834	0.000	0.147
100.00	-20.30	-4.00	0.00	-92.42	0.00	92.42	1437.39	718.70	1436.71	719.42	18.32	-1.857	0.000	0.143
102.00	-19.85	-3.96	0.00	-84.41	0.00	84.41	990.34	495.17	991.38	496.43	19.11	-1.891	0.000	0.190
105.00	-19.41	-3.88	0.00	-72.54	0.00	72.54	971.88	485.94	945.01	473.21	20.31	-1.940	0.000	0.173
107.00	-12.71	-2.45	0.00	-64.78	0.00	64.78	959.26	479.63	914.39	457.88	21.13	-1.979	0.000	0.155
110.00	-12.31	-2.38	0.00	-57.42	0.00	57.42	939.85	469.93	868.93	435.11	22.39	-2.035	0.000	0.145
115.00	-11.66	-2.27	0.00	-45.49	0.00	45.49	906.24	453.12	794.52	397.85	24.57	-2.120	0.000	0.127
120.00	-11.04	-2.15	0.00	-34.17	0.00	34.17	871.06	435.53	722.01	361.54	26.83	-2.197	0.000	0.107
125.00	-10.45	-2.03	0.00	-23.43	0.00	23.43	834.29	417.15	651.64	326.30	29.17	-2.264	0.000	0.084
130.00	-9.88	-1.91	0.00	-13.28	0.00	13.28	791.03	395.51	580.02	290.44	31.57	-2.314	0.000	0.058
135.00	-9.34	-1.80	0.00	-3.71	0.00	3.71	739.97	369.98	507.20	253.97	34.01	-2.342	0.000	0.027
137.00	-0.21	-0.06	0.00	-0.12	0.00	0.12	719.55	359.77	479.43	240.07	34.99	-2.345	0.000	0.001
139.00	0.00	-0.05	0.00	0.00	0.00	0.00	699.12	349.56	452.45	226.56	35.97	-2.345	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT13549-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (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

IES Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	24
Gust Response Factor	1.10				**Sds**	0.23		**Ss**	0.22
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.11		**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32		**SA**	0.03	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		781.99	0.00	0.03	0.02	20.48	
10.00		762.50	0.01	0.05	0.03	27.75	
15.00		743.01	0.02	0.07	0.04	30.47	
20.00		723.53	0.04	0.07	0.04	31.30	
25.00		704.04	0.06	0.07	0.04	31.41	
30.00		684.55	0.09	0.07	0.04	31.35	
35.00		665.06	0.12	0.07	0.03	31.27	
40.00		645.57	0.16	0.07	0.03	31.07	
45.00		626.08	0.20	0.06	0.02	30.43	
48.50	Bot - Section 2	426.66	0.23	0.06	0.02	20.52	
50.00		326.16	0.24	0.06	0.02	15.50	
53.25	Top - Section 1	695.84	0.28	0.05	0.01	31.58	
55.00		165.27	0.30	0.05	0.01	7.20	
60.00		461.69	0.35	0.03	0.01	16.24	
65.00		446.10	0.41	0.01	0.01	9.41	
70.00		430.51	0.48	-0.01	0.01	0.81	
75.00		414.92	0.55	-0.03	0.01	-7.94	
80.00		399.33	0.63	-0.06	0.02	-14.84	
85.00		383.74	0.71	-0.09	0.03	-18.69	
90.00		368.15	0.79	-0.11	0.05	-19.35	
95.00		352.56	0.88	-0.12	0.08	-17.20	
97.00	Appurtenance(s)	2208.0	0.92	-0.12	0.10	-99.91	
98.75	Bot - Section 3	117.53	0.95	-0.12	0.11	-4.84	
100.00		145.97	0.98	-0.11	0.12	-5.52	
102.00	Top - Section 2	230.01	1.02	-0.11	0.14	-7.24	
105.00		145.87	1.08	-0.08	0.17	-2.90	
107.00	Appurtenance(s)	2489.2	1.12	-0.06	0.20	-26.83	
110.00		138.86	1.18	-0.01	0.24	0.68	
115.00		222.07	1.29	0.11	0.33	8.12	
120.00		210.38	1.41	0.30	0.44	15.83	
125.00		198.69	1.53	0.57	0.58	24.07	
130.00		187.00	1.65	0.95	0.74	32.61	
135.00		175.30	1.78	1.46	0.95	41.23	
137.00	Appurtenance(s)	3994.3	1.84	1.71	1.04	1045.29	
139.00	Appurtenance(s)	71.48	1.89	1.98	1.14	20.69	
	Totals:	**21,742.0**				**1,330.1**	**Total Wind:** **22,782.3**

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

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 24

Gust Response Factor	1.10			**Sds**	0.23			**Ss**	0.22
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.11			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03	**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	-30.88	-1.56	0.00	-185.37	0.00	185.37	3003.53	1501.76	5797.25	2902.93		0.00	0.00	0.074
5.00	-29.73	-1.55	0.00	-177.56	0.00	177.56	2960.91	1480.45	5573.38	2790.83		0.01	-0.02	0.074
10.00	-28.61	-1.53	0.00	-169.82	0.00	169.82	2916.70	1458.35	5350.68	2679.32		0.04	-0.04	0.073
15.00	-27.51	-1.51	0.00	-162.16	0.00	162.16	2870.92	1435.46	5129.40	2568.51		0.10	-0.06	0.073
20.00	-26.44	-1.49	0.00	-154.60	0.00	154.60	2823.56	1411.78	4909.74	2458.52		0.17	-0.08	0.072
25.00	-25.39	-1.47	0.00	-147.16	0.00	147.16	2774.61	1387.31	4691.94	2349.46		0.27	-0.11	0.072
30.00	-24.36	-1.44	0.00	-139.83	0.00	139.83	2724.09	1362.04	4476.23	2241.44		0.40	-0.13	0.071
35.00	-23.35	-1.42	0.00	-132.62	0.00	132.62	2671.99	1335.99	4262.83	2134.58		0.54	-0.15	0.071
40.00	-22.37	-1.39	0.00	-125.53	0.00	125.53	2618.30	1309.15	4051.97	2029.00		0.72	-0.18	0.070
45.00	-21.42	-1.37	0.00	-118.55	0.00	118.55	2563.04	1281.52	3843.87	1924.79		0.92	-0.20	0.070
48.50	-20.76	-1.35	0.00	-113.76	0.00	113.76	2523.41	1261.71	3699.97	1852.74		1.08	-0.22	0.070
50.00	-20.31	-1.34	0.00	-111.74	0.00	111.74	2506.19	1253.10	3638.77	1822.09		1.15	-0.23	0.069
53.25	-19.34	-1.31	0.00	-107.38	0.00	107.38	1850.79	925.39	2677.47	1340.72		1.31	-0.25	0.091
55.00	-19.07	-1.31	0.00	-105.10	0.00	105.10	1837.85	918.92	2627.99	1315.95		1.41	-0.26	0.090
60.00	-18.31	-1.30	0.00	-98.56	0.00	98.56	1799.82	899.91	2487.54	1245.62		1.70	-0.29	0.089
65.00	-17.56	-1.30	0.00	-92.07	0.00	92.07	1760.21	880.10	2348.61	1176.05		2.03	-0.33	0.088
70.00	-16.84	-1.30	0.00	-85.59	0.00	85.59	1719.02	859.51	2211.45	1107.37		2.39	-0.37	0.087
75.00	-16.14	-1.31	0.00	-79.08	0.00	79.08	1676.25	838.13	2076.26	1039.67		2.80	-0.41	0.086
80.00	-15.45	-1.31	0.00	-72.55	0.00	72.55	1631.90	815.95	1943.29	973.09		3.24	-0.44	0.084
85.00	-14.78	-1.32	0.00	-65.98	0.00	65.98	1585.97	792.99	1812.75	907.72		3.73	-0.48	0.082
90.00	-14.14	-1.32	0.00	-59.39	0.00	59.39	1538.46	769.23	1684.87	843.69		4.26	-0.53	0.080
95.00	-13.51	-1.32	0.00	-52.77	0.00	52.77	1489.37	744.69	1559.88	781.10		4.83	-0.57	0.077
97.00	-10.77	-1.30	0.00	-50.12	0.00	50.12	1469.29	734.65	1510.75	756.50		5.08	-0.59	0.074
98.75	-10.59	-1.30	0.00	-47.85	0.00	47.85	1451.52	725.76	1468.18	735.18		5.29	-0.60	0.072
100.00	-10.38	-1.30	0.00	-46.22	0.00	46.22	1437.39	718.70	1436.71	719.42		5.45	-0.61	0.071
102.00	-10.06	-1.30	0.00	-43.62	0.00	43.62	990.34	495.17	991.38	496.43		5.71	-0.63	0.098
105.00	-9.81	-1.30	0.00	-39.72	0.00	39.72	971.88	485.94	945.01	473.21		6.12	-0.66	0.094
107.00	-6.77	-1.27	0.00	-37.11	0.00	37.11	959.26	479.63	914.39	457.88		6.40	-0.68	0.088
110.00	-6.55	-1.27	0.00	-33.30	0.00	33.30	939.85	469.93	868.93	435.11		6.83	-0.71	0.084
115.00	-6.19	-1.26	0.00	-26.94	0.00	26.94	906.24	453.12	794.52	397.85		7.60	-0.76	0.075
120.00	-5.85	-1.25	0.00	-20.62	0.00	20.62	871.06	435.53	722.01	361.54		8.42	-0.81	0.064
125.00	-5.52	-1.22	0.00	-14.38	0.00	14.38	834.29	417.15	651.64	326.30		9.29	-0.85	0.051
130.00	-5.20	-1.19	0.00	-8.27	0.00	8.27	791.03	395.51	580.02	290.44		10.19	-0.88	0.035
135.00	-4.90	-1.14	0.00	-2.33	0.00	2.33	739.97	369.98	507.20	253.97		11.12	-0.89	0.016
137.00	-0.09	-0.02	0.00	-0.04	0.00	0.04	719.55	359.77	479.43	240.07		11.50	-0.90	0.000
139.00	0.00	-0.02	0.00	0.00	0.00	0.00	699.12	349.56	452.45	226.56		11.87	-0.90	0.000

Seismic Segment Forces (Factored)

Structure:	CT13549-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (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

IES Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	24
Gust Response Factor	1.10				**Sds**	0.23		**Ss**	0.22
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.11		**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32		**SA**	0.03	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		781.99	0.00	0.03	0.02	20.48	
10.00		762.50	0.01	0.05	0.03	27.75	
15.00		743.01	0.02	0.07	0.04	30.47	
20.00		723.53	0.04	0.07	0.04	31.30	
25.00		704.04	0.06	0.07	0.04	31.41	
30.00		684.55	0.09	0.07	0.04	31.35	
35.00		665.06	0.12	0.07	0.03	31.27	
40.00		645.57	0.16	0.07	0.03	31.07	
45.00		626.08	0.20	0.06	0.02	30.43	
48.50	Bot - Section 2	426.66	0.23	0.06	0.02	20.52	
50.00		326.16	0.24	0.06	0.02	15.50	
53.25	Top - Section 1	695.84	0.28	0.05	0.01	31.58	
55.00		165.27	0.30	0.05	0.01	7.20	
60.00		461.69	0.35	0.03	0.01	16.24	
65.00		446.10	0.41	0.01	0.01	9.41	
70.00		430.51	0.48	-0.01	0.01	0.81	
75.00		414.92	0.55	-0.03	0.01	-7.94	
80.00		399.33	0.63	-0.06	0.02	-14.84	
85.00		383.74	0.71	-0.09	0.03	-18.69	
90.00		368.15	0.79	-0.11	0.05	-19.35	
95.00		352.56	0.88	-0.12	0.08	-17.20	
97.00	Appurtenance(s)	2208.0	0.92	-0.12	0.10	-99.91	
98.75	Bot - Section 3	117.53	0.95	-0.12	0.11	-4.84	
100.00		145.97	0.98	-0.11	0.12	-5.52	
102.00	Top - Section 2	230.01	1.02	-0.11	0.14	-7.24	
105.00		145.87	1.08	-0.08	0.17	-2.90	
107.00	Appurtenance(s)	2489.2	1.12	-0.06	0.20	-26.83	
110.00		138.86	1.18	-0.01	0.24	0.68	
115.00		222.07	1.29	0.11	0.33	8.12	
120.00		210.38	1.41	0.30	0.44	15.83	
125.00		198.69	1.53	0.57	0.58	24.07	
130.00		187.00	1.65	0.95	0.74	32.61	
135.00		175.30	1.78	1.46	0.95	41.23	
137.00	Appurtenance(s)	3994.3	1.84	1.71	1.04	1045.29	
139.00	Appurtenance(s)	71.48	1.89	1.98	1.14	20.69	
	Totals:	**21,742.0**				**1,330.1**	**Total Wind:** **22,782.3**

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

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (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 + 1.0E

Iterations 24

Gust Response Factor	1.10			**Sds**	0.23			**Ss**	0.22
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.11			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03	**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	-23.16	-1.56	0.00	-182.39	0.00	182.39	3003.53	1501.76	5797.25	2902.93	0.00	0.00	0.00	0.071
5.00	-22.30	-1.55	0.00	-174.60	0.00	174.60	2960.91	1480.45	5573.38	2790.83	0.01	-0.02	0.070	
10.00	-21.46	-1.53	0.00	-166.87	0.00	166.87	2916.70	1458.35	5350.68	2679.32	0.04	-0.04	0.070	
15.00	-20.63	-1.50	0.00	-159.24	0.00	159.24	2870.92	1435.46	5129.40	2568.51	0.09	-0.06	0.069	
20.00	-19.83	-1.48	0.00	-151.74	0.00	151.74	2823.56	1411.78	4909.74	2458.52	0.17	-0.08	0.069	
25.00	-19.04	-1.45	0.00	-144.35	0.00	144.35	2774.61	1387.31	4691.94	2349.46	0.27	-0.10	0.068	
30.00	-18.27	-1.43	0.00	-137.09	0.00	137.09	2724.09	1362.04	4476.23	2241.44	0.39	-0.13	0.068	
35.00	-17.51	-1.40	0.00	-129.96	0.00	129.96	2671.99	1335.99	4262.83	2134.58	0.54	-0.15	0.067	
40.00	-16.78	-1.37	0.00	-122.96	0.00	122.96	2618.30	1309.15	4051.97	2029.00	0.71	-0.18	0.067	
45.00	-16.06	-1.35	0.00	-116.08	0.00	116.08	2563.04	1281.52	3843.87	1924.79	0.90	-0.20	0.067	
48.50	-15.57	-1.33	0.00	-111.36	0.00	111.36	2523.41	1261.71	3699.97	1852.74	1.06	-0.22	0.066	
50.00	-15.23	-1.32	0.00	-109.37	0.00	109.37	2506.19	1253.10	3638.77	1822.09	1.13	-0.23	0.066	
53.25	-14.50	-1.29	0.00	-105.09	0.00	105.09	1850.79	925.39	2677.47	1340.72	1.29	-0.25	0.086	
55.00	-14.30	-1.28	0.00	-102.84	0.00	102.84	1837.85	918.92	2627.99	1315.95	1.38	-0.26	0.086	
60.00	-13.73	-1.27	0.00	-96.43	0.00	96.43	1799.82	899.91	2487.54	1245.62	1.67	-0.29	0.085	
65.00	-13.17	-1.27	0.00	-90.07	0.00	90.07	1760.21	880.10	2348.61	1176.05	1.99	-0.32	0.084	
70.00	-12.63	-1.27	0.00	-83.74	0.00	83.74	1719.02	859.51	2211.45	1107.37	2.35	-0.36	0.083	
75.00	-12.10	-1.28	0.00	-77.38	0.00	77.38	1676.25	838.13	2076.26	1039.67	2.74	-0.40	0.082	
80.00	-11.59	-1.28	0.00	-71.00	0.00	71.00	1631.90	815.95	1943.29	973.09	3.18	-0.44	0.080	
85.00	-11.09	-1.28	0.00	-64.60	0.00	64.60	1585.97	792.99	1812.75	907.72	3.66	-0.48	0.078	
90.00	-10.60	-1.29	0.00	-58.18	0.00	58.18	1538.46	769.23	1684.87	843.69	4.18	-0.52	0.076	
95.00	-10.13	-1.29	0.00	-51.74	0.00	51.74	1489.37	744.69	1559.88	781.10	4.74	-0.56	0.073	
97.00	-8.08	-1.27	0.00	-49.16	0.00	49.16	1469.29	734.65	1510.75	756.50	4.98	-0.57	0.070	
98.75	-7.94	-1.27	0.00	-46.94	0.00	46.94	1451.52	725.76	1468.18	735.18	5.19	-0.59	0.069	
100.00	-7.78	-1.27	0.00	-45.35	0.00	45.35	1437.39	718.70	1436.71	719.42	5.35	-0.60	0.068	
102.00	-7.54	-1.27	0.00	-42.81	0.00	42.81	990.34	495.17	991.38	496.43	5.60	-0.62	0.094	
105.00	-7.35	-1.27	0.00	-39.00	0.00	39.00	971.88	485.94	945.01	473.21	6.00	-0.64	0.090	
107.00	-5.07	-1.25	0.00	-36.45	0.00	36.45	959.26	479.63	914.39	457.88	6.27	-0.66	0.085	
110.00	-4.91	-1.25	0.00	-32.71	0.00	32.71	939.85	469.93	868.93	435.11	6.70	-0.70	0.080	
115.00	-4.64	-1.24	0.00	-26.46	0.00	26.46	906.24	453.12	794.52	397.85	7.45	-0.74	0.072	
120.00	-4.38	-1.23	0.00	-20.25	0.00	20.25	871.06	435.53	722.01	361.54	8.26	-0.79	0.061	
125.00	-4.13	-1.20	0.00	-14.12	0.00	14.12	834.29	417.15	651.64	326.30	9.11	-0.83	0.048	
130.00	-3.90	-1.17	0.00	-8.12	0.00	8.12	791.03	395.51	580.02	290.44	9.99	-0.86	0.033	
135.00	-3.67	-1.12	0.00	-2.29	0.00	2.29	739.97	369.98	507.20	253.97	10.90	-0.88	0.014	
137.00	-0.07	-0.02	0.00	-0.04	0.00	0.04	719.55	359.77	479.43	240.07	11.27	-0.88	0.000	
139.00	0.00	-0.02	0.00	0.00	0.00	0.00	699.12	349.56	452.45	226.56	11.64	-0.88	0.000	

Wind Loading - Shaft

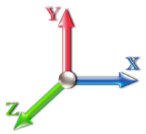
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	221.08	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	215.67	0.650	0.000	5.00	19.738	12.83	105.0	0.0	782.0
10.00		1.00	0.85	7.442	8.19	210.27	0.650	0.000	5.00	19.250	12.51	102.4	0.0	762.5
15.00		1.00	0.85	7.442	8.19	204.86	0.650	0.000	5.00	18.761	12.19	99.8	0.0	743.0
20.00		1.00	0.90	7.896	8.69	205.45	0.650	0.000	5.00	18.273	11.88	103.2	0.0	723.5
25.00		1.00	0.95	8.276	9.10	204.63	0.650	0.000	5.00	17.784	11.56	105.2	0.0	704.0
30.00		1.00	0.98	8.600	9.46	202.79	0.650	0.000	5.00	17.295	11.24	106.3	0.0	684.5
35.00		1.00	1.01	8.883	9.77	200.20	0.650	0.000	5.00	16.807	10.92	106.8	0.0	665.1
40.00		1.00	1.04	9.137	10.05	197.04	0.650	0.000	5.00	16.318	10.61	106.6	0.0	645.6
45.00		1.00	1.07	9.366	10.30	193.44	0.650	0.000	5.00	15.830	10.29	106.0	0.0	626.1
48.50	Bot - Section 2	1.00	1.09	9.515	10.47	190.69	0.650	0.000	3.50	10.790	7.01	73.4	0.0	426.7
50.00		1.00	1.09	9.576	10.53	189.46	0.650	0.000	1.50	4.614	3.00	31.6	0.0	326.2
53.25	Top - Section 1	1.00	1.11	9.704	10.67	186.71	0.650	0.000	3.25	9.847	6.40	68.3	0.0	695.8
55.00		1.00	1.12	9.770	10.75	187.86	0.650	0.000	1.75	5.217	3.39	36.4	0.0	165.3
60.00		1.00	1.14	9.951	10.95	183.34	0.650	0.000	5.00	14.575	9.47	103.7	0.0	461.7
65.00		1.00	1.16	10.120	11.13	178.59	0.650	0.000	5.00	14.087	9.16	101.9	0.0	446.1
70.00		1.00	1.17	10.279	11.31	173.63	0.650	0.000	5.00	13.598	8.84	99.9	0.0	430.5
75.00		1.00	1.19	10.430	11.47	168.50	0.650	0.000	5.00	13.109	8.52	97.8	0.0	414.9
80.00		1.00	1.21	10.572	11.63	163.20	0.650	0.000	5.00	12.621	8.20	95.4	0.0	399.3
85.00		1.00	1.22	10.708	11.78	157.76	0.650	0.000	5.00	12.132	7.89	92.9	0.0	383.7
90.00		1.00	1.24	10.838	11.92	152.19	0.650	0.000	5.00	11.644	7.57	90.2	0.0	368.1
95.00		1.00	1.25	10.962	12.06	146.50	0.650	0.000	5.00	11.155	7.25	87.4	0.0	352.6
97.00	Appurtenance(s)	1.00	1.26	11.010	12.11	144.19	0.650	0.000	2.00	4.325	2.81	34.0	0.0	136.7
98.75	Bot - Section 3	1.00	1.26	11.051	12.16	142.16	0.650	0.000	1.75	3.720	2.42	29.4	0.0	117.5
100.00		1.00	1.27	11.081	12.19	140.70	0.650	0.000	1.25	2.660	1.73	21.1	0.0	146.0
102.00	Top - Section 2	1.00	1.27	11.127	12.24	138.35	0.650	0.000	2.00	4.193	2.73	33.4	0.0	230.0
105.00		1.00	1.28	11.195	12.31	136.94	0.650	0.000	3.00	6.143	3.99	49.2	0.0	145.9
107.00	Appurtenance(s)	1.00	1.28	11.240	12.36	134.56	0.650	0.000	2.00	3.998	2.60	32.1	0.0	94.9
110.00		1.00	1.29	11.305	12.44	130.95	0.650	0.000	3.00	5.850	3.80	47.3	0.0	138.9
115.00		1.00	1.30	11.412	12.55	124.87	0.650	0.000	5.00	9.359	6.08	76.4	0.0	222.1
120.00		1.00	1.32	11.514	12.67	118.71	0.650	0.000	5.00	8.871	5.77	73.0	0.0	210.4
125.00		1.00	1.33	11.614	12.78	112.47	0.650	0.000	5.00	8.382	5.45	69.6	0.0	198.7
130.00		1.00	1.34	11.710	12.88	106.15	0.650	0.000	5.00	7.893	5.13	66.1	0.0	187.0
135.00		1.00	1.35	11.803	12.98	99.77	0.650	0.000	5.00	7.405	4.81	62.5	0.0	175.3
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	97.19	0.650	0.000	2.00	2.825	1.84	23.9	0.0	66.8
139.00	Appurtenance(s)	1.00	1.36	11.876	13.06	94.61	0.650	0.000	2.00	2.747	1.79	23.3	0.0	65.0
								Totals:	**139.00**			**2,561.7**		**13,342.3**

