STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP	:	SUB-PETITION NO. 1133
D/B/A VERIZON WIRELESS FOR	:	71 PLEASANT VIEW ROAD
MODIFICATIONS TO AN EXISTING	:	DERBY, CT
WIRELESS TELECOMMUNICATIONS	:	
FACILITY AT 71 PLEASANT VIEW ROAD	:	
IN DERBY, CONNECTICUT	:	OCTOBER 19, 2022

SUB-PETITION FOR DECLARATORY RULING:
ELIGIBLE FACILITIES REQUEST FOR MODIFICATIONS
THAT WILL NOT SUBSTANTIALLY CHANGE THE
PHYSICAL DIMENSIONS OF AN EXISTING BASE STATION

I. Introduction

Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, codified at 47 U.S.C. § 1455(a) ("Section 6409(a)") and the October 21, 2014 Report and Order (FCC-14-153) issued by the Federal Communications Commission ("FCC") (the "FCC Order"), Cellco Partnership d/b/a Verizon Wireless ("Cellco") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Sub-Petition") that the installation of replacement antennas and related telecommunications equipment at the existing wireless telecommunications base station at 71 Pleasant View Road in Derby, Connecticut (the "Property") constitutes an Eligible Facilities Request ("EFR") under the FCC Order. Cellco identifies this site as its "Derby North Facility". The Property is a 15.88-acre parcel owned by Our Lady, Queen of the Apostles Parish (the "Property Owner").

II. Factual Background

The existing facility, approved by the Council in Docket No. 307, consists of a 120-foot flagpole tower within a fenced compound in the southeast portion of the Property. The tower is

shared by Dish, T-Mobile, Cellco and Sprint. All antennas are located within an RF transparent screening shroud 27-inches in diameter. Equipment associated with the existing antennas is located on the ground adjacent to the flagpole tower. Cellco's use of the tower was approved by the Council in 2007 in EM-VER-037-070508. Included in Attachment 1 are copies of the Council's Decision and Order in Docket No. 307 and EM-VER-037-070508.

III. Cellco's Proposed Facility Modifications

Cellco is licensed to provide wireless telecommunications services in the 700 MHz, 800 MHz, 1900 MHz, 2100 MHz and 3000 MHz frequency ranges in Derby and throughout the State of Connecticut. Cellco intends to remove its three (3) existing antennas and install three (3) model APXVBLL09B antennas at the 107.8-foot level and three (3) model MT6407 antennas at the 103-foot level on the tower. To accommodate Cellco's proposed antenna modifications, the existing antenna screening shroud around Cellco's antennas will need to be replaced with a larger (36" diameter) shroud. No changes to Cellco's ground-mounted equipment are proposed at this time.

Project Plans and Specifications for Cellco's antennas for the proposed Derby North Facility modifications are included in Attachment 2. According to the attached Structural Analysis ("SA") and Mount Analysis ("MA"), the existing tower, tower foundation and the existing mounting brackets can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 3.

IV. Discussion

A. The Proposed Modification Will Not Cause a Substantial Change to the Physical Dimensions of the Existing Base Station

Section 6409(a) provides, in relevant part, that "a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless

tower or base station that does not substantially change the physical dimensions of such tower or base station." Pursuant to the FCC Order, the proposed modification does not substantially change the physical dimensions of the base station if the following criteria are satisfied.

1. *The proposed modified facility will not increase the height of the tower by more than ten (10) percent of the height.* Cellco's proposed antenna and antenna shroud modifications does not require an increase in the height of the existing flagpole tower.

2. *The proposed facility modification will not protrude from the edge of the structure more than six (6) feet.* Cellco's antennas will be located inside a 36" diameter antenna screening shroud. The new antennas will not, therefore, protrude more than six (6) feet from the face of the tower.

3. *The proposed facility does not involve installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets.* No changes are proposed to Cellco's ground equipment as part of these facility modifications. All existing Cellco equipment is located inside an equipment shelter.

4. *The proposed facility does not entail any excavation or deployment outside the current site of the base station.* Cellco's proposed facility modifications will remain within the limits of the Property and the existing fenced compound.

5. *The proposed facility does not defeat the existing concealment elements of the base station.* The existing facility consists of a flagpole tower. All antennas on the tower are currently located within an antenna screening shroud, 27-inch in diameter. To accommodate Cellco's new antennas, the diameter of the shroud around its antennas will need to increase from 27 inches to 36 inches. Cellco's antennas will remain concealed behind a screening shroud, consistent with the existing concealment elements.

6. *The proposed facility complies with conditions associated with the prior approval of construction or modification of the base station.* Cellco's proposed facility modifications are consistent with the Siting Council's approval in EM-VER-037-070508 and Docket No. 307.

B. FCC Compliance

Included in Attachment 4 is a cumulative power density calculation table and Cellco's general power density for its proposed modified facility confirming that the facility will operate within the FCC safety standards for radio frequency emissions.

C. Notice to the City, Property Owner and Abutting Landowners

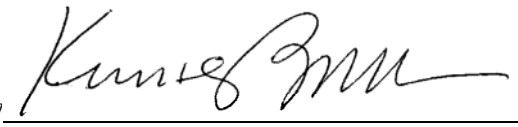
On October 19, 2022, a copy of this Sub-Petition was sent to Derby's Mayor, Richard Dziekan; Joseph Ballaro, Derby's Building Official; and the Property Owner. Copies of the letters sent to Mayor Dziekan, Joseph Ballaro and Our Lady, Queen of the Apostles are included in Attachment 5. A copy of this Sub-Petition was also sent to the owners of land that abuts the Property. A sample abutter's letter and the list of those abutting landowners who were sent notice and a copy of this filing is included in Attachment 6.

V. Conclusion

Based on the information provided above, Cellco respectfully submits that the proposed modification of the existing base station at the Property constitutes an "eligible facilities request" under Section 6409(a) and the FCC Order.

Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

By 

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1

DOCKET NO. 307 – National Grid Communications, Inc. d/b/a Gridcom application for a Certificate of Environmental Compatibility and Pubic Need for the construction, operation, and maintenance of a telecommunications facility located at one of two sites at 71 Pleasant View Road, Derby, Connecticut.	}	Connecticut Siting Council April 27, 2006

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to National Grid Communications, Inc. d/b/a Gridcom, hereinafter referred to as the Certificate Holder, for a telecommunications facility at Site A, 71 Pleasant View Road, Derby, Connecticut. The Council denies certification of Site B, 71 Pleasant View Road, Derby, 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 no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Omnipoint Holdings, Inc. (T-Mobile) and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level. The height at the top of the antennas shall not exceed 120 feet above ground level.

2. 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 Derby 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 not to exceed 40-feet by 40-feet, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. Prior to submission of the D&M Plan to the Council, the Certificate Holder shall discuss a tower design at this site with the City of Derby. The Town and Certificate Holder shall agree upon a tower design, but any differences would be resolved by the Council.

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

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

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

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

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

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

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

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

12. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of 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 Connecticut Post, The New Haven Register and Valley Gazette.

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**
National Grid Communications, Inc. d/b/a Gridcom	David Vivian Site Development Manager Gridcom 733 Chapin Street, Suite 200F Ludlow, MA 01056 Lucia Chiocchio, Esq. Cuddy & Feder LLP 90 Maple Avenue White Plains, NY 10601-5196
Intervenor	**Its Representative**
Omnipoint Communications, Inc.	Kenneth Ira Spigle, Esq. Attorney at Law 687 Highland Avenue, Suite 1 Needham, MA 02494
Party	**Its Representative**
City of Derby	Joseph T. Coppola, Esq. Karanian & Catalano 2 Corporate Drive, Suite 201 Trumbull, CT 06611 Anthony Staffieri, Mayor City Hall 1 Elizabeth Street Derby, CT 06418
Intervenor	**Its Representative**
Pleasant View Hilltop Committee	Nancy Marren 195 Sentinel Hill Road Derby, CT 06418

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
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

May 23, 2007

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

RE: **EM-VER-037-070508** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 71 Pleasant View Road, Derby, Connecticut.

Dear Attorney Baldwin:

At a public meeting held on May 22, 2007, the Connecticut Siting Council (Council) acknowledged your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated May 8, 2007, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

Thank you for your attention and cooperation.

Very truly yours,

Daniel F. Caruso

Daniel F. Caruso
Chairman

DFC/MP/laf

c: The Honorable Anthony Staffieri, Mayor, City of Derby
David Kopjanski, Building Official, City of Derby
National Grid Communications, Inc.
Christine Farrell, T-Mobile Inc.

ATTACHMENT 2

verizon

WIRELESS COMMUNICATIONS FACILITY

SITE NAME:
DERBY NORTH CT

SBA SITE # CT13616-A
71 PLEASANT VIEW RD.
DERBY, CT 06418

ANTENNA MODIFICATION

PROJECT SUMMARY	
SITE NAME:	DERBY NORTH CT
SITE ADDRESS:	71 PLEASANT VIEW RD. DERBY, CT 06418
PROPERTY OWNER:	OUR LADY, QUEEN OF THE APOSTLES PARISH 212 ELIZABETH ST. DERBY, CT 06418
TOWER OWNER/MGMT:	SBA # CT13616-A
PARCEL ID:	5-6-101 & 113
COORDINATES:	41° 18' 54.1512" N 73° 03' 51.5304" W
VERIZON CONSTRUCTION:	WALTER CHARCZYNSKI (860) 306-1806
VERIZON REAL ESTATE:	ALEX TYURIN (860) 550-3195

AERIAL MAP

SHEET INDEX	
DE-1	TITLE SHEET
DE-2	SITE LAYOUT & ELEVATION
DE-3	ANTENNA PLANS & ELEVATION
DE-4	CONCEALMENT RADOME SECTION & DETAILS
DE-5	RF PLUMBING DIAGRAM & B.O.M.
DE-6	GENERAL CONSTRUCTION NOTES

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WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-4524
onair@optonline.net

LICENSURE

STATE OF CONNECTICUT
DAVID A. WEINPAHL
NO. 22144
LICENSED
LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS		
0	06.08.22	REVIEW
1	06.09.22	REVISED RF DESIGN
2	06.14.22	REVISED FOR SBA REVIEW
3	10.17.22	REVISED FOR CSC FILING
NO	DATE	DISCRIPTION

DRAWN BY:	MF
CHECKED BY:	DW

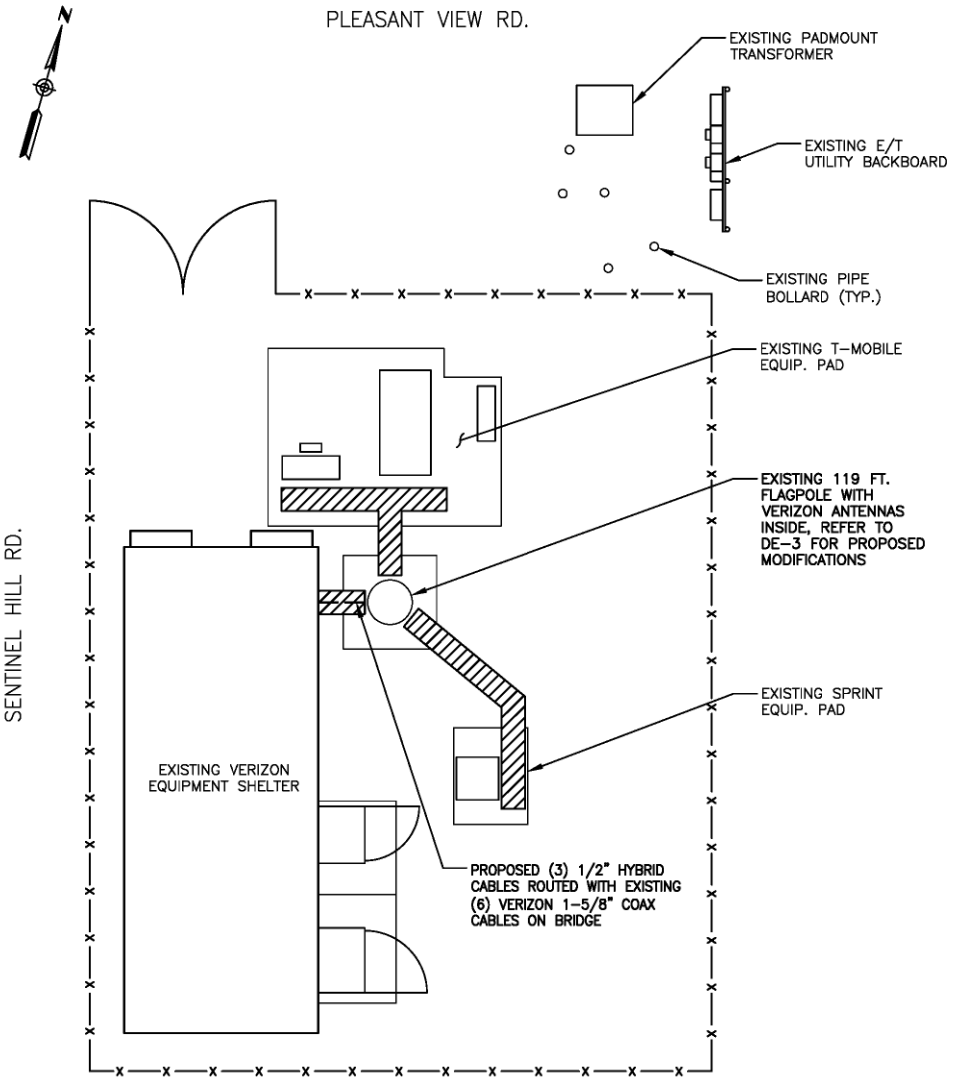
PROJECT NAME:
ANTMO
MT6407-850-LTE
DESIGN EXHIBITS

SITE NAME:
DERBY NORTH CT

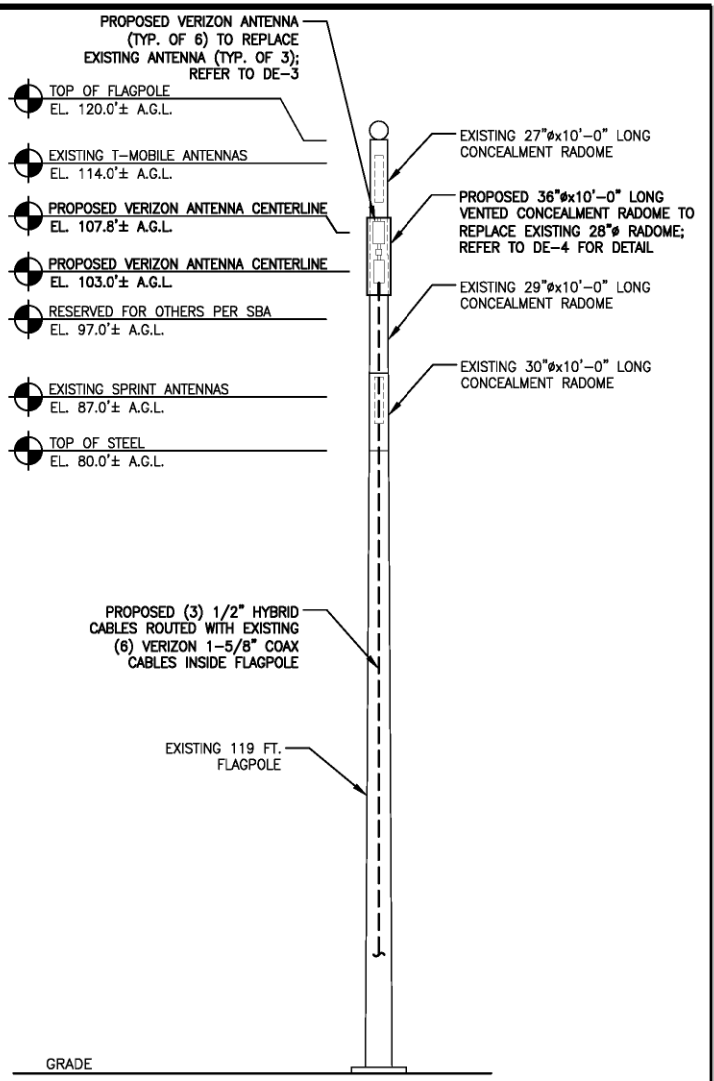
SITE ADDRESS:
SBA SITE # CT13616-A
71 PLEASANT VIEW RD.
DERBY, CT 06418

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
DE-1



1 DE-2 **SITE LAYOUT**
Scale: 1/8" = 1'-0"



2 DE-2 **ELEVATION**
Scale: 1/8" = 1'-0"

NOTES:
1. SITE LAYOUT IS COMPILED FROM EXISTING DRAWINGS ON FILE WITH THE CT SITING COUNCIL AND A LIMITED DESIGN VISIT ON 06-13-22 FOR A PROPOSED VERIZON ANTENNA MODIFICATION.
2. PLANS ARE DIAGRAMMATIC ONLY AND NOT TO BE SCALED.
3. REFER TO STRUCTURAL TOWER AND MOUNT ANALYSIS REPORTS, UNDER SEPARATE COVER, FOR ANY REQUIRED TOWER & MOUNT REINFORCEMENTS, WHICH MUST BE PERFORMED PRIOR TO ANY OTHER VERIZON ANTENNA MODIFICATIONS.

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CT LIC NO. 22144

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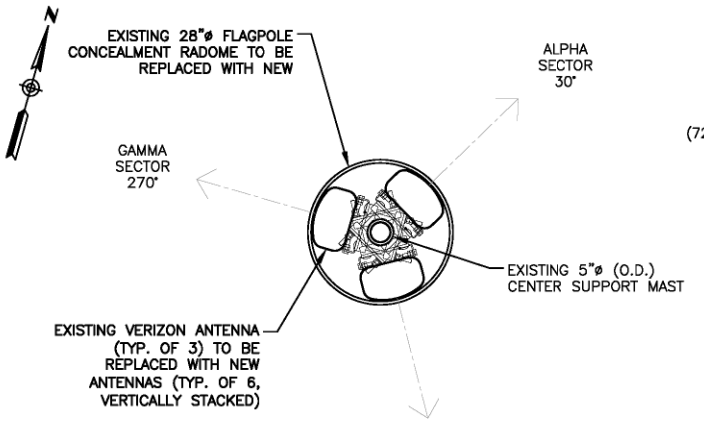
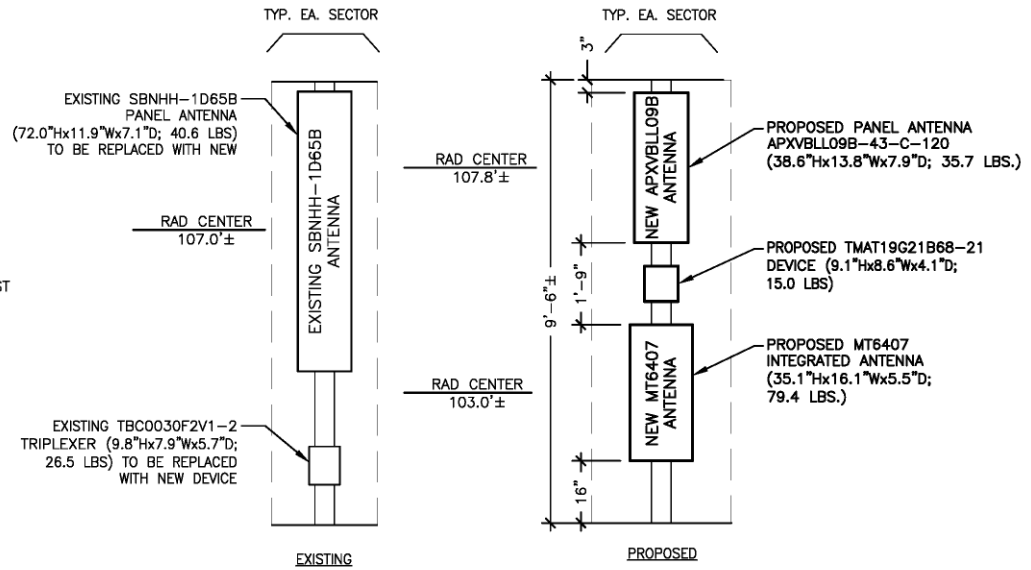
SBA SITE # CT13616-A
71 PLEASANT VIEW RD.
DERBY, CT 06418

SHEET TITLE:
SITE LAYOUT &
ELEVATION

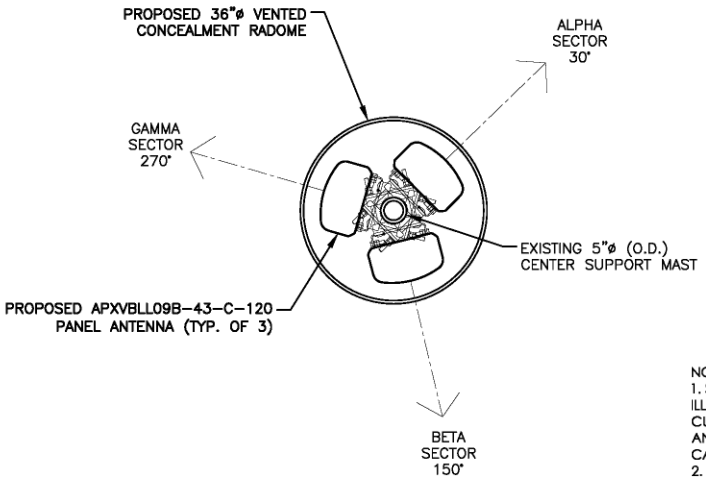
SHEET NUMBER:
DE-2



1 DE-3 **ANTENNA PLAN @ 107 FT. - EXISTING**
Scale: 1/2" = 1'-0"

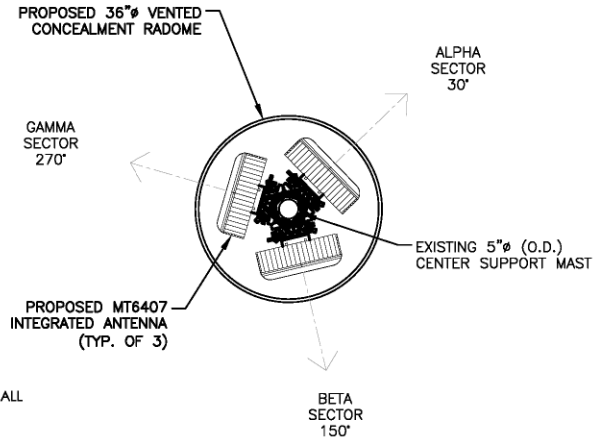


4 DE-3 **ANTENNA ELEVATIONS**
Scale: 3/8" = 1'-0"



2 DE-3 **ANTENNA PLAN @ 107.8 FT. - PROPOSED**
Scale: 1/8" = 1'-0"

NOTES TO 2/DE-3 & 3/DE-3:
1. STANDARD ANTENNA BRACKETS SHOWN FOR ILLUSTRATION PURPOSES ONLY. CONTRACTOR SHALL CUSTOMIZE MOUNTING BRACKETS IN FIELD FOR ANTENNAS AS MOST MANUFACTURER BRACKETS CANNOT BE USED ON PIPE MASTS EXCEEDING 4"Ø.
2. EXISTING/PROPOSED CABLING NOT SHOWN.