Discrete Appurtenance Forces

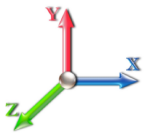
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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	139.00	6' Lightning rod	1	11.876	13.064	1.00	1.00	0.38	6.50	0.000	0.000	4.96	0.00	0.00
2	137.00	Air 32	3	11.840	13.024	0.65	0.75	12.74	396.60	0.000	0.000	165.97	0.00	0.00
3	137.00	AIR6449 B41	3	11.840	13.024	0.53	0.75	9.03	309.00	0.000	0.000	117.55	0.00	0.00
4	137.00	KRY 112 144/1	3	11.840	13.024	0.50	0.75	0.62	33.00	0.000	0.000	8.05	0.00	0.00
5	137.00	RFS	3	11.840	13.024	0.52	0.75	31.88	384.00	0.000	0.000	415.18	0.00	0.00
6	137.00	Radio 4449 B71+B12	3	11.840	13.024	0.50	0.75	2.49	210.00	0.000	0.000	32.40	0.00	0.00
7	137.00	SDX1926Q-43	1	11.840	13.024	0.50	0.75	0.19	7.00	0.000	0.000	2.49	0.00	0.00
8	137.00	RMQP-4096-HRK	1	11.840	13.024	1.00	1.00	46.00	2449.00	0.000	0.000	599.10	0.00	0.00
9	137.00	4415 B25	3	11.840	13.024	0.50	0.75	2.80	138.90	0.000	0.000	36.52	0.00	0.00
10	107.00	RRUS 4449 B5/B12	3	11.240	12.364	0.54	0.80	2.65	255.00	0.000	0.000	32.80	0.00	0.00
11	107.00	RRUS-E2	3	11.240	12.364	0.54	0.80	2.65	231.00	0.000	0.000	32.80	0.00	0.00
12	107.00	DTMABP7819VG12A	3	11.240	12.364	0.54	0.80	1.83	57.60	0.000	0.000	22.66	0.00	0.00
13	107.00	DBC20056F1V1	3	11.240	12.364	0.54	0.80	0.66	19.80	0.000	0.000	8.15	0.00	0.00
14	107.00	EPBQ-652L8H6-L2	3	11.240	12.364	0.68	0.80	19.71	218.40	0.000	0.000	243.64	0.00	0.00
15	107.00	OPA-65R-LCUU-H6	3	11.240	12.364	0.63	0.80	18.32	240.00	0.000	0.000	226.45	0.00	0.00
16	107.00	RRUS-11 700MHz	3	11.240	12.364	0.54	0.80	4.05	152.10	0.000	0.000	50.10	0.00	0.00
17	107.00	Collar Mount Commscope	1	11.240	12.364	1.00	1.00	5.00	122.40	0.000	0.000	61.82	0.00	0.00
18	107.00	T-Arm Commscope	3	11.240	12.364	0.56	0.75	16.88	534.00	0.000	0.000	208.64	0.00	0.00
19	107.00	DC6-48-60-18-8F	3	11.240	12.364	0.54	0.80	2.36	95.40	0.000	0.000	29.22	0.00	0.00
20	107.00	RRUS 12	3	11.240	12.364	0.54	0.80	5.07	174.00	0.000	0.000	62.62	0.00	0.00
21	107.00	RRUS A2	3	11.240	12.364	0.54	0.80	2.99	63.60	0.000	0.000	36.98	0.00	0.00
22	107.00	RRUS-32	3	11.240	12.364	0.54	0.80	6.22	231.00	0.000	0.000	76.94	0.00	0.00
23	97.00	Commscope	1	11.010	12.111	1.00	1.00	5.60	20.00	0.000	0.000	67.82	0.00	0.00
24	97.00	Samsung B2/B66A	3	11.010	12.111	0.54	0.80	3.02	210.90	0.000	0.000	36.61	0.00	0.00
25	97.00	Samsung B5/B13	3	11.010	12.111	0.54	0.80	3.02	253.20	0.000	0.000	36.61	0.00	0.00
26	97.00	Samsung VZS01	3	11.010	12.111	0.55	0.80	7.12	261.30	0.000	0.000	86.24	0.00	0.00
27	97.00	JMA MX06FRO660-03	6	11.010	12.111	0.70	0.80	41.22	276.00	0.000	0.000	499.18	0.00	0.00
28	97.00	Standoff	3	11.010	12.111	0.56	0.75	13.50	1050.00	0.000	0.000	163.50	0.00	0.00
							Totals:		**8,399.70**			**3,365.01**		

Total Applied Force Summary

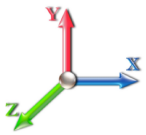
Structure:	CT13549-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 32

TES Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		105.03	953.46	0.00	0.00
10.00		102.43	933.97	0.00	0.00
15.00		99.83	914.48	0.00	0.00
20.00		103.16	894.99	0.00	0.00
25.00		105.23	875.50	0.00	0.00
30.00		106.35	856.01	0.00	0.00
35.00		106.75	836.53	0.00	0.00
40.00		106.60	817.04	0.00	0.00
45.00		106.01	797.55	0.00	0.00
48.50		73.41	546.69	0.00	0.00
50.00		31.60	377.60	0.00	0.00
53.25		68.32	807.30	0.00	0.00
55.00		36.44	225.29	0.00	0.00
60.00		103.70	633.15	0.00	0.00
65.00		101.93	617.56	0.00	0.00
70.00		99.94	601.97	0.00	0.00
75.00		97.76	586.38	0.00	0.00
80.00		95.40	570.79	0.00	0.00
85.00		92.89	555.20	0.00	0.00
90.00		90.23	539.61	0.00	0.00
95.00		87.43	524.02	0.00	0.00
97.00	(19) attachments	924.01	2276.64	0.00	0.00
98.75		29.40	153.78	0.00	0.00
100.00		21.08	171.86	0.00	0.00
102.00		33.36	271.43	0.00	0.00
105.00		49.17	208.01	0.00	0.00
107.00	(37) attachments	1124.96	2530.64	0.00	0.00
110.00		47.29	184.08	0.00	0.00
115.00		76.36	297.44	0.00	0.00
120.00		73.03	285.75	0.00	0.00
125.00		69.60	274.05	0.00	0.00
130.00		66.09	262.36	0.00	0.00
135.00		62.49	250.67	0.00	0.00
137.00	(20) attachments	1401.17	4024.49	0.00	0.00
139.00	(1) attachments	28.29	74.10	0.00	0.00
	Totals:	**5,926.73**	**25,730.40**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

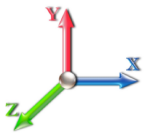
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	1.37
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	5.20
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	1.37
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	5.20
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	1.37
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	5.20
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	1.37
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	5.20
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	1.37
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	5.20
45.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	1.37
45.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	5.20
48.50	Safety Cable	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	9.515	0.00	0.96
48.50	Step bolts (ladder)	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	9.515	0.00	3.64
50.00	Safety Cable	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	0.41
50.00	Step bolts (ladder)	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	1.56
53.25	Safety Cable	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	9.704	0.00	0.89
53.25	Step bolts (ladder)	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	9.704	0.00	3.38
55.00	Safety Cable	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	0.48
55.00	Step bolts (ladder)	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	1.82
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	1.37
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	5.20
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	1.37
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	5.20
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	1.37
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	5.20
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	1.37
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	5.20
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	1.37
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	5.20
85.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	1.37
85.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	5.20
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	1.37
90.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	5.20
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	1.37
95.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	5.20
97.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.010	0.00	0.55
97.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.010	0.00	2.08
98.75	Safety Cable	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	11.051	0.00	0.48
98.75	Step bolts (ladder)	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	11.051	0.00	1.82
100.00	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	0.34

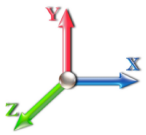
Linear Appurtenance Segment Forces (Factored)

Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (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	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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)
100.00	Step bolts (ladder)	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	1.30
102.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.127	0.00	0.55
102.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.127	0.00	2.08
105.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	0.82
105.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	3.12
107.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.240	0.00	0.55
107.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.240	0.00	2.08
110.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	0.82
110.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	3.12
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	1.37
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	5.20
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	1.37
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	5.20
125.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	1.37
125.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	5.20
130.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	1.37
130.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	5.20
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	1.37
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	5.20
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.840	0.00	0.55
137.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.840	0.00	2.08
139.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.876	0.00	0.55
139.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.876	0.00	2.08
										Totals:	**0.0**	**182.5**

Calculated Forces

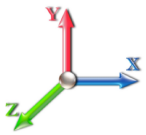
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 35	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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	-25.73	-5.94	0.00	-586.74	0.00	586.74	3003.53	1501.76	5797.25	2902.93	0.00	0.000	0.000	0.211
5.00	-24.77	-5.86	0.00	-557.03	0.00	557.03	2960.91	1480.45	5573.38	2790.83	0.03	-0.063	0.000	0.208
10.00	-23.83	-5.79	0.00	-527.72	0.00	527.72	2916.70	1458.35	5350.68	2679.32	0.13	-0.127	0.000	0.205
15.00	-22.91	-5.71	0.00	-498.79	0.00	498.79	2870.92	1435.46	5129.40	2568.51	0.30	-0.193	0.000	0.202
20.00	-22.00	-5.63	0.00	-470.25	0.00	470.25	2823.56	1411.78	4909.74	2458.52	0.54	-0.260	0.000	0.199
25.00	-21.12	-5.54	0.00	-442.10	0.00	442.10	2774.61	1387.31	4691.94	2349.46	0.85	-0.328	0.000	0.196
30.00	-20.26	-5.46	0.00	-414.38	0.00	414.38	2724.09	1362.04	4476.23	2241.44	1.23	-0.398	0.000	0.192
35.00	-19.42	-5.37	0.00	-387.09	0.00	387.09	2671.99	1335.99	4262.83	2134.58	1.69	-0.469	0.000	0.189
40.00	-18.60	-5.28	0.00	-360.24	0.00	360.24	2618.30	1309.15	4051.97	2029.00	2.22	-0.542	0.000	0.185
45.00	-17.79	-5.18	0.00	-333.85	0.00	333.85	2563.04	1281.52	3843.87	1924.79	2.82	-0.615	0.000	0.180
48.50	-17.24	-5.12	0.00	-315.70	0.00	315.70	2523.41	1261.71	3699.97	1852.74	3.29	-0.668	0.000	0.177
50.00	-16.86	-5.09	0.00	-308.03	0.00	308.03	2506.19	1253.10	3638.77	1822.09	3.51	-0.692	0.000	0.176
53.25	-16.05	-5.02	0.00	-291.48	0.00	291.48	1850.79	925.39	2677.47	1340.72	4.00	-0.741	0.000	0.226
55.00	-15.82	-5.00	0.00	-282.69	0.00	282.69	1837.85	918.92	2627.99	1315.95	4.27	-0.769	0.000	0.223
60.00	-15.18	-4.91	0.00	-257.68	0.00	257.68	1799.82	899.91	2487.54	1245.62	5.13	-0.860	0.000	0.215
65.00	-14.56	-4.82	0.00	-233.12	0.00	233.12	1760.21	880.10	2348.61	1176.05	6.08	-0.952	0.000	0.207
70.00	-13.95	-4.74	0.00	-209.00	0.00	209.00	1719.02	859.51	2211.45	1107.37	7.12	-1.043	0.000	0.197
75.00	-13.36	-4.65	0.00	-185.32	0.00	185.32	1676.25	838.13	2076.26	1039.67	8.27	-1.135	0.000	0.186
80.00	-12.79	-4.56	0.00	-162.08	0.00	162.08	1631.90	815.95	1943.29	973.09	9.50	-1.224	0.000	0.174
85.00	-12.23	-4.47	0.00	-139.28	0.00	139.28	1585.97	792.99	1812.75	907.72	10.83	-1.312	0.000	0.161
90.00	-11.68	-4.39	0.00	-116.91	0.00	116.91	1538.46	769.23	1684.87	843.69	12.25	-1.396	0.000	0.146
95.00	-11.16	-4.30	0.00	-94.97	0.00	94.97	1489.37	744.69	1559.88	781.10	13.76	-1.475	0.000	0.129
97.00	-8.90	-3.32	0.00	-86.37	0.00	86.37	1469.29	734.65	1510.75	756.50	14.38	-1.506	0.000	0.120
98.75	-8.75	-3.29	0.00	-80.57	0.00	80.57	1451.52	725.76	1468.18	735.18	14.94	-1.532	0.000	0.116
100.00	-8.58	-3.27	0.00	-76.45	0.00	76.45	1437.39	718.70	1436.71	719.42	15.34	-1.551	0.000	0.112
102.00	-8.30	-3.23	0.00	-69.92	0.00	69.92	990.34	495.17	991.38	496.43	16.00	-1.580	0.000	0.149
105.00	-8.10	-3.18	0.00	-60.23	0.00	60.23	971.88	485.94	945.01	473.21	17.01	-1.620	0.000	0.136
107.00	-5.60	-1.99	0.00	-53.86	0.00	53.86	959.26	479.63	914.39	457.88	17.69	-1.653	0.000	0.123
110.00	-5.41	-1.94	0.00	-47.90	0.00	47.90	939.85	469.93	868.93	435.11	18.74	-1.699	0.000	0.116
115.00	-5.12	-1.86	0.00	-38.19	0.00	38.19	906.24	453.12	794.52	397.85	20.56	-1.770	0.000	0.102
120.00	-4.83	-1.79	0.00	-28.88	0.00	28.88	871.06	435.53	722.01	361.54	22.45	-1.835	0.000	0.085
125.00	-4.56	-1.71	0.00	-19.95	0.00	19.95	834.29	417.15	651.64	326.30	24.41	-1.892	0.000	0.067
130.00	-4.30	-1.64	0.00	-11.39	0.00	11.39	791.03	395.51	580.02	290.44	26.41	-1.934	0.000	0.045
135.00	-4.05	-1.57	0.00	-3.20	0.00	3.20	739.97	369.98	507.20	253.97	28.45	-1.959	0.000	0.018
137.00	-0.07	-0.03	0.00	-0.06	0.00	0.06	719.55	359.77	479.43	240.07	29.27	-1.961	0.000	0.000
139.00	0.00	-0.03	0.00	0.00	0.00	0.00	699.12	349.56	452.45	226.56	30.09	-1.961	0.000	0.000

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 93 mph Wind	22.8	0.00	30.83	0.00	0.00	2271.51
0.9D + 1.6W 93 mph Wind	22.8	0.00	23.11	0.00	0.00	2240.63
1.2D + 1.0Di + 1.0Wi 50 mph Wind	7.0	0.00	51.21	0.00	0.00	697.66
1.2D + 1.0E	1.6	0.00	30.88	0.00	0.00	185.37
0.9D + 1.0E	1.6	0.00	23.16	0.00	0.00	182.39
1.0D + 1.0W 60 mph Wind	5.9	0.00	25.73	0.00	0.00	586.74

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 93 mph Wind	-18.37	-19.46	0.00	-1131.5	0.00	-1131.5	1850.79	925.39	2677.47	1340.72	53.25	0.854
0.9D + 1.6W 93 mph Wind	-13.56	-19.20	0.00	-1108.6	0.00	-1108.6	1850.79	925.39	2677.47	1340.72	53.25	0.835
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-35.19	-5.96	0.00	-348.60	0.00	-348.60	1850.79	925.39	2677.47	1340.72	53.25	0.279
1.2D + 1.0E	-10.06	-1.30	0.00	-43.62	0.00	-43.62	990.34	495.17	991.38	496.43	102.00	0.098
0.9D + 1.0E	-7.54	-1.27	0.00	-42.81	0.00	-42.81	990.34	495.17	991.38	496.43	102.00	0.094
1.0D + 1.0W 60 mph Wind	-16.05	-5.02	0.00	-291.48	0.00	-291.48	1850.79	925.39	2677.47	1340.72	53.25	0.226

Base Plate Summary

Structure:	CT13549-S-SB		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (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

Reactions	
Original Design	
Moment (kip-ft):	2074.00
Axial (kip):	21.70
Shear (kip):	20.70
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	2271.51
Axial (kip):	30.83
Shear (kip):	22.85

Base Plate	
Yield (ksi):	50.00
Width (in):	51.50
Style:	Clipped
Polygon Sides:	4.00
Clip Length (in):	9.00
Effective Len (in):	9.88
Moment (kip-in):	545.80
Allow Stress (ksi):	67.50
Applied Stress (ksi):	43.88
Stress Ratio:	0.65

Anchor Bolts	
Bolt Circle:	53.50
Number Bolts:	12.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	6.00
Start Angle (deg):	45.00
Compression	
Force (kip):	174.10
Allowable (kip):	260.00
Ratio:	0.68
Tension	
Force (kip):	165.57
Allowable (kip):	260.00
Ratio:	0.65

Monopole Mat Foundation Design

			Date
			4/26/2021
Customer Name:	Verizon	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	139
Site Number:	CT13549-S-SBA	**Engineer Name:**	H. You
Engr. Number:	106414	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

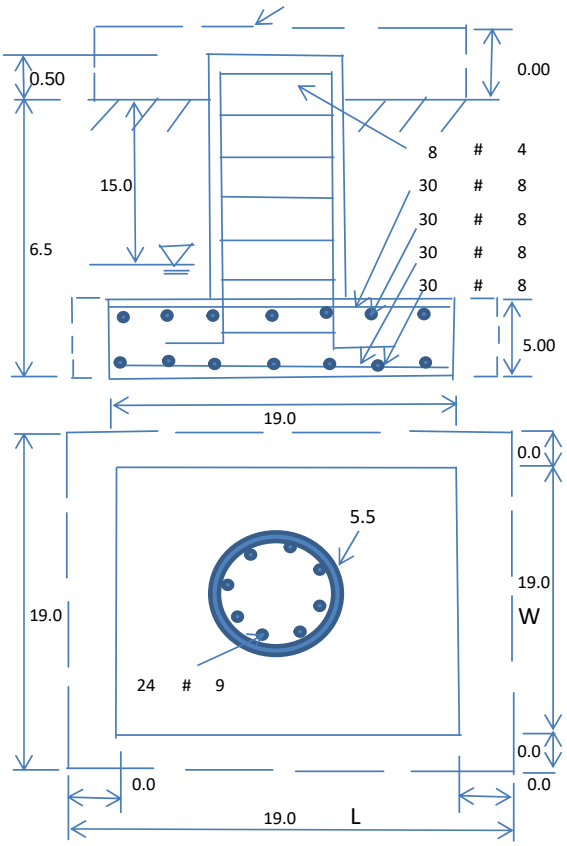
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	30.8	Shear Force (Kips):	22.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2271.5
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	5.5	Depth of Base BG (ft.):	6.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	5.00
Length of Pad (ft.):	19	Width of Pad (ft.):	19
Final Length of pad (ft)	19.0	Final width of pad (ft):	19.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	24	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	115.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	15.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	8600	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.):	505.86	Total Dry Soil Weight (Kips):	58.17
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	58.17	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1852.52	Total Dry Concrete Weight (Kips):	277.88
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	277.88	Total Vertical Load on Base (Kips):	366.85

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	3732	<	Allowable Factored Soil Bearing (psf):	6450	0.58	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3165.8	>	Design Factored Momont (kips-ft):	2246	0.71	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.41	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.00		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	3146.1	>	Design Factored Moment (Mu, Kips-F	2317.1	0.74	OK!
Calculated Shear Capacity (Kips):	430.2	>	Design Factored Shear (Kips):	22.8	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	1296.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	6006.2	>	Design Factored Axial Load (Pu Kips):	30.8	0.01	OK!
Moment & Axial Strength Combination:	0.74	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.007		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1222.1	>	One-Way Factored Shear (L-D. Kips):	92.9	0.08	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1222.1	>	One-Way Factored Shear (W-D., Kips)	92.9	0.08	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	768.9	>	One-Way Factored Shear (C-C, Kips):	99.1	0.13	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):	5927.9	>	Moment at Bottom (L-Dir. K-Ft):	721.0	0.12	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5927.9	>	Moment at Bottom (W-Dir. K-Ft):	721.0	0.12	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	8347.7	>	Moment at Bottom (C-C Dir. K-Ft):	1019.6	0.12	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):	5927.9	>	Moment at the top (L-Dir K-Ft):	339.9	0.06	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	5927.9	>	Moment at the top (W-Dir K-Ft):	339.9	0.06	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	8347.7	>	Moment at the top (C-C Dir. K-Ft):	319.4	0.04	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	908.6	k-ft.	Max. factored shear stress v_{u_CD}:		2.9	Psi
Max. factored shear stress v_{u_AB}:	4.8	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	4.8	Psi	Check Usage of Punching Shear Capacity:		0.03	OK!

Tower Engineering Solutions, LLC

June 14, 2021

Mr. Andrew Leone
Verizon Wireless
20 Alexander Dr.
Wallingford, CT 06492

Re: Verizon Wireless antenna Model Clarification for CT Siting Council

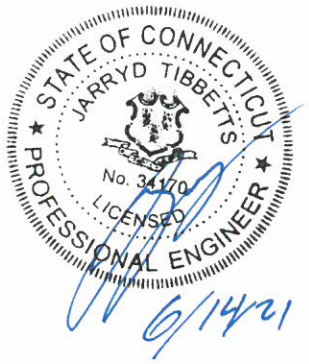
Dear Mr. Leone,

This letter is intended to clarify and confirm the antenna naming convention used by Verizon Wireless as a part of an antenna upgrade project on numerous wireless facilities.