3 DE-3 **ANTENNA PLAN @ 103.0 FT. - PROPOSED**
Scale: 1/8" = 1'-0"

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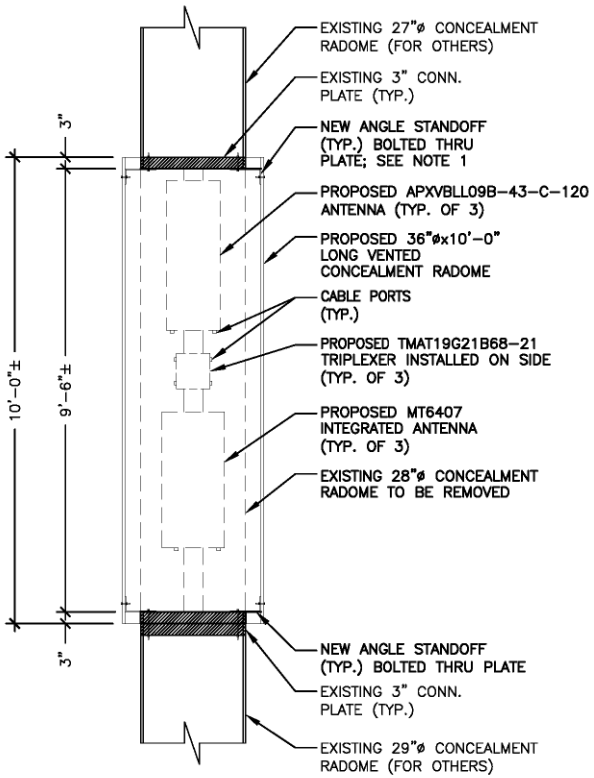
DERBY, CT 06418

SHEET TITLE:
ANTENNA PLANS
& ELEVATION

SHEET NUMBER:
DE-3



1 / DE-4 CONCEALMENT SECTION - PROPOSED
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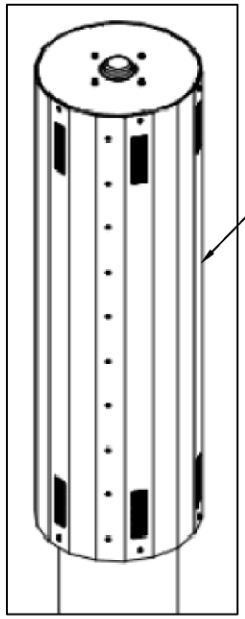

2 / DE-4 CONCEALMENT DETAIL
Scale: NTS

NOTES TO 1/DE-4:
1. RADOME ATTACHMENT SHOWN IS CONCEPTUAL AND SHALL BE DESIGNED BY MANUFACTURER OR OTHERS IN CONJUNCTION WITH STRUCTURAL ANALYSIS.
2. EXISTING/PROPOSED CABLING NOT SHOWN.

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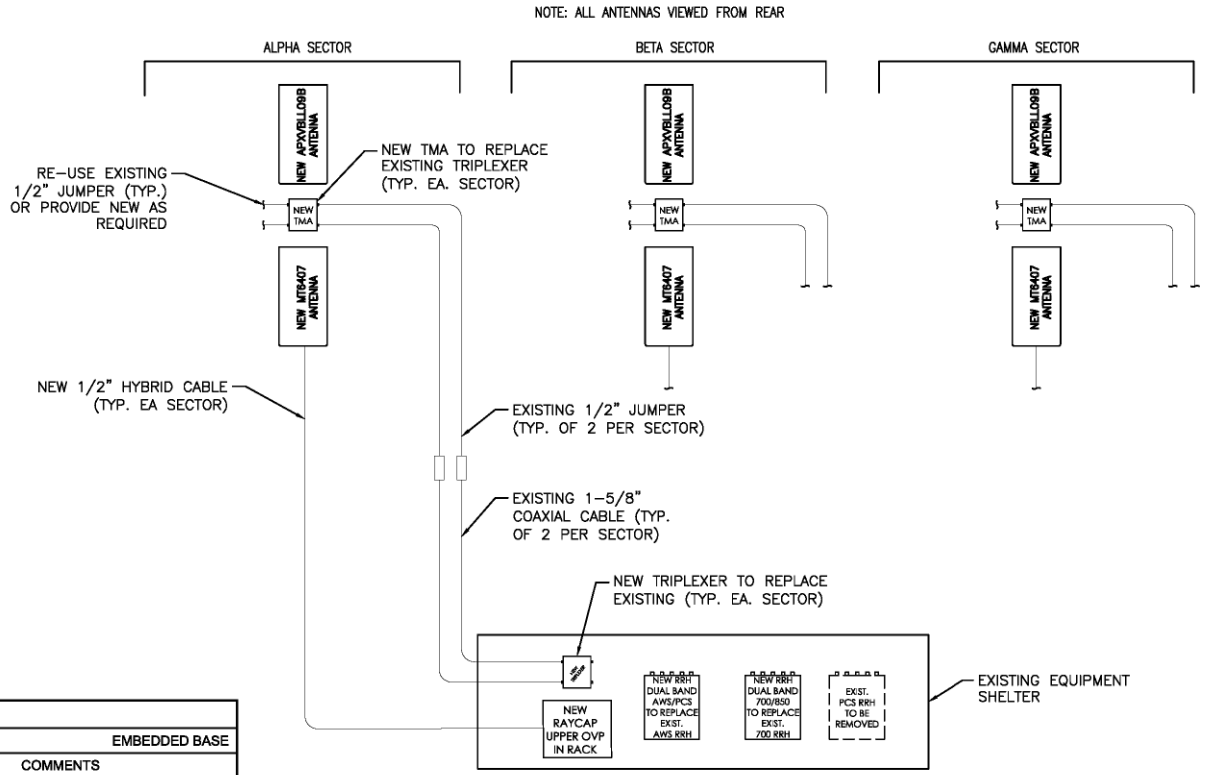
DERBY, CT 06418

SHEET TITLE:
CONCEALMENT
RADOME SECTION
& DETAILS

SHEET NUMBER:
DE-4

GENERAL NOTES:

1. CONTRACTOR SHALL REFER TO THE LATEST VERIZON WIRELESS RFDS WHICH MAY INCLUDE ANTENNA SECTOR AZIMUTHS/ANTENNA CHANGES, ETC. THAT ARE REQUIRED AS PART OF THE PROJECT.
2. CONTRACTOR SHALL SECURE ALL CONTROL CABLES IN ACCORDANCE WITH INDUSTRY STANDARDS AND MANUFACTURERS INSTRUCTIONS. EXTERIOR CABLES MAY BE TAPED OR TIE-WRAPPED TO EXISTING SUPPORTS EVERY 4 FT. MAX. FOR HORIZONTAL RUNS. CONTRACTOR MAY USE HOISTING GRIPS AT TOP OF VERTICAL CABLE RUNS WHEN REQUIRED.
3. ALL CABLES SHALL BE ROUTED AND SECURED ON STRUCTURAL MEMBERS ONLY - DO NOT "LOOP" THE CABLES IN MID-AIR BETWEEN ANTENNAS
4. REFER TO RFDS FOR DETAILED PLUMBING DIAGRAM SHOWING ALL JUMPER AND OTHER CABLING CONNECTIONS AT ANTENNAS, RRH's, DIPLEXERS OR OTHER DEVICES.



1 DE-5 **RF PLUMBING DIAGRAM**
Scale: N.T.S

BILL OF MATERIALS			
SITE NAME: DERBY NORTH CT	ANTMO MT6407-850-LTE		EMBEDDED BASE
DESCRIPTION	QTY	LENGTH	COMMENTS
6-CKT. LOWER OVP	1	-	NEW RACK MOUNT
6-CKT. UPPER OVP	-	-	NOT APPLICABLE
1x2 HYBRID CABLE	3	120 FT.	FIBER JUMPER FOR MT6407 - 1 PER SECTOR
RET CONTROL CABLE	-	-	AS REQUIRED BY RF ENGINEER
1/2" JUMPERS	-	-	SEE NOTE 2
AWS/PCS DUAL BAND RRH	3	-	REFER TO RFDS - 1 PER SECTOR - INSIDE SHELTER
700/850 DUAL BAND RRH	3	-	REFER TO RFDS - 1 PER SECTOR - INSIDE SHELTER
TRIPLEXER	3	-	NEW TO REPLACE EXIST. - 1 PER SECTOR - INSIDE SHELTER
MT6407 ANTENNA	3	-	SAMSUNG INTEGRATED - 1 PER SECTOR
AWS-PCS-700-850 ANTENNA	3	-	RFS APXVBLL09B - 1 PER SECTOR
TMA	3	-	REFER TO RFDS - 1 PER SECTOR

NOTES:
1. ITEMS SHOWN ARE FOR MAJOR DESIGN ELEMENTS ONLY. REFER TO VERIZON WIRELESS RFDS FOR ALL MANUFACTURER PART NUMBERS AND ACCESSORY ITEMS REQUIRED FOR A COMPLETE INSTALLATION.
2. CONTRACTOR SHALL DETERMINE AND PROVIDE ALL REQUIRED PRE-FAB JUMPER QUANTITIES AND LENGTHS, KEEPING ALL LENGTHS TO A MINIMUM.

verizon
WIRELESS COMMUNICATIONS FACILITY
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-4624
onair@optonline.net

LICENSURE

STATE OF CONNECTICUT · DAVID A. WEINPAHL · NO. 22144 · LICENSED · LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS		
0	06.08.22	REVIEW
1	06.09.22	REVISED RF DESIGN
2	06.14.22	REVISED FOR SBA REVIEW
3	10.17.22	REVISED FOR CSC FILING
NO	DATE	DESCRIPTION

DRAWN BY:	MF
CHECKED BY:	DW

PROJECT NAME:
ANTMO
MT6407-850-LTE
DESIGN EXHIBITS

SITE NAME:
DERBY NORTH CT

SITE ADDRESS:
SBA SITE # CT13616-A
71 PLEASANT VIEW RD.
DERBY, CT 06418

SHEET TITLE:
RF PLUMBING DIAGRAM & B.O.M.

SHEET NUMBER:
DE-5

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL NOT COMMENCE ANY WORK UNTIL HE OBTAINS, AT HIS OWN EXPENSE, ALL INSURANCE REQUIRED BY *CELLCO PARTNERSHIP d/b/a VERIZON, THE PRO*PERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.

2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS AND ALL LOCAL LAWS AND REGULATIONS, CURRENT EDITIONS.

3. CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

4. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

5. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.

6. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.

7. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.

8. CONTRACTOR SHALL OBTAIN AT HIS OWN EXPENSE ALL PERMITS AND ALL INSPECTIONS REQUIRED FROM FEDERAL AND STATE GOVERNMENTS, COUNTIES, MUNICIPALITIES AND OTHER REGULATORY AGENCIES WHICH MAY BE REQUIRED FOR THE PROJECT.

10. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

11. ALL MATERIAL PROVIDED BY *CELLCO PARTNERSHIP d/b/a VERIZON IS TO BE* REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTOR PRIOR TO INSTALLATION. ANY DEFICIENCIES TO PROVIDED MATERIALS SHALL BE BROUGHT TO THE CONSTRUCTION MANAGERS ATTENTION IMMEDIATELY.

12. THE MATERIALS INSTALLED IN THE WORK SHALL MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. NO SUBSTITUTIONS ARE ALLOWED.

13. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION, FOR SEQUENCES AND PROCEDURES TO BE USED, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.

14. CONTRACTOR SHALL COORDINATE ALL CIVIL, STRUCTURAL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC.

15. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.

16. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.

17. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST-ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.

18. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL O.S.H.A REQUIREMENTS.

19. CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.

20. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.

21. CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS MAY TAKE PRECEDENCE.

22. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING, ANTENNA AND ANTENNA CABLES AND REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.

23. CONTRACTOR SHALL REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.

24. CONTRACTOR SHALL KEEP CONTRACT AREA CLEAN, HAZARD FREE AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITIONS AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.

25. BEFORE FINAL ACCEPTANCE OF THE WORK, CONTRACTOR SHALL REMOVE ALL EQUIPMENT, TEMPORARY WORKS, UNUSED AND USELESS MATERIALS, RUBBISH AND TEMPORARY STRUCTURES.

verizon

WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
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ANTMO
MT6407-850-LTE
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SBA SITE # CT13616-A
71 PLEASANT VIEW RD.
DERBY, CT 06418

SHEET TITLE:

GENERAL
CONSTRUCTION
NOTES

SHEET NUMBER:

DE-6

SAMSUNG

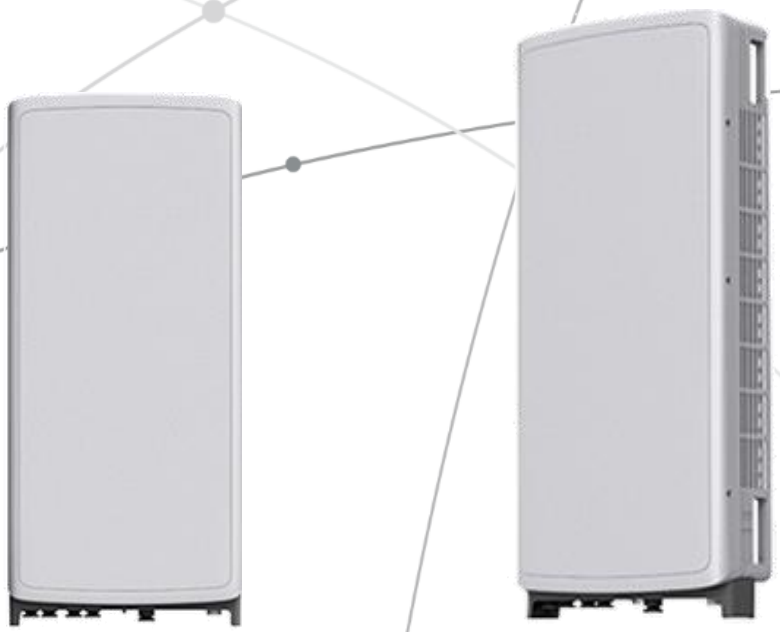
SAMSUNG

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

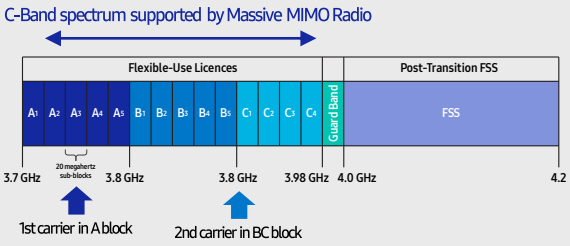


Points of Differentiation

Wide Bandwidth

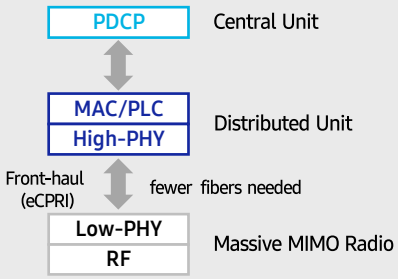
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

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.

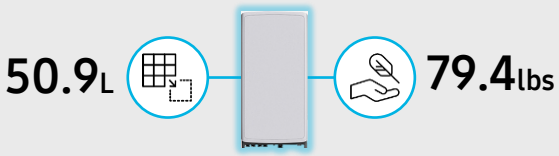
This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

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

PRODUCT DATASHEET

APXVBLL09B_43-C-I20

Triple band X-pol Antenna, 698-960/1710-2690/1710-2690MHz, 65deg, 13.1/16.2/16.4dBi, 0.9m, 2-15/2-12deg, Integrated RET

FEATURES / BENEFITS

- 2 ports / 1 cross pol system in low band (698-960MHz)
- 4 ports / 2 cross pol systems in high band (1710-2690MHz)
- Supporting 4x4 MIMO in high band
- Integrated and field replaceable SRET
- ACU HW Version -2.02 / SW Version -2.72
- Compliant with AISG V2.0 and 3GPP

Technical features

ELECTRICAL SPECIFICATIONS

Electrical Specification Header		LOW BAND ARRAY (698-960 MHZ) [R1]		
Frequency Band	Mhz	698-806	790-894	880-960
Gain Typical	dBi	12.9	13.1	13
Gain Over all Tilts	dBi	12.4 +/- 0.5	12.6 +/- 0.5	12.9 +/- 0.1
Azimuth Beamwidth 3dB	Deg	66.6 +/- 2.5	67.6 +/- 2.5	66.5 +/- 2.5
Elevation Beamwidth 3 dB	Deg	24.8 +/- 3	21.2 +/- 2	19.3 +/- 1
Cross Polar Discrimination at Boresight	dB	26	24.2	27
Cross Polar Discrimination over Sector	dB	10	9	12
F/B at +/-30deg Total Power	dB	22	20.8	22
First Upper Side Lobe Suppression	dB	22	20	17
Electrical Downtilt	Deg	2 to 15		
Cross Polar Isolation	dB	25		
Interband Isolation	dB	30		
VSWR	-	1.5		
Passive Intermodulation (3rd Order, 2 x 43dBm)	dBc	-153		
Maximum Effective Power per Port	Watts	400		

Triple band X-pol Antenna, 698-960/1710-2690/1710-2690MHz, 65deg, 13.1/16.2/16.4dBi, 0.9m, 2-15/2-12deg, Integrated RET

ELECTRICAL SPECIFICATIONS

Electrical Specification Header		HIGH BAND ARRAY (1710-2690 MHZ) [Y1]				
Frequency Band	Mhz	1710-1880	1850-1990	1920-2170	2300-2400	2490-2690
Gain Typical	dBi	16.1	16	16.2	16.2	15.9
Gain Over all Tilts	dBi	15.1 +/- 1	15.5 +/- 0.5	15.7 +/- 0.5	15.7 +/- 0.5	15.4 +/- 0.5
Azimuth Beamwidth 3dB	Deg	64.6 +/- 6.8	64.2 +/- 5.8	64.3 +/- 5.4	64.6 +/- 4.1	61.4 +/- 4.3
Elevation Beamwidth 3 dB	Deg	10.3 +/- 0.5	9.6 +/- 0.5	9.2 +/- 0.5	8.6 +/- 0.5	7.8 +/- 1
Cross Polar Discrimination at Boresight	dB	22	22	23	25	21
Cross Polar Discrimination over Sector	dB	8	8	6	9	3
F/B at +/-30deg Total Power	dB	18.5	19	20	19	18
First Upper Side Lobe Suppression	dB	13	14	14	17	13
Electrical Downtilt	Deg	2 to 12				
Cross Polar Isolation	dB	25				
Interband Isolation	dB	30				
VSWR	-	1.5				
Passive Intermodulation (3rd Order, 2 x 43dBm)	dBc	-153				
Maximum Effective Power per Port	Watts	400				