The antenna naming convention "Licensed Sub-6, L-Sub6, nL-Sub6, VZS01" and any other slight variants refer to the 64T64RMMU, Model Code: MT6407-77A manufactured by Samsung Electronics. These names are interchangeable and are used in various documents, including but not limited to the "Structural Analysis".

If you have any questions or comments, or require additional information, please do not hesitate to contact me.

Sincerely,
Tower Engineering Solutions, LLC



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

Paul J. Ford and Company
250 East Broad Street Suite 600
Columbus, OH 43215
(614)221-6679
mtimas@pauljford.com

Post-Mod Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10041401

Maser Consulting Project Number #: 20777630

Paul J. Ford Project #: A22721-0005.002.7191

February 28, 2021

Site Information	*Site ID:*	*468687-VZW / BROOKFIELD_WEST_CT*
	Site Name:	*BROOKFIELD_WEST_CT*
	Carrier Name:	*Verizon Wireless*
	Address:	*52 STADLEY ROUGH RD DANBURY, Connecticut 06811, Fairfield County*
	Latitude:	*41.433103°*
	Longitude:	*-73.431917°*
Structure Information	*Tower Type:*	*Monopole*
	Mount Type:	*6.00-Ft T-Arm*

FUZE ID # 16244180

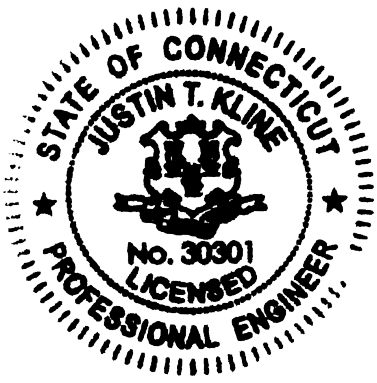
Analysis Results

T-Arm: **43.5% Pass**

******Contractor PMI Requirements*:**
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com
Contractor - Please Review Specific Site PMI Requirements Upon Award
Requirements also Noted on Mount Modification Drawings
Requirements may also be Noted on A & E drawings

Report Prepared By:

Michael Timas



Executive Summary:

The objective of this report is to summarize the analysis results of the antenna support mount including the proposed modifications at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

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, FUZE ID 16244180 , dated November 18, 2020*
Mount Mapping Report	*RKS Design & Engineering, dated January 9, 2021*
Associated Failing Mount Analysis	*PJF, Project # A22721-0005.001.7190, dated January 26, 2021*
Proposed Mount Modification	*PJF, Project # A22721-0005.002.7191, dated February 28, 2021*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	115 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:	0.980
Seismic Parameters:	S_S:	0.218
	S_1:	0.056
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Live Load, Lv:	0 lbs.
	Maintenance Live Load, Lm:	0 lbs.
Analysis Software:	RISA-3D (V17.0.3)	

Final Loading Configuration:

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

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
96.00	97.00	3	Andrew	DBXNH-6565A-VTM	Retained
		6	JMA Wireless	MX06FRO660-03	Added
		3	Samsung	B2/B66A RRH-BR049 (RFV01U-D1A)	
		3	Samsung	B5/B13 RRH-BR04C (RFV01U-D2A)	
		3	Samsung	VZS01	
		3	JMA Wireless	Side by Side Bracket	
		1*	Raycap	12 circuit OVP	

*Equipment to be flush mounted directly to the monopole. It is not mounted on the t-arm mounts and is not included in this mount analysis.

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Paul J. Ford 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 Paul J. Ford 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 by PJF, 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. Paul J. Ford 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, Plate — ASTM A36 (Gr. 36)
   - Angle — ASTM A53 (GR 35)
   - HSS (Rectangular) — ASTM 500 (Gr. B-46)
   - Pipe — ASTM A53 (Gr. B-35)
   - Threaded Rod — F1554 (Gr. 36)
   - Bolts — ASTM A325

8. Any mount modifications listed under Sources of Information are assumed to have been installed per the design specifications.

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Paul J. Ford.

Analysis Results:

Component	Utilization %	Pass/Fail
Face Horizontals	*35.6%*	*Pass*
Standoff Members	*17.8%*	*Pass*
Bracing Members	*7.0%*	*Pass*
Mount Pipes	*43.5%*	*Pass*
Mount to Tower Connection	*20.5%*	*Pass*

Structure Rating – *(Controlling Utilization of all Components)*	**43.5%**

Recommendation:

The existing mount will be **SUFFICIENT** for the final loading after the proposed modifications are successfully completed.

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

Attachments:

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


01/09/2021
11:31

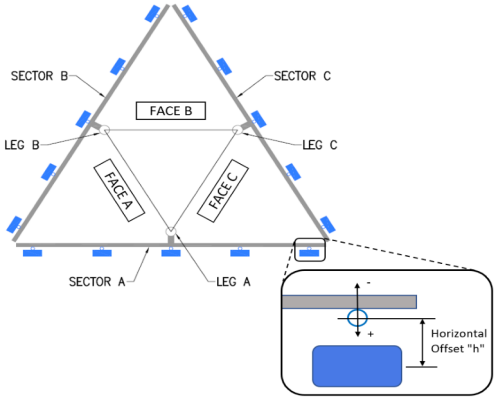
V3.0 Updated on 8-31-2020

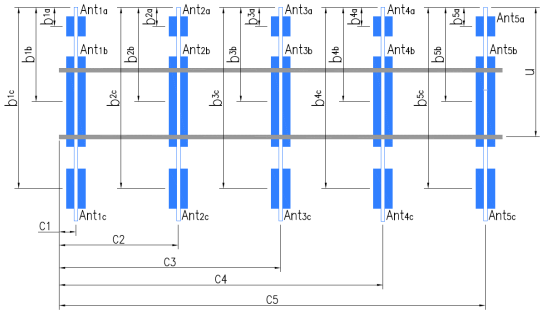
Antenna Mount Mapping Form (PATENT PENDING)

FCC # 1263107

Tower Owner:	SBA	**Mapping Date:**	1/9/2021
Site Name:	VZW: BROOKFIELD WEST CT	**Tower Type:**	Monopole
Site Number or ID:	SBA: CT13549	**Tower Height (Ft.):**	UNKNOWN
Mapping Contractor:	RKS Design & Engineering LLC	**Mount Elevation (Ft.):**	97.75

Please insert the sketches of the antenna mount from the "Sketches" tab with dimensions and members here.





Antenna Layout (Looking Out From Tower)

Mount Pipe Configuration and Geometries [Unit = Inches]

Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."
A1	Pipe 2.375"Ø X 0.16" X 84" Long	49.00	5.75	C1	Pipe 2.375"Ø X 0.16" X 84" Long	47.75	5.75
A2	Pipe 2.375"Ø X 0.16" X 78" Long	51.75	36.75	C2	Pipe 2.375"Ø X 0.16" X 78" Long	48.25	36.75
A3	Pipe 2.375"Ø X 0.16" X 78" Long	52.00	66.25	C3	Pipe 2.375"Ø X 0.16" X 78" Long	49.00	66.00
A4				C4			
A5				C5			
A6				C6			
B1	Pipe 2.375"Ø X 0.16" X 84" Long	48.00	5.75	D1			
B2	Pipe 2.375"Ø X 0.16" X 78" Long	48.00	36.75	D2			
B3	Pipe 2.375"Ø X 0.16" X 78" Long	49.00	66.50	D3			
B4				D4			
B5				D5			
B6				D6			

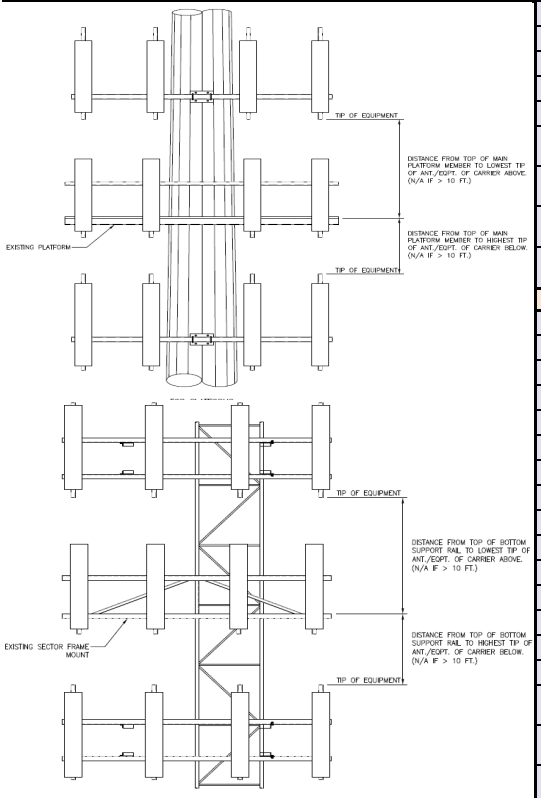
Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See 'Mount Elev Ref' tab for details. :	
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :	4.6
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :	
Please enter additional infomation or comments below.	

Tower Face Width at Mount Elev. (ft.):		Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.):	25.5

	Enter antenna model. If not labeled, enter "Unknown".						Mounting Locations [Units are inches and degrees]			Photos of antennas
Ants. Items	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Antenna Center-line (Ft.)	Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (Inches)	Horiz. Offset "h" (Use "-" if Ant. is behind)	Antenna Azimuth (Degrees)	Photo Numbers
Sector A										
Ant_{1a}	9442 RRH2X40-AWS	10.60	6.70	24.40		100.188	19.75	-6.50		16, 150
Ant_{1b}	BXA-171063-12CF-ED	6.10	4.10	72.40		98.7708	36.75	7.75	10.00	16, 150
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	BXA-70063-6CF-EDIN-	11.20	5.20	71.00		98.6458	41.00	9.00	10.00	16, 155
Ant_{2c}										
Ant_{3a}	(2)FD9R6004/2C-3L	6.50	1.50	5.80		99.0833	36.00	3.25		16, 157
Ant_{3b}	UNKNOWN PANEL	12.00	7.50	51.00		98.7292	40.25	7.50	10.00	16, 157
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Mount Azimuth (Degree) for Each Sector				Tower Leg Azimuth (Degree) for Each Sector	
Sector A:	0.00	Deg	Leg A:		Deg
Sector B:	120.00	Deg	Leg B:		Deg
Sector C:	240.00	Deg	Leg C:		Deg
Sector D:		Deg	Leg D:		Deg

Climbing Facility Information		
Location:	300.00 Deg	N/A
Climbing Facility	Corrosion Type:	N/A
	Access:	Climbing path was unobstructed.
	Condition:	Good condition.



Sector B										
Ant_{1a}	9442 RRH2X40-AWS	10.60	6.70	24.40		100.146	19.25	-6.50		24, 160
Ant_{1b}	BXA-171063-12CF-ED	6.10	4.10	72.40		98.6875	36.75	7.75	130.00	24, 160
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	BXA-70063-6CF-EDIN-	11.20	5.20	71.00		98.2292	42.25	9.00	130.00	24, 164
Ant_{2c}										
Ant_{3a}	(2)FD9R6004/2C-3L	6.50	1.50	5.80		98.8333	36.00	3.25		24, 170
Ant_{3b}	UNKNOWN PANEL	12.00	7.50	51.00		98.4167	41.00	7.50	130.00	24, 171
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower	RRFDC-3315-PF-48	15.73	10.25	25.66			25.25			24, 167
Ant on Tower										
Sector C										
Ant_{1a}	9442 RRH2X40-AWS	10.60	6.70	24.40		100.208	18.25	-6.50		30, 174
Ant_{1b}	BXA-171063-12CF-ED	6.10	4.10	72.40		98.6667	36.75	7.75	250.00	30, 173
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	BXA-70063-6CF-EDIN-	11.20	5.20	71.00		98.2708	42.00	9.00	250.00	30, 179
Ant_{2c}										
Ant_{3a}	(2)FD9R6004/2C-3L	6.50	1.50	5.80		98.8333	36.00	3.25		30, 180
Ant_{3b}	UNKNOWN PANEL	12.00	7.50	51.00		98.4583	40.50	7.50	250.00	30, 181
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector D										
Ant_{1a}										
Ant_{1b}										
Ant_{1c}										
Ant_{2a}										
Ant_{2b}										
Ant_{2c}										
Ant_{3a}										
Ant_{3b}										
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Observed Safety and Structural Issues During the Mount Mapping		
Issue #	Description of Issue	Photo #

1	COAX:TOTAL(13): (12)FH 1-5/8, (1)1.5"Ø	46
2		
3		
4		
5		
6		
7		
8		

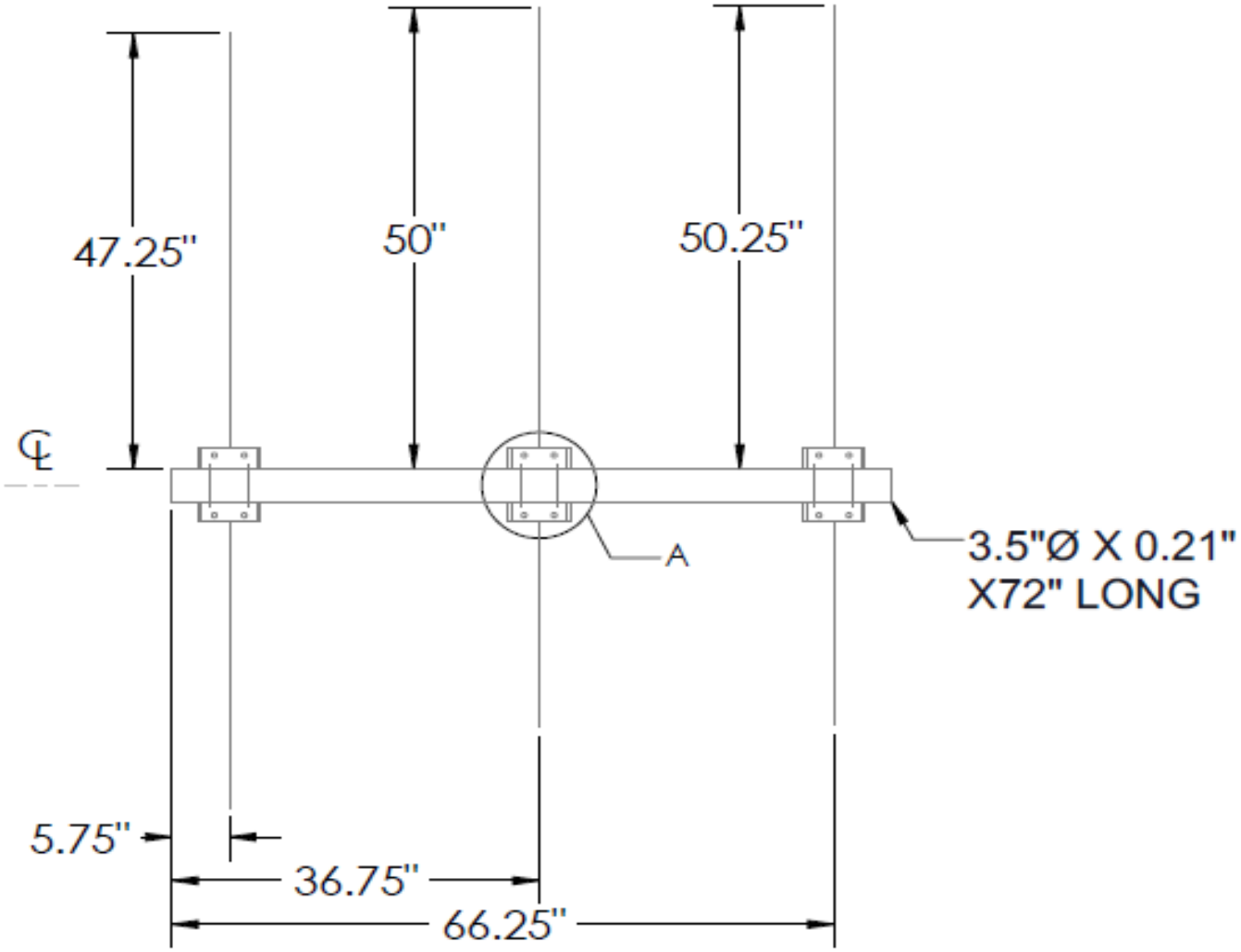
Mapping Notes
1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.)
2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic measurement tool (thickness gauge) to measure the thickness.
3. Please create all required detail sketches of the mounts and insert them into the "Sketches" tab.
4. Please measure and enter the bolt sizes and types under the Members Box in the spreadsheet of the mount type.
5. Take and label the photos of the tower, mounts, connections, antennas and all measurements. Minimum 50 photos are required.
6. Please measure and report the size and length of all existing antenna mounting pipes.
7. Please measure and report the antenna information for all sectors.
8. Don't delete or rearrange any sheet or contents of any sheet from this mapping form.

Standard Conditions
1. Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping are to be reported in this mapping. However, this mount mapping is not a condition assessment of the mount.

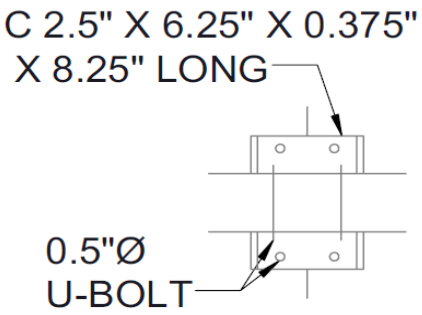
V3.0 Updated on 8-31-2020

Antenna Mount Mapping Form (PATENT PENDING)			FCC #
			1263107
Tower Owner:	SBA	**Mapping Date:**	1/9/2021
Site Name:	VZW: BROOKFIELD WEST CT	**Tower Type:**	Monopole
Site Number or ID:	SBA: CT13549	**Tower Height (Ft.):**	UNKNOWN
Mapping Contractor:	RKS Design & Engineering LLC	**Mount Elevation (Ft.):**	97.75