ELECTRICAL SPECIFICATIONS

Electrical Specification Header		HIGH BAND ARRAY (1710-2690 MHZ) [Y2]				
Frequency Band	Mhz	1710-1880	1850-1990	1920-2170	2300-2400	2490-2690
Gain Typical	dBi	15.8	16.4	16.1	16	16.2
Gain Over all Tilts	dBi	15.3 +/- 0.5	15.9 +/- 0.5	16 +/- 0.1	15.9 +/- 0.1	15.7 +/- 0.5
Azimuth Beamwidth 3dB	Deg	64 +/- 4	65.4 +/- 4.7	64.7 +/- 5.5	64.9 +/- 3	60.2 +/- 3
Elevation Beamwidth 3 dB	Deg	10.2 +/- 0.5	9.5 +/- 0.5	9.2 +/- 0.5	8.6 +/- 0.5	7.9 +/- 0.7
Cross Polar Discrimination at Boresight	dB	20	23.5	22	22.8	22
Cross Polar Discrimination over Sector	dB	9	9	7	10	2
F/B at +/-30deg Total Power	dB	19	20	20	19	18
First Upper Side Lobe Suppression	dB	12	13	14	15	13.6
Electrical Downtilt	Deg	2 to 12				
Cross Polar Isolation	dB	25				
Interband Isolation	dB	30				
VSWR	-	1.5				
Passive Intermodulation (3rd Order, 2 x 43dBm)	dBc	-153				
Maximum Effective Power per Port	Watts	400				

APXVBLL09B_43-C-I20

Triple band X-pol Antenna, 698-960/1710-2690/1710-2690MHz, 65deg, 13.1/16.2/16.4dBi, 0.9m, 2-15/2-12deg, Integrated RET

ELECTRICAL SPECIFICATIONS

Impedance	Ohm	50
Polarization	Deg	±45°

MECHANICAL SPECIFICATIONS

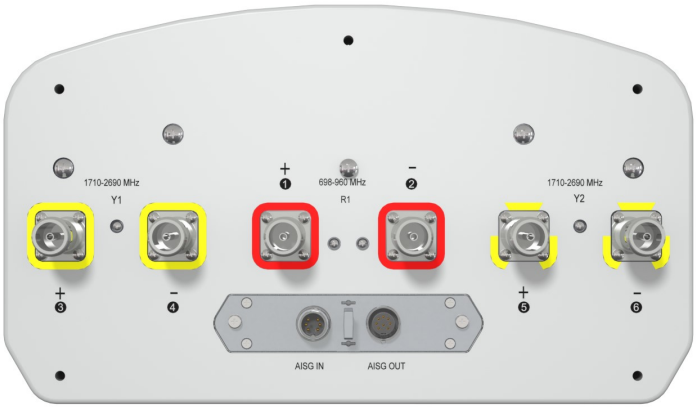
Dimensions - H x W x D	mm (in)	980 x 350 x 200 (38.6 x 13.8 x 7.9)
Weight (Antenna Only)	kg (lb)	16.2 (35.7)
Weight (Mounting Hardware only)	kg (lb)	4.5 (9.9)
Packing size- HxWxD	mm (in)	1250 x 425 x 275 (49.2 x 16.7 x 10.8)
Shipping Weight	kg (lb)	23.5 (51.8)
Connector type		6 x 4.3-10 female/bottom + 2 AISG connectors (1 male, 1 female)
Radome Material / Color		Fiberglass / Light Gray

TESTING AND ENVIRONMENTAL

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Lightning protection		DC Ground
Survival/Rated Wind Velocity	km/h	200 (150)
Wind Load @Rated Wind Front	N	433
Wind Load @Rated Wind Side	N	225
Wind Load @Rated Wind Rear	N	245

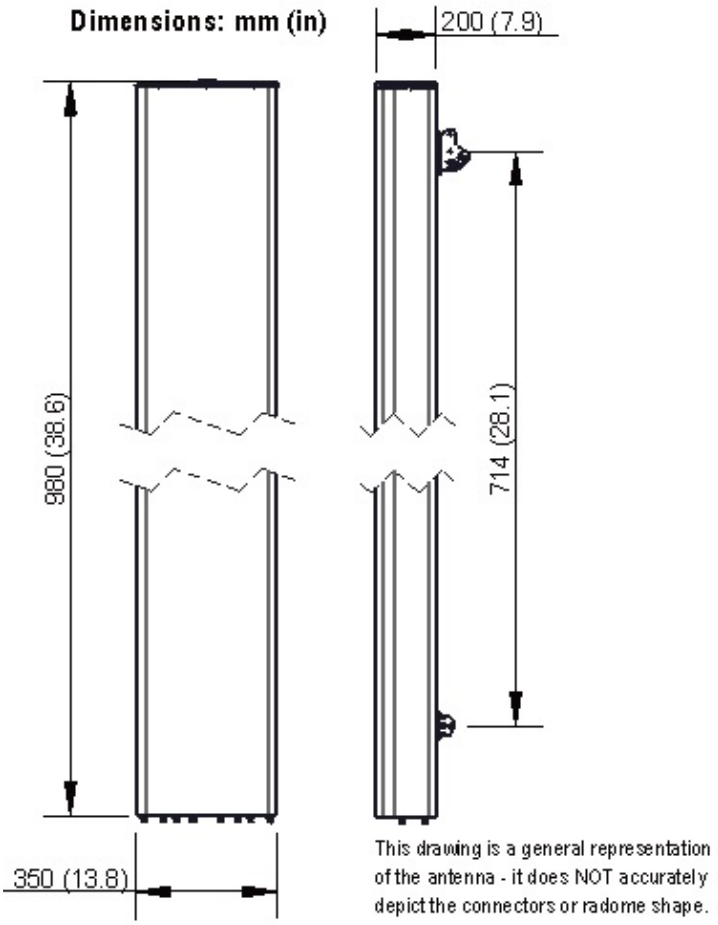
ORDERING INFORMATION

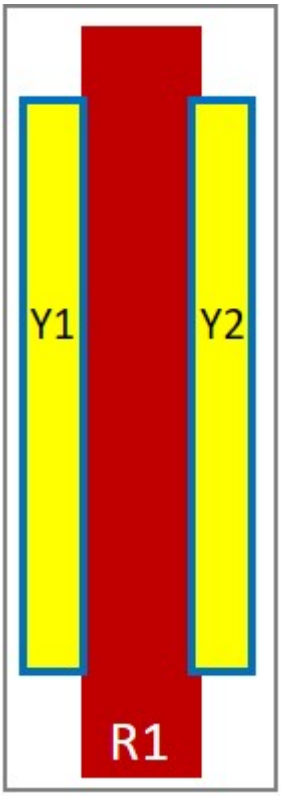
Order No.	Configuration	Mounting Hardware	Mounting pipe Diameter	Shipping Weight
APXVBLL09B_43-C-I20	Internal RET (ACU-I20-B3)	APM50-B1	50-110 mm	23.5 kg



APXVBLL09B_43-C-I20

Triple band X-pol Antenna, 698-960/1710-2690/1710-2690MHz, 65deg, 13.1/16.2/16.4dBi, 0.9m, 2-15/2-12deg, Integrated RET





External Document Links

APM50_Series_Installation_Instructions

Notes

- All electrical parameters are compliant with BASTA NGMN 11.1 requirements.
- For additional mounting information please click "External Document Links".
- **Radiating patterns:** Request pattern files

ATTACHMENT 3

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

Structural Analysis Report

Existing 119 ft PennSummit Monopole
Customer Name: SBA Communications Corp
Customer Site Number: CT13616-A
Customer Site Name: St. Judes
Carrier Name: Verizon (App#: 202165-1)
Carrier Site ID / Name: 468487 / Derby North_CT
Site Location: 71 Pleasantview Road
Derby, Connecticut
New Haven County
Latitude: 41.315042
Longitude: -73.064314

Exp. 01/31/2024

06/28/2022

Analysis Result:

Max Structural Usage: 49.0% [Pass]
Max Foundation Usage: 18.0% [Pass]

Report Prepared By : Tawfeeq Alajaj

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

Structural Analysis Report

Existing 119 ft PennSummit Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13616-A

Customer Site Name: St. Judes

Carrier Name: Verizon (App#: 202165-1)

Carrier Site ID / Name: 468487 / Derby North_CT

Site Location: 71 Pleasantview Road

Derby, Connecticut

New Haven County

Latitude: 41.315042

Longitude: -73.064314

Analysis Result:

Max Structural Usage: 49.0% [Pass]

Max Foundation Usage: 18.0% [Pass]

Report Prepared By : Tawfeeq Alajaj

Introduction

The purpose of this report is to summarize the analysis results on the 119 ft PennSummit 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	Original structural design report prepared by PennSummit Tubular, LLC & Paul J. Ford and Company. Dated 08-17-2006. Design No 26805. Job No 29206-0266. / Original antenna concealment cylinder fabrication drawings prepared by Stealth Concealment Solutions, Inc. Dated 03-17-2003. Job No. FOUR-4C-100-40. Previous structural report prepared by Tower Engineering Solutions. Dated 01-21-2016. TES Project No 20131.
Foundation Drawing	Original foundation design prepared by PennSummit Tubular, LLC & Paul J. Ford and Company. Dated 08-17-2006. Design No 26805. Job No 29206-0266.
Geotechnical Report	Geotechnical report prepared by JGI Eastern, Inc. Dated 07-31-2006. Project No 06496G.
Modification Drawings	N/A
Mount Analysis	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)
(Based on IBC 2015)	Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G, 2015 IBC & 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	3
Crest Height:	101 ft.
Seismic Parameters:	S_S = 0.194, S_1 = 0.063

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	114.0	3	RFS V18-209014 - Panel	Inside 27" existing concealment canister from 109' to 119'	(6) 1 5/8"	T-Mobile
2		3	RFS Twin PCS TMAs			
3		3	RFS Twin AWS TMAs			
4	113.0	1	Flag (12'x18')	Direct	-	-
5	107.0	3	Andrew SBNHH-1D65B - Panel	Inside 28" existing concealment canister from 99' to 109'	(12) 1 5/8"	Verizon
6	97.0	3	FFVV-65B-R3 - Panel	Inside 30" existing concealment canister from 79' to 99'	(1) 1.60" Hybrid	Dish Wireless
7		1	Raycap RDIDC-9181-PF-48			
8	87.0	3	Commscope DHHTT65B-3XR - Panel	Inside 30" existing concealment canister from 79' to 99'	(12) 7/8"; (2) 1/2"; (3) 3/8" RET Line; (3) 5/8" DC; (3) 1/4" Fiber	Sprint Nextel
9		2	Andrew FPA5250D06-N			
10		6	RFS KIT-FD9R6004/1C-DL Diplexrs			
11		3	Redconnex AN-80i			
12	84.0	3	Argus LLPX310R - Panel	Inside 30" existing concealment canister from 79' to 99'	(2) 1/2"; (3) 5/8"; (3) 1/4"	Clearwire
13		1	Andrew FPA5250D06-N			
14		3	Redconnex AN-80i BTSs			

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
4	108.0	3	RFS - APXVBLL09B43-C-I20 - Panel	Inside 36" existing concealment canister from 99' to 109'	(12) 1 5/8"	Verizon
5	103.5	3	Samsung - MT6407-77A - Panel			
6	103.0	3	CommScope TMAT1921B78-21A			

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	Spoked Connection
Max. Usage:	**46.3%**	**22.1%**	**23.2%**	**49.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	1550.0	23.0
Analysis Reactions	635.1	10.7
Factored Reactions*	2092.5	31.1
% of Design Reactions	30.3%	34.5%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.1028 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure was found inadequate to safely support the existing and proposed equipment per the TIA-222 Standard under the design basic wind speed specified in the Analysis Criteria. The following modifications to the existing structure will be required.
A modification packet (including design drawings) can be provided under a separate scope of work.

Replace the canister from 99-109' with 36".

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 46.29% at 79.0ft

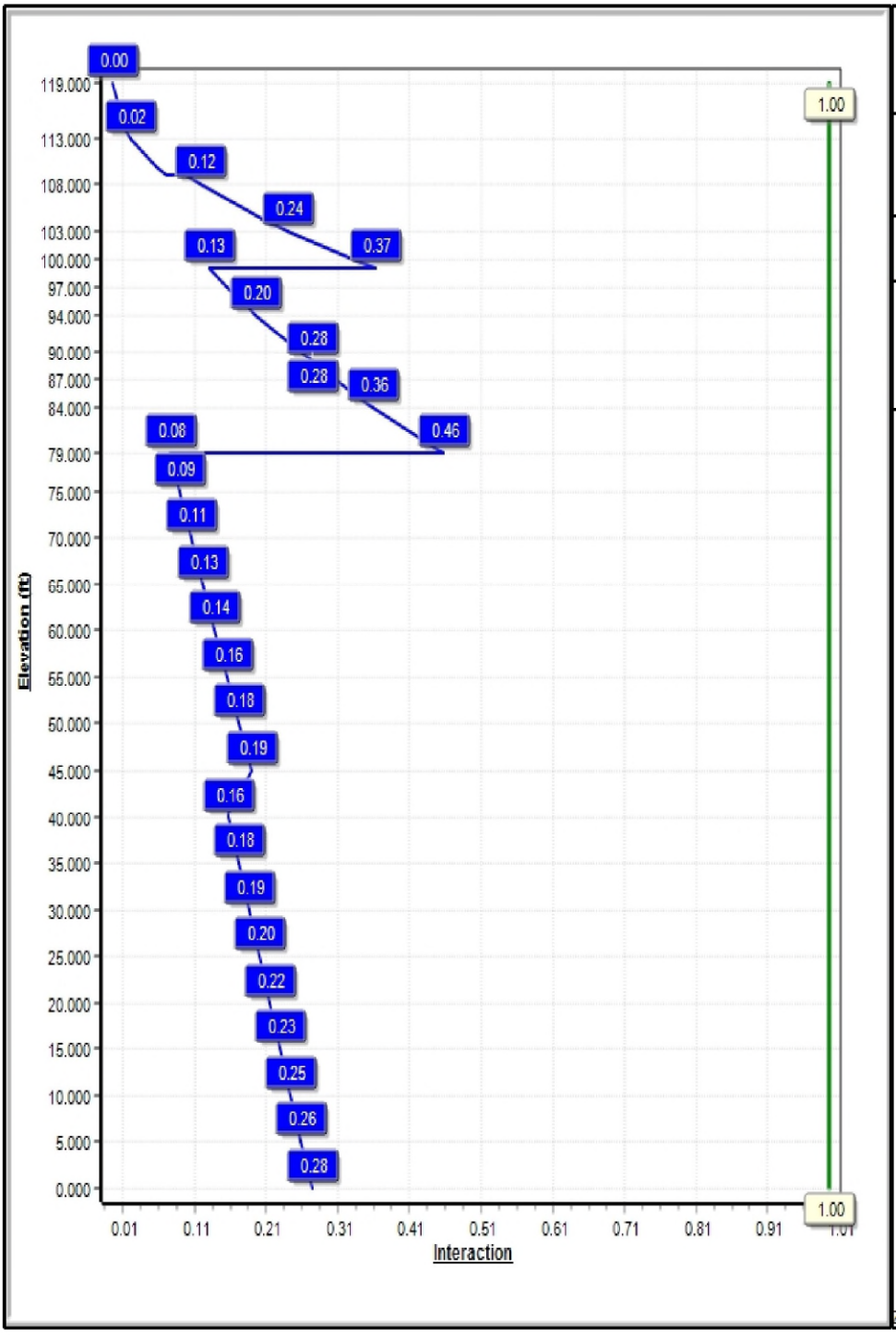
Structure:	CT13616-A-SBA	**Code:**	EIA/TIA-222-G	6/28/2022
Site Name:	St. Judes	**Exposure:**	B	
Height:	119.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

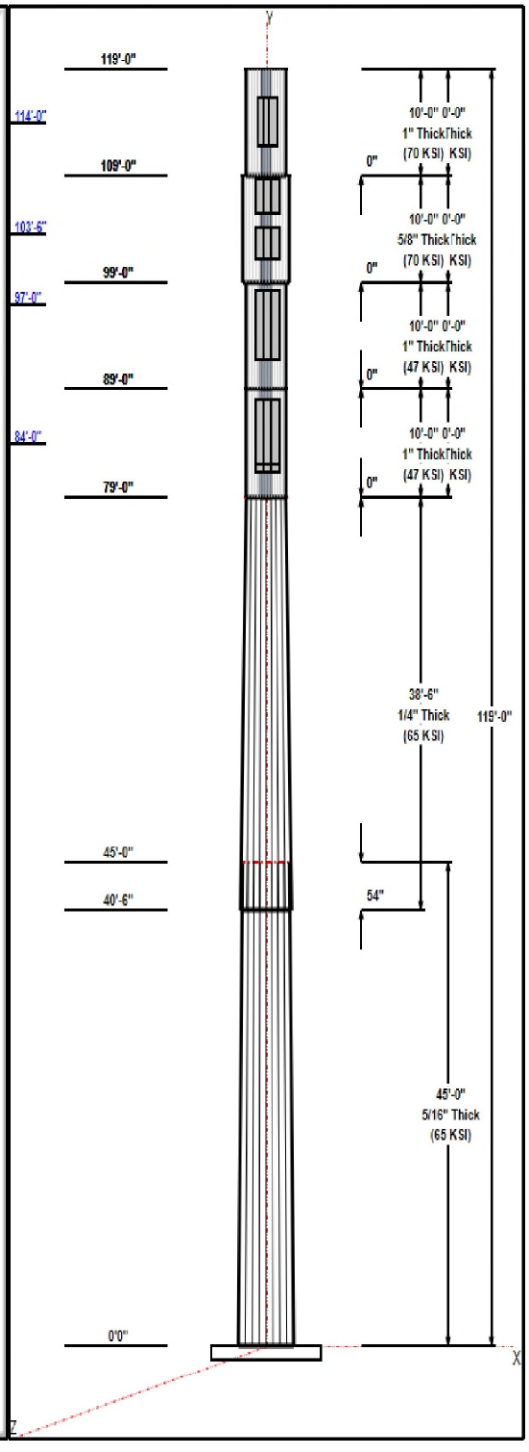
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 97 mph Wind

Iterations: 29





Structure: CT13616-A-SBA

Type: Custom
Site Name: St. Judes
Height: 119.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.15000

6/28/2022

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	34.60	41.35	0.313		0.15000	65
2	38.50	30.00	35.77	0.250	Slip	0.15000	65
3	10.00	8.00	8.00	1.000	Butt	0.00000	47
4	10.00	8.00	8.00	1.000	Butt	0.00000	47
5	10.00	5.00	5.00	0.625	Butt	0.00000	70
6	10.00	5.00	5.00	1.000	Butt	0.00000	70

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
114.00	114.00	1	27" Canister at 114.0'	---
114.00	114.00	3	V18-209014	T-Mobile
114.00	114.00	3	RFS Twin PCS TMAs	T-Mobile
114.00	114.00	3	RFS Twin AWS TMAs	T-Mobile
113.00	113.00	1	Flag (12'x18')	---
108.00	107.00	3	APXVBLL09B43-C-I20	Verizon
104.00	104.00	1	28" Canister at 104.0'	---
103.50	102.50	3	MT6407-77A	Verizon
103.00	103.00	3	Commscope	Verizon
97.00	95.00	3	FFVV-65B-R3	Dish Wireless
97.00	97.00	1	Raycap	Dish Wireless
94.00	94.00	1	29" Canister at 94.0'	---
87.00	85.00	3	Commscope	Sprint Nextel
87.00	87.00	2	Andrew FPA5250D06-N	Sprint Nextel
87.00	87.00	6	RFS	Sprint Nextel
87.00	87.00	3	Redconnex AN-80i	Sprint Nextel
84.00	84.00	1	30" Canister at 84.0'	---
84.00	82.00	3	Argus LLPX310R	Clearwire
84.00	82.00	1	Andrew FPA5250D06-N	Clearwire
84.00	84.00	3	Redconnex AN-80i BTSs	Clearwire