Please Insert Sketches of the Antenna Mount

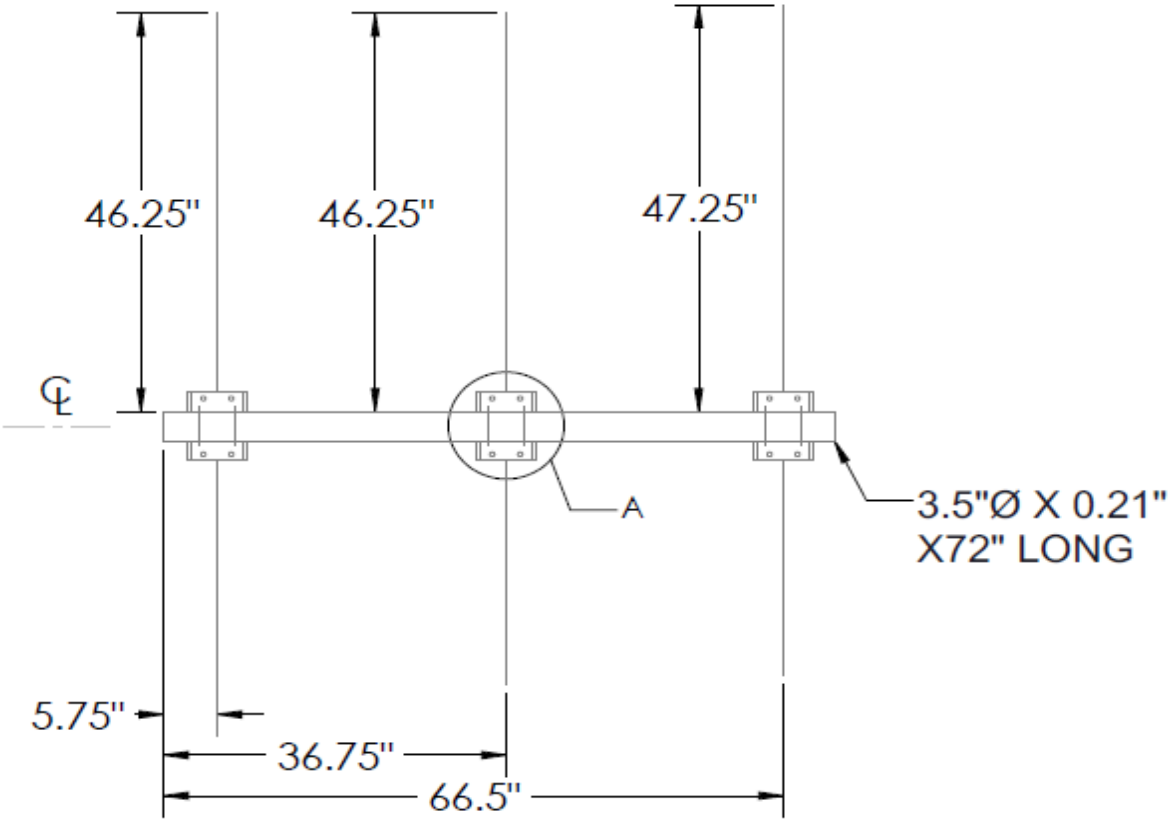


SECTOR A

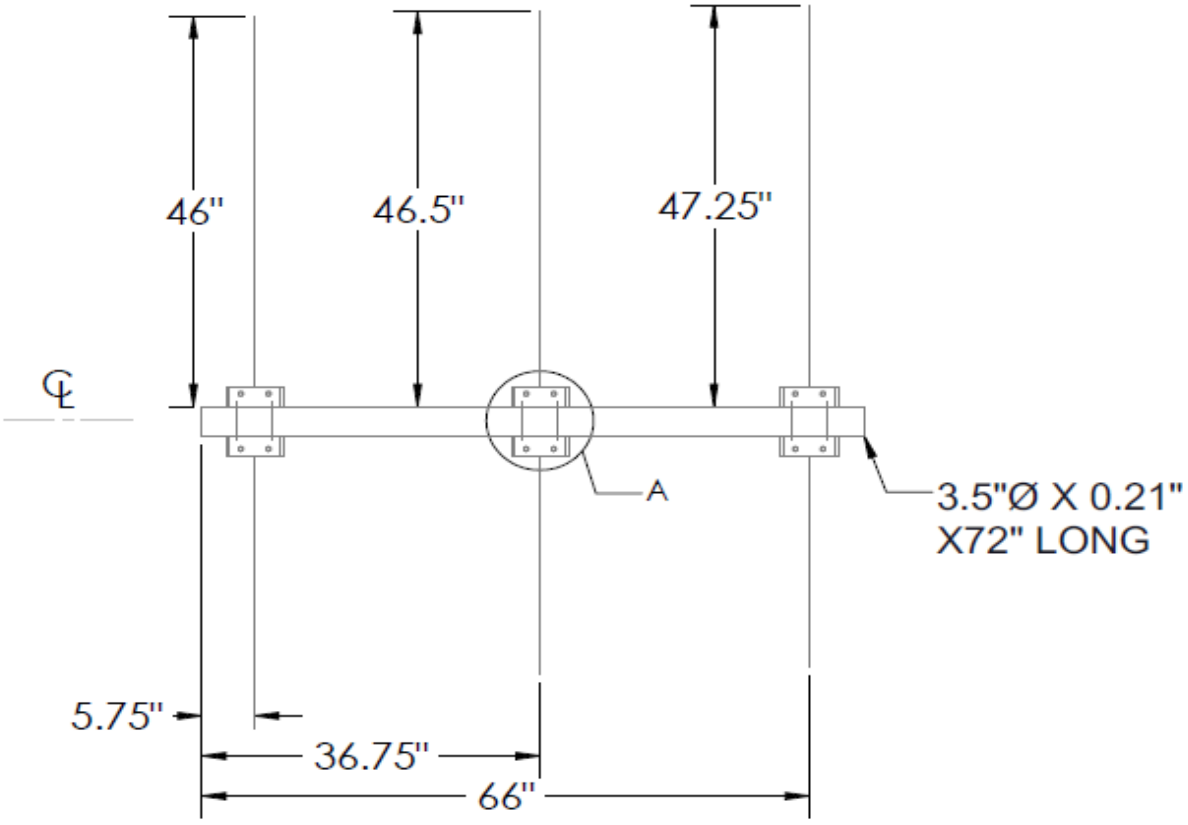


DETAIL A

Please Insert Sketches of the Antenna Mount, cont'd

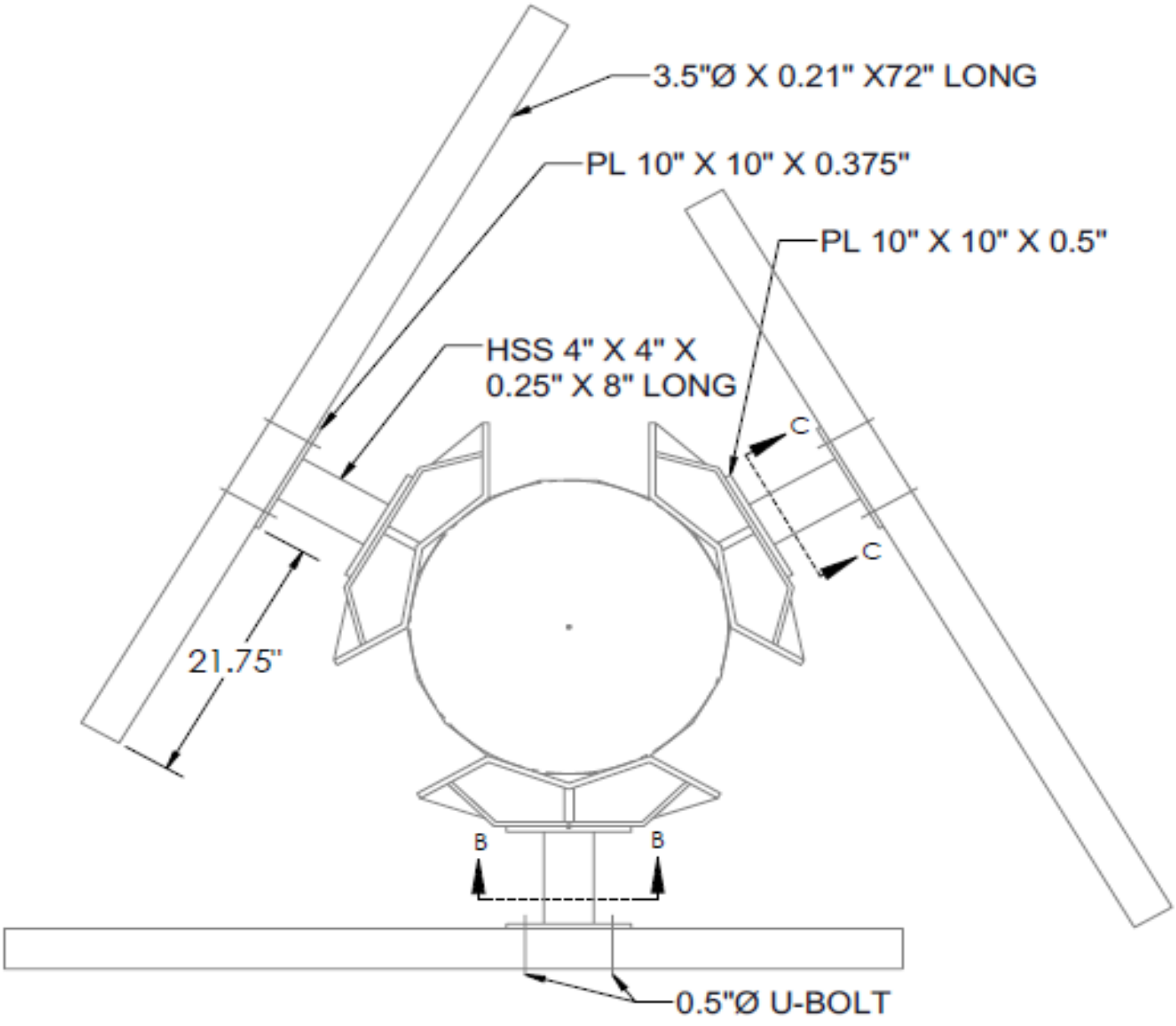


SECTOR B



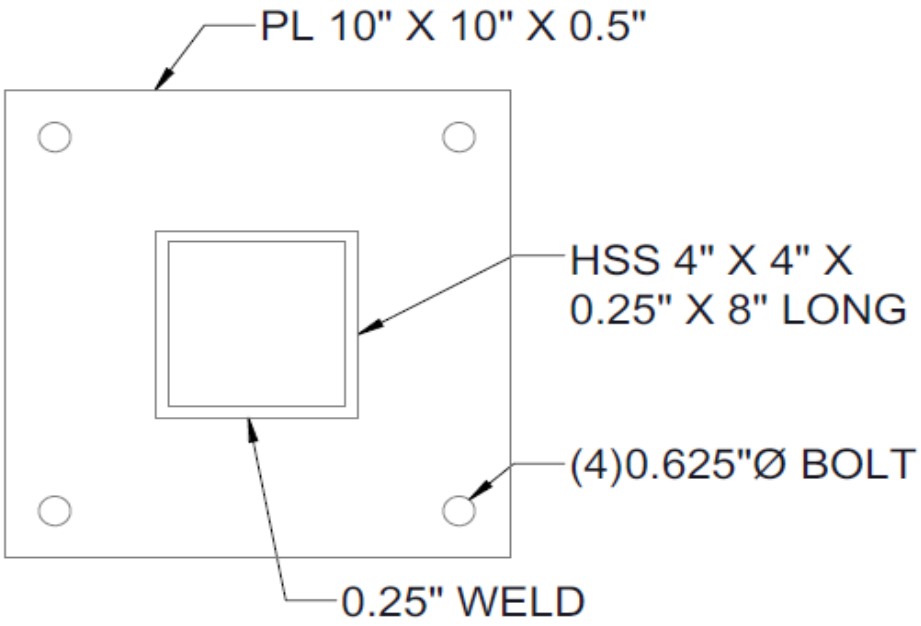
SECTOR C

Please Insert Sketches of the Antenna Mount, cont'd

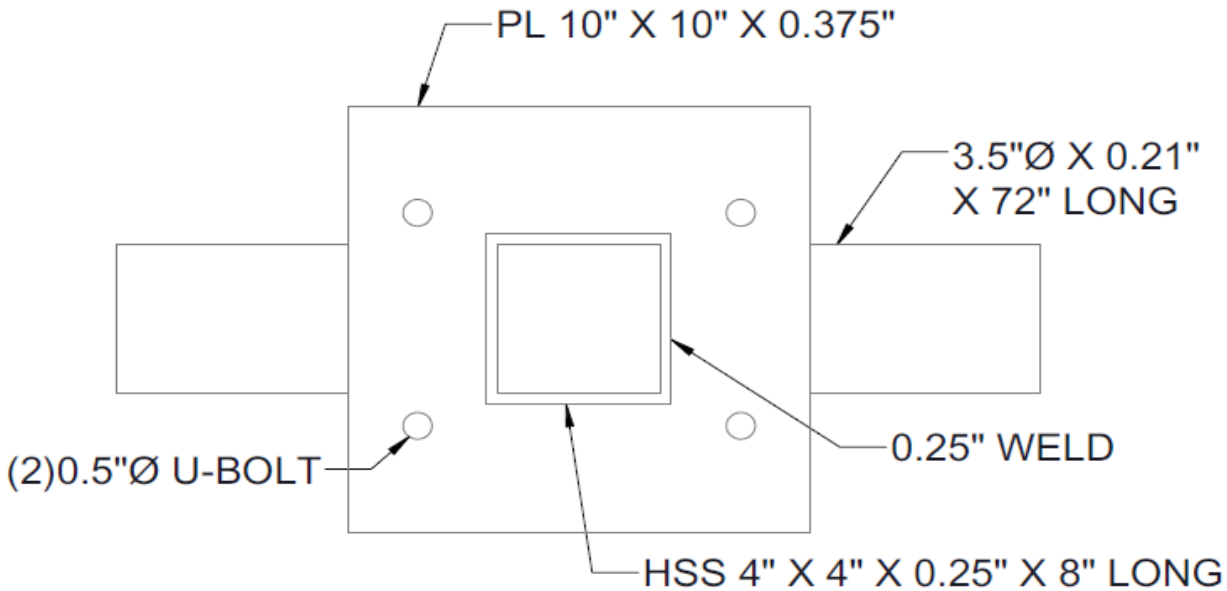


MOUNT PLAN VIEW

Please Insert Sketches of the Antenna Mount, cont'd

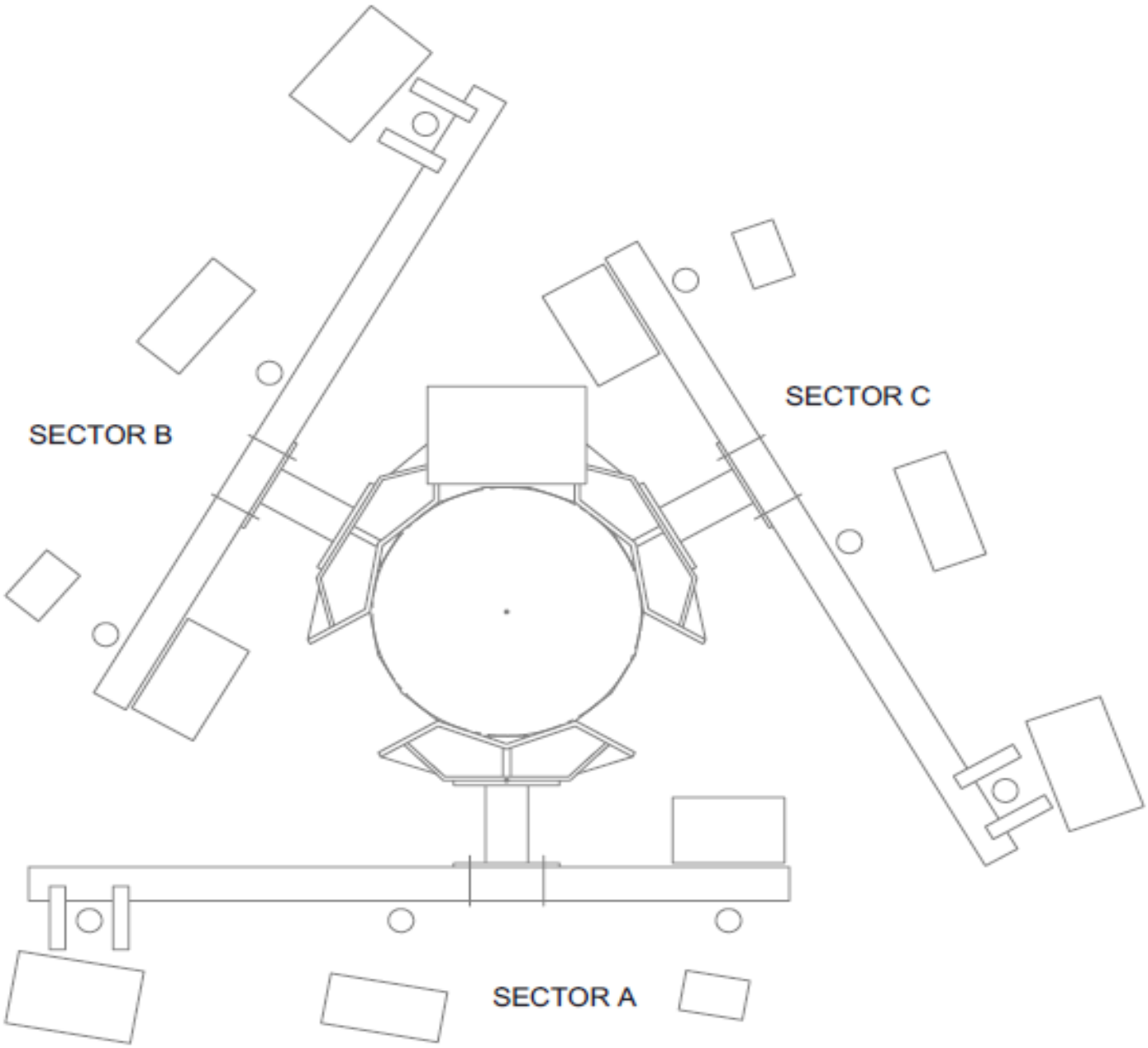


SECTION B-B

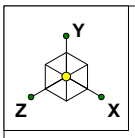


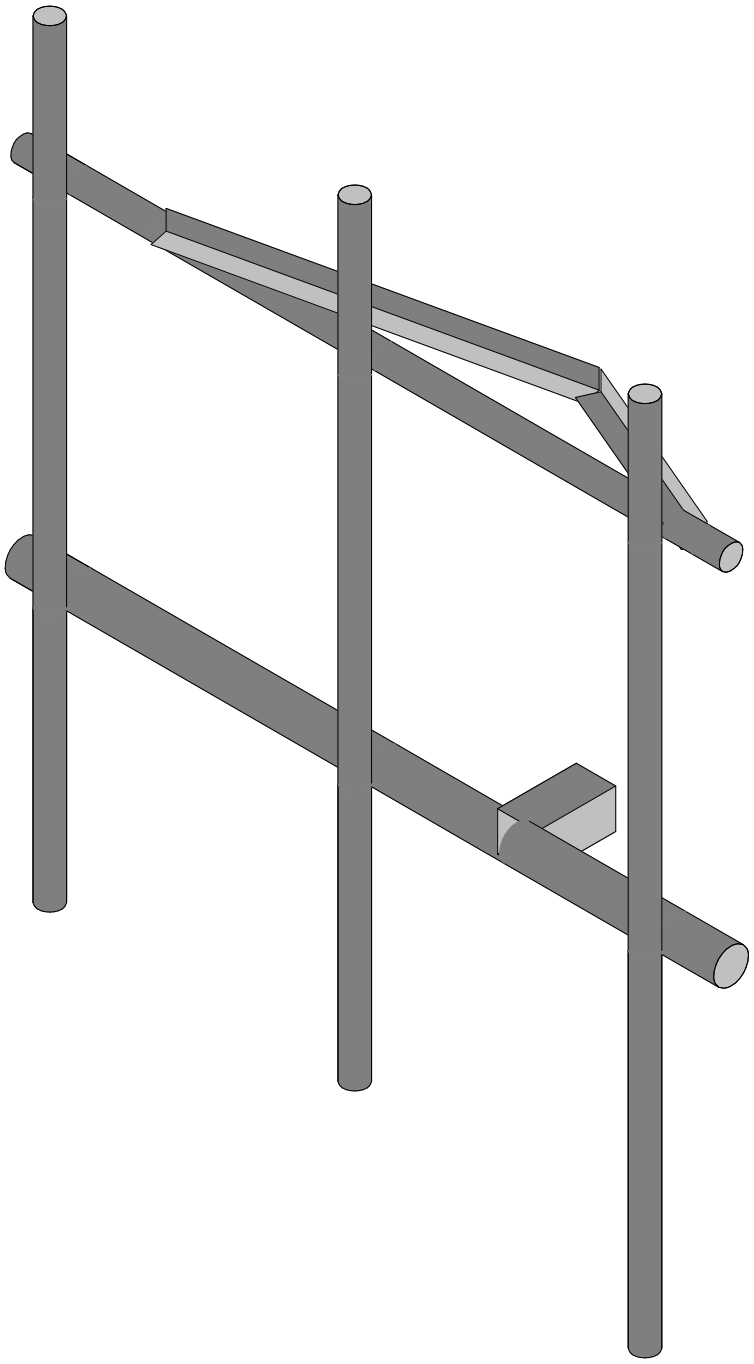
SECTION C-C

Please Insert Sketches of the Antenna Mount, cont'd



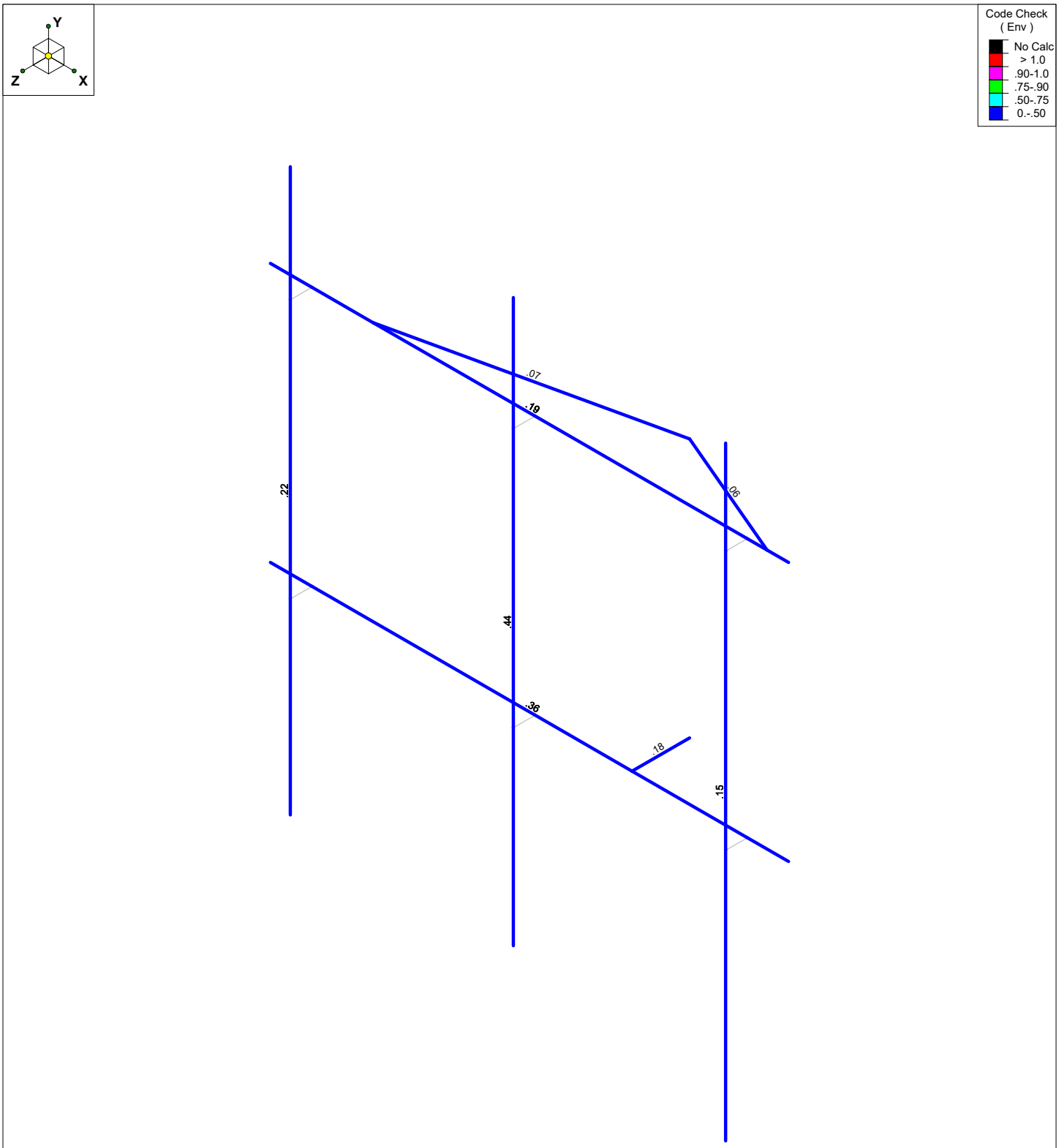
ANTENNA PLAN VIEW





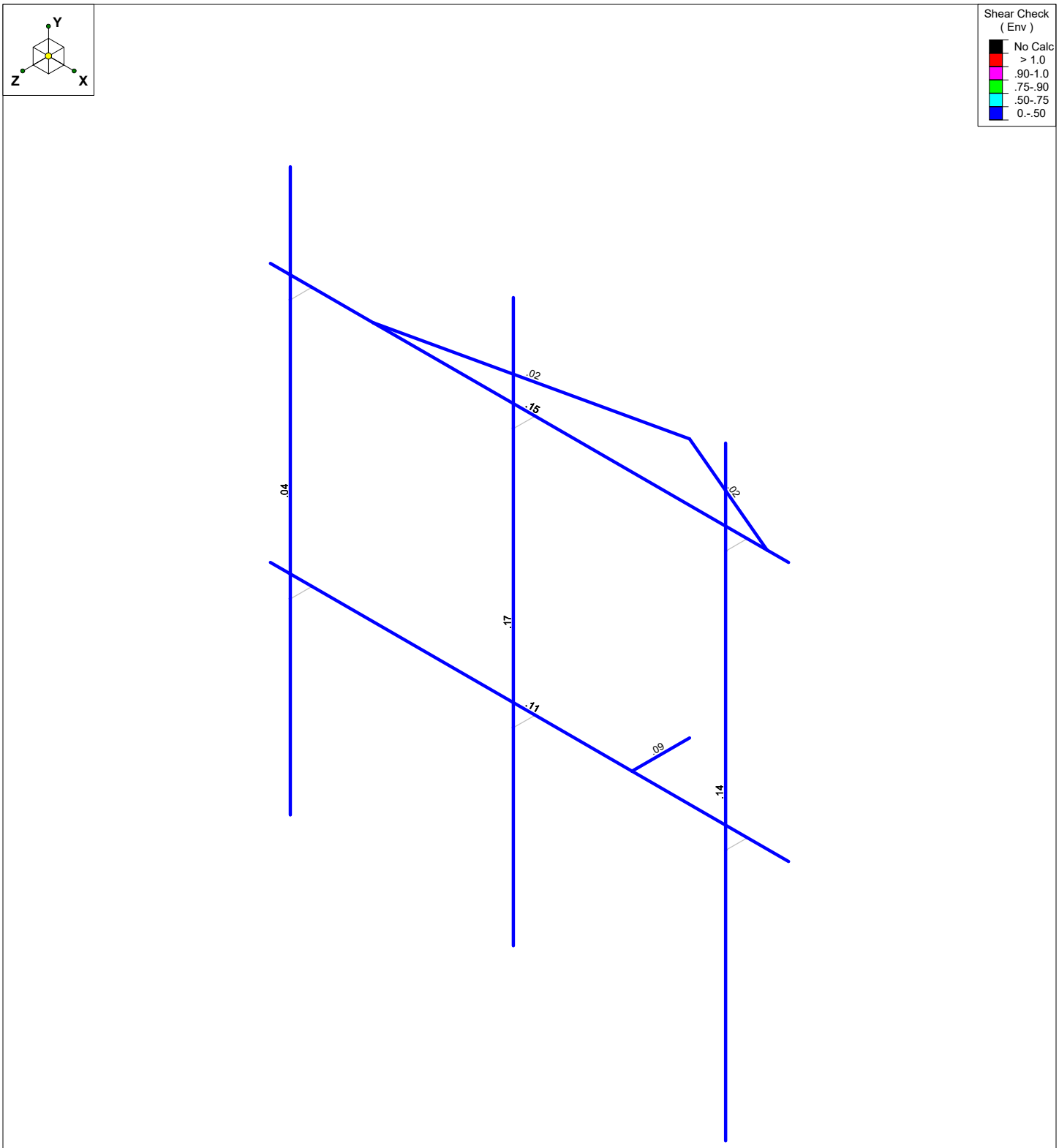
Envelope Only Solution

Paul J. Ford & Company	468687-VZW_MT_LOT_SectorA_H	SK - 1
MJT		Feb 24, 2021 at 3:14 PM
		468687-VZW_MT_LOT_A_H.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Paul J. Ford & Company	468687-VZW_MT_LOT_SectorA_H	SK - 2
MJT		Feb 28, 2021 at 4:34 PM
		468687-VZW_MT_LOT_A_H.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Paul J. Ford & Company	468687-VZW_MT_LOT_SectorA_H	SK - 3
MJT		Feb 28, 2021 at 4:34 PM
		468687-VZW_MT_LOT_A_H.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	No
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	No
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	0