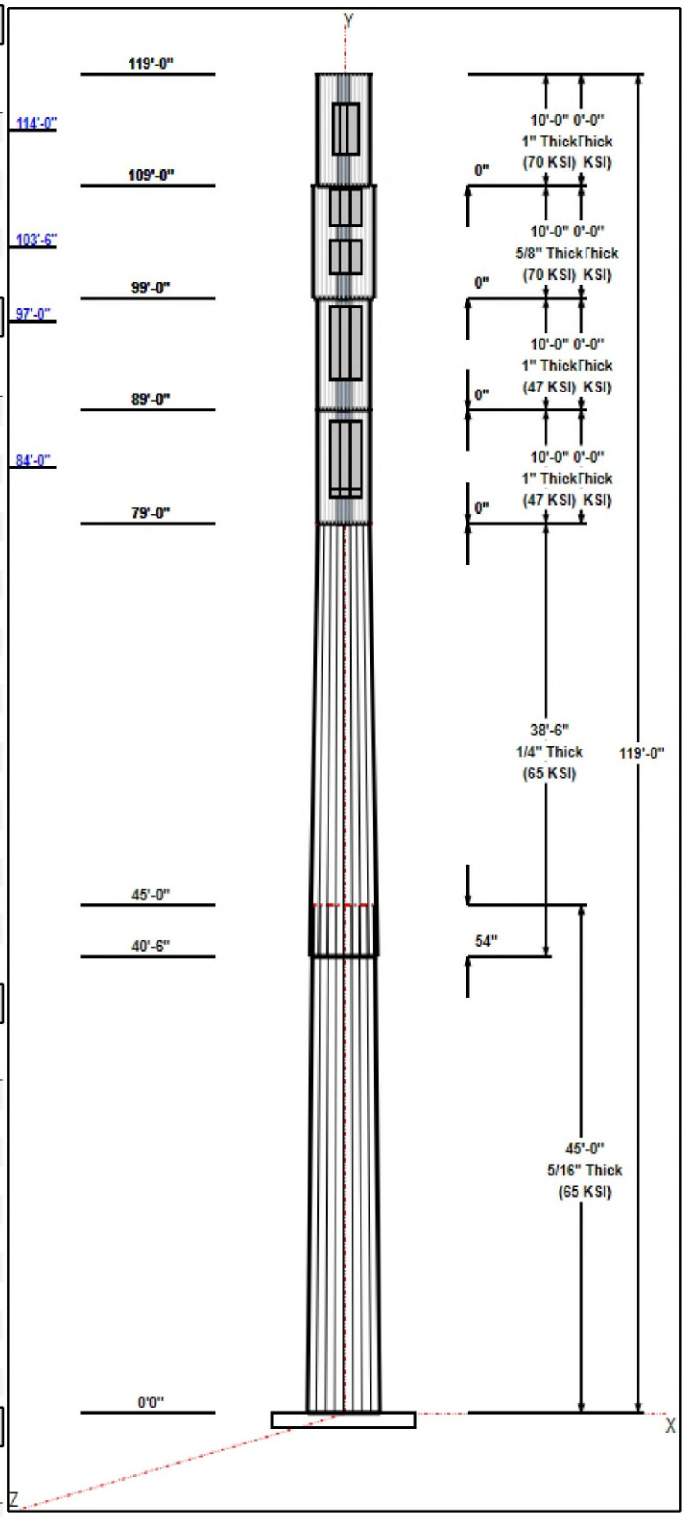
Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
3.00	114.00	Inside	1 5/8" Coax	T-Mobile
3.00	107.00	Inside	1 5/8" Coax	Verizon
3.00	97.00	Inside	1.60" Hybrid	Dish Wireless
3.00	87.00	Inside	1/2" Coax	Sprint Nextel
3.00	87.00	Inside	1/4" Fiber	Sprint Nextel
3.00	87.00	Inside	3/8" RET Line	Sprint Nextel
3.00	87.00	Inside	5/8" DC	Sprint Nextel
3.00	87.00	Inside	7/8" Coax	Sprint Nextel
3.00	84.00	Inside	1/2" Coax	Clearwire
3.00	84.00	Inside	1/4" Coax	Clearwire
3.00	84.00	Inside	5/8" Coax	Clearwire

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	46.0	50.0	Clipped

Reactions

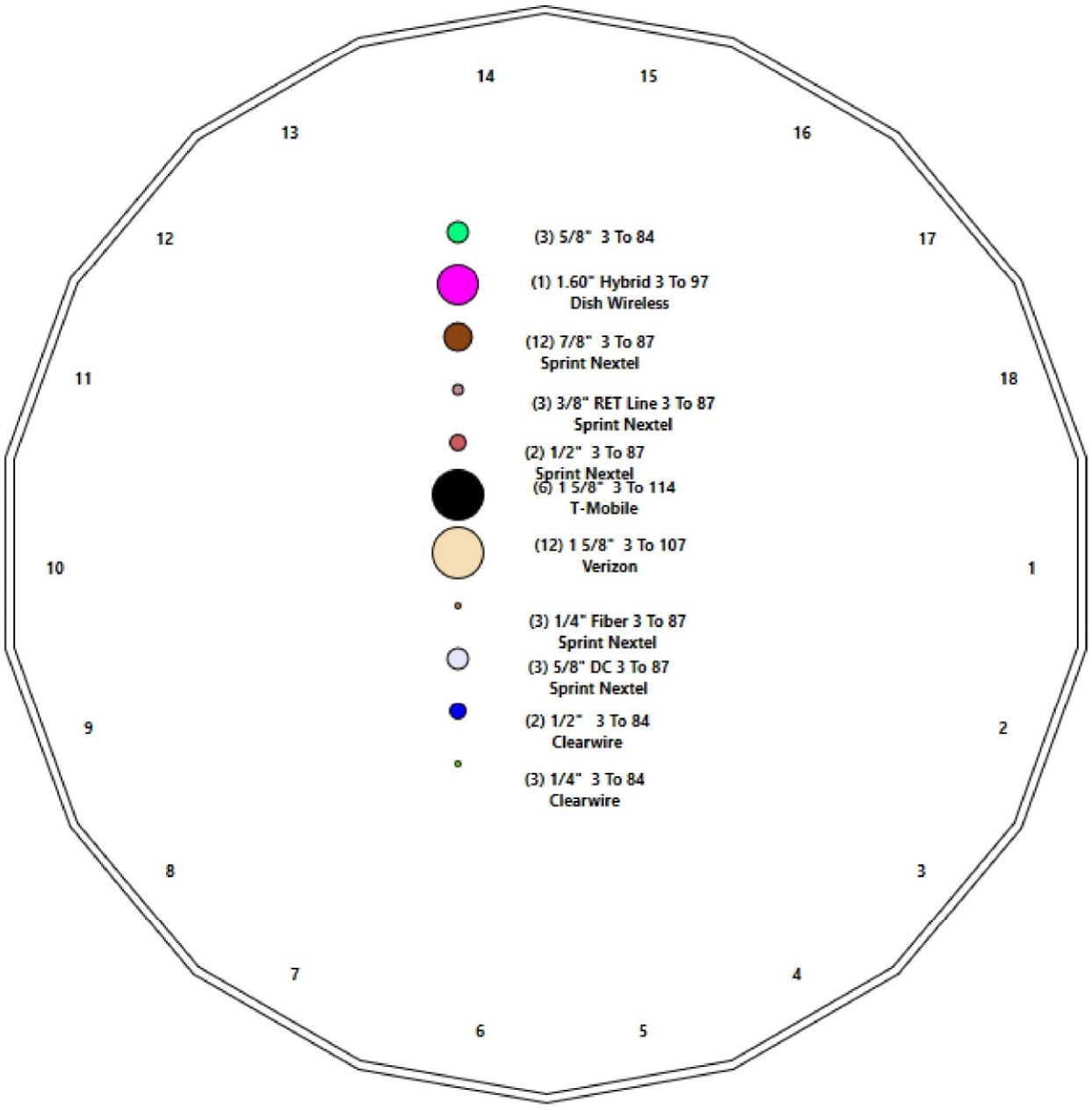
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	635.1	10.7	19.6
0.9D + 1.6W 97 mph Wind	631.2	10.7	14.7
1.2D + 1.0Di + 1.0Wi 50 mph Wind	301.1	4.4	33.6
1.2D + 1.0E	38.8	0.5	19.6
0.9D + 1.0E	38.5	0.5	14.7
1.0D + 1.0W 60 mph Wind	151.2	2.6	16.3

Structure: CT13616-A-SBA - Coax Line Placement

Type: Monopole
Site Name: St. Judes
Height: 119.00 (ft)

6/28/2022

Tower Engineering Solutions



Shaft Properties

Structure:	CT13616-A-SBA		**Code:**	TIA-222-G	6/28/2022
Site Name:	St. Judes		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	101.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 3	**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	45.000	0.3125	65		0.00	5,720
2	18	38.500	0.2500	65	Slip	54.00	3,393
3	R	10.000	1.0000	47	Flange	0.00	748
4	R	10.000	1.0000	47	Flange	0.00	748
5	R	10.000	0.6250	70	Flange	0.00	292
6	R	10.000	1.0000	70	Flange	0.00	428
					Total Shaft Weight:		**11,329**

	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**	**Canister Diam (in)**
1	41.35	0.00	40.70	8660.38	21.92	132.32	34.60	45.00	34.01	5051.28	18.11	110.7	0.150000	0.00
2	35.77	40.50	28.19	4494.55	23.82	143.10	30.00	79.00	23.61	2639.64	19.75	120.0	0.150000	0.00
3	8.00	79.00	21.99	134.80	0.00	8.00	8.00	89.00	21.99	134.80	0.00	8.00	0.000000	30.00
4	8.00	89.00	21.99	134.80	0.00	8.00	8.00	99.00	21.99	134.80	0.00	8.00	0.000000	30.00
5	5.00	99.00	8.59	20.57	0.00	8.00	5.00	109.00	8.59	20.57	0.00	8.00	0.000000	36.00
6	5.00	109.0	12.57	25.15	0.00	5.00	5.00	119.00	12.57	25.15	0.00	5.00	0.000000	30.00

Load Summary

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	114.00	27" Canister at 114.0'	1	150.00	0.00	1.00	1089.01	0.000	1.00	0.00	0.00
2	114.00	V18-209014	3	18.70	0.00	0.00	108.14	4.519	0.00	0.00	0.00
3	114.00	RFS Twin PCS TMAs	3	11.00	0.00	0.00	21.67	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	17.60	0.00	0.00	34.94	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	100.00	7.92	1.00	107.03	8.476	1.00	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	35.70	0.00	0.00	168.83	5.393	0.00	0.00	-1.00
7	104.00	28" Canister at 104.0'	1	150.00	0.00	1.00	1087.30	0.000	1.00	0.00	0.00
8	103.50	MT6407-77A	3	79.40	0.00	0.00	198.83	5.596	0.00	0.00	-1.00
9	103.00	Commscope TMAT1921B78-21A	3	17.60	0.00	0.00	35.16	0.000	0.00	0.00	0.00
10	97.00	FFVV-65B-R3	3	125.70	0.00	0.00	623.75	21.132	0.00	0.00	-2.00
11	97.00	Raycap RDIDC-9181-PF-48	1	21.90	0.00	0.00	75.35	0.000	0.00	0.00	0.00
12	94.00	29" Canister at 94.0'	1	150.00	0.00	1.00	1086.02	0.000	1.00	0.00	0.00
13	87.00	Commscope DHHTT65B-3XR	3	45.40	0.00	1.00	245.90	0.000	1.00	0.00	-2.00
14	87.00	Andrew FPA5250D06-N	2	2.00	0.00	1.00	29.54	0.000	1.00	0.00	0.00
15	87.00	RFS KIT-FD9R6004/1C-DL Diplexrs	6	6.40	0.00	1.00	17.01	0.000	1.00	0.00	0.00
16	87.00	Redconnex AN-80i	3	4.50	0.00	1.00	89.71	0.000	1.00	0.00	0.00
17	84.00	30" Canister at 84.0'	1	150.00	0.00	1.00	1085.32	0.000	1.00	0.00	0.00
18	84.00	Argus LLPX310R	3	28.60	0.00	1.00	119.14	0.000	1.00	0.00	-2.00
19	84.00	Andrew FPA5250D06-N	1	14.00	0.00	1.00	35.99	0.714	1.00	0.00	-2.00
20	84.00	Redconnex AN-80i BTSs	3	4.50	0.83	1.00	21.01	1.507	1.00	0.00	0.00
		Totals:	**48**	**1,944.40**			**9,728.42**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
3.00	114.00	(6) 1 5/8" Coax	0.00	Inside
3.00	107.00	(12) 1 5/8" Coax	0.00	Inside
3.00	97.00	(1) 1.60" Hybrid	0.00	Inside
3.00	87.00	(2) 1/2" Coax	0.00	Inside
3.00	87.00	(3) 1/4" Fiber	0.00	Inside
3.00	87.00	(3) 3/8" RET Line	0.00	Inside
3.00	87.00	(3) 5/8" DC	0.00	Inside
3.00	87.00	(12) 7/8" Coax	0.00	Inside
3.00	84.00	(2) 1/2" Coax	0.00	Inside
3.00	84.00	(3) 1/4" Coax	0.00	Inside
3.00	84.00	(3) 5/8" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 7	

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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	41.350	40.703	8660.4	21.92	132.32	75.6	412.5	0.0
5.00		0.3125	40.600	39.959	8194.2	21.50	129.92	76.1	397.5	686.2
10.00		0.3125	39.850	39.215	7745.0	21.07	127.52	76.6	382.8	673.5
15.00		0.3125	39.100	38.471	7312.6	20.65	125.12	77.1	368.4	660.9
20.00		0.3125	38.350	37.727	6896.5	20.23	122.72	77.6	354.2	648.2
25.00		0.3125	37.600	36.983	6496.6	19.81	120.32	78.1	340.3	635.6
30.00		0.3125	36.850	36.239	6112.4	19.38	117.92	78.6	326.7	622.9
35.00		0.3125	36.100	35.495	5743.7	18.96	115.52	79.1	313.4	610.2
40.00		0.3125	35.350	34.752	5390.1	18.54	113.12	79.6	300.3	597.6
40.50	Bot - Section 2	0.3125	35.275	34.677	5355.5	18.49	112.88	79.6	299.0	59.1
45.00	Top - Section 1	0.2500	35.100	27.652	4243.2	23.35	140.40	0.0	0.0	953.4
50.00		0.2500	34.350	27.057	3975.1	22.82	137.40	74.6	227.9	465.4
55.00		0.2500	33.600	26.462	3718.5	22.29	134.40	75.2	218.0	455.3
60.00		0.2500	32.850	25.867	3473.3	21.76	131.40	75.8	208.2	445.2
65.00		0.2500	32.100	25.272	3239.0	21.23	128.40	76.4	198.7	435.0
70.00		0.2500	31.350	24.677	3015.5	20.70	125.40	77.1	189.5	424.9
75.00		0.2500	30.600	24.082	2802.6	20.17	122.40	77.7	180.4	414.8
79.00	Top - Section 2	0.2500	30.000	23.606	2639.6	19.75	120.00	78.2	173.3	324.5
79.00	Bot - Section 3	1.0000	8.000	21.991	134.8	4.94	30.00	47.0	33.7	
80.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
84.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	299.3
85.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
87.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
89.00	Top - Section 3	1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
89.00	Bot - Section 4	1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	
90.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
94.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	299.3
95.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
97.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
99.00	Top - Section 4	1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
99.00	Bot - Section 5	0.6250	5.000	8.590	20.6	0.00	12.80	70.0	8.2	
100.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	29.2
103.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	87.7
103.50		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	14.6
104.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	14.6
105.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	29.2
108.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	87.7
109.00	Top - Section 5	0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	29.2
109.00	Bot - Section 6	1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	
110.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	42.8
113.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	128.3
114.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	42.8
115.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	42.8
119.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	171.0
										11329.2

Wind Loading - Shaft

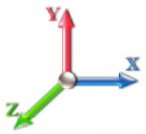
Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 29

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		2.18	0.70	34.943	38.44	419.42	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		2.05	0.70	32.848	36.13	399.27	0.650	0.000	5.00	17.336	11.27	651.5	0.0	823.4
10.00		1.94	0.70	31.007	34.11	380.75	0.650	0.000	5.00	17.019	11.06	603.7	0.0	808.2
15.00		1.83	0.70	29.385	32.32	363.68	0.650	0.000	5.00	16.702	10.86	561.4	0.0	793.0
20.00		1.75	0.70	27.953	30.75	347.91	0.650	0.000	5.00	16.384	10.65	523.9	0.0	777.9
25.00		1.67	0.70	26.687	29.36	333.29	0.650	0.000	5.00	16.067	10.44	490.5	0.0	762.7
30.00		1.60	0.70	25.587	28.15	319.84	0.650	0.000	5.00	15.750	10.24	461.0	0.0	747.5
35.00		1.53	0.73	25.699	28.27	314.02	0.650	0.000	5.00	15.432	10.03	453.7	0.0	732.3
40.00		1.48	0.76	25.738	28.31	307.72	0.650	0.000	5.00	15.115	9.82	445.0	0.0	717.1
40.50	Bot - Section 2	1.47	0.76	25.739	28.31	307.08	0.650	0.000	0.50	1.494	0.97	44.0	0.0	70.9
45.00	Top - Section 1	1.43	0.79	25.735	28.31	301.18	0.650	0.000	4.50	13.494	8.77	397.3	0.0	1144.1
50.00		1.39	0.81	25.709	28.28	298.85	0.650	0.000	5.00	14.692	9.55	432.1	0.0	558.5
55.00		1.35	0.83	25.674	28.24	292.13	0.650	0.000	5.00	14.375	9.34	422.2	0.0	546.3
60.00		1.31	0.85	25.639	28.20	285.41	0.650	0.000	5.00	14.057	9.14	412.3	0.0	534.2
65.00		1.28	0.87	25.608	28.17	278.73	0.650	0.000	5.00	13.740	8.93	402.5	0.0	522.0
70.00		1.25	0.89	25.585	28.14	272.09	0.650	0.000	5.00	13.423	8.72	392.9	0.0	509.9
75.00		1.23	0.91	25.573	28.13	265.52	0.650	0.000	5.00	13.105	8.52	383.4	0.0	497.7
79.00	Top - Section 2	1.21	0.92	25.571	28.13	260.31	0.650	0.000	4.00	10.256	6.67	300.0	0.0	389.4
80.00		1.21	0.93	25.572	28.13	256.36	0.600	0.000	1.00	2.500	1.50	67.5	0.0	99.4
84.00	Appurtenance(s)	1.19	0.94	25.580	28.14	256.40	0.600	0.000	4.00	10.000	6.00	270.1	0.0	397.6
85.00		1.19	0.94	25.584	28.14	256.41	0.600	0.000	1.00	2.500	1.50	67.5	0.0	99.4
87.00	Appurtenance(s)	1.18	0.95	25.592	28.15	256.45	0.600	0.000	2.00	5.000	3.00	135.1	0.0	198.8
89.00	Top - Section 3	1.17	0.96	25.602	28.16	256.50	0.600	0.000	2.00	5.000	3.00	135.2	0.0	198.8
90.00		1.17	0.96	25.607	28.17	256.53	0.600	0.000	1.00	2.500	1.50	67.6	0.0	99.4
94.00	Appurtenance(s)	1.15	0.97	25.635	28.20	256.67	0.600	0.000	4.00	10.000	6.00	270.7	0.0	397.6
95.00		1.15	0.97	25.643	28.21	256.71	0.600	0.000	1.00	2.500	1.50	67.7	0.0	99.4
97.00	Appurtenance(s)	1.14	0.98	25.660	28.23	256.80	0.600	0.000	2.00	5.000	3.00	135.5	0.0	198.8
99.00	Top - Section 4	1.14	0.99	25.680	28.25	256.89	0.600	0.000	2.00	5.000	3.00	135.6	0.0	198.8
100.00		1.14	0.99	25.690	28.26	308.33	0.600	0.000	1.00	3.000	1.80	81.4	0.0	46.6
103.00	Appurtenance(s)	1.13	1.00	25.724	28.30	308.54	0.600	0.000	3.00	9.000	5.40	244.5	0.0	139.8
103.50	Appurtenance(s)	1.13	1.00	25.730	28.30	308.57	0.600	0.000	0.50	1.500	0.90	40.8	0.0	23.3
104.00	Appurtenance(s)	1.13	1.00	25.736	28.31	308.61	0.600	0.000	0.50	1.500	0.90	40.8	0.0	23.3
105.00		1.12	1.00	25.748	28.32	308.68	0.600	0.000	1.00	3.000	1.80	81.6	0.0	46.6
108.00	Appurtenance(s)	1.12	1.01	25.788	28.37	308.92	0.600	0.000	3.00	9.000	5.40	245.1	0.0	139.8
109.00	Top - Section 5	1.11	1.01	25.802	28.38	309.01	0.600	0.000	1.00	3.000	1.80	81.7	0.0	46.6
110.00		1.11	1.02	25.816	28.40	257.58	0.600	0.000	1.00	2.500	1.50	68.2	0.0	60.9
113.00	Appurtenance(s)	1.10	1.02	25.862	28.45	257.80	0.600	0.000	3.00	7.500	4.50	204.8	0.0	182.7
114.00	Appurtenance(s)	1.10	1.03	25.878	28.47	257.88	0.600	0.000	1.00	2.500	1.50	68.3	0.0	60.9
115.00		1.10	1.03	25.894	28.48	257.97	0.600	0.000	1.00	2.500	1.50	68.4	0.0	60.9
119.00		1.09	1.04	25.963	28.56	258.31	0.600	0.000	4.00	10.000	6.00	274.2	0.0	243.7
								Totals:	**119.00**			**10,229.8**		**13,998.3**

Discrete Appurtenance Forces

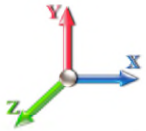
Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 29