(Global) Model Settings, Continued

Seismic Code	None
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct X	0
Ct Z	0
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	1
R Z	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A53 Gr. B (35 ksi)	29000	11154	.3	.65	.49	35	1.5	60	1.2
2	A500 Gr. B (46ksi)	29000	11154	.3	.65	.49	46	1.5	58	1.2
3	A36	29000	11154	.3	.65	.49	36	1.5	58	1.2
4	Q235 Gr B	29000	11154	.3	.65	.49	34	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	M4	N7	N8			RIGID	None	None	RIGID	Typical
2	M6	N11A	N12			RIGID	None	None	RIGID	Typical
3	M8	N15	N16			RIGID	None	None	RIGID	Typical
4	M10	N19	N20			RIGID	None	None	RIGID	Typical
5	M11	N21	N22			RIGID	None	None	RIGID	Typical
6	M12	N23	N24			RIGID	None	None	RIGID	Typical
7	M2	N3	N11			HSS4X4X4	None	None	A500 Gr. B ...	Typical
8	MP3A	N13A	N14			PIPE_2.0	None	None	A53 Gr. B (...	Typical
9	CBC1	N6	N5			PIPE_3.0	None	None	A53 Gr. B (...	Typical
10	MP2A	N9	N10			PIPE_2.0	None	None	A53 Gr. B (...	Typical
11	MP1A	N13	N14A			PIPE_2.0	None	None	A53 Gr. B (...	Typical
12	M9	N18	N17			PIPE_2.0	None	None	A53 Gr. B (...	Typical
13	M13	N26	N25		270	L2.5x2.5x3	None	None	A53 Gr. B (...	Typical
14	M14	N26	N27			L2.5x2.5x3	None	None	A53 Gr. B (...	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Ra...	Analysis ...	Inactive	Seismi...
1	M4						Yes	** NA **			None
2	M6						Yes	** NA **			None
3	M8						Yes	** NA **			None
4	M10						Yes	** NA **			None
5	M11						Yes	** NA **			None
6	M12						Yes	** NA **			None
7	M2	OOOOOX					Yes	** NA **			None
8	MP3A						Yes	** NA **			None
9	CBC1						Yes	** NA **			None
10	MP2A						Yes	** NA **			None
11	MP1A						Yes	** NA **			None
12	M9						Yes	** NA **			None
13	M13		BenPIN				Yes	** NA **			None
14	M14		BenPIN				Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[...	Lbyy[ft]	Lbzz[ft]	Lcomp top..	Lcomp bot..	L-torq...	Kyy	Kzz	Cb	Function
1	M2	HSS4X4X4	.667									Lateral
2	MP3A	PIPE_2.0	6.5									Lateral
3	CBC1	PIPE_3.0	6									Lateral
4	MP2A	PIPE_2.0	6.5									Lateral
5	MP1A	PIPE_2.0	7									Lateral
6	M9	PIPE_2.0	6									Lateral
7	M13	L2.5x2.5x3	3.073									Lateral
8	M14	L2.5x2.5x3	1.699									Lateral

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distri...	Area(Memb...	Surface(Plate/Wall)
1	Antenna D	None					36			
2	Antenna Di	None					36			
3	Antenna Wo (0 Deg)	None					36			
4	Antenna Wo (30 Deg)	None					36			
5	Antenna Wo (60 Deg)	None					36			
6	Antenna Wo (90 Deg)	None					36			
7	Antenna Wo (120 Deg)	None					36			
8	Antenna Wo (150 Deg)	None					36			
9	Antenna Wo (180 Deg)	None					36			
10	Antenna Wo (210 Deg)	None					36			
11	Antenna Wo (240 Deg)	None					36			
12	Antenna Wo (270 Deg)	None					36			
13	Antenna Wo (300 Deg)	None					36			
14	Antenna Wo (330 Deg)	None					36			
15	Antenna Wi (0 Deg)	None					36			
16	Antenna Wi (30 Deg)	None					36			
17	Antenna Wi (60 Deg)	None					36			
18	Antenna Wi (90 Deg)	None					36			
19	Antenna Wi (120 Deg)	None					36			
20	Antenna Wi (150 Deg)	None					36			
21	Antenna Wi (180 Deg)	None					36			
22	Antenna Wi (210 Deg)	None					36			
23	Antenna Wi (240 Deg)	None					36			
24	Antenna Wi (270 Deg)	None					36			
25	Antenna Wi (300 Deg)	None					36			
26	Antenna Wi (330 Deg)	None					36			
27	Antenna Wm (0 Deg)	None					36			
28	Antenna Wm (30 Deg)	None					36			
29	Antenna Wm (60 Deg)	None					36			
30	Antenna Wm (90 Deg)	None					36			
31	Antenna Wm (120 Deg)	None					36			
32	Antenna Wm (150 Deg)	None					36			
33	Antenna Wm (180 Deg)	None					36			
34	Antenna Wm (210 Deg)	None					36			
35	Antenna Wm (240 Deg)	None					36			
36	Antenna Wm (270 Deg)	None					36			
37	Antenna Wm (300 Deg)	None					36			
38	Antenna Wm (330 Deg)	None					36			
39	Structure D	None		-1						
40	Structure Di	None						8		
41	Structure Wo (0 Deg)	None						16		
42	Structure Wo (30 Deg)	None						16		
43	Structure Wo (60 Deg)	None						16		

Basic Load Cases (Continued)

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distri...	Area(Memb...	Surface(Plate/Wall)
44	Structure Wo (90 Deg)	None						16		
45	Structure Wo (120 Deg)	None						16		
46	Structure Wo (150 Deg)	None						16		
47	Structure Wo (180 Deg)	None						16		
48	Structure Wo (210 Deg)	None						16		
49	Structure Wo (240 Deg)	None						16		
50	Structure Wo (270 Deg)	None						16		
51	Structure Wo (300 Deg)	None						16		
52	Structure Wo (330 Deg)	None						16		
53	Structure Wi (0 Deg)	None						16		
54	Structure Wi (30 Deg)	None						16		
55	Structure Wi (60 Deg)	None						16		
56	Structure Wi (90 Deg)	None						16		
57	Structure Wi (120 Deg)	None						16		
58	Structure Wi (150 Deg)	None						16		
59	Structure Wi (180 Deg)	None						16		
60	Structure Wi (210 Deg)	None						16		
61	Structure Wi (240 Deg)	None						16		
62	Structure Wi (270 Deg)	None						16		
63	Structure Wi (300 Deg)	None						16		
64	Structure Wi (330 Deg)	None						16		
65	Structure Wm (0 Deg)	None						16		
66	Structure Wm (30 Deg)	None						16		
67	Structure Wm (60 Deg)	None						16		
68	Structure Wm (90 Deg)	None						16		
69	Structure Wm (120 Deg)	None						16		
70	Structure Wm (150 Deg)	None						16		
71	Structure Wm (180 Deg)	None						16		
72	Structure Wm (210 Deg)	None						16		
73	Structure Wm (240 Deg)	None						16		
74	Structure Wm (270 Deg)	None						16		
75	Structure Wm (300 Deg)	None						16		
76	Structure Wm (330 Deg)	None						16		
77	Lm1	None					1			
78	Lm2	None					1			
79	Lv1	None					1			
80	Lv2	None					1			

Load Combinations

	Description	Solve	PDe..	SRSS	B...	Fa..	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 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	15	1	53	1											
14	1.2D + 1.0Di + 1.0Wi (30 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	16	1	54	1											
15	1.2D + 1.0Di + 1.0Wi (60 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	17	1	55	1											

Load Combinations (Continued)

	Description	Solve	PDe..	SRSS	B...	Fa..	B...	Fa..	B...	Fa..	B...	Fa..	B...	Fa..	B...	Fa..	B...	Fa..	B...	Fa..	B...	Fa..	B...	Fa..
16	1.2D + 1.0Di + 1.0Wi (90 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	18	1	56	1								
17	1.2D + 1.0Di + 1.0Wi (120 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	19	1	57	1								
18	1.2D + 1.0Di + 1.0Wi (150 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	20	1	58	1								
19	1.2D + 1.0Di + 1.0Wi (180 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	21	1	59	1								
20	1.2D + 1.0Di + 1.0Wi (210 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	22	1	60	1								
21	1.2D + 1.0Di + 1.0Wi (240 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	23	1	61	1								
22	1.2D + 1.0Di + 1.0Wi (270 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	24	1	62	1								
23	1.2D + 1.0Di + 1.0Wi (300 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	25	1	63	1								
24	1.2D + 1.0Di + 1.0Wi (330 Deg)	Yes	Y		1	1.2	39	1.2	2	1	40	1	26	1	64	1								
25	1.2D + 1.5Lm1 + 1.0Wm (0 Deg)	Yes	Y		1	1.2	39	1.2	77	1.5	27	1	65	1										
26	1.2D + 1.5Lm1 + 1.0Wm (30 Deg)	Yes	Y		1	1.2	39	1.2	77	1.5	28	1	66	1										
27	1.2D + 1.5Lm1 + 1.0Wm (60 Deg)	Yes	Y		1	1.2	39	1.2	77	1.5	29	1	67	1										
28	1.2D + 1.5Lm1 + 1.0Wm (90 Deg)	Yes	Y		1	1.2	39	1.2	77	1.5	30	1	68	1										
29	1.2D + 1.5Lm1 + 1.0Wm (120 D...	Yes	Y		1	1.2	39	1.2	77	1.5	31	1	69	1										
30	1.2D + 1.5Lm1 + 1.0Wm (150 D...	Yes	Y		1	1.2	39	1.2	77	1.5	32	1	70	1										
31	1.2D + 1.5Lm1 + 1.0Wm (180 D...	Yes	Y		1	1.2	39	1.2	77	1.5	33	1	71	1										
32	1.2D + 1.5Lm1 + 1.0Wm (210 D...	Yes	Y		1	1.2	39	1.2	77	1.5	34	1	72	1										
33	1.2D + 1.5Lm1 + 1.0Wm (240 D...	Yes	Y		1	1.2	39	1.2	77	1.5	35	1	73	1										
34	1.2D + 1.5Lm1 + 1.0Wm (270 D...	Yes	Y		1	1.2	39	1.2	77	1.5	36	1	74	1										
35	1.2D + 1.5Lm1 + 1.0Wm (300 D...	Yes	Y		1	1.2	39	1.2	77	1.5	37	1	75	1										
36	1.2D + 1.5Lm1 + 1.0Wm (330 D...	Yes	Y		1	1.2	39	1.2	77	1.5	38	1	76	1										
37	1.2D + 1.5Lm2 + 1.0Wm (0 Deg)	Yes	Y		1	1.2	39	1.2	78	1.5	27	1	65	1										
38	1.2D + 1.5Lm2 + 1.0Wm (30 Deg)	Yes	Y		1	1.2	39	1.2	78	1.5	28	1	66	1										
39	1.2D + 1.5Lm2 + 1.0Wm (60 Deg)	Yes	Y		1	1.2	39	1.2	78	1.5	29	1	67	1										
40	1.2D + 1.5Lm2 + 1.0Wm (90 Deg)	Yes	Y		1	1.2	39	1.2	78	1.5	30	1	68	1										
41	1.2D + 1.5Lm2 + 1.0Wm (120 D...	Yes	Y		1	1.2	39	1.2	78	1.5	31	1	69	1										
42	1.2D + 1.5Lm2 + 1.0Wm (150 D...	Yes	Y		1	1.2	39	1.2	78	1.5	32	1	70	1										
43	1.2D + 1.5Lm2 + 1.0Wm (180 D...	Yes	Y		1	1.2	39	1.2	78	1.5	33	1	71	1										
44	1.2D + 1.5Lm2 + 1.0Wm (210 D...	Yes	Y		1	1.2	39	1.2	78	1.5	34	1	72	1										
45	1.2D + 1.5Lm2 + 1.0Wm (240 D...	Yes	Y		1	1.2	39	1.2	78	1.5	35	1	73	1										
46	1.2D + 1.5Lm2 + 1.0Wm (270 D...	Yes	Y		1	1.2	39	1.2	78	1.5	36	1	74	1										
47	1.2D + 1.5Lm2 + 1.0Wm (300 D...	Yes	Y		1	1.2	39	1.2	78	1.5	37	1	75	1										
48	1.2D + 1.5Lm2 + 1.0Wm (330 D...	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	Seismic Mass		Y		1	1	39	1																
53	1.2D + 1.0Ev + 1.0Eh (0 Deg)		Y		1	1.2	39	1.2	SX		SY	1	SZ	-1										
54	1.2D + 1.0Ev + 1.0Eh (30 Deg)		Y		1	1.2	39	1.2	SX	.5	SY	1	SZ	-.8...										
55	1.2D + 1.0Ev + 1.0Eh (60 Deg)		Y		1	1.2	39	1.2	SX	.866	SY	1	SZ	-.5										
56	1.2D + 1.0Ev + 1.0Eh (90 Deg)		Y		1	1.2	39	1.2	SX	1	SY	1	SZ											
57	1.2D + 1.0Ev + 1.0Eh (120 Deg)		Y		1	1.2	39	1.2	SX	.866	SY	1	SZ	.5										
58	1.2D + 1.0Ev + 1.0Eh (150 Deg)		Y		1	1.2	39	1.2	SX	.5	SY	1	SZ	.866										
59	1.2D + 1.0Ev + 1.0Eh (180 Deg)		Y		1	1.2	39	1.2	SX		SY	1	SZ	1										
60	1.2D + 1.0Ev + 1.0Eh (210 Deg)		Y		1	1.2	39	1.2	SX	-.5	SY	1	SZ	.866										
61	1.2D + 1.0Ev + 1.0Eh (240 Deg)		Y		1	1.2	39	1.2	SX	-.8...	SY	1	SZ	.5										
62	1.2D + 1.0Ev + 1.0Eh (270 Deg)		Y		1	1.2	39	1.2	SX	-1	SY	1	SZ											
63	1.2D + 1.0Ev + 1.0Eh (300 Deg)		Y		1	1.2	39	1.2	SX	-.8...	SY	1	SZ	-.5										
64	1.2D + 1.0Ev + 1.0Eh (330 Deg)		Y		1	1.2	39	1.2	SX	-.5	SY	1	SZ	-.8...										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N11	max	661.919	11	1364.913	44	1132.765	1	-.407	3	2.426	12	.189	6
2		min	-858.127	5	614.951	3	-911.79	7	-.907	44	-2.428	6	-.787	48
3	N26	max	408.349	9	27.48	15	403.361	1	0	51	0	51	0	51

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
4		min	-212.155	3	8.679	8	-624.335	7	0	1	0	1	0	1
5	Totals:	max	979.544	10	1377.335	29	1536.126	1						
6		min	-979.544	4	627.335	11	-1536.1...	7						

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

	Memb...	Shape	Code Check	Loc[ft]	LC	Shear Ch..	Loc[ft]	Dir	LC	phi*P...	phi*Pnt...	phi*M...	phi*Mn ...	Cb	Eqn
1	MP2A	PIPE_2.0	.435	4.333	1	.173	4.333		10	19360...	32130	1.872	1.872	1.677	H1...
2	CBC1	PIPE_3.0	.356	4.188	12	.110	3.063		12	53775...	65205	5.749	5.749	2.549	H1...
3	MP3A	PIPE_2.0	.221	4.333	12	.042	4.333		2	19360...	32130	1.872	1.872	1.939	H1...
4	M9	PIPE_2.0	.186	3.063	8	.154	3.063		6	20866...	32130	1.872	1.872	1.877	H1...
5	M2	HSS4X4X4	.178	.667	12	.093	.667	y	48	13925...	139518	16.181	16.181	1.67	H1...
6	MP1A	PIPE_2.0	.153	4.083	5	.137	2.479		6	17855...	32130	1.872	1.872	1.945	H1...
7	M13	L2.5x2.5x3	.070	0	7	.019	0	y	1	21033...	28381.5	.848	1.917	2.854	H2-1
8	M14	L2.5x2.5x3	.063	0	7	.022	0	y	15	25898...	28381.5	.848	1.917	1.997	H2-1

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Job Number:	A22721-0005.002.7191
Engineer:	MJT
Date:	2/24/2021
Site Name:	BROOKFIELD_WEST_CT
Site Number:	468687
Client Project 1:	20777630

Mount to Tower Connection Checks

(Version v5.3 - Effective Date 02/9/2021)

Total Populated Members: 14
Total Populated Nodes: 27

Risa File Path: G:\TOWER\227_Maser\2021\22721-0005_468687_BROOKFIELD_WEST_CT\22721-0005.002.7191_MDD_16244180\Risa3D\468687-VZW_MT_LOT_A_H.r3d

Settings

☐ Apply Capcity Normalization Per Section 15.5

Code:	TIA-222-H
Main Check(s) Performed:	Bolts & Welds
Consider Epoxy Capacity:	No

Risa-3D Member Reactions

☐ Input Forces Manually

Consider Tie-Backs:	No	
Consider Kickers:	No	
Consider Horizontal Members Only:	Yes	
Controlling Load Case:	12	
Controlling Member:	M2	
Member Orientation:	Horizontal	*(in global Risa coordinate system)*
Member Local Rotation:	0	*(about its longitudinal axis)*

	Shear (kip)	Moment (kip-ft)
Local Z Axis (Global Horizontal):	0.506	0.407
Local Y Axis (Global Vertical):	0.614	2.316
	Axial (kip)	**Torque (kip-ft)**
Local X Axis (Global Horizontal):	0.915	0.657

Note: Forces are relative to member local axis

Bolt Information

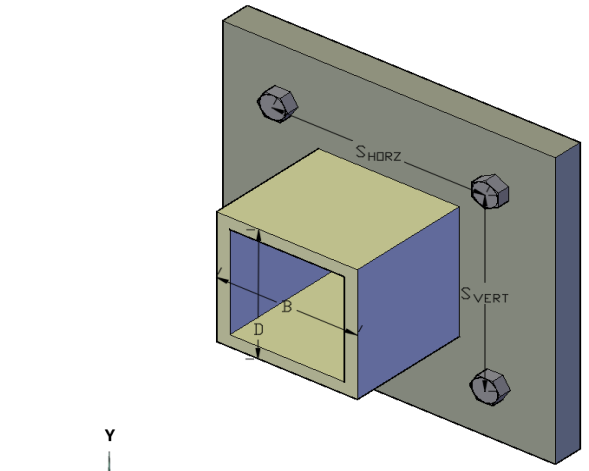
Type:	A325-N	
Diameter:	0.625	in
Quantity:	4	
Vertical Spacing (S_{VERT}):	8.00	in
Horizontal Spacing (S_{HORZ}):	8.00	in

Standoff Member Information

Type:	Rectangular	
Width (B):	4	in
Depth (D):	4	in
Thickness:	0.25	in
Weld Size:	0.25	in
Weld Size Assummed:	No	

Stiffener Information

Present:	No



Member Local Axis

Connection Type: Collar

Analysis Results

20.5% Pass

Bolt Capacity — 11.0%

Tension:	Applied Load: 2.27 kip Capacity: 20.71 kip	11.0%
Shear:	Applied Load: 0.55 kip Capacity: 12.43 kip	4.4%
Tension-Shear Interaction:	Applied Load: - Capacity: -	OK

Weld Capacity — 20.5%

	Applied Resultant Load: 1.14 kip/in Capacity: 5.57 kip/in	20.5%

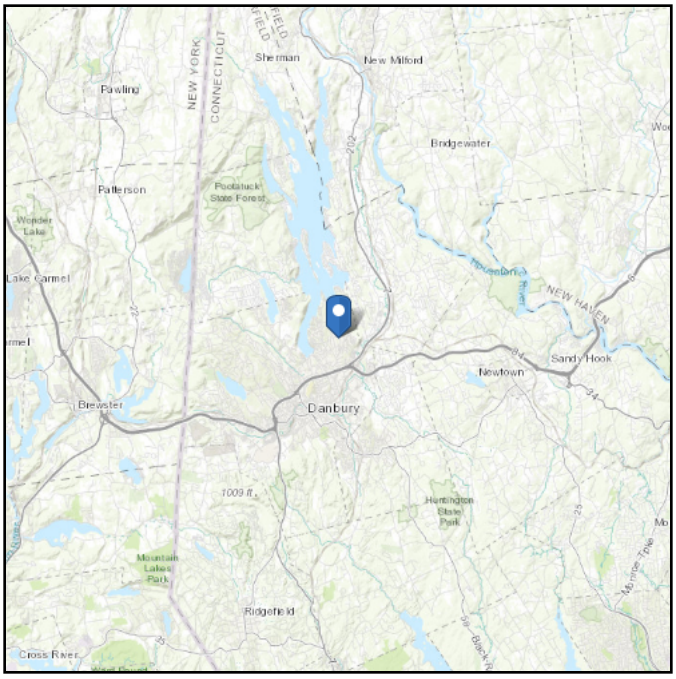
(Welds Controls)

Notes:
1. Connection is considered fixed.
2. Allowable capacity limit is 105%.
3. Calculations are in accordance with TIA-222-H and AISC 15th Ed.
4. Bolt tension reduction not required as tension and/or shear capacity is below 30%.

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	547.79 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.433103
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-73.431917



Wind

Results:

Wind Speed:	115 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	96 Vmph
Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4
Date Accessed:	Mon Jan 25 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

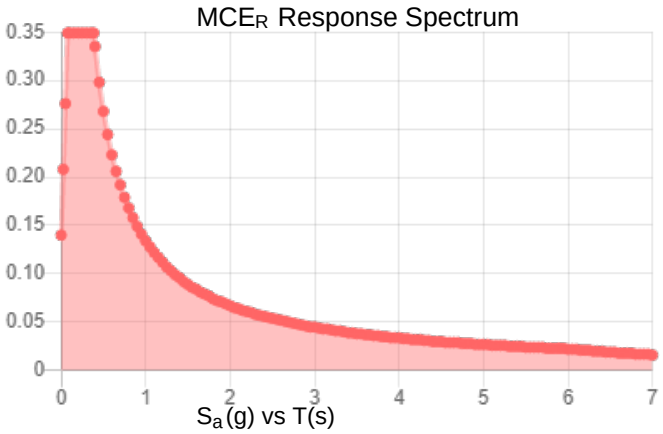
Seismic

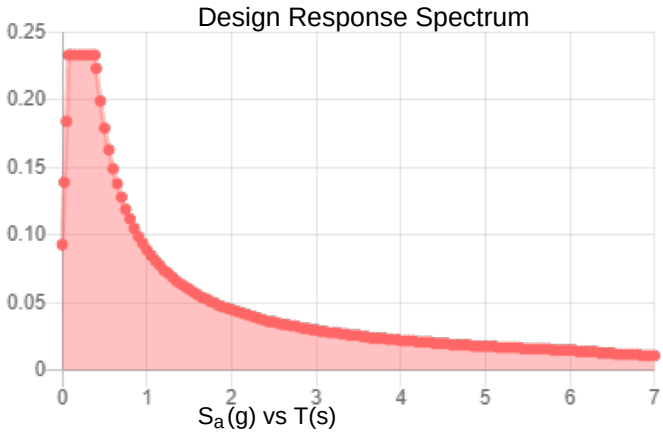
Site Soil Class: D - Default (see Section 11.4.3)

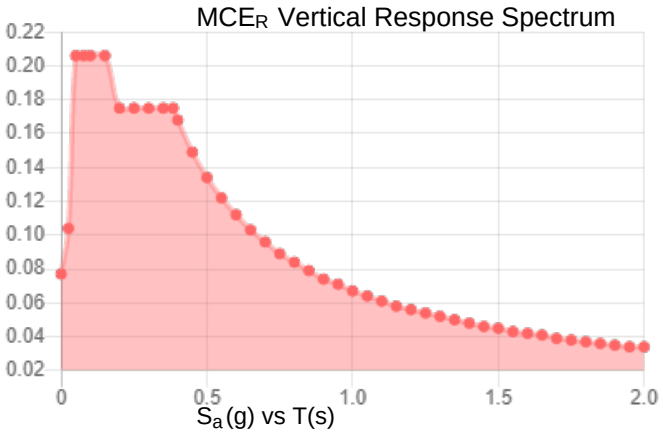
Results:

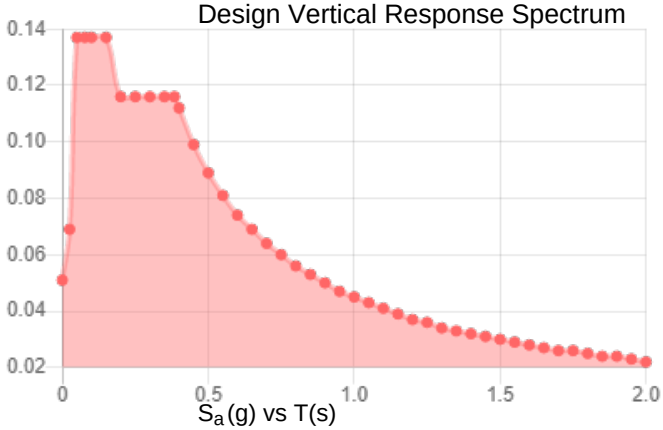
S_S :	0.218	S_{D1} :	0.089
S_1 :	0.056	T_L :	6
F_a :	1.6	PGA :	0.125
F_v :	2.4	PGA_M :	0.193
S_{MS} :	0.349	F_{PGA} :	1.55
S_{M1} :	0.134	I_e :	1
S_{DS} :	0.233	C_v :	0.737

Seismic Design Category B









Data Accessed: Mon Jan 25 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Jan 25 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

PAUL J. FORD & COMPANY

Subject	TIA-222-H Usage
Site Information	Site ID: 468687-VZW / BROOKFIELD_WEST_CT Site Name: BROOKFIELD_WEST_CT Carrier Name: Verizon Address: 52 STADLEY ROUGH RD DANBURY, Connecticut 06811, Fairfield County Latitude: 41.433103° Longitude: -73.431917°
Structure Information	Tower Type: Monopole Mount Type: 6-Ft T-Arm

To Whom It May Concern,

We respectfully submit the above referenced Antenna Mount Structural Analysis report in conformance with ANSI/TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures.

The 2015 International Building Code states that, in Section 3108, telecommunication towers shall be designed and constructed in accordance with the provisions of TIA-222. The TIA-222-H is the latest revision of the TIA-222 Standard, effective as of January 01, 2018.

As with all ANSI standards and engineering best practice is to apply the most current revision of the standard. This ensures the engineer is applying all updates. As an example, the TIA-222-H standard includes updates to bring it in line with the latest AISC and ACI standards and it also incorporates the latest wind speed map by ASCE 7 based on updated studies of the wind data.

The TIA-222-H standard clarifies these specific requirements for the antenna mount analysis such as modeling method, seismic analysis, 30-degree increment wind direction and maintenance loading. Therefore, it is our opinion that TIA-222-H is the most appropriate standard for antenna mount structural analysis and is acceptable for use at this tower site to ensure the engineer is taking into account the most current engineering standard available.

Sincerely,

Michael Timas

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Mount Modification

Purpose – to provide PJF 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 modification was completed in accordance with the modification drawings.
- Contractor shall relay any data that can impact the performance of the mount or the mount modification, this includes safety issues.

Base Requirements:

- Any special photos outside of the standard requirements will be indicated on the drawings
- Provide "as built drawings" showing contractor's name, preparer's signature, and date. Any deviations from the drawings (proposed modification) must be shown.
- Notation that all hardware was properly installed, and the existing hardware was inspected for any issues.
- Verification that loading is as communicated in the modification drawings. NOTE If loading is different than what is conveyed in the modification drawing contact PJF immediately.
- Each photo should be time and date stamped
- Photos should be high resolution and submitted in a Zip File and should be organized in the file structure as depicted in Schedule A attached.
- 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.
- The photos in the file structure should be uploaded **to** https://pmi.vzwsmart.com as depicted on the drawings

Photo Requirements:

- *Base and "During Installation Photos"*
  - Base pictures include
    - Photo of Gate Signs showing the tower owner, site name, and number
    - Photo of carrier shelter showing the carrier site name and number if available
    - Photos of the galvanizing compound and/or paint used (if applicable), clearly showing the label and name
  - "During Installation Photos if provided - must be placed only in this folder
- *Photos taken at ground level*
  - Overall tower structure before and after installation of the modifications
  - Photos of the appropriate mount before and after installation of the modifications; if the mounts are at different rad elevations, pictures must be provided for all elevations that the modifications were installed
- *Photos taken at Mount Elevation*
  - Photos showing each individual sector before and also after installation of modifications. Each entire sector must be in one photo to show in the inter-connection of members.
    - These photos should also certify that the placement and geometry of the equipment on the mount is as depicted on the sketch and table in the mount analysis
  - Close-up photos of each installed modification per the modification drawings; pictures should also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
  - Photos showing the measurements of the installed modification member sizes (i.e. lengths, widths, depths, diameters, thicknesses)
  - Photos showing the elevation or distances of the installed modifications from the appropriate reference locations shown in the modification drawings
  - Photos showing the installed modifications onto the tower with tape drop measurements (if applicable) (i.e. ring/collar mounts, tie-backs, V-bracing kits, etc.); if the existing mount elevation needs to be changed according to the modification drawings, a tape drop measurement shall be provided before the elevation change
  - Photos showing the safety climb wire rope above and below the mount prior to modification.
  - Photos showing the climbing facility and safety climb if present.

Material Certification:

- Materials utilized must be as per specification on the drawings or the equivalent as validated by PJF.
    - If the drawings are as specified on the drawings
        - The contractor should provide the packing list or the materials utilized to perform the mount modification
    - If an equivalent is utilized
        - It is required that the PJF certification of such is included in the contractor submission package. There may be an additional charge for this certification if the equivalent submission doesn't meet specifications as prescribed in the drawings.
- The contractor must certify that the materials meet these specifications by one of these methods.

☐ The Material utilized was as specified on the PJF Mount Modification Drawings and included in the Material certification folder is a packing list or invoice for these materials

☐ The material utilized was an "equivalent" and included as part of the contractor submission is the PJF certification, invoices, or specifications validating accepted status

Certifying Individual: Company _____

Name _____

Signature _____

Antenna & equipment placement and Geometry Confirmation:

- The contractor must certify that the antenna & equipment placement and geometry is in accordance with the antenna placement diagrams as included in this mount analysis.

☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the antenna placement diagrams as included in this mount analysis.

☐ The contractor notes that the equipment on the mount is not in accordance with the antenna placement diagrams and has accordingly marked up the diagrams or provided a diagram outlining the differences.

Certifying Individual: Company _____

Name _____

Signature _____

Special Instructions / Validation as required from the MA or Mod Drawings:

Issue:

Response:

Schedule A – Photo & Document File Structure

- VzW Site Number / Name
  - Base & “During Installation” Photos
  - Pre-Installation Photos
    - Alpha
    - Beta
    - Gamma
    - Ground Level
    - Tape Drop
  - Post-Installation Photos
    - Alpha
    - Beta
    - Gamma
    - Ground Level
    - Tape Drop
    - Photos of climbing facility and safety climb – If Present
  - Certifications – Submission of this document including certifications
  - Specific Required Additional Photos

Structure: 468687-VZW - BROOKFIELD_WEST_CT

Sector: **A**

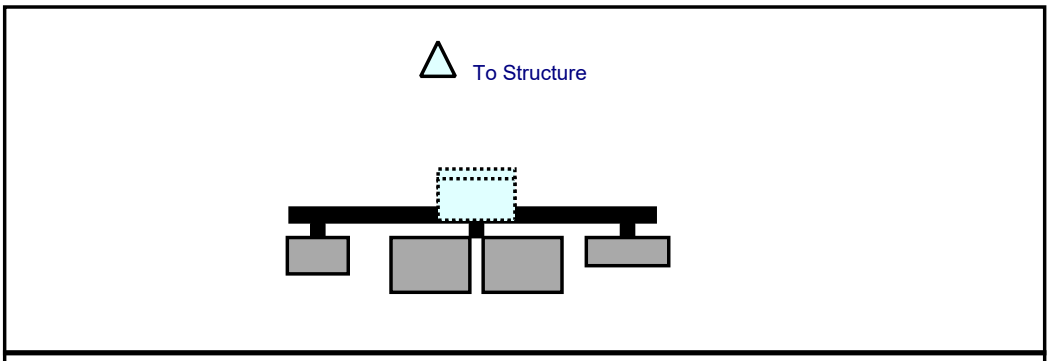
Structure Type: Monopole

Mount Elev: 98.75

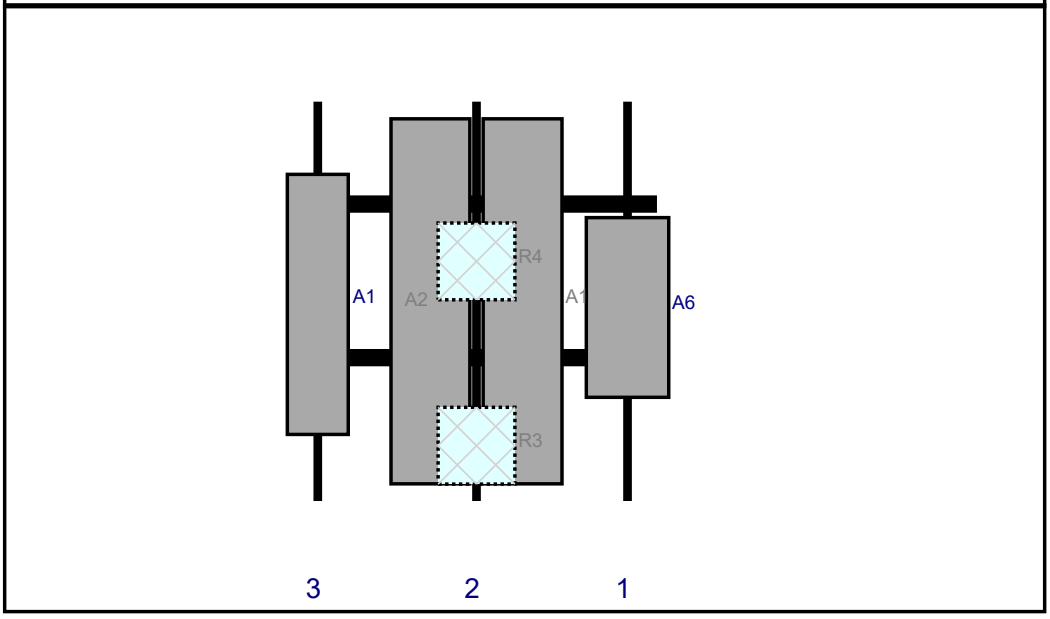
2/28/2021

PAUL J. FORD & COMPANY

Plan View

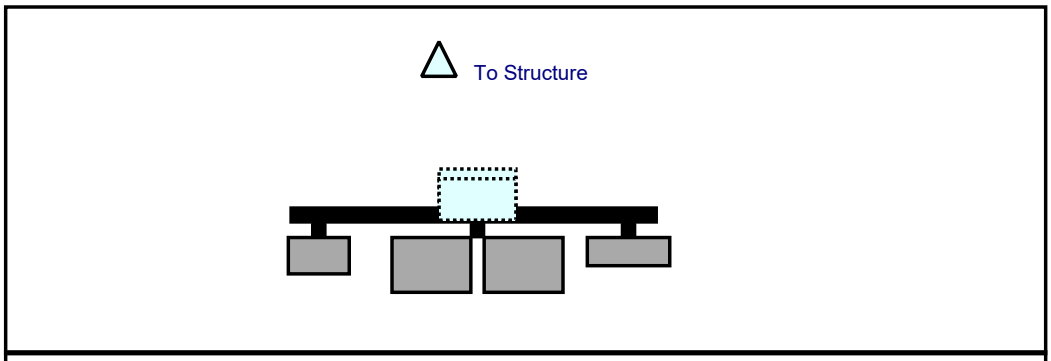


Front View
Loo ing at Structure

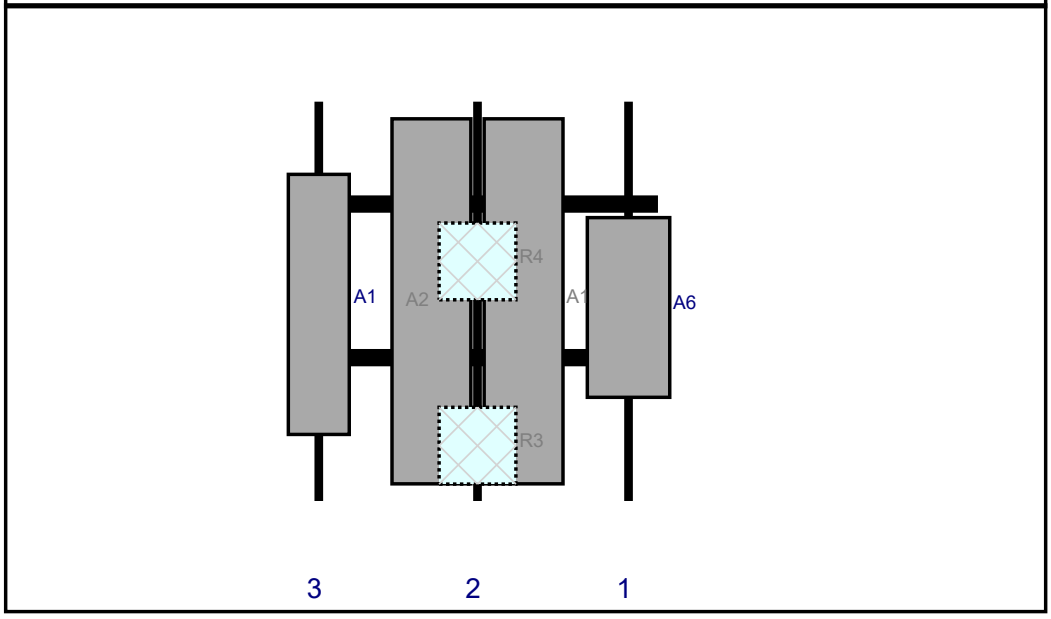


Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A6	VZS01	35.1	16.1	66.25	1	a	Front	40.2	0	Added	
A1	MX06FRO660-03	71.3	15.4	36.75	2	a	Front	39	9	Added	
A1	MX06FRO660-03	71.3	15.4	36.75	2	b	Front	39	-9	Added	
R3	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	36.75	2	a	Behind	67.2	0	Added	
R4	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	36.75	2	a	Behind	31.2	0	Added	
A2	DBXNH-6565A-VTM	50.8	11.9	5.75	3	a	Front	39.6	0	Retained	01/26/2021

Plan View



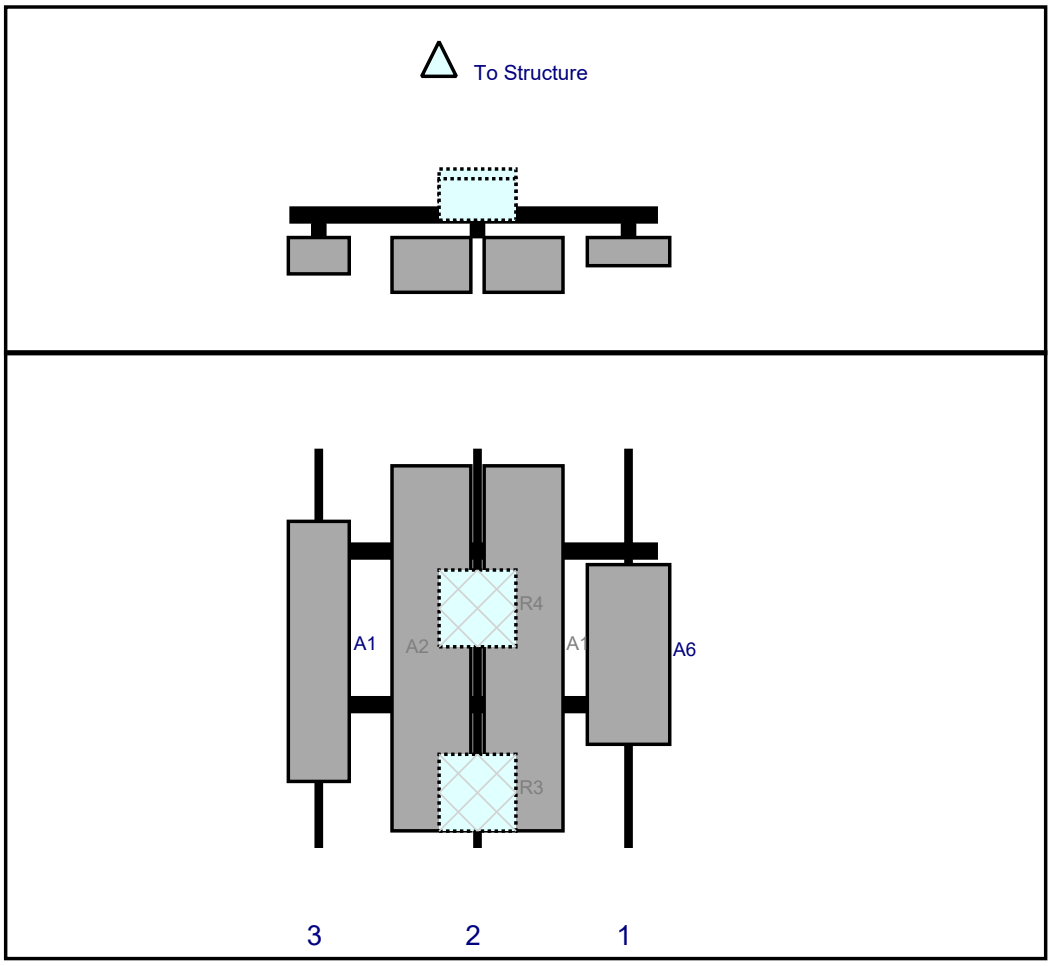
Front View
Loo ing at Structure



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
A6	VZS01	35.1	16.1	66.25	1	a	Front	40.2	0	Added	
A1	MX06FRO660-03	71.3	15.4	36.75	2	a	Front	39	9	Added	
A1	MX06FRO660-03	71.3	15.4	36.75	2	b	Front	39	-9	Added	
R3	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	36.75	2	a	Behind	67.2	0	Added	
R4	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	36.75	2	a	Behind	31.2	0	Added	
A2	DBXNH-6565A-VTM	50.8	11.9	5.75	3	a	Front	39.6	0	Retained	01/26/2021

Plan View

Front View
Loo ing 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
A6	VZS01	35.1	16.1	66.25	1	a	Front	40.2	0	Added	
A1	MX06FRO660-03	71.3	15.4	36.75	2	a	Front	39	9	Added	
A1	MX06FRO660-03	71.3	15.4	36.75	2	b	Front	39	-9	Added	
R3	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	36.75	2	a	Behind	67.2	0	Added	
R4	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	36.75	2	a	Behind	31.2	0	Added	
A2	DBXNH-6565A-VTM	50.8	11.9	5.75	3	a	Front	39.6	0	Retained	01/26/2021

MASER CONSULTING
— CONNECTICUT —

331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
T: 732.383.1950
www.maserconsulting.com

March 29, 2021

Mr. Andrew Leone
Verizon Wireless
20 Alexander Dr.
Wallingford, CT 06492

Re: Verizon Wireless antenna Model Clarification for CT Siting Council

Dear Mr. Leone,

This letter is intended to clarify and confirm the antenna naming convention used by Verizon Wireless as a part of an antenna upgrade project on numerous wireless facilities.