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	114.00	RFS Twin PCS TMAs	3	25.878	28.466	0.00	1.00	0.00	39.60	0.000	0.000	0.00	0.00	0.00
2	114.00	V18-209014	3	25.878	28.466	0.00	1.00	0.00	67.32	0.000	0.000	0.00	0.00	0.00
3	114.00	27" Canister at 114.0'	1	25.878	28.466	1.00	1.00	0.00	180.00	0.000	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	25.878	28.466	0.00	1.00	0.00	63.36	0.000	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	25.862	28.448	1.00	1.00	7.92	120.00	0.000	0.000	360.50	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	25.774	28.352	0.00	1.00	0.00	128.52	0.000	-1.000	0.00	0.00	0.00
7	104.00	28" Canister at 104.0'	1	25.736	28.309	1.00	1.00	0.00	180.00	0.000	0.000	0.00	0.00	0.00
8	103.50	MT6407-77A	3	25.718	28.290	0.00	1.00	0.00	285.84	0.000	-1.000	0.00	0.00	0.00
9	103.00	Commscope	3	25.724	28.296	0.00	1.00	0.00	63.36	0.000	0.000	0.00	0.00	0.00
10	97.00	Raycap	1	25.660	28.227	0.00	1.00	0.00	26.28	0.000	0.000	0.00	0.00	0.00
11	97.00	FFVV-65B-R3	3	25.643	28.207	0.00	1.00	0.00	452.52	0.000	-2.000	0.00	0.00	0.00
12	94.00	29" Canister at 94.0'	1	25.635	28.198	1.00	1.00	0.00	180.00	0.000	0.000	0.00	0.00	0.00
13	87.00	Redconnex AN-80i	3	25.592	28.151	1.00	1.00	0.00	16.20	0.000	0.000	0.00	0.00	0.00
14	87.00	RFS	6	25.592	28.151	1.00	1.00	0.00	46.08	0.000	0.000	0.00	0.00	0.00
15	87.00	Andrew FPA5250D06-N	2	25.592	28.151	1.00	1.00	0.00	4.80	0.000	0.000	0.00	0.00	0.00
16	87.00	Commscope	3	25.584	28.142	1.00	1.00	0.00	163.44	0.000	-2.000	0.00	0.00	0.00
17	84.00	Redconnex AN-80i BTSs	3	25.580	28.139	1.00	1.00	2.49	16.20	0.000	0.000	112.10	0.00	0.00
18	84.00	Andrew FPA5250D06-N	1	25.575	28.133	1.00	1.00	0.00	16.80	0.000	-2.000	0.00	0.00	0.00
19	84.00	Argus LLPX310R	3	25.575	28.133	1.00	1.00	0.00	102.96	0.000	-2.000	0.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	25.580	28.139	1.00	1.00	0.00	180.00	0.000	0.000	0.00	0.00	0.00
							Totals:		**2,333.28**			**472.60**		

Total Applied Force Summary

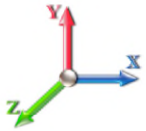
Structure:	CT13616-A-SBA		**Code:**	TIA-222-G	6/28/2022
Site Name:	St. Judes		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	101.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 3	**Struct Class:**	II	Page: 10

IES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 29

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		651.47	888.60	0.00	0.00
10.00		603.69	971.19	0.00	0.00
15.00		561.44	956.00	0.00	0.00
20.00		523.94	940.82	0.00	0.00
25.00		490.52	925.63	0.00	0.00
30.00		461.02	910.44	0.00	0.00
35.00		453.71	895.25	0.00	0.00
40.00		445.05	880.06	0.00	0.00
40.50		43.99	87.17	0.00	0.00
45.00		397.27	1290.74	0.00	0.00
50.00		432.11	721.46	0.00	0.00
55.00		422.21	709.31	0.00	0.00
60.00		412.31	697.16	0.00	0.00
65.00		402.52	685.01	0.00	0.00
70.00		392.88	672.86	0.00	0.00
75.00		383.40	660.71	0.00	0.00
79.00		300.02	519.82	0.00	0.00
80.00		67.51	131.99	0.00	0.00
84.00	(8) attachments	382.23	843.92	0.00	0.00
85.00		67.54	130.90	0.00	0.00
87.00	(14) attachments	135.12	492.33	0.00	0.00
89.00		135.18	244.08	0.00	0.00
90.00		67.60	122.04	0.00	0.00
94.00	(1) attachments	270.70	668.16	0.00	0.00
95.00		67.70	122.04	0.00	0.00
97.00	(4) attachments	135.49	722.88	0.00	0.00
99.00		135.59	243.72	0.00	0.00
100.00		81.39	69.06	0.00	0.00
103.00	(3) attachments	244.48	270.54	0.00	0.00
103.50	(3) attachments	40.76	320.37	0.00	0.00
104.00	(1) attachments	40.77	214.53	0.00	0.00
105.00		81.57	69.06	0.00	0.00
108.00	(3) attachments	245.09	320.73	0.00	0.00
109.00		81.74	54.09	0.00	0.00
110.00		68.16	68.40	0.00	0.00
113.00	(1) attachments	565.33	325.20	0.00	0.00
114.00	(10) attachments	68.32	418.68	0.00	0.00
115.00		68.36	60.91	0.00	0.00
119.00		274.17	243.65	0.00	0.00
	Totals:	**10,702.35**	**19,569.51**	**0.00**	**0.00**

Calculated Forces

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 11	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60

Iterations 29

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	-19.56	-10.72	0.00	-635.06	0.00	635.06	2770.05	1385.03	4672.11	2339.53	0.00	0.000	0.000	0.279
5.00	-18.65	-10.10	0.00	-581.46	0.00	581.46	2737.33	1368.66	4531.89	2269.31	0.05	-0.100	0.000	0.263
10.00	-17.67	-9.52	0.00	-530.96	0.00	530.96	2703.94	1351.97	4392.63	2199.58	0.21	-0.196	0.000	0.248
15.00	-16.70	-8.98	0.00	-483.35	0.00	483.35	2669.88	1334.94	4254.38	2130.35	0.47	-0.290	0.000	0.233
20.00	-15.75	-8.48	0.00	-438.43	0.00	438.43	2635.15	1317.58	4117.21	2061.66	0.82	-0.379	0.000	0.219
25.00	-14.82	-8.00	0.00	-396.04	0.00	396.04	2599.76	1299.88	3981.17	1993.54	1.26	-0.465	0.000	0.204
30.00	-13.90	-7.55	0.00	-356.03	0.00	356.03	2563.70	1281.85	3846.33	1926.02	1.80	-0.548	0.000	0.190
35.00	-13.00	-7.11	0.00	-318.26	0.00	318.26	2526.98	1263.49	3712.75	1859.13	2.41	-0.626	0.000	0.176
40.00	-12.12	-6.66	0.00	-282.73	0.00	282.73	2489.59	1244.79	3580.49	1792.91	3.11	-0.701	0.000	0.163
40.50	-12.03	-6.62	0.00	-279.40	0.00	279.40	2485.81	1242.91	3567.34	1786.32	3.18	-0.708	0.000	0.161
45.00	-10.74	-6.22	0.00	-249.59	0.00	249.59	1840.21	920.11	2636.97	1320.44	3.88	-0.771	0.000	0.195
50.00	-10.01	-5.79	0.00	-218.48	0.00	218.48	1815.76	907.88	2545.53	1274.66	4.72	-0.837	0.000	0.177
55.00	-9.31	-5.37	0.00	-189.53	0.00	189.53	1790.64	895.32	2454.70	1229.18	5.64	-0.910	0.000	0.159
60.00	-8.61	-4.96	0.00	-162.68	0.00	162.68	1764.86	882.43	2364.54	1184.03	6.63	-0.977	0.000	0.142
65.00	-7.93	-4.55	0.00	-137.90	0.00	137.90	1738.40	869.20	2275.11	1139.25	7.69	-1.039	0.000	0.126
70.00	-7.26	-4.15	0.00	-115.15	0.00	115.15	1711.29	855.64	2186.47	1094.86	8.81	-1.095	0.000	0.109
75.00	-6.60	-3.76	0.00	-94.40	0.00	94.40	1683.50	841.75	2098.69	1050.90	9.98	-1.144	0.000	0.094
79.00	-6.09	-3.45	0.00	-79.36	0.00	79.36	1660.79	830.40	2029.12	1016.07	10.95	-1.179	0.000	0.082
79.00	-6.09	-3.45	0.00	-79.36	0.00	79.36	930.23	465.11	237.26	173.90	10.95	-1.179	0.000	0.463
80.00	-5.94	-3.41	0.00	-75.91	0.00	75.91	930.23	465.11	237.26	173.90	11.20	-1.188	0.000	0.443
84.00	-5.09	-3.04	0.00	-62.26	0.00	62.26	930.23	465.11	237.26	173.90	12.45	-1.771	0.000	0.364
85.00	-4.95	-2.98	0.00	-59.22	0.00	59.22	930.23	465.11	237.26	173.90	12.83	-1.899	0.000	0.346
87.00	-4.45	-2.85	0.00	-53.25	0.00	53.25	930.23	465.11	237.26	173.90	13.68	-2.136	0.000	0.311
89.00	-4.20	-2.72	0.00	-47.55	0.00	47.55	930.23	465.11	237.26	173.90	14.62	-2.349	0.000	0.278
89.00	-4.20	-2.72	0.00	-47.55	0.00	47.55	930.23	465.11	237.26	173.90	14.62	-2.349	0.000	0.278
90.00	-4.07	-2.66	0.00	-44.84	0.00	44.84	930.23	465.11	237.26	173.90	15.12	-2.447	0.000	0.262
94.00	-3.41	-2.37	0.00	-34.20	0.00	34.20	930.23	465.11	237.26	173.90	17.32	-2.780	0.000	0.200
95.00	-3.29	-2.30	0.00	-31.83	0.00	31.83	930.23	465.11	237.26	173.90	17.91	-2.850	0.000	0.187
97.00	-2.57	-2.13	0.00	-27.23	0.00	27.23	930.23	465.11	237.26	173.90	19.13	-2.975	0.000	0.159
99.00	-2.33	-1.99	0.00	-22.96	0.00	22.96	930.23	465.11	237.26	173.90	20.40	-3.081	0.000	0.135
99.00	-2.33	-1.99	0.00	-22.96	0.00	22.96	541.19	270.59	86.27	63.23	20.40	-3.081	0.000	0.368
100.00	-2.25	-1.92	0.00	-20.97	0.00	20.97	541.19	270.59	86.27	63.23	21.05	-3.127	0.000	0.336
103.00	-1.99	-1.67	0.00	-15.21	0.00	15.21	541.19	270.59	86.27	63.23	23.26	-3.878	0.000	0.244
103.50	-1.67	-1.61	0.00	-14.37	0.00	14.37	541.19	270.59	86.27	63.23	23.67	-3.980	0.000	0.230
104.00	-1.45	-1.56	0.00	-13.57	0.00	13.57	541.19	270.59	86.27	63.23	24.09	-4.077	0.000	0.217
105.00	-1.38	-1.48	0.00	-12.01	0.00	12.01	541.19	270.59	86.27	63.23	24.96	-4.254	0.000	0.192
108.00	-1.07	-1.22	0.00	-7.56	0.00	7.56	541.19	270.59	86.27	63.23	27.77	-4.659	0.000	0.122
109.00	-1.03	-1.13	0.00	-6.34	0.00	6.34	541.19	270.59	86.27	63.23	28.76	-4.756	0.000	0.102
109.00	-1.03	-1.13	0.00	-6.34	0.00	6.34	791.68	395.84	105.49	85.75	28.76	-4.756	0.000	0.075
110.00	-0.96	-1.06	0.00	-5.20	0.00	5.20	791.68	395.84	105.49	85.75	29.76	-4.835	0.000	0.062
113.00	-0.68	-0.47	0.00	-2.02	0.00	2.02	791.68	395.84	105.49	85.75	32.84	-4.958	0.000	0.024
114.00	-0.27	-0.37	0.00	-1.55	0.00	1.55	791.68	395.84	105.49	85.75	33.88	-4.978	0.000	0.018
115.00	-0.22	-0.29	0.00	-1.18	0.00	1.18	791.68	395.84	105.49	85.75	34.92	-4.993	0.000	0.014
119.00	0.00	-0.27	0.00	0.00	0.00	0.00	791.68	395.84	105.49	85.75	39.11	-5.020	0.000	0.000

Wind Loading - Shaft

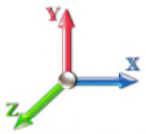
Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 29

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		2.18	0.70	34.943	38.44	419.42	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		2.05	0.70	32.848	36.13	399.27	0.650	0.000	5.00	17.336	11.27	651.5	0.0	617.6
10.00		1.94	0.70	31.007	34.11	380.75	0.650	0.000	5.00	17.019	11.06	603.7	0.0	606.2
15.00		1.83	0.70	29.385	32.32	363.68	0.650	0.000	5.00	16.702	10.86	561.4	0.0	594.8
20.00		1.75	0.70	27.953	30.75	347.91	0.650	0.000	5.00	16.384	10.65	523.9	0.0	583.4
25.00		1.67	0.70	26.687	29.36	333.29	0.650	0.000	5.00	16.067	10.44	490.5	0.0	572.0
30.00		1.60	0.70	25.587	28.15	319.84	0.650	0.000	5.00	15.750	10.24	461.0	0.0	560.6
35.00		1.53	0.73	25.699	28.27	314.02	0.650	0.000	5.00	15.432	10.03	453.7	0.0	549.2
40.00		1.48	0.76	25.738	28.31	307.72	0.650	0.000	5.00	15.115	9.82	445.0	0.0	537.8
40.50	Bot - Section 2	1.47	0.76	25.739	28.31	307.08	0.650	0.000	0.50	1.494	0.97	44.0	0.0	53.2
45.00	Top - Section 1	1.43	0.79	25.735	28.31	301.18	0.650	0.000	4.50	13.494	8.77	397.3	0.0	858.1
50.00		1.39	0.81	25.709	28.28	298.85	0.650	0.000	5.00	14.692	9.55	432.1	0.0	418.9
55.00		1.35	0.83	25.674	28.24	292.13	0.650	0.000	5.00	14.375	9.34	422.2	0.0	409.8
60.00		1.31	0.85	25.639	28.20	285.41	0.650	0.000	5.00	14.057	9.14	412.3	0.0	400.6
65.00		1.28	0.87	25.608	28.17	278.73	0.650	0.000	5.00	13.740	8.93	402.5	0.0	391.5
70.00		1.25	0.89	25.585	28.14	272.09	0.650	0.000	5.00	13.423	8.72	392.9	0.0	382.4
75.00		1.23	0.91	25.573	28.13	265.52	0.650	0.000	5.00	13.105	8.52	383.4	0.0	373.3
79.00	Top - Section 2	1.21	0.92	25.571	28.13	260.31	0.650	0.000	4.00	10.256	6.67	300.0	0.0	292.1
80.00		1.21	0.93	25.572	28.13	256.36	0.600	0.000	1.00	2.500	1.50	67.5	0.0	74.5
84.00	Appurtenance(s)	1.19	0.94	25.580	28.14	256.40	0.600	0.000	4.00	10.000	6.00	270.1	0.0	298.2
85.00		1.19	0.94	25.584	28.14	256.41	0.600	0.000	1.00	2.500	1.50	67.5	0.0	74.5
87.00	Appurtenance(s)	1.18	0.95	25.592	28.15	256.45	0.600	0.000	2.00	5.000	3.00	135.1	0.0	149.1
89.00	Top - Section 3	1.17	0.96	25.602	28.16	256.50	0.600	0.000	2.00	5.000	3.00	135.2	0.0	149.1
90.00		1.17	0.96	25.607	28.17	256.53	0.600	0.000	1.00	2.500	1.50	67.6	0.0	74.5
94.00	Appurtenance(s)	1.15	0.97	25.635	28.20	256.67	0.600	0.000	4.00	10.000	6.00	270.7	0.0	298.2
95.00		1.15	0.97	25.643	28.21	256.71	0.600	0.000	1.00	2.500	1.50	67.7	0.0	74.5
97.00	Appurtenance(s)	1.14	0.98	25.660	28.23	256.80	0.600	0.000	2.00	5.000	3.00	135.5	0.0	149.1
99.00	Top - Section 4	1.14	0.99	25.680	28.25	256.89	0.600	0.000	2.00	5.000	3.00	135.6	0.0	149.1
100.00		1.14	0.99	25.690	28.26	308.33	0.600	0.000	1.00	3.000	1.80	81.4	0.0	34.9
103.00	Appurtenance(s)	1.13	1.00	25.724	28.30	308.54	0.600	0.000	3.00	9.000	5.40	244.5	0.0	104.8
103.50	Appurtenance(s)	1.13	1.00	25.730	28.30	308.57	0.600	0.000	0.50	1.500	0.90	40.8	0.0	17.5
104.00	Appurtenance(s)	1.13	1.00	25.736	28.31	308.61	0.600	0.000	0.50	1.500	0.90	40.8	0.0	17.5
105.00		1.12	1.00	25.748	28.32	308.68	0.600	0.000	1.00	3.000	1.80	81.6	0.0	34.9
108.00	Appurtenance(s)	1.12	1.01	25.788	28.37	308.92	0.600	0.000	3.00	9.000	5.40	245.1	0.0	104.8
109.00	Top - Section 5	1.11	1.01	25.802	28.38	309.01	0.600	0.000	1.00	3.000	1.80	81.7	0.0	34.9
110.00		1.11	1.02	25.816	28.40	257.58	0.600	0.000	1.00	2.500	1.50	68.2	0.0	45.7
113.00	Appurtenance(s)	1.10	1.02	25.862	28.45	257.80	0.600	0.000	3.00	7.500	4.50	204.8	0.0	137.1
114.00	Appurtenance(s)	1.10	1.03	25.878	28.47	257.88	0.600	0.000	1.00	2.500	1.50	68.3	0.0	45.7
115.00		1.10	1.03	25.894	28.48	257.97	0.600	0.000	1.00	2.500	1.50	68.4	0.0	45.7
119.00		1.09	1.04	25.963	28.56	258.31	0.600	0.000	4.00	10.000	6.00	274.2	0.0	182.7
								Totals:	**119.00**			**10,229.8**		**10,498.7**

Discrete Appurtenance Forces

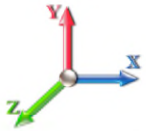
Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 29

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	114.00	RFS Twin PCS TMAs	3	25.878	28.466	0.00	1.00	0.00	29.70	0.000	0.000	0.00	0.00	0.00
2	114.00	V18-209014	3	25.878	28.466	0.00	1.00	0.00	50.49	0.000	0.000	0.00	0.00	0.00
3	114.00	27" Canister at 114.0'	1	25.878	28.466	1.00	1.00	0.00	135.00	0.000	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	25.878	28.466	0.00	1.00	0.00	47.52	0.000	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	25.862	28.448	1.00	1.00	7.92	90.00	0.000	0.000	360.50	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	25.774	28.352	0.00	1.00	0.00	96.39	0.000	-1.000	0.00	0.00	0.00
7	104.00	28" Canister at 104.0'	1	25.736	28.309	1.00	1.00	0.00	135.00	0.000	0.000	0.00	0.00	0.00
8	103.50	MT6407-77A	3	25.718	28.290	0.00	1.00	0.00	214.38	0.000	-1.000	0.00	0.00	0.00
9	103.00	Commscope	3	25.724	28.296	0.00	1.00	0.00	47.52	0.000	0.000	0.00	0.00	0.00
10	97.00	Raycap	1	25.660	28.227	0.00	1.00	0.00	19.71	0.000	0.000	0.00	0.00	0.00
11	97.00	FFVV-65B-R3	3	25.643	28.207	0.00	1.00	0.00	339.39	0.000	-2.000	0.00	0.00	0.00
12	94.00	29" Canister at 94.0'	1	25.635	28.198	1.00	1.00	0.00	135.00	0.000	0.000	0.00	0.00	0.00
13	87.00	Redconnex AN-80i	3	25.592	28.151	1.00	1.00	0.00	12.15	0.000	0.000	0.00	0.00	0.00
14	87.00	RFS	6	25.592	28.151	1.00	1.00	0.00	34.56	0.000	0.000	0.00	0.00	0.00
15	87.00	Andrew FPA5250D06-N	2	25.592	28.151	1.00	1.00	0.00	3.60	0.000	0.000	0.00	0.00	0.00
16	87.00	Commscope	3	25.584	28.142	1.00	1.00	0.00	122.58	0.000	-2.000	0.00	0.00	0.00
17	84.00	Redconnex AN-80i BTSs	3	25.580	28.139	1.00	1.00	2.49	12.15	0.000	0.000	112.10	0.00	0.00
18	84.00	Andrew FPA5250D06-N	1	25.575	28.133	1.00	1.00	0.00	12.60	0.000	-2.000	0.00	0.00	0.00
19	84.00	Argus LLPX310R	3	25.575	28.133	1.00	1.00	0.00	77.22	0.000	-2.000	0.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	25.580	28.139	1.00	1.00	0.00	135.00	0.000	0.000	0.00	0.00	0.00
							Totals:		**1,749.96**			**472.60**		

Total Applied Force Summary

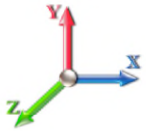
Structure:	CT13616-A-SBA		**Code:**	TIA-222-G	6/28/2022
Site Name:	St. Judes		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	101.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 3	**Struct Class:**	II	Page: 14