The antenna naming convention "Licensed Sub-6, L-Sub6, nL-Sub6, VZS01" and any other slight variants refer to the 64T64RMMU antenna manufactured by Samsung Electronics. These names are interchangeable and are used in various documents, including but not limited to the "Antenna Mount Analysis".

If you have any questions or comments, or require additional information, please do not hesitate to contact me.

Very truly yours,
MASER CONSULTING CONNECTICUT

Petros Toukalas
Connecticut Professional Engineer
License Number: 32577

MOUNT MODIFICATION DESIGN DRAWINGS

PSLC #468687;BROOKFIELD_WEST_CT

52 STADLEY ROUGH ROAD
DANBURY, CT 06811
FAIRFIELD COUNTY
LAT: 41° 25' 59.1"; LONG: -73° 25' 54.9"

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

VERIZON WIRELESS
118 FLANDERS RD (3RD FLOOR) WESTBOROUGH, MA 01581
PH: (508)439-3278

PROJECT CONTACTS

CLIENT:
VERIZON WIRELESS
CONTACT: ANDREW CANDIELLO AT ANDREW.CANDIELLO @VERIZONWIRELESS.COM
PH: (508) 439-3278

ENGINEER OF RECORD:
PJFMOUNT@PAULJFORD.COM

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
N-1	NOTES
SC-1	SAFETY CLIMB INFORMATION
S-1	MOUNT INFORMATION
S-2	MOUNT REINFORCING DETAILS

VZW MOUNT MOD KITS - APPROVED VENDORS			
VENDOR	CONTACT	EMAIL	PHONE NUMBER
PERFECT VISION	WIRELESS SALES	WIRELESSSALES@PERFECT-VISION.COM	(844) 884-6723
SITEPRO	PAULA BOSWELL	PAULA.BOSWELL@VALMONT.COM	(972) 236-9843
SABRE INDUSTRIES INC.	ANGIE WELCH	AKWELCH@SABREINDUSTRIES.COM	(866) 428-6937
METROSITE FABRICATORS, LLC	KENT RAMEY	KENT@METROSITELLC.COM	(706) 335-7045
COMMSCOPE	SALVADOR ANGUIANO	SALVADOR.ANGUIANO@COMMSCOPE.COM	(817) 304-7492

WIND DESIGN DATA	
REFERENCE STANDARD	ANSI/TIA-222-H-1-2019
ULTIMATE WIND SPEED (3-SECOND GUST)	115 MPH
ICE THICKNESS	1.0 IN
ICE WIND SPEED	50 MPH
MAINTENANCE WIND SPEED	30 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	C
TOPOGRAPHIC CATEGORY	1

SEISMIC DESIGN DATA	
SEISMIC IMPORTANCE FACTOR	1.00
S_S	0.218
S_1	0.056
S_{DS}	0.233
S_{D1}	0.089
SEISMIC DESIGN CATEGORY	B
R	2.0

** ADDITIONAL SPEC SHEETS INCLUDED IN PACKAGE FOR INSTALLATION REFERENCE ONLY

SPECIAL INSTRUCTIONS / VALIDATION AS REQUIRED FROM THE MA OR MOD DRAWINGS:

ISSUE: _____

_____

_____

RESPONSE: _____

_____

_____

CONTRACTOR PMI REQUIREMENTS	
PMI LOCATION	HTTPS://PMI.VZWSMART.COM
SMART TOOL PROJECT #	10041401
VZW LOCATION CODE (PSLC)	468687
PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT	

REFERENCED DOCUMENTS	
FAILING MOUNT ANALYSIS REPORT	
SMART TOOL PROJECT #	10032205
PJF PROJECT #	A22721-0005.001.7190
ANALYSIS DATE	1/26/2021

REV	DATE	DESCRIPTION

PSLC #468687;BROOKFIELD_WEST_CT
DANBURY, CT
MOUNT MODIFICATION DESIGN DRAWINGS

PROJECT No:	A22721-0005.002.7191
DRAWN BY:	MJT
DESIGNED BY:	MJT
CHECKED BY:	RMD
DATE:	2/28/2021

TITLE SHEET

T-1

V1.0 A22721-0005.002.7191.DWG

GENERAL NOTES:

1. THESE MOUNT MODIFICATION DRAWINGS ARE TO BE INSTALLED PER STRUCTURAL MODIFICATION REPORT BY PAUL J. FORD AND COMPANY DATED 2/28/2021

2. PAUL J. FORD AND COMPANY WAS NOT PROVIDED WITH THE EXACT LOCATION OF EVERY EXISTING ANTENNA MOUNT CONNECTION, CABLE CLIP, ETC THAT COULD POTENTIALLY INTERFERE WITH THE MODIFICATIONS AS INDICATED ON THESE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY THAT THE MATERIAL CAN BE INSTALLED AS SHOWN ON THESE DRAWINGS BEFORE FABRICATING ANY MATERIAL. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROPER FIT AND CLEARANCE OF THE REINFORCING MATERIAL IN THE FIELD. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT AS REPRESENTED ON THESE DRAWINGS, PAUL J. FORD AND COMPANY SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE STRUCTURAL SIGNIFICANCE OF THE DEVIATION.

3. WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE LOCAL BUILDING OFFICIALS FOR ANY INSPECTIONS THAT MAY BE REQUIRED.

4. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED ON THESE DRAWINGS. BY ACCEPTANCE OF THIS PROJECT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED TO DO THIS WORK IN THE JURISDICTION IN WHICH THE WORK IS TO BE PERFORMED.

5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION. ALL STRUCTURES ARE DESIGNED TO BE STABLE AND SELF-SUPPORTING AT THE COMPLETION OF CONSTRUCTION. THIS DRAWING DOES NOT INDICATE THE METHOD OF CONSTRUCTION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURES, METHODS, MEANS, TECHNIQUES, AND SEQUENCES TO ENSURE THE STABILITY AND SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS, AND THE ADEQUACY OF TEMPORARY OR INCOMPLETE CONNECTIONS DURING CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING THAT MAY BE NECESSARY AND ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING. SUCH MATERIAL IS NOT INDICATED ON THE DRAWINGS AND, IF PROVIDED, SHALL BE REMOVED, AS CONDITIONS PERMIT AND REMAIN THE PROPERTY OF THE CONTRACTOR.

6. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE STRUCTURE THAT MAY INTERFERE WITH THE INSTALLATION OF THE MODIFICATION SYSTEM WILL HAVE TO BE REMOVED AND RELOCATED, REPLACED, OR RE-INSTALLED AS REQUIRED AFTER THE MODIFICATION IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH OWNER, TESTING AGENCY, AND EOR.

7. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THE WORK.

8. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING STRUCTURES, EQUIPMENT AND UTILITIES. ANY DAMAGE TO EXISTING STRUCTURES, EQUIPMENT, AND UTILITIES AS A RESULT OF THE CONTRACTOR'S WORK OR FROM DAMAGE DUE TO OTHER CAUSES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

9. WORK SHALL BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 30-MPH) IN ACCORDANCE WITH OPERATIONAL WIND CONDITIONS PER TIA-322.

10. THE MOUNTING SYSTEM SHALL NOT BE USED AS A TIE OFF POINT.

11. THE STRUCTURAL ANALYSIS ASSUMES THAT ALL STRUCTURAL COMPONENTS ARE IN BRAND-NEW CONDITION, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. NO ALLOWANCE WAS MADE FOR ANY DAMAGED, MISSING, OR RUSTED MEMBERS. IF ANY OF THESE CONDITIONS ARE DISCOVERED, THE CONTRACTOR SHALL BRING THEM TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY OWNER AND EOR PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.

12. IF MATERIALS, QUANTITIES, STRENGTHS, OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH, OR SIZE INDICATED, SPECIFIED, OR NOTED SHALL BE PROVIDED.

13. OBSERVATION VISITS TO THE SITE BY OWNER AND/OR THE EOR SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.

14. ANY SUPPORT SERVICES PERFORMED BY THE EOR DURING CONSTRUCTION ARE SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING GENERAL PERFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTORS PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.

15. THE CLIMBING FACILITIES, SAFETY CLIMB, AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED, OR ALTERED WITHOUT THE APPROVAL OF THE EOR.

16. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MODIFICATION SYSTEM AND THE WORK HAS BEEN ACCEPTED BY THE OWNER, THE OWNER WILL BE RESPONSIBLE FOR THE LONG TERM/PERPETUAL INSPECTION AND MAINTENANCE OF THE STRUCTURE AND MODIFICATION SYSTEM.

17. DO NOT SCALE DRAWINGS.

18. THE MOUNTING SYSTEM SHALL NOT BE USED FOR RIGGING PURPOSES. IF RIGGING TO THE MOUNT IS REQUIRED, ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION), INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).

19. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED, UNO. CONFLICTING NOTES SHALL BE BROUGHT TO THE ATTENTION OF THE EOR.

20. IF REMOVAL OF EXISTING MODIFICATIONS IS REQUIRED PER THE MODIFICATION SCOPE, THE GC SHALL CLEAN AND COLD GALVANIZE ANY EXISTING EMPTY BOLT HOLES, UNO. IF ADDITIONAL UNEXPECTED, OVERSIZED, OR SLOTTED HOLES ARE FOUND, THE GC SHALL CONTACT THE EOR FOR GUIDANCE PRIOR TO PROCEEDING WITH THE MODIFICATION.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST ADDITION OF THE FOLLOWING REFERENCE STANDARDS:
   A. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
      "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
      "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS" AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS.
      "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
   B. BY THE AMERICAN WELDING SOCIETY (AWS):
      "STRUCTURAL WELDING CODE- STEEL D1.1"
      "STANDARD SYMBOLS FOR WELDING, BRAZING, AND NON-DESTRUCTIVE EXAMINATION"

2. NEW STEEL (UNLESS NOTED OTHERWISE) SHALL CONFORM TO THE REQUIREMENTS OF THE ASTM STANDARD SPECIFICATION FOR STRUCTURAL STEEL NOTED BELOW:
   W - ASTM A992 (50 KSI YIELD POINT MATERIAL)
   HSS RECTANGULAR - ASTM A500 GR. B (46 KSI YIELD POINT MATERIAL)
   HSS ROUND - ASTM A500 GR. B (42 KSI YIELD POINT MATERIAL)
   PIPE - ASTM A53 GR. B (35 KSI YIELD POINT MATERIAL)
   C, MC, L, PLATES, BARS & ALL OTHER STEEL - ASTM A36 (36KSI YIELD POINT MATERIAL)
   BOLTS - ASTM A325
   U-BOLTS - ASTM A307 GRADE A, OR SAE J429 GRADE 2
   THREADED RODS - ASTM A36
   NUTS - ASTM A563 GRADE DH
   WASHERS - ASTM F436 TYPE 1

3. ALL NEW STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123, ASTM 153/A153M, OR ASTM A653 G90.

4. ALL BOLTS, U-BOLTS, AND THREADED RODS SHALL BE PROVIDED WITH LOCK-WASHERS, OR LOCK-NUTS, OR PAL-NUTS TORQUED TO THE SNUG-TIGHT CONDITION AS DEFINED BY AISC.

5. ALL HOLES, EITHER PUNCHED OR DRILLED, IN THE EXISTING STEEL MEMBERS SHALL BE 1/16 INCH LARGER THAN THE BOLT DIAMETER, UNLESS NOTED OTHERWISE. BURNING OF MEMBERS SHALL NOT BE PERMITTED. SLOTTED HOLES ARE NOT PERMITTED. THE MINIMUM BOLT SPACING SHALL BE 3 TIMES THE BOLT DIAMETER AND THE MINIMUM EDGE DISTANCE SHALL BE 1.5 TIMES THE BOLT DIAMETER UNLESS NOTED OTHERWISE. ALL BOLT HOLES SHALL BE PLACED AT AISC STANDARD GAGE DIMENSIONS, UNLESS NOTED OTHERWISE.

6. IF ANY EXISTING ASTM A325 BOLTS ARE REMOVED, THEY MUST BE REPLACED WITH NEW A325 BOLTS OR GREATER.

7. ALL EXISTING PAINTED OR GALVANIZED SURFACES DAMAGED DURING CONSTRUCTION SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING BRUSH APPLIED PAINT (ZRC OR EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH CONFORMING TO ASTM A780.

8. ALL PARTS ARE TO MARKED WITH ITEM NUMBERS USING 3/4" HIGH STEEL STENCILS.

9. SHOP SHALL ASSEMBLE AND VERIFY FIT AND GAPS BEFORE BREAKDOWN FOR GALVANIZING.

10. NO FIELD WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL OF THE OWNER AND SUPERVISION BY THE INSPECTION/TESTING AGENCY.

11. ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CONTRACTOR TO AVOID 90 DEGREE CORNERS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUT.

12. ALL JOINTS ARE BEARING TYPE CONNECTIONS, UNO. IF NO BOLT LENGTH IS GIVEN IN THE BILL OF MATERIALS, THE CONNECTION MAY INCLUDE THREADS IN THE SHEAR PLANE, AND THE GC IS RESPONSIBLE FOR SIZING THE LENGTH OF THE BOLT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679
www.pauljford.com

VERIZON WIRELESS
118 FLANDERS RD (3RD FLOOR) WESTBOROUGH, MA 01581
PH: (508)439-3278

PSLC #468687;BROOKFIELD_WEST_CT
DANBURY, CT
MOUNT MODIFICATION DESIGN DRAWINGS

PROJECT No:	A22721-0005.002.7191
DRAWN BY:	MJT
DESIGNED BY:	MJT
CHECKED BY:	RMD
DATE:	2/28/2021

NOTES

N-1

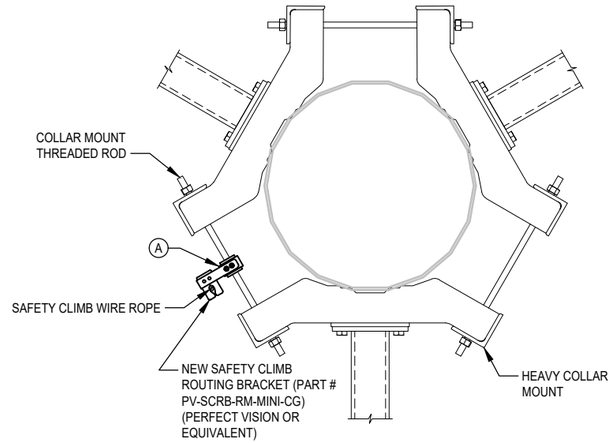
STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

2-28-21

REV	DATE	DESCRIPTION

V1.0 A22721-0005.002.7191.DWG

LOCATION OF SAFETY CLIMB



TYPE - 3 (1 / SC-1)

ITEM #	QTY	PART NUMBER	DESCRIPTIONS
A	1	PV-SCRB-RM-MINI-CG	SAFETY CABLE GUIDE (PERFECT VISION OR EQUIV)

NOTE: CONTRACTOR TO PROVIDE AS NECESSARY

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679
www.pauljford.com

VERIZON WIRELESS
118 FLANDERS RD (3RD FLOOR) WESTBOROUGH, MA 01581
PH: (508)439-3278

PSLC #468687;BROOKFIELD_WEST_CT
DANBURY, CT
MOUNT MODIFICATION DESIGN DRAWINGS

PROJECT No:	A22721-0005.002.7191
DRAWN BY:	MJT
DESIGNED BY:	MJT
CHECKED BY:	RMD
DATE:	2/28/2021

SAFETY CLIMB INFORMATION

SC-1

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER
2-28-21

REV	DATE	DESCRIPTION

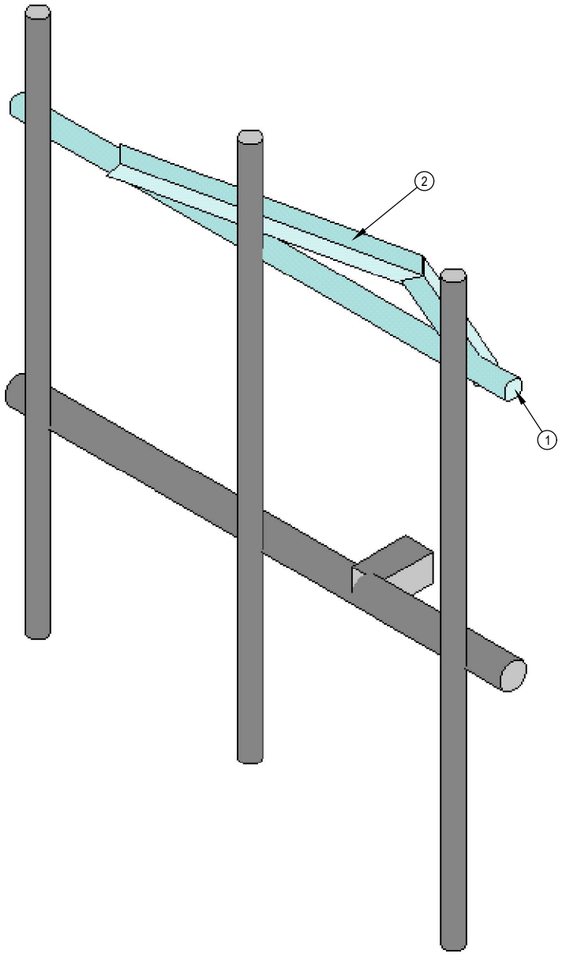
V1.0 A22721-0005.002.7191.DWG

NOTES:
1. CONTRACTOR TO VERIFY LOCATION OF EXISTING EQUIPMENT PRIOR TO INSTALLATION OF PROPOSED EQUIPMENT. NOTIFY EOR FOR ANY DEVIATIONS.
2. INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB OR ANY SYSTEM INSTALLED ON THIS STRUCTURE.

MOUNT MODIFICATION SCHEDULE

	ELEVATION	MOUNT MODIFICATION DESCRIPTION	REFERENCE SHEETS
(1)	96'-0"	INSTALL HORIZONTAL BRACING PIPE USING CROSSOVER PLATES AT EACH MOUNT PIPE LOCATION	S-1 & S-2
(2)		INSTALL V-STYLE KICKER KIT ON NEW MOUNT MEMBER	

PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSE ONLY AND SHALL NOT BE USED FOR FABRICATION.