IES Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 29

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		651.47	666.45	0.00	0.00
10.00		603.69	728.39	0.00	0.00
15.00		561.44	717.00	0.00	0.00
20.00		523.94	705.61	0.00	0.00
25.00		490.52	694.22	0.00	0.00
30.00		461.02	682.83	0.00	0.00
35.00		453.71	671.44	0.00	0.00
40.00		445.05	660.05	0.00	0.00
40.50		43.99	65.38	0.00	0.00
45.00		397.27	968.06	0.00	0.00
50.00		432.11	541.09	0.00	0.00
55.00		422.21	531.98	0.00	0.00
60.00		412.31	522.87	0.00	0.00
65.00		402.52	513.75	0.00	0.00
70.00		392.88	504.64	0.00	0.00
75.00		383.40	495.53	0.00	0.00
79.00		300.02	389.86	0.00	0.00
80.00		67.51	98.99	0.00	0.00
84.00	(8) attachments	382.23	632.94	0.00	0.00
85.00		67.54	98.18	0.00	0.00
87.00	(14) attachments	135.12	369.24	0.00	0.00
89.00		135.18	183.06	0.00	0.00
90.00		67.60	91.53	0.00	0.00
94.00	(1) attachments	270.70	501.12	0.00	0.00
95.00		67.70	91.53	0.00	0.00
97.00	(4) attachments	135.49	542.16	0.00	0.00
99.00		135.59	182.79	0.00	0.00
100.00		81.39	51.80	0.00	0.00
103.00	(3) attachments	244.48	202.91	0.00	0.00
103.50	(3) attachments	40.76	240.28	0.00	0.00
104.00	(1) attachments	40.77	160.90	0.00	0.00
105.00		81.57	51.80	0.00	0.00
108.00	(3) attachments	245.09	240.55	0.00	0.00
109.00		81.74	40.56	0.00	0.00
110.00		68.16	51.30	0.00	0.00
113.00	(1) attachments	565.33	243.90	0.00	0.00
114.00	(10) attachments	68.32	314.01	0.00	0.00
115.00		68.36	45.68	0.00	0.00
119.00		274.17	182.74	0.00	0.00
	Totals:	**10,702.35**	**14,677.13**	**0.00**	**0.00**

Calculated Forces

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 15	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60

Iterations 29

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	-14.67	-10.72	0.00	-631.21	0.00	631.21	2770.05	1385.03	4672.11	2339.53	0.00	0.000	0.000	0.275
5.00	-13.98	-10.09	0.00	-577.63	0.00	577.63	2737.33	1368.66	4531.89	2269.31	0.05	-0.099	0.000	0.260
10.00	-13.24	-9.50	0.00	-527.20	0.00	527.20	2703.94	1351.97	4392.63	2199.58	0.21	-0.195	0.000	0.245
15.00	-12.51	-8.96	0.00	-479.68	0.00	479.68	2669.88	1334.94	4254.38	2130.35	0.46	-0.288	0.000	0.230
20.00	-11.80	-8.45	0.00	-434.89	0.00	434.89	2635.15	1317.58	4117.21	2061.66	0.81	-0.377	0.000	0.215
25.00	-11.10	-7.97	0.00	-392.65	0.00	392.65	2599.76	1299.88	3981.17	1993.54	1.25	-0.462	0.000	0.201
30.00	-10.41	-7.52	0.00	-352.80	0.00	352.80	2563.70	1281.85	3846.33	1926.02	1.78	-0.544	0.000	0.187
35.00	-9.73	-7.07	0.00	-315.22	0.00	315.22	2526.98	1263.49	3712.75	1859.13	2.39	-0.621	0.000	0.173
40.00	-9.07	-6.62	0.00	-279.87	0.00	279.87	2489.59	1244.79	3580.49	1792.91	3.09	-0.695	0.000	0.160
40.50	-9.00	-6.58	0.00	-276.56	0.00	276.56	2485.81	1242.91	3567.34	1786.32	3.16	-0.702	0.000	0.158
45.00	-8.03	-6.18	0.00	-246.94	0.00	246.94	1840.21	920.11	2636.97	1320.44	3.85	-0.765	0.000	0.191
50.00	-7.49	-5.75	0.00	-216.03	0.00	216.03	1815.76	907.88	2545.53	1274.66	4.69	-0.830	0.000	0.174
55.00	-6.96	-5.33	0.00	-187.27	0.00	187.27	1790.64	895.32	2454.70	1229.18	5.60	-0.902	0.000	0.156
60.00	-6.44	-4.92	0.00	-160.62	0.00	160.62	1764.86	882.43	2364.54	1184.03	6.58	-0.969	0.000	0.139
65.00	-5.93	-4.51	0.00	-136.03	0.00	136.03	1738.40	869.20	2275.11	1139.25	7.63	-1.030	0.000	0.123
70.00	-5.42	-4.11	0.00	-113.48	0.00	113.48	1711.29	855.64	2186.47	1094.86	8.73	-1.084	0.000	0.107
75.00	-4.93	-3.72	0.00	-92.91	0.00	92.91	1683.50	841.75	2098.69	1050.90	9.90	-1.133	0.000	0.091
79.00	-4.55	-3.42	0.00	-78.01	0.00	78.01	1660.79	830.40	2029.12	1016.07	10.86	-1.168	0.000	0.080
79.00	-4.55	-3.42	0.00	-78.01	0.00	78.01	930.23	465.11	237.26	173.90	10.86	-1.168	0.000	0.454
80.00	-4.43	-3.37	0.00	-74.59	0.00	74.59	930.23	465.11	237.26	173.90	11.11	-1.176	0.000	0.434
84.00	-3.79	-3.00	0.00	-61.10	0.00	61.10	930.23	465.11	237.26	173.90	12.34	-1.749	0.000	0.355
85.00	-3.69	-2.94	0.00	-58.11	0.00	58.11	930.23	465.11	237.26	173.90	12.72	-1.875	0.000	0.338
87.00	-3.31	-2.80	0.00	-52.23	0.00	52.23	930.23	465.11	237.26	173.90	13.55	-2.107	0.000	0.304
89.00	-3.13	-2.67	0.00	-46.63	0.00	46.63	930.23	465.11	237.26	173.90	14.48	-2.316	0.000	0.272
89.00	-3.13	-2.67	0.00	-46.63	0.00	46.63	930.23	465.11	237.26	173.90	14.48	-2.316	0.000	0.272
90.00	-3.03	-2.61	0.00	-43.96	0.00	43.96	930.23	465.11	237.26	173.90	14.98	-2.412	0.000	0.256
94.00	-2.53	-2.32	0.00	-33.52	0.00	33.52	930.23	465.11	237.26	173.90	17.14	-2.739	0.000	0.196
95.00	-2.44	-2.26	0.00	-31.20	0.00	31.20	930.23	465.11	237.26	173.90	17.72	-2.807	0.000	0.182
97.00	-1.90	-2.10	0.00	-26.69	0.00	26.69	930.23	465.11	237.26	173.90	18.92	-2.929	0.000	0.156
99.00	-1.72	-1.95	0.00	-22.49	0.00	22.49	930.23	465.11	237.26	173.90	20.17	-3.033	0.000	0.131
99.00	-1.72	-1.95	0.00	-22.49	0.00	22.49	541.19	270.59	86.27	63.23	20.17	-3.033	0.000	0.359
100.00	-1.66	-1.88	0.00	-20.54	0.00	20.54	541.19	270.59	86.27	63.23	20.81	-3.078	0.000	0.328
103.00	-1.46	-1.64	0.00	-14.89	0.00	14.89	541.19	270.59	86.27	63.23	22.99	-3.813	0.000	0.238
103.50	-1.23	-1.58	0.00	-14.07	0.00	14.07	541.19	270.59	86.27	63.23	23.39	-3.914	0.000	0.225
104.00	-1.06	-1.53	0.00	-13.28	0.00	13.28	541.19	270.59	86.27	63.23	23.81	-4.008	0.000	0.212
105.00	-1.01	-1.45	0.00	-11.75	0.00	11.75	541.19	270.59	86.27	63.23	24.66	-4.181	0.000	0.188
108.00	-0.78	-1.19	0.00	-7.39	0.00	7.39	541.19	270.59	86.27	63.23	27.42	-4.578	0.000	0.118
109.00	-0.75	-1.11	0.00	-6.20	0.00	6.20	541.19	270.59	86.27	63.23	28.39	-4.672	0.000	0.099
109.00	-0.75	-1.11	0.00	-6.20	0.00	6.20	791.68	395.84	105.49	85.75	28.39	-4.672	0.000	0.073
110.00	-0.70	-1.04	0.00	-5.09	0.00	5.09	791.68	395.84	105.49	85.75	29.38	-4.750	0.000	0.060
113.00	-0.51	-0.46	0.00	-1.97	0.00	1.97	791.68	395.84	105.49	85.75	32.40	-4.870	0.000	0.024
114.00	-0.20	-0.36	0.00	-1.52	0.00	1.52	791.68	395.84	105.49	85.75	33.42	-4.890	0.000	0.018
115.00	-0.16	-0.29	0.00	-1.16	0.00	1.16	791.68	395.84	105.49	85.75	34.45	-4.905	0.000	0.014
119.00	0.00	-0.27	0.00	0.00	0.00	0.00	791.68	395.84	105.49	85.75	38.57	-4.931	0.000	0.000

Wind Loading - Shaft

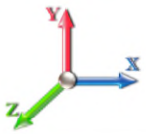
Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 28

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		2.18	0.70	9.285	10.21	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		2.05	0.70	8.728	9.60	0.00	1.200	1.597	5.00	18.667	22.40	215.1	417.8	1241.2
10.00		1.94	0.70	8.239	9.06	0.00	1.200	1.677	5.00	18.417	22.10	200.3	431.8	1240.0
15.00		1.83	0.70	7.808	8.59	0.00	1.200	1.714	5.00	18.130	21.76	186.8	433.7	1226.8
20.00		1.75	0.70	7.427	8.17	0.00	1.200	1.734	5.00	17.829	21.39	174.8	430.8	1208.6
25.00		1.67	0.70	7.091	7.80	0.00	1.200	1.744	5.00	17.521	21.02	164.0	425.4	1188.1
30.00		1.60	0.70	6.799	7.48	0.00	1.200	1.750	5.00	17.208	20.65	154.4	418.7	1166.2
35.00		1.53	0.73	6.828	7.51	0.00	1.200	1.753	5.00	16.893	20.27	152.3	411.2	1143.5
40.00		1.48	0.76	6.839	7.52	0.00	1.200	1.754	5.00	16.576	19.89	149.6	403.3	1120.4
40.50	Bot - Section 2	1.47	0.76	6.839	7.52	0.00	1.200	1.754	0.50	1.640	1.97	14.8	40.2	111.1
45.00	Top - Section 1	1.43	0.79	6.838	7.52	0.00	1.200	1.753	4.50	14.809	17.77	133.7	360.5	1504.6
50.00		1.39	0.81	6.831	7.51	0.00	1.200	1.753	5.00	16.153	19.38	145.6	392.2	950.7
55.00		1.35	0.83	6.822	7.50	0.00	1.200	1.752	5.00	15.835	19.00	142.6	383.9	930.2
60.00		1.31	0.85	6.812	7.49	0.00	1.200	1.751	5.00	15.517	18.62	139.5	375.6	909.8
65.00		1.28	0.87	6.804	7.48	0.00	1.200	1.750	5.00	15.199	18.24	136.5	367.2	889.3
70.00		1.25	0.89	6.798	7.48	0.00	1.200	1.750	5.00	14.881	17.86	133.5	359.0	868.9
75.00		1.23	0.91	6.795	7.47	0.00	1.200	1.750	5.00	14.563	17.48	130.6	350.8	848.5
79.00	Top - Section 2	1.21	0.92	6.794	7.47	0.00	1.200	1.750	4.00	11.422	13.71	102.4	275.4	664.9
80.00		1.21	0.93	6.795	7.47	0.00	1.200	1.750	1.00	2.500	3.00	22.4	51.9	151.3
84.00	Appurtenance(s)	1.19	0.94	6.797	7.48	0.00	1.200	1.750	4.00	10.000	12.00	89.7	207.4	605.0
85.00		1.19	0.94	6.798	7.48	0.00	1.200	1.750	1.00	2.500	3.00	22.4	51.9	151.3
87.00	Appurtenance(s)	1.18	0.95	6.800	7.48	0.00	1.200	1.750	2.00	5.000	6.00	44.9	103.7	302.5
89.00	Top - Section 3	1.17	0.96	6.802	7.48	0.00	1.200	1.750	2.00	5.000	6.00	44.9	103.7	302.5
90.00		1.17	0.96	6.804	7.48	0.00	1.200	1.750	1.00	2.500	3.00	22.5	51.9	151.3
94.00	Appurtenance(s)	1.15	0.97	6.811	7.49	0.00	1.200	1.751	4.00	10.000	12.00	89.9	207.5	605.1
95.00		1.15	0.97	6.813	7.49	0.00	1.200	1.751	1.00	2.500	3.00	22.5	51.9	151.3
97.00	Appurtenance(s)	1.14	0.98	6.818	7.50	0.00	1.200	1.752	2.00	5.000	6.00	45.0	103.8	302.6
99.00	Top - Section 4	1.14	0.99	6.823	7.51	0.00	1.200	1.752	2.00	5.000	6.00	45.0	103.8	302.6
100.00		1.14	0.99	6.826	7.51	0.00	1.200	1.752	1.00	3.000	3.60	27.0	51.6	98.2
103.00	Appurtenance(s)	1.13	1.00	6.835	7.52	0.00	1.200	1.753	3.00	9.000	10.80	81.2	154.8	294.6
103.50	Appurtenance(s)	1.13	1.00	6.836	7.52	0.00	1.200	1.753	0.50	1.500	1.80	13.5	25.8	49.1
104.00	Appurtenance(s)	1.13	1.00	6.838	7.52	0.00	1.200	1.753	0.50	1.500	1.80	13.5	25.8	49.1
105.00		1.12	1.00	6.841	7.53	0.00	1.200	1.754	1.00	3.000	3.60	27.1	51.6	98.2
108.00	Appurtenance(s)	1.12	1.01	6.852	7.54	0.00	1.200	1.755	3.00	9.000	10.80	81.4	154.9	294.7
109.00	Top - Section 5	1.11	1.01	6.856	7.54	0.00	1.200	1.755	1.00	3.000	3.60	27.1	51.6	98.2
110.00		1.11	1.02	6.860	7.55	0.00	1.200	1.755	1.00	2.500	3.00	22.6	45.5	106.4
113.00	Appurtenance(s)	1.10	1.02	6.872	7.56	0.00	1.200	1.756	3.00	7.500	9.00	68.0	136.5	319.3
114.00	Appurtenance(s)	1.10	1.03	6.876	7.56	0.00	1.200	1.757	1.00	2.500	3.00	22.7	45.5	106.4
115.00		1.10	1.03	6.880	7.57	0.00	1.200	1.757	1.00	2.500	3.00	22.7	45.5	106.4
119.00		1.09	1.04	6.898	7.59	0.00	1.200	1.759	4.00	10.000	12.00	91.1	182.1	425.8
								Totals:	**119.00**			**3,423.9**		**22,284.5**

Discrete Appurtenance Forces

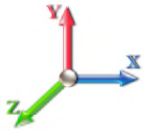
Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 28

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	114.00	RFS Twin PCS TMAs	3	6.876	7.563	0.00	1.00	0.00	64.40	0.000	0.000	0.00	0.00	0.00
2	114.00	V18-209014	3	6.876	7.563	0.00	1.00	13.56	335.65	0.000	0.000	102.53	0.00	0.00
3	114.00	27" Canister at 114.0'	1	6.876	7.563	1.00	1.00	0.00	460.41	0.000	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	6.876	7.563	0.00	1.00	0.00	103.68	0.000	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	6.872	7.559	1.00	1.00	8.48	127.03	0.000	0.000	64.07	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	6.848	7.533	0.00	1.00	16.18	527.92	0.000	-1.000	121.87	0.00	-121.87
7	104.00	28" Canister at 104.0'	1	6.838	7.522	1.00	1.00	0.00	458.70	0.000	0.000	0.00	0.00	0.00
8	103.50	MT6407-77A	3	6.833	7.517	0.00	1.00	16.79	644.13	0.000	-1.000	126.18	0.00	-126.18
9	103.00	Commscope	3	6.835	7.518	0.00	1.00	0.00	104.05	0.000	0.000	0.00	0.00	0.00
10	97.00	Raycap	1	6.818	7.500	0.00	1.00	0.00	67.03	0.000	0.000	0.00	0.00	0.00
11	97.00	FFVV-65B-R3	3	6.813	7.495	0.00	1.00	63.40	1946.68	0.000	-2.000	475.14	0.00	-950.28
12	94.00	29" Canister at 94.0'	1	6.811	7.492	1.00	1.00	0.00	889.10	0.000	0.000	0.00	0.00	0.00
13	87.00	Redconnex AN-80i	3	6.800	7.480	1.00	1.00	0.00	257.72	0.000	0.000	0.00	0.00	0.00
14	87.00	RFS	6	6.800	7.480	1.00	1.00	0.00	100.73	0.000	0.000	0.00	0.00	0.00
15	87.00	Andrew FPA5250D06-N	2	6.800	7.480	1.00	1.00	0.00	63.89	0.000	0.000	0.00	0.00	0.00
16	87.00	Commscope	3	6.798	7.477	1.00	1.00	0.00	626.35	0.000	-2.000	0.00	0.00	0.00
17	84.00	Redconnex AN-80i BTSs	3	6.797	7.476	1.00	1.00	4.52	51.63	0.000	0.000	33.80	0.00	0.00
18	84.00	Andrew FPA5250D06-N	1	6.795	7.475	1.00	1.00	0.71	38.79	0.000	-2.000	5.34	0.00	-10.67
19	84.00	Argus LLPX310R	3	6.795	7.475	1.00	1.00	0.00	296.87	0.000	-2.000	0.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	6.797	7.476	1.00	1.00	0.00	888.40	0.000	0.000	0.00	0.00	0.00
							Totals:		**8,053.16**			**928.93**		

Total Applied Force Summary

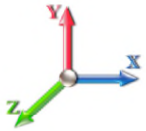
Structure:	CT13616-A-SBA		**Code:**	TIA-222-G	6/28/2022
Site Name:	St. Judes		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	101.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 3	**Struct Class:**	II	Page: 18

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 28

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		215.06	1306.37	0.00	0.00
10.00		200.28	1403.01	0.00	0.00
15.00		186.85	1389.72	0.00	0.00
20.00		174.79	1371.60	0.00	0.00
25.00		163.99	1351.04	0.00	0.00
30.00		154.43	1329.14	0.00	0.00
35.00		152.26	1306.47	0.00	0.00
40.00		149.63	1283.35	0.00	0.00
40.50		14.81	127.42	0.00	0.00
45.00		133.67	1651.23	0.00	0.00
50.00		145.65	1113.70	0.00	0.00
55.00		142.59	1093.21	0.00	0.00
60.00		139.53	1072.71	0.00	0.00
65.00		136.51	1052.25	0.00	0.00
70.00		133.53	1031.84	0.00	0.00
75.00		130.62	1011.49	0.00	0.00
79.00		102.44	795.23	0.00	0.00
80.00		22.42	183.84	0.00	0.00
84.00	(8) attachments	128.85	2011.08	0.00	-10.67
85.00		22.43	182.76	0.00	0.00
87.00	(14) attachments	44.88	1414.22	0.00	0.00
89.00		44.90	347.81	0.00	0.00
90.00		22.45	173.91	0.00	0.00
94.00	(1) attachments	89.91	1584.76	0.00	0.00
95.00		22.48	173.92	0.00	0.00
97.00	(4) attachments	520.14	2361.56	0.00	-950.28
99.00		45.03	347.50	0.00	0.00
100.00		27.03	120.66	0.00	0.00
103.00	(3) attachments	81.20	466.05	0.00	0.00
103.50	(3) attachments	139.72	704.46	0.00	-126.18
104.00	(1) attachments	13.54	519.04	0.00	0.00
105.00		27.09	120.67	0.00	0.00
108.00	(3) attachments	203.28	874.98	0.00	-121.87
109.00		27.15	105.71	0.00	0.00
110.00		22.64	113.90	0.00	0.00
113.00	(1) attachments	132.10	468.77	0.00	0.00
114.00	(10) attachments	125.22	1078.06	0.00	0.00
115.00		22.70	106.43	0.00	0.00
119.00		91.06	425.80	0.00	0.00
	Totals:	**4,352.86**	**33,575.64**	**0.00**	**-1,209.01**