OVERALL MODIFIED MOUNT VIEW 1/S-1
SCALE: NTS

PICTURE OF THE MOUNTING FRAME 2/S-1
SCALE: NTS

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

VERIZON WIRELESS
118 FLANDERS RD (3RD FLOOR) WESTBOROUGH, MA 01581
PH: (508)439-3278

PSLC #468687;BROOKFIELD_WEST_CT
DANBURY, CT
MOUNT MODIFICATION DESIGN DRAWINGS

PROJECT No:	A22721-0005.002.7191
DRAWN BY:	MJT
DESIGNED BY:	MJT
CHECKED BY:	RMD
DATE:	2/28/2021

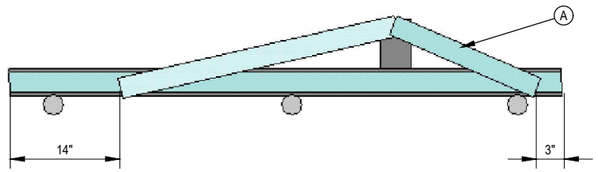
MOUNT INFORMATION

S-1

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED PROFESSIONAL ENGINEER
2-28-21

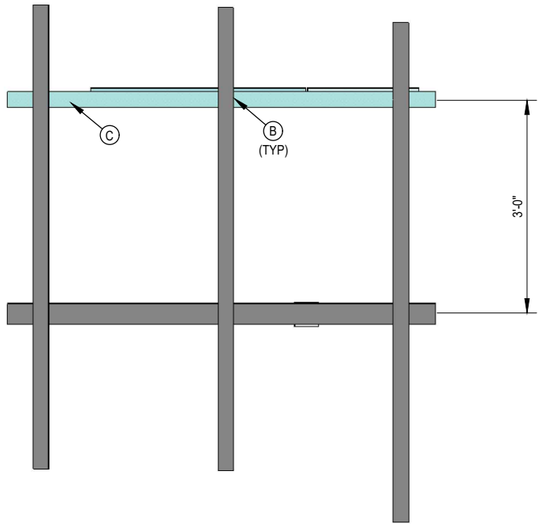
REV	DATE	DESCRIPTION

V1.0 A22721-0005.002.7191.DWG

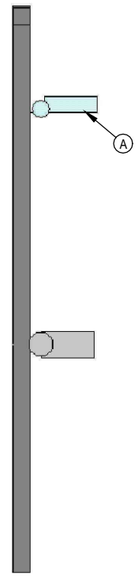


TOP DOWN VIEW 2 / S-2
SCALE: NTS

MATERIAL LIST			
PART #	QTY	MATERIAL	LENGTH
A	1	SITEPRO1 PRK-SFS - V-BRACING KIT	N/A
B	9	VZWSMART-MSK1 - CROSSOVER PLATE	N/A
C	3	P2STD (2.375" OD x 0.15" THK) PIPE	6'-0"
THE ABOVE MATERIAL LIST IS PROVIDED TO CLEARLY IDENTIFY MEMBER SIZES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROPER FIT AND CLEARANCE OF THE REINFORCING MATERIAL IN THE FIELD. THE CONTRACTOR IS EXPECTED TO PERFORM A SITE VISIT BEFORE FABRICATING ANY MATERIAL.			
THE ABOVE MATERIAL LIST IS FOR THREE SECTORS			
FIELD CUTTING/TRIMMING MAY BE REQUIRED FOR FIT UP. CONTACT EOR FOR APPROVAL UNLESS NOTED OTHERWISE			



FRONT VIEW 1 / S-2
SCALE: NTS



SIDE VIEW 3 / S-2
SCALE: NTS

NOTE: SOME EXISTING MOUNT MEMBERS NOT SHOWN FOR CLARITY

REV	DATE	DESCRIPTION

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

VERIZON WIRELESS
118 FLANDERS RD (3RD FLOOR) WESTBOROUGH, MA 01581
PH: (508)439-3278

PSLC #468687;BROOKFIELD_WEST_CT
DANBURY, CT
MOUNT MODIFICATION DESIGN DRAWINGS

PROJECT No:	A22721-0005.002.7191
DRAWN BY:	MJT
DESIGNED BY:	MJT
CHECKED BY:	RMD
DATE:	2/28/2021

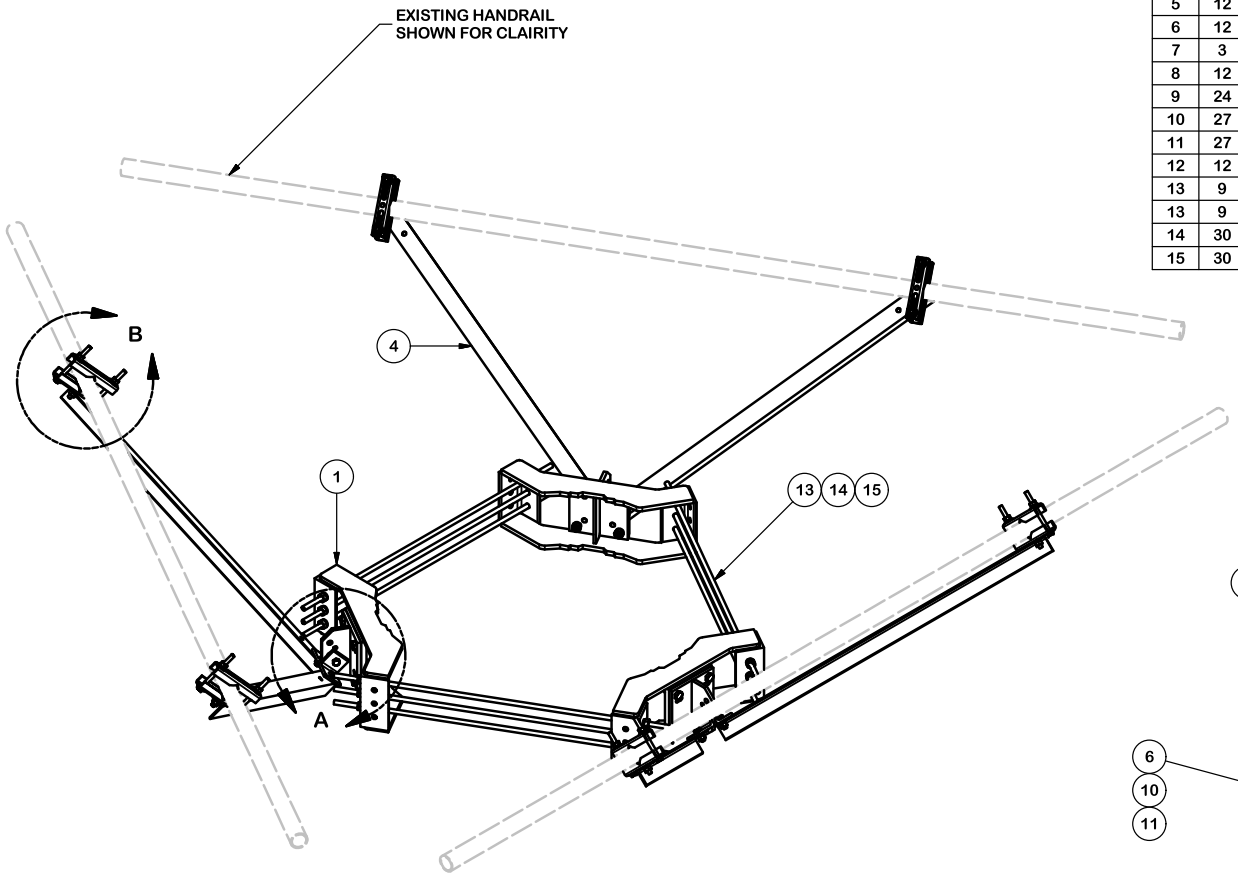
MOUNT REINFORCING DETAILS

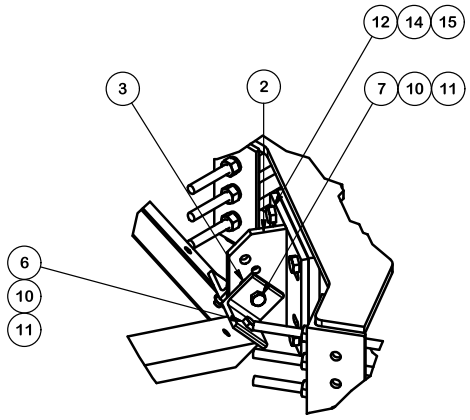
S-2

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER
2-28-21

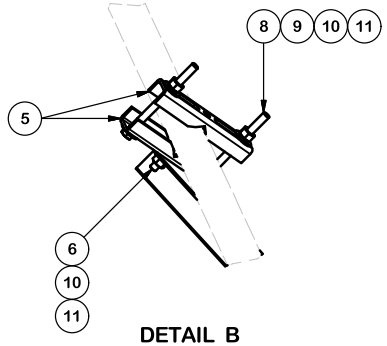
V1.0 A22721-0005.002.7191.DWG

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	3	X-TBW	T-BRACKET WELDMENT		13.60	40.80
3	6	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3 in	1.86	11.15
4	6	X-232697	TRPD-HD DIAGONAL ANGLE - SITE PRO 1	52 1/2 in	14.35	86.08
5	12	X-STU	STIFF ARM CHANNEL BRACKET	8 1/2 in	1.37	16.46
6	12	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	1.77
7	3	G12212	1/2" x 2-1/2" HDG HEX BOLT GR5	2 1/2 in	0.20	0.61
8	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
9	24	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.82
10	27	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.38
11	27	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.93
12	12	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	3.75
13	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	0.40	3.59
13	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)	48 in	0.40	3.59
14	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
15	30	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	3.90
					TOTAL WT. #	587.71





DETAIL A



DETAIL B

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	SP1	BC	10/23/2017

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION: HANDRAIL REINFORCEMENT KIT

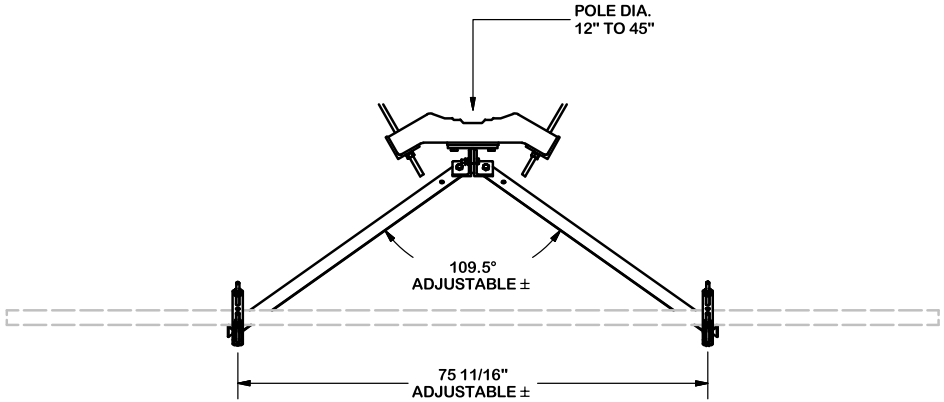
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

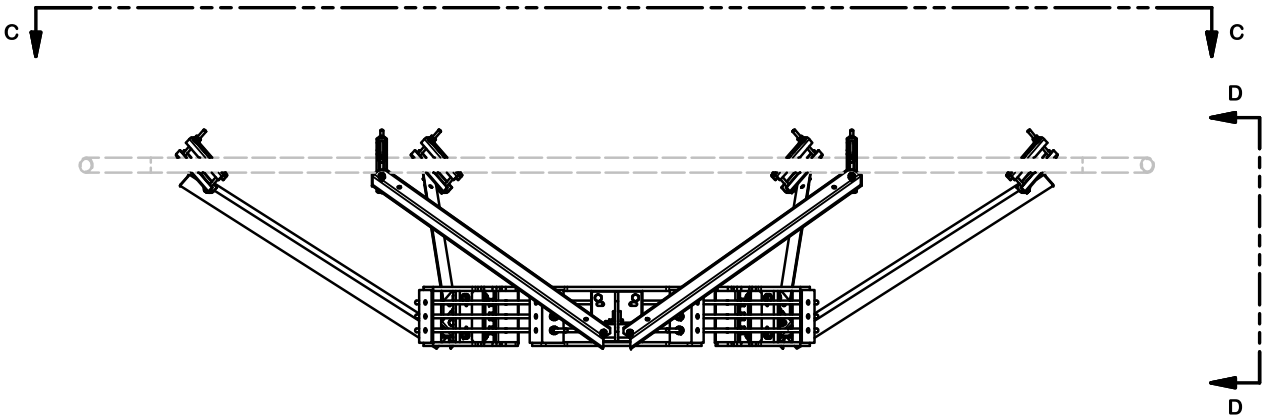
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
SP1	CSL3 2/23/2017	3RD PARTY	PRK-SFS	1 OF 3

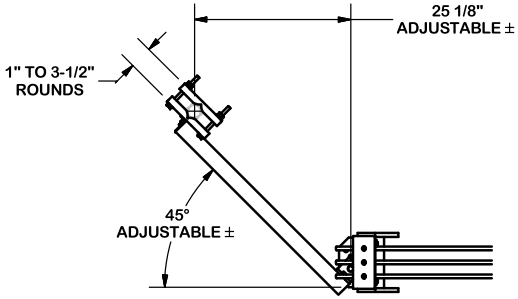
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	SHOP	BMC 3/16/2017	PRK-SFS



PARTIAL VIEW C-C

VERTICAL POSITION





PARTIAL VIEW D-D

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	SP1	BC	10/23/2017

REVISION HISTORY

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION: HANDRAIL REINFORCEMENT KIT

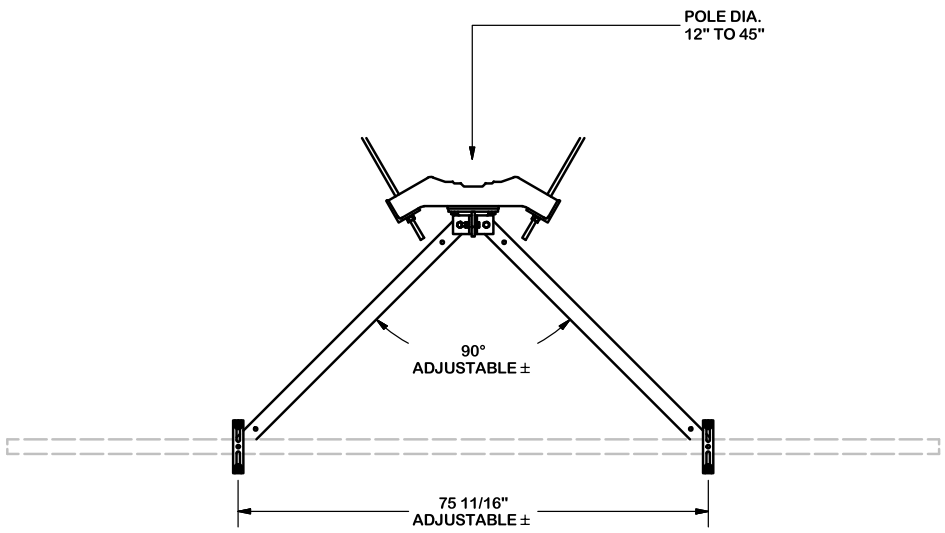
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

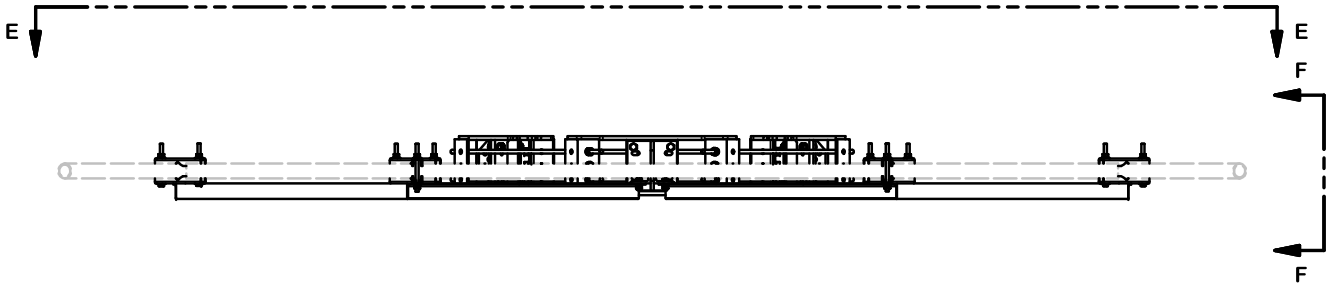
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
SP1	CSL3 2/23/2017	3RD PARTY	PRK-SFS

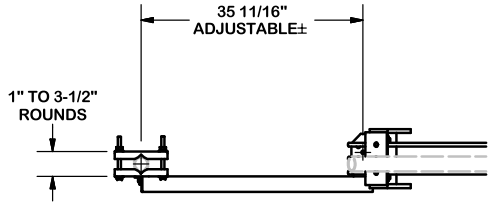
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	SHOP	BMC 3/16/2017	PRK-SFS



PARTIAL VIEW E-E

HORIZONTAL POSITION





PARTIAL VIEW F-F

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	SP1	BC	10/23/2017

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

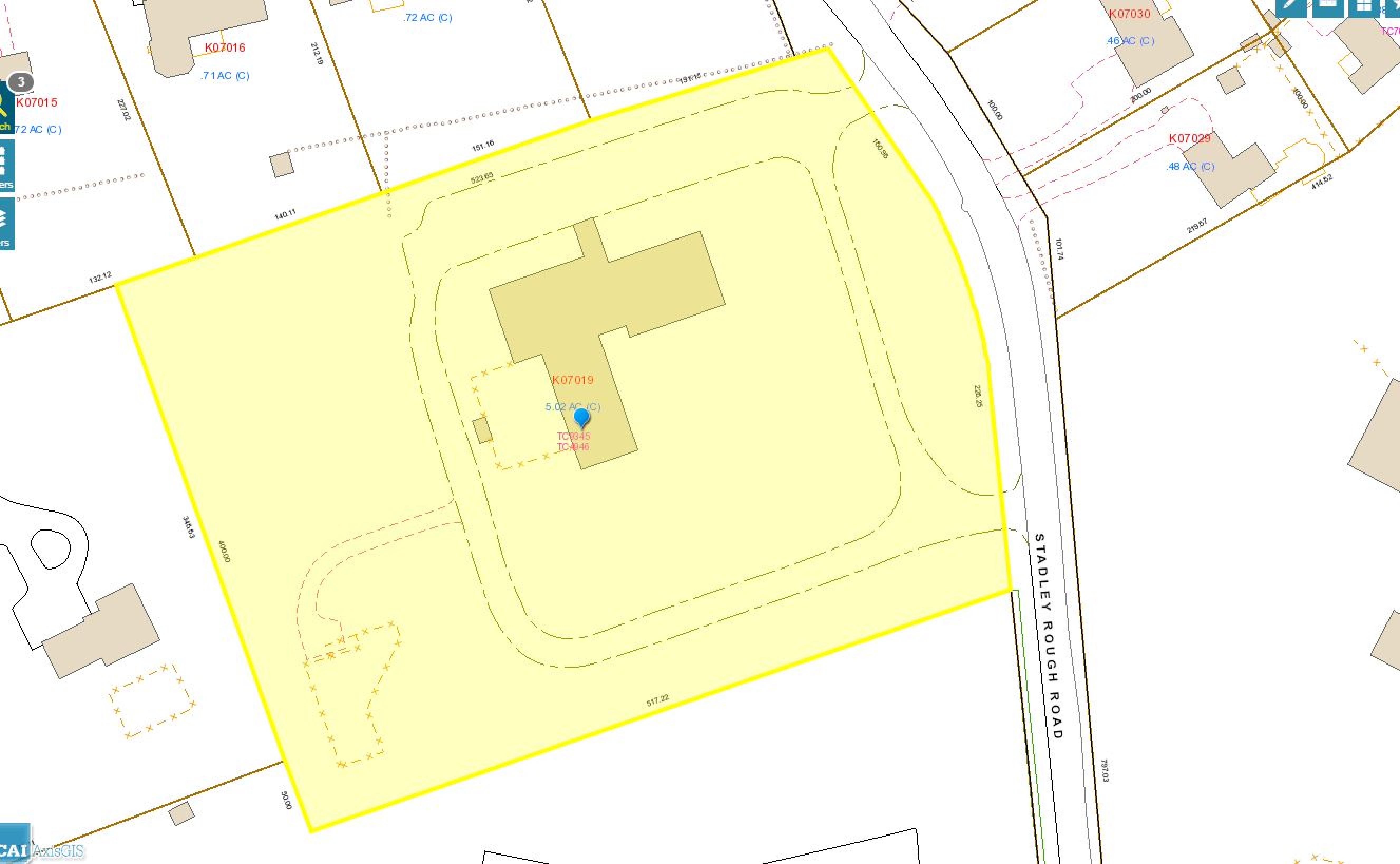
DESCRIPTION: HANDRAIL REINFORCEMENT KIT

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
SP1	CSL3 2/23/2017	3RD PARTY	PRK-SFS

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	SHOP	BMC 3/16/2017	PRK-SFS

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

ATTACHMENT 5


.72 AC (C)
K07016
.71 AC (C)
K07015
K07030
.46 AC (C)
K07029
.48 AC (C)
K07019
STADLEY ROUGH ROAD
151.16
140.11
132.12
517.22
400.00
345.53
90.00
219.67
414.52
101.74
100.00
200.00
226.25
797.03
CAI AxisGIS

Danbury,CT

52 STADLEY ROUGH RD

Location
52 STADLEY ROUGH RD
Mblu
K07/ / 19/ 1/
Acct#
1
Owner
CHRIST THE SHEPHERD CHURCH PCA
Assessment
$173,800
Appraisal
$248,300
PID
128447
Building Count
1

Current Value

Appraisal

Valuation Year	Improvements	Land	Total
2020	$232,200	$16,100	$248,300

Assessment

Valuation Year	Improvements	Land	Total
2020	$162,500	$11,300	$173,800

Owner of Record

Owner CHRIST THE SHEPHERD CHURCH PCA
Co-Owner
Address 52 STADLEY ROUGH RD
DANBURY, CT 06811
Sale Price $450,000
Book & Page 1948/ 939
Sale Date 07/25/2007
Instrument 25

Ownership History

Ownership History

Owner	Sale Price	Book & Page	Instrument	Sale Date
CHRIST THE SHEPHERD CHURCH PCA	$450,000	1948/ 939	25	07/25/2007

Building Information
Building 1 : Section 1
Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes

Field	Description

Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplaces	
Whirlpool	
Addn'l Kitchen	
Bsm Gar	

Fin Bsm Area	
Fin Bsm Qual	
Nhbd	
MH Park	

Building Photo

Building Layout

Building Sub-Areas (sq ft) Legend

Code	Description	Gross Area	Living Area
UST	Unf. Storage	3,616	0
		3,616	0

Extra Features

Extra Features Legend

No Data for Extra Features

Land

Land Use

Use Code	200V
Description	Commercial MDL-00
Zone	RA40
Neighborhood	3000

Alt Land Appr	No
Category	
Land Line Valuation	
Size (Acres)	0
Frontage	0
Depth	0
Assessed Value	$11,300
Appraised Value	$16,100

Outbuildings

Outbuildings Legend

Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
	CELL TOWER AREA			3498	$232,200	1

Valuation History

Appraisal

Valuation Year	Improvements	Land	Total
2019	$232,200	$16,100	$248,300
2018	$232,200	$16,100	$248,300
2017	$232,200	$16,100	$248,300

Assessment

Valuation Year	Improvements	Land	Total
2019	$162,500	$11,300	$173,800
2018	$162,500	$11,300	$173,800
2017	$162,500	$11,300	$173,800

closecloseclose

ATTACHMENT 6

UNITED STATES POSTAL SERVICE®

BROOKFIELD WEST

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		5	OLD STATE HOUSE STATION 06103 JUN 21 2021 USPS neopost 06/21/2021 US POSTAGE $003.55⁰ ZIP 06103 041L1220937
	Postmaster, per *(name of receiving employee)*	10	

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Joseph M. Cavo, Mayor City of Danbury 155 Deer Hill Avenue Danbury, CT 06810				
2.	Sharon Calitro, Director Planning and Zoning City of Danbury 155 Deer Hill Avenue Danbury, CT 06810				
3.	Robert Yamin, Esq., Chief Legal Officer City of Danbury 155 Deer Hill Avenue Danbury, CT 06810				
4.	Jose and Christina Carvalheiro 125 Stadley Rough Road Danbury, CT 06811				
5.	Christ The Shepherd Church PCA 52 Stadley Rough Road Danbury, CT 06811				
6.					