Calculated Forces

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 19	

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

Dead Load Factor 1.20

Wind Load Factor 1.00

Iterations 28

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	-33.57	-4.37	0.00	-301.11	0.00	301.11	2770.05	1385.03	4672.11	2339.53	0.00	0.000	0.000	0.141
5.00	-32.26	-4.18	0.00	-279.28	0.00	279.28	2737.33	1368.66	4531.89	2269.31	0.03	-0.048	0.000	0.135
10.00	-30.86	-4.00	0.00	-258.39	0.00	258.39	2703.94	1351.97	4392.63	2199.58	0.10	-0.094	0.000	0.129
15.00	-29.47	-3.83	0.00	-238.39	0.00	238.39	2669.88	1334.94	4254.38	2130.35	0.22	-0.140	0.000	0.123
20.00	-28.09	-3.68	0.00	-219.22	0.00	219.22	2635.15	1317.58	4117.21	2061.66	0.39	-0.184	0.000	0.117
25.00	-26.74	-3.53	0.00	-200.84	0.00	200.84	2599.76	1299.88	3981.17	1993.54	0.61	-0.228	0.000	0.111
30.00	-25.41	-3.39	0.00	-183.20	0.00	183.20	2563.70	1281.85	3846.33	1926.02	0.87	-0.270	0.000	0.105
35.00	-24.10	-3.24	0.00	-166.27	0.00	166.27	2526.98	1263.49	3712.75	1859.13	1.18	-0.310	0.000	0.099
40.00	-22.82	-3.10	0.00	-150.05	0.00	150.05	2489.59	1244.79	3580.49	1792.91	1.52	-0.350	0.000	0.093
40.50	-22.69	-3.09	0.00	-148.50	0.00	148.50	2485.81	1242.91	3567.34	1786.32	1.56	-0.354	0.000	0.092
45.00	-21.04	-2.96	0.00	-134.61	0.00	134.61	1840.21	920.11	2636.97	1320.44	1.91	-0.387	0.000	0.113
50.00	-19.92	-2.82	0.00	-119.83	0.00	119.83	1815.76	907.88	2545.53	1274.66	2.34	-0.423	0.000	0.105
55.00	-18.83	-2.68	0.00	-105.75	0.00	105.75	1790.64	895.32	2454.70	1229.18	2.80	-0.464	0.000	0.097
60.00	-17.75	-2.54	0.00	-92.36	0.00	92.36	1764.86	882.43	2364.54	1184.03	3.31	-0.502	0.000	0.088
65.00	-16.70	-2.40	0.00	-79.66	0.00	79.66	1738.40	869.20	2275.11	1139.25	3.85	-0.537	0.000	0.080
70.00	-15.67	-2.27	0.00	-67.64	0.00	67.64	1711.29	855.64	2186.47	1094.86	4.43	-0.569	0.000	0.071
75.00	-14.66	-2.13	0.00	-56.30	0.00	56.30	1683.50	841.75	2098.69	1050.90	5.04	-0.598	0.000	0.062
79.00	-13.86	-2.03	0.00	-47.76	0.00	47.76	1660.79	830.40	2029.12	1016.07	5.55	-0.619	0.000	0.055
79.00	-13.86	-2.03	0.00	-47.76	0.00	47.76	930.23	465.11	237.26	173.90	5.55	-0.619	0.000	0.290
80.00	-13.67	-2.05	0.00	-45.74	0.00	45.74	930.23	465.11	237.26	173.90	5.68	-0.625	0.000	0.278
84.00	-11.66	-1.93	0.00	-37.55	0.00	37.55	930.23	465.11	237.26	173.90	6.36	-0.976	0.000	0.228
85.00	-11.47	-1.93	0.00	-35.62	0.00	35.62	930.23	465.11	237.26	173.90	6.57	-1.053	0.000	0.217
87.00	-10.06	-1.88	0.00	-31.77	0.00	31.77	930.23	465.11	237.26	173.90	7.04	-1.196	0.000	0.193
89.00	-9.71	-1.84	0.00	-28.01	0.00	28.01	930.23	465.11	237.26	173.90	7.57	-1.322	0.000	0.172
89.00	-9.71	-1.84	0.00	-28.01	0.00	28.01	930.23	465.11	237.26	173.90	7.57	-1.322	0.000	0.172
90.00	-9.53	-1.84	0.00	-26.17	0.00	26.17	930.23	465.11	237.26	173.90	7.85	-1.379	0.000	0.161
94.00	-7.94	-1.72	0.00	-18.82	0.00	18.82	930.23	465.11	237.26	173.90	9.09	-1.569	0.000	0.117
95.00	-7.77	-1.70	0.00	-17.10	0.00	17.10	930.23	465.11	237.26	173.90	9.43	-1.607	0.000	0.107
97.00	-5.42	-1.12	0.00	-13.70	0.00	13.70	930.23	465.11	237.26	173.90	10.11	-1.672	0.000	0.085
99.00	-5.07	-1.07	0.00	-11.46	0.00	11.46	930.23	465.11	237.26	173.90	10.83	-1.725	0.000	0.071
99.00	-5.07	-1.07	0.00	-11.46	0.00	11.46	541.19	270.59	86.27	63.23	10.83	-1.725	0.000	0.191
100.00	-4.95	-1.05	0.00	-10.39	0.00	10.39	541.19	270.59	86.27	63.23	11.19	-1.748	0.000	0.174
103.00	-4.48	-0.97	0.00	-7.23	0.00	7.23	541.19	270.59	86.27	63.23	12.41	-2.114	0.000	0.123
103.50	-3.79	-0.81	0.00	-6.75	0.00	6.75	541.19	270.59	86.27	63.23	12.63	-2.162	0.000	0.114
104.00	-3.27	-0.78	0.00	-6.34	0.00	6.34	541.19	270.59	86.27	63.23	12.86	-2.207	0.000	0.106
105.00	-3.14	-0.76	0.00	-5.56	0.00	5.56	541.19	270.59	86.27	63.23	13.33	-2.289	0.000	0.094
108.00	-2.28	-0.52	0.00	-3.29	0.00	3.29	541.19	270.59	86.27	63.23	14.83	-2.473	0.000	0.056
109.00	-2.17	-0.49	0.00	-2.77	0.00	2.77	541.19	270.59	86.27	63.23	15.36	-2.515	0.000	0.048
109.00	-2.17	-0.49	0.00	-2.77	0.00	2.77	791.68	395.84	105.49	85.75	15.36	-2.515	0.000	0.035
110.00	-2.06	-0.46	0.00	-2.28	0.00	2.28	791.68	395.84	105.49	85.75	15.89	-2.550	0.000	0.029
113.00	-1.60	-0.31	0.00	-0.89	0.00	0.89	791.68	395.84	105.49	85.75	17.51	-2.604	0.000	0.012
114.00	-0.53	-0.14	0.00	-0.58	0.00	0.58	791.68	395.84	105.49	85.75	18.05	-2.612	0.000	0.007
115.00	-0.42	-0.11	0.00	-0.44	0.00	0.44	791.68	395.84	105.49	85.75	18.60	-2.618	0.000	0.006
119.00	0.00	-0.09	0.00	0.00	0.00	0.00	791.68	395.84	105.49	85.75	20.80	-2.628	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 20	

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Load Case:	1.2D + 1.0E							**Iterations**	26
Gust Response Factor	1.10				**Sds**	0.21		**Ss**	0.19
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.52		**SA**	0.05	**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		686.18	0.00	0.04	0.02	12.55	
10.00		673.53	0.01	0.06	0.03	17.64	
15.00		660.87	0.03	0.07	0.04	19.68	
20.00		648.21	0.05	0.07	0.04	20.49	
25.00		635.56	0.08	0.07	0.04	20.91	
30.00		622.90	0.12	0.07	0.03	21.21	
35.00		610.24	0.16	0.07	0.03	21.34	
40.00		597.59	0.21	0.06	0.02	21.01	
40.50	Bot - Section 2	59.06	0.22	0.06	0.02	2.07	
45.00	Top - Section 1	953.40	0.27	0.05	0.01	32.15	
50.00		465.41	0.33	0.04	0.01	13.82	
55.00		455.29	0.40	0.02	0.01	10.14	
60.00		445.16	0.48	-0.01	0.01	5.08	
65.00		435.04	0.56	-0.04	0.01	-0.68	
70.00		424.91	0.65	-0.07	0.02	-5.89	
75.00		414.79	0.75	-0.10	0.04	-9.22	
79.00	Top - Section 2	324.54	0.83	-0.12	0.06	-7.88	
80.00		74.83	0.85	-0.12	0.07	-1.80	
84.00	Appurtenance(s)	562.62	0.94	-0.12	0.10	-11.08	
85.00		74.83	0.96	-0.12	0.11	-1.33	
87.00	Appurtenance(s)	341.76	1.01	-0.11	0.14	-4.38	
89.00	Top - Section 3	149.66	1.06	-0.09	0.16	-0.97	
90.00		74.83	1.08	-0.08	0.18	-0.21	
94.00	Appurtenance(s)	449.32	1.18	-0.01	0.24	7.03	
95.00		74.83	1.20	0.01	0.26	1.58	
97.00	Appurtenance(s)	548.66	1.26	0.06	0.30	18.24	
99.00	Top - Section 4	149.66	1.31	0.13	0.34	7.00	
100.00		29.23	1.33	0.17	0.37	1.58	
103.00	Appurtenance(s)	140.49	1.42	0.31	0.45	11.00	
103.50	Appurtenance(s)	252.82	1.43	0.34	0.46	20.89	
104.00	Appurtenance(s)	164.62	1.44	0.37	0.48	14.33	
105.00		29.23	1.47	0.43	0.51	2.81	
108.00	Appurtenance(s)	194.79	1.56	0.65	0.61	24.53	
109.00	Top - Section 5	29.23	1.59	0.73	0.65	3.99	
110.00		42.76	1.61	0.83	0.69	6.31	
113.00	Appurtenance(s)	228.28	1.70	1.14	0.82	41.78	
114.00	Appurtenance(s)	334.66	1.73	1.26	0.87	65.46	
115.00		42.76	1.77	1.38	0.92	8.92	
119.00		171.04	1.89	1.98	1.14	45.20	
	Totals:	**13,273.6**				**455.3**	**Total Wind:** **10,702.4**

Calculated Forces

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 21	

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Load Case: 1.2D + 1.0E

Iterations 26

Gust Response Factor	1.10			**Sds**	0.21			**Ss**	0.19
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.52	**SA**	0.05	**Seismic Importance Factor**			1.00

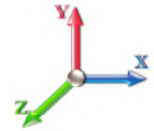
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-19.57	-0.50	0.00	-38.84	0.00	38.84	2770.05	1385.03	4672.11	2339.53		0.00	0.00	0.024
5.00	-18.68	-0.49	0.00	-36.34	0.00	36.34	2737.33	1368.66	4531.89	2269.31		0.00	-0.01	0.023
10.00	-17.71	-0.47	0.00	-33.89	0.00	33.89	2703.94	1351.97	4392.63	2199.58		0.01	-0.01	0.022
15.00	-16.75	-0.45	0.00	-31.53	0.00	31.53	2669.88	1334.94	4254.38	2130.35		0.03	-0.02	0.021
20.00	-15.81	-0.44	0.00	-29.26	0.00	29.26	2635.15	1317.58	4117.21	2061.66		0.05	-0.02	0.020
25.00	-14.89	-0.42	0.00	-27.08	0.00	27.08	2599.76	1299.88	3981.17	1993.54		0.08	-0.03	0.019
30.00	-13.98	-0.40	0.00	-25.00	0.00	25.00	2563.70	1281.85	3846.33	1926.02		0.11	-0.04	0.018
35.00	-13.08	-0.37	0.00	-23.02	0.00	23.02	2526.98	1263.49	3712.75	1859.13		0.15	-0.04	0.018
40.00	-12.20	-0.35	0.00	-21.15	0.00	21.15	2489.59	1244.79	3580.49	1792.91		0.20	-0.05	0.017
40.50	-12.11	-0.35	0.00	-20.97	0.00	20.97	2485.81	1242.91	3567.34	1786.32		0.21	-0.05	0.017
45.00	-10.82	-0.32	0.00	-19.39	0.00	19.39	1840.21	920.11	2636.97	1320.44		0.25	-0.05	0.021
50.00	-10.10	-0.31	0.00	-17.79	0.00	17.79	1815.76	907.88	2545.53	1274.66		0.31	-0.06	0.020
55.00	-9.39	-0.30	0.00	-16.26	0.00	16.26	1790.64	895.32	2454.70	1229.18		0.37	-0.06	0.018
60.00	-8.70	-0.29	0.00	-14.78	0.00	14.78	1764.86	882.43	2364.54	1184.03		0.44	-0.07	0.017
65.00	-8.01	-0.29	0.00	-13.32	0.00	13.32	1738.40	869.20	2275.11	1139.25		0.52	-0.08	0.016
70.00	-7.34	-0.29	0.00	-11.87	0.00	11.87	1711.29	855.64	2186.47	1094.86		0.60	-0.08	0.015
75.00	-6.68	-0.29	0.00	-10.41	0.00	10.41	1683.50	841.75	2098.69	1050.90		0.69	-0.09	0.014
79.00	-6.16	-0.29	0.00	-9.25	0.00	9.25	1660.79	830.40	2029.12	1016.07		0.76	-0.09	0.013
79.00	-6.16	-0.29	0.00	-9.25	0.00	9.25	930.23	465.11	237.26	173.90		0.76	-0.09	0.060
80.00	-6.02	-0.29	0.00	-8.96	0.00	8.96	930.23	465.11	237.26	173.90		0.78	-0.09	0.058
84.00	-5.18	-0.30	0.00	-7.78	0.00	7.78	930.23	465.11	237.26	173.90		0.89	-0.16	0.050
85.00	-5.05	-0.30	0.00	-7.49	0.00	7.49	930.23	465.11	237.26	173.90		0.92	-0.18	0.048
87.00	-4.56	-0.30	0.00	-6.89	0.00	6.89	930.23	465.11	237.26	173.90		1.00	-0.21	0.045
89.00	-4.31	-0.30	0.00	-6.30	0.00	6.30	930.23	465.11	237.26	173.90		1.10	-0.24	0.041
89.00	-4.31	-0.30	0.00	-6.30	0.00	6.30	930.23	465.11	237.26	173.90		1.10	-0.24	0.041
90.00	-4.19	-0.30	0.00	-6.00	0.00	6.00	930.23	465.11	237.26	173.90		1.15	-0.25	0.039
94.00	-3.52	-0.29	0.00	-4.80	0.00	4.80	930.23	465.11	237.26	173.90		1.38	-0.29	0.031
95.00	-3.40	-0.29	0.00	-4.51	0.00	4.51	930.23	465.11	237.26	173.90		1.44	-0.30	0.030
97.00	-2.68	-0.27	0.00	-3.92	0.00	3.92	930.23	465.11	237.26	173.90		1.57	-0.32	0.025
99.00	-2.43	-0.26	0.00	-3.39	0.00	3.39	930.23	465.11	237.26	173.90		1.71	-0.34	0.022
99.00	-2.43	-0.26	0.00	-3.39	0.00	3.39	541.19	270.59	86.27	63.23		1.71	-0.34	0.058
100.00	-2.36	-0.26	0.00	-3.13	0.00	3.13	541.19	270.59	86.27	63.23		1.78	-0.34	0.054
103.00	-2.09	-0.25	0.00	-2.34	0.00	2.34	541.19	270.59	86.27	63.23		2.03	-0.46	0.041
103.50	-1.77	-0.23	0.00	-2.21	0.00	2.21	541.19	270.59	86.27	63.23		2.08	-0.47	0.038
104.00	-1.56	-0.21	0.00	-2.10	0.00	2.10	541.19	270.59	86.27	63.23		2.13	-0.49	0.036
105.00	-1.49	-0.21	0.00	-1.89	0.00	1.89	541.19	270.59	86.27	63.23		2.24	-0.52	0.033
108.00	-1.17	-0.18	0.00	-1.26	0.00	1.26	541.19	270.59	86.27	63.23		2.58	-0.58	0.022
109.00	-1.11	-0.18	0.00	-1.07	0.00	1.07	541.19	270.59	86.27	63.23		2.71	-0.60	0.019
109.00	-1.11	-0.18	0.00	-1.07	0.00	1.07	791.68	395.84	105.49	85.75		2.71	-0.60	0.014
110.00	-1.05	-0.17	0.00	-0.89	0.00	0.89	791.68	395.84	105.49	85.75		2.83	-0.61	0.012
113.00	-0.72	-0.13	0.00	-0.38	0.00	0.38	791.68	395.84	105.49	85.75		3.23	-0.63	0.005
114.00	-0.30	-0.06	0.00	-0.25	0.00	0.25	791.68	395.84	105.49	85.75		3.36	-0.64	0.003
115.00	-0.24	-0.05	0.00	-0.19	0.00	0.19	791.68	395.84	105.49	85.75		3.49	-0.64	0.003
119.00	0.00	-0.05	0.00	0.00	0.00	0.00	791.68	395.84	105.49	85.75		4.03	-0.64	0.000

Seismic Segment Forces (Factored)

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.21	**Iterations**	26
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.52	**SA**	0.05	**S1**	0.06
						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		686.18	0.00	0.04	0.02	12.55	
10.00		673.53	0.01	0.06	0.03	17.64	
15.00		660.87	0.03	0.07	0.04	19.68	
20.00		648.21	0.05	0.07	0.04	20.49	
25.00		635.56	0.08	0.07	0.04	20.91	
30.00		622.90	0.12	0.07	0.03	21.21	
35.00		610.24	0.16	0.07	0.03	21.34	
40.00		597.59	0.21	0.06	0.02	21.01	
40.50	Bot - Section 2	59.06	0.22	0.06	0.02	2.07	
45.00	Top - Section 1	953.40	0.27	0.05	0.01	32.15	
50.00		465.41	0.33	0.04	0.01	13.82	
55.00		455.29	0.40	0.02	0.01	10.14	
60.00		445.16	0.48	-0.01	0.01	5.08	
65.00		435.04	0.56	-0.04	0.01	-0.68	
70.00		424.91	0.65	-0.07	0.02	-5.89	
75.00		414.79	0.75	-0.10	0.04	-9.22	
79.00	Top - Section 2	324.54	0.83	-0.12	0.06	-7.88	
80.00		74.83	0.85	-0.12	0.07	-1.80	
84.00	Appurtenance(s)	562.62	0.94	-0.12	0.10	-11.08	
85.00		74.83	0.96	-0.12	0.11	-1.33	
87.00	Appurtenance(s)	341.76	1.01	-0.11	0.14	-4.38	
89.00	Top - Section 3	149.66	1.06	-0.09	0.16	-0.97	
90.00		74.83	1.08	-0.08	0.18	-0.21	
94.00	Appurtenance(s)	449.32	1.18	-0.01	0.24	7.03	
95.00		74.83	1.20	0.01	0.26	1.58	
97.00	Appurtenance(s)	548.66	1.26	0.06	0.30	18.24	
99.00	Top - Section 4	149.66	1.31	0.13	0.34	7.00	
100.00		29.23	1.33	0.17	0.37	1.58	
103.00	Appurtenance(s)	140.49	1.42	0.31	0.45	11.00	
103.50	Appurtenance(s)	252.82	1.43	0.34	0.46	20.89	
104.00	Appurtenance(s)	164.62	1.44	0.37	0.48	14.33	
105.00		29.23	1.47	0.43	0.51	2.81	
108.00	Appurtenance(s)	194.79	1.56	0.65	0.61	24.53	
109.00	Top - Section 5	29.23	1.59	0.73	0.65	3.99	
110.00		42.76	1.61	0.83	0.69	6.31	
113.00	Appurtenance(s)	228.28	1.70	1.14	0.82	41.78	
114.00	Appurtenance(s)	334.66	1.73	1.26	0.87	65.46	
115.00		42.76	1.77	1.38	0.92	8.92	
119.00		171.04	1.89	1.98	1.14	45.20	
	Totals:	**13,273.6**				**455.3**	**Total Wind:** **10,702.4**

Calculated Forces

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Iterations 26

Gust Response Factor	1.10			**Sds**	0.21			**Ss**	0.19
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.52	**SA**	0.05	**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	-14.68	-0.50	0.00	-38.52	0.00	38.52	2770.05	1385.03	4672.11	2339.53		0.00	0.00	0.022
5.00	-14.01	-0.49	0.00	-36.03	0.00	36.03	2737.33	1368.66	4531.89	2269.31		0.00	-0.01	0.021
10.00	-13.28	-0.47	0.00	-33.59	0.00	33.59	2703.94	1351.97	4392.63	2199.58		0.01	-0.01	0.020
15.00	-12.57	-0.45	0.00	-31.23	0.00	31.23	2669.88	1334.94	4254.38	2130.35		0.03	-0.02	0.019
20.00	-11.86	-0.43	0.00	-28.96	0.00	28.96	2635.15	1317.58	4117.21	2061.66		0.05	-0.02	0.019
25.00	-11.17	-0.41	0.00	-26.79	0.00	26.79	2599.76	1299.88	3981.17	1993.54		0.08	-0.03	0.018
30.00	-10.48	-0.39	0.00	-24.73	0.00	24.73	2563.70	1281.85	3846.33	1926.02		0.11	-0.04	0.017
35.00	-9.81	-0.37	0.00	-22.76	0.00	22.76	2526.98	1263.49	3712.75	1859.13		0.15	-0.04	0.016
40.00	-9.15	-0.35	0.00	-20.90	0.00	20.90	2489.59	1244.79	3580.49	1792.91		0.20	-0.05	0.015
40.50	-9.09	-0.35	0.00	-20.72	0.00	20.72	2485.81	1242.91	3567.34	1786.32		0.20	-0.05	0.015
45.00	-8.12	-0.32	0.00	-19.15	0.00	19.15	1840.21	920.11	2636.97	1320.44		0.25	-0.05	0.019
50.00	-7.58	-0.30	0.00	-17.57	0.00	17.57	1815.76	907.88	2545.53	1274.66		0.31	-0.06	0.018
55.00	-7.04	-0.29	0.00	-16.05	0.00	16.05	1790.64	895.32	2454.70	1229.18		0.37	-0.06	0.017
60.00	-6.52	-0.29	0.00	-14.58	0.00	14.58	1764.86	882.43	2364.54	1184.03		0.44	-0.07	0.016
65.00	-6.01	-0.29	0.00	-13.14	0.00	13.14	1738.40	869.20	2275.11	1139.25		0.51	-0.07	0.015
70.00	-5.50	-0.29	0.00	-11.70	0.00	11.70	1711.29	855.64	2186.47	1094.86		0.59	-0.08	0.014
75.00	-5.01	-0.29	0.00	-10.26	0.00	10.26	1683.50	841.75	2098.69	1050.90		0.68	-0.08	0.013
79.00	-4.62	-0.29	0.00	-9.11	0.00	9.11	1660.79	830.40	2029.12	1016.07		0.75	-0.09	0.012
79.00	-4.62	-0.29	0.00	-9.11	0.00	9.11	930.23	465.11	237.26	173.90		0.75	-0.09	0.057
80.00	-4.52	-0.29	0.00	-8.82	0.00	8.82	930.23	465.11	237.26	173.90		0.77	-0.09	0.056
84.00	-3.89	-0.29	0.00	-7.66	0.00	7.66	930.23	465.11	237.26	173.90		0.88	-0.16	0.048
85.00	-3.79	-0.29	0.00	-7.36	0.00	7.36	930.23	465.11	237.26	173.90		0.91	-0.18	0.046
87.00	-3.42	-0.29	0.00	-6.78	0.00	6.78	930.23	465.11	237.26	173.90		0.99	-0.21	0.043
89.00	-3.23	-0.29	0.00	-6.19	0.00	6.19	930.23	465.11	237.26	173.90		1.08	-0.23	0.039
89.00	-3.23	-0.29	0.00	-6.19	0.00	6.19	930.23	465.11	237.26	173.90		1.08	-0.23	0.039
90.00	-3.14	-0.30	0.00	-5.90	0.00	5.90	930.23	465.11	237.26	173.90		1.13	-0.25	0.037
94.00	-2.64	-0.29	0.00	-4.72	0.00	4.72	930.23	465.11	237.26	173.90		1.36	-0.29	0.030
95.00	-2.55	-0.29	0.00	-4.43	0.00	4.43	930.23	465.11	237.26	173.90		1.42	-0.30	0.028
97.00	-2.01	-0.26	0.00	-3.86	0.00	3.86	930.23	465.11	237.26	173.90		1.55	-0.32	0.024
99.00	-1.82	-0.26	0.00	-3.33	0.00	3.33	930.23	465.11	237.26	173.90		1.69	-0.33	0.021
99.00	-1.82	-0.26	0.00	-3.33	0.00	3.33	541.19	270.59	86.27	63.23		1.69	-0.33	0.056
100.00	-1.77	-0.26	0.00	-3.07	0.00	3.07	541.19	270.59	86.27	63.23		1.76	-0.34	0.052
103.00	-1.57	-0.25	0.00	-2.30	0.00	2.30	541.19	270.59	86.27	63.23		2.01	-0.45	0.039
103.50	-1.33	-0.22	0.00	-2.18	0.00	2.18	541.19	270.59	86.27	63.23		2.05	-0.47	0.037
104.00	-1.17	-0.21	0.00	-2.07	0.00	2.07	541.19	270.59	86.27	63.23		2.10	-0.48	0.035
105.00	-1.12	-0.21	0.00	-1.86	0.00	1.86	541.19	270.59	86.27	63.23		2.21	-0.51	0.031
108.00	-0.88	-0.18	0.00	-1.24	0.00	1.24	541.19	270.59	86.27	63.23		2.55	-0.57	0.021
109.00	-0.84	-0.18	0.00	-1.06	0.00	1.06	541.19	270.59	86.27	63.23		2.67	-0.59	0.018
109.00	-0.84	-0.18	0.00	-1.06	0.00	1.06	791.68	395.84	105.49	85.75		2.67	-0.59	0.013
110.00	-0.78	-0.17	0.00	-0.88	0.00	0.88	791.68	395.84	105.49	85.75		2.79	-0.60	0.011
113.00	-0.54	-0.13	0.00	-0.37	0.00	0.37	791.68	395.84	105.49	85.75		3.18	-0.62	0.005
114.00	-0.23	-0.06	0.00	-0.25	0.00	0.25	791.68	395.84	105.49	85.75		3.31	-0.63	0.003
115.00	-0.18	-0.05	0.00	-0.19	0.00	0.19	791.68	395.84	105.49	85.75		3.44	-0.63	0.002
119.00	0.00	-0.05	0.00	0.00	0.00	0.00	791.68	395.84	105.49	85.75		3.97	-0.63	0.000

Wind Loading - Shaft

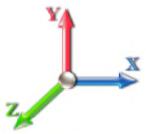
Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 27

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		2.18	0.70	13.370	14.71	259.43	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		2.05	0.70	12.568	13.83	246.97	0.650	0.000	5.00	17.336	11.27	155.8	0.0	686.2
10.00		1.94	0.70	11.864	13.05	235.52	0.650	0.000	5.00	17.019	11.06	144.4	0.0	673.5
15.00		1.83	0.70	11.243	12.37	224.96	0.650	0.000	5.00	16.702	10.86	134.3	0.0	660.9
20.00		1.75	0.70	10.695	11.76	215.20	0.650	0.000	5.00	16.384	10.65	125.3	0.0	648.2
25.00		1.67	0.70	10.211	11.23	206.16	0.650	0.000	5.00	16.067	10.44	117.3	0.0	635.6
30.00		1.60	0.70	9.790	10.77	197.84	0.650	0.000	5.00	15.750	10.24	110.2	0.0	622.9
35.00		1.53	0.73	9.833	10.82	194.24	0.650	0.000	5.00	15.432	10.03	108.5	0.0	610.2
40.00		1.48	0.76	9.848	10.83	190.34	0.650	0.000	5.00	15.115	9.82	106.4	0.0	597.6
40.50	Bot - Section 2	1.47	0.76	9.848	10.83	189.95	0.650	0.000	0.50	1.494	0.97	10.5	0.0	59.1
45.00	Top - Section 1	1.43	0.79	9.846	10.83	186.29	0.650	0.000	4.50	13.494	8.77	95.0	0.0	953.4
50.00		1.39	0.81	9.837	10.82	184.86	0.650	0.000	5.00	14.692	9.55	103.3	0.0	465.4
55.00		1.35	0.83	9.823	10.81	180.70	0.650	0.000	5.00	14.375	9.34	101.0	0.0	455.3
60.00		1.31	0.85	9.810	10.79	176.54	0.650	0.000	5.00	14.057	9.14	98.6	0.0	445.2
65.00		1.28	0.87	9.798	10.78	172.41	0.650	0.000	5.00	13.740	8.93	96.3	0.0	435.0
70.00		1.25	0.89	9.789	10.77	168.31	0.650	0.000	5.00	13.423	8.72	93.9	0.0	424.9
75.00		1.23	0.91	9.785	10.76	164.24	0.650	0.000	5.00	13.105	8.52	91.7	0.0	414.8
79.00	Top - Section 2	1.21	0.92	9.784	10.76	161.01	0.650	0.000	4.00	10.256	6.67	71.7	0.0	324.5
80.00		1.21	0.93	9.784	10.76	158.57	0.600	0.000	1.00	2.500	1.50	16.1	0.0	82.8
84.00	Appurtenance(s)	1.19	0.94	9.787	10.77	158.60	0.600	0.000	4.00	10.000	6.00	64.6	0.0	331.3
85.00		1.19	0.94	9.789	10.77	158.61	0.600	0.000	1.00	2.500	1.50	16.2	0.0	82.8
87.00	Appurtenance(s)	1.18	0.95	9.792	10.77	158.63	0.600	0.000	2.00	5.000	3.00	32.3	0.0	165.7
89.00	Top - Section 3	1.17	0.96	9.796	10.78	158.66	0.600	0.000	2.00	5.000	3.00	32.3	0.0	165.7
90.00		1.17	0.96	9.798	10.78	158.68	0.600	0.000	1.00	2.500	1.50	16.2	0.0	82.8
94.00	Appurtenance(s)	1.15	0.97	9.808	10.79	158.76	0.600	0.000	4.00	10.000	6.00	64.7	0.0	331.3
95.00		1.15	0.97	9.811	10.79	158.79	0.600	0.000	1.00	2.500	1.50	16.2	0.0	82.8
97.00	Appurtenance(s)	1.14	0.98	9.818	10.80	158.84	0.600	0.000	2.00	5.000	3.00	32.4	0.0	165.7
99.00	Top - Section 4	1.14	0.99	9.825	10.81	158.90	0.600	0.000	2.00	5.000	3.00	32.4	0.0	165.7
100.00		1.14	0.99	9.829	10.81	190.72	0.600	0.000	1.00	3.000	1.80	19.5	0.0	38.8
103.00	Appurtenance(s)	1.13	1.00	9.842	10.83	190.85	0.600	0.000	3.00	9.000	5.40	58.5	0.0	116.5
103.50	Appurtenance(s)	1.13	1.00	9.844	10.83	190.87	0.600	0.000	0.50	1.500	0.90	9.7	0.0	19.4
104.00	Appurtenance(s)	1.13	1.00	9.847	10.83	190.89	0.600	0.000	0.50	1.500	0.90	9.7	0.0	19.4
105.00		1.12	1.00	9.852	10.84	190.94	0.600	0.000	1.00	3.000	1.80	19.5	0.0	38.8
108.00	Appurtenance(s)	1.12	1.01	9.867	10.85	191.09	0.600	0.000	3.00	9.000	5.40	58.6	0.0	116.5
109.00	Top - Section 5	1.11	1.01	9.872	10.86	191.14	0.600	0.000	1.00	3.000	1.80	19.5	0.0	38.8
110.00		1.11	1.02	9.878	10.87	159.33	0.600	0.000	1.00	2.500	1.50	16.3	0.0	50.8
113.00	Appurtenance(s)	1.10	1.02	9.895	10.88	159.47	0.600	0.000	3.00	7.500	4.50	49.0	0.0	152.3
114.00	Appurtenance(s)	1.10	1.03	9.901	10.89	159.52	0.600	0.000	1.00	2.500	1.50	16.3	0.0	50.8
115.00		1.10	1.03	9.908	10.90	159.57	0.600	0.000	1.00	2.500	1.50	16.3	0.0	50.8
119.00		1.09	1.04	9.934	10.93	159.78	0.600	0.000	4.00	10.000	6.00	65.6	0.0	203.0
								Totals:	**119.00**			**2,446.3**		**11,665.2**

Discrete Appurtenance Forces

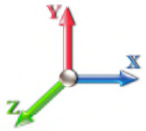
Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 27

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	114.00	RFS Twin PCS TMAs	3	9.901	10.891	0.00	1.00	0.00	33.00	0.000	0.000	0.00	0.00	0.00
2	114.00	V18-209014	3	9.901	10.891	0.00	1.00	0.00	56.10	0.000	0.000	0.00	0.00	0.00
3	114.00	27" Canister at 114.0'	1	9.901	10.891	1.00	1.00	0.00	150.00	0.000	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	9.901	10.891	0.00	1.00	0.00	52.80	0.000	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	9.895	10.885	1.00	1.00	7.92	100.00	0.000	0.000	86.21	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	9.862	10.848	0.00	1.00	0.00	107.10	0.000	-1.000	0.00	0.00	0.00
7	104.00	28" Canister at 104.0'	1	9.847	10.831	1.00	1.00	0.00	150.00	0.000	0.000	0.00	0.00	0.00
8	103.50	MT6407-77A	3	9.840	10.824	0.00	1.00	0.00	238.20	0.000	-1.000	0.00	0.00	0.00
9	103.00	Commscope	3	9.842	10.826	0.00	1.00	0.00	52.80	0.000	0.000	0.00	0.00	0.00
10	97.00	Raycap	1	9.818	10.800	0.00	1.00	0.00	21.90	0.000	0.000	0.00	0.00	0.00
11	97.00	FFVV-65B-R3	3	9.811	10.792	0.00	1.00	0.00	377.10	0.000	-2.000	0.00	0.00	0.00
12	94.00	29" Canister at 94.0'	1	9.808	10.789	1.00	1.00	0.00	150.00	0.000	0.000	0.00	0.00	0.00
13	87.00	Redconnex AN-80i	3	9.792	10.771	1.00	1.00	0.00	13.50	0.000	0.000	0.00	0.00	0.00
14	87.00	RFS	6	9.792	10.771	1.00	1.00	0.00	38.40	0.000	0.000	0.00	0.00	0.00
15	87.00	Andrew FPA5250D06-N	2	9.792	10.771	1.00	1.00	0.00	4.00	0.000	0.000	0.00	0.00	0.00
16	87.00	Commscope	3	9.789	10.768	1.00	1.00	0.00	136.20	0.000	-2.000	0.00	0.00	0.00
17	84.00	Redconnex AN-80i BTSs	3	9.787	10.766	1.00	1.00	2.49	13.50	0.000	0.000	26.81	0.00	0.00
18	84.00	Andrew FPA5250D06-N	1	9.785	10.764	1.00	1.00	0.00	14.00	0.000	-2.000	0.00	0.00	0.00
19	84.00	Argus LLPX310R	3	9.785	10.764	1.00	1.00	0.00	85.80	0.000	-2.000	0.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	9.787	10.766	1.00	1.00	0.00	150.00	0.000	0.000	0.00	0.00	0.00
							Totals:		**1,944.40**			**113.01**		

Total Applied Force Summary

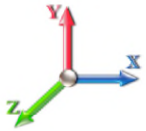
Structure:	CT13616-A-SBA		**Code:**	TIA-222-G	6/28/2022
Site Name:	St. Judes		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	101.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 3	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 27

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		155.79	740.50	0.00	0.00
10.00		144.36	809.33	0.00	0.00
15.00		134.26	796.67	0.00	0.00
20.00		125.29	784.01	0.00	0.00
25.00		117.30	771.36	0.00	0.00
30.00		110.25	758.70	0.00	0.00
35.00		108.50	746.04	0.00	0.00
40.00		106.43	733.39	0.00	0.00
40.50		10.52	72.64	0.00	0.00
45.00		95.00	1075.62	0.00	0.00
50.00		103.33	601.21	0.00	0.00
55.00		100.96	591.09	0.00	0.00
60.00		98.60	580.96	0.00	0.00
65.00		96.26	570.84	0.00	0.00
70.00		93.95	560.71	0.00	0.00
75.00		91.68	550.59	0.00	0.00
79.00		71.74	433.18	0.00	0.00
80.00		16.14	109.99	0.00	0.00
84.00	(8) attachments	91.40	703.26	0.00	0.00
85.00		16.15	109.09	0.00	0.00
87.00	(14) attachments	32.31	410.27	0.00	0.00
89.00		32.33	203.40	0.00	0.00
90.00		16.17	101.70	0.00	0.00
94.00	(1) attachments	64.73	556.80	0.00	0.00
95.00		16.19	101.70	0.00	0.00
97.00	(4) attachments	32.40	602.40	0.00	0.00
99.00		32.42	203.10	0.00	0.00
100.00		19.46	57.55	0.00	0.00
103.00	(3) attachments	58.46	225.45	0.00	0.00
103.50	(3) attachments	9.75	266.98	0.00	0.00
104.00	(1) attachments	9.75	178.78	0.00	0.00
105.00		19.51	57.55	0.00	0.00
108.00	(3) attachments	58.61	267.27	0.00	0.00
109.00		19.55	45.07	0.00	0.00
110.00		16.30	57.00	0.00	0.00
113.00	(1) attachments	135.19	271.00	0.00	0.00
114.00	(10) attachments	16.34	348.90	0.00	0.00
115.00		16.35	50.76	0.00	0.00
119.00		65.56	203.04	0.00	0.00
	Totals:	**2,559.28**	**16,307.92**	**0.00**	**0.00**

Calculated Forces

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 27	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations 27

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	-16.31	-2.56	0.00	-151.25	0.00	151.25	2770.05	1385.03	4672.11	2339.53	0.00	0.000	0.000	0.071
5.00	-15.57	-2.41	0.00	-138.44	0.00	138.44	2737.33	1368.66	4531.89	2269.31	0.01	-0.024	0.000	0.067
10.00	-14.76	-2.27	0.00	-126.37	0.00	126.37	2703.94	1351.97	4392.63	2199.58	0.05	-0.047	0.000	0.063
15.00	-13.96	-2.14	0.00	-115.00	0.00	115.00	2669.88	1334.94	4254.38	2130.35	0.11	-0.069	0.000	0.059
20.00	-13.17	-2.02	0.00	-104.28	0.00	104.28	2635.15	1317.58	4117.21	2061.66	0.20	-0.090	0.000	0.056
25.00	-12.40	-1.91	0.00	-94.17	0.00	94.17	2599.76	1299.88	3981.17	1993.54	0.30	-0.111	0.000	0.052
30.00	-11.64	-1.80	0.00	-84.63	0.00	84.63	2563.70	1281.85	3846.33	1926.02	0.43	-0.130	0.000	0.048
35.00	-10.90	-1.69	0.00	-75.63	0.00	75.63	2526.98	1263.49	3712.75	1859.13	0.57	-0.149	0.000	0.045
40.00	-10.16	-1.59	0.00	-67.16	0.00	67.16	2489.59	1244.79	3580.49	1792.91	0.74	-0.167	0.000	0.042
40.50	-10.09	-1.58	0.00	-66.37	0.00	66.37	2485.81	1242.91	3567.34	1786.32	0.76	-0.168	0.000	0.041
45.00	-9.01	-1.48	0.00	-59.27	0.00	59.27	1840.21	920.11	2636.97	1320.44	0.92	-0.183	0.000	0.050
50.00	-8.41	-1.38	0.00	-51.87	0.00	51.87	1815.76	907.88	2545.53	1274.66	1.12	-0.199	0.000	0.045
55.00	-7.82	-1.28	0.00	-44.97	0.00	44.97	1790.64	895.32	2454.70	1229.18	1.34	-0.216	0.000	0.041
60.00	-7.24	-1.18	0.00	-38.59	0.00	38.59	1764.86	882.43	2364.54	1184.03	1.58	-0.232	0.000	0.037
65.00	-6.67	-1.08	0.00	-32.69	0.00	32.69	1738.40	869.20	2275.11	1139.25	1.83	-0.247	0.000	0.033
70.00	-6.11	-0.99	0.00	-27.28	0.00	27.28	1711.29	855.64	2186.47	1094.86	2.09	-0.260	0.000	0.028
75.00	-5.56	-0.89	0.00	-22.35	0.00	22.35	1683.50	841.75	2098.69	1050.90	2.37	-0.272	0.000	0.025
79.00	-5.13	-0.82	0.00	-18.78	0.00	18.78	1660.79	830.40	2029.12	1016.07	2.60	-0.280	0.000	0.022
79.00	-5.13	-0.82	0.00	-18.78	0.00	18.78	930.23	465.11	237.26	173.90	2.60	-0.280	0.000	0.113
80.00	-5.02	-0.81	0.00	-17.96	0.00	17.96	930.23	465.11	237.26	173.90	2.66	-0.282	0.000	0.109
84.00	-4.31	-0.72	0.00	-14.72	0.00	14.72	930.23	465.11	237.26	173.90	2.96	-0.420	0.000	0.089
85.00	-4.20	-0.71	0.00	-14.00	0.00	14.00	930.23	465.11	237.26	173.90	3.05	-0.450	0.000	0.085
87.00	-3.79	-0.67	0.00	-12.59	0.00	12.59	930.23	465.11	237.26	173.90	3.25	-0.507	0.000	0.076
89.00	-3.59	-0.64	0.00	-11.24	0.00	11.24	930.23	465.11	237.26	173.90	3.47	-0.557	0.000	0.068
89.00	-3.59	-0.64	0.00	-11.24	0.00	11.24	930.23	465.11	237.26	173.90	3.47	-0.557	0.000	0.068
90.00	-3.49	-0.63	0.00	-10.60	0.00	10.60	930.23	465.11	237.26	173.90	3.59	-0.580	0.000	0.065
94.00	-2.93	-0.56	0.00	-8.08	0.00	8.08	930.23	465.11	237.26	173.90	4.11	-0.659	0.000	0.050
95.00	-2.83	-0.54	0.00	-7.52	0.00	7.52	930.23	465.11	237.26	173.90	4.25	-0.675	0.000	0.046
97.00	-2.23	-0.50	0.00	-6.44	0.00	6.44	930.23	465.11	237.26	173.90	4.54	-0.705	0.000	0.039
99.00	-2.02	-0.47	0.00	-5.43	0.00	5.43	930.23	465.11	237.26	173.90	4.84	-0.730	0.000	0.033
99.00	-2.02	-0.47	0.00	-5.43	0.00	5.43	541.19	270.59	86.27	63.23	4.84	-0.730	0.000	0.090
100.00	-1.97	-0.45	0.00	-4.96	0.00	4.96	541.19	270.59	86.27	63.23	5.00	-0.741	0.000	0.082
103.00	-1.74	-0.40	0.00	-3.60	0.00	3.60	541.19	270.59	86.27	63.23	5.52	-0.918	0.000	0.060
103.50	-1.47	-0.38	0.00	-3.40	0.00	3.40	541.19	270.59	86.27	63.23	5.62	-0.942	0.000	0.056
104.00	-1.29	-0.37	0.00	-3.21	0.00	3.21	541.19	270.59	86.27	63.23	5.72	-0.965	0.000	0.053
105.00	-1.24	-0.35	0.00	-2.84	0.00	2.84	541.19	270.59	86.27	63.23	5.93	-1.007	0.000	0.047
108.00	-0.97	-0.29	0.00	-1.79	0.00	1.79	541.19	270.59	86.27	63.23	6.59	-1.103	0.000	0.030
109.00	-0.93	-0.27	0.00	-1.50	0.00	1.50	541.19	270.59	86.27	63.23	6.82	-1.126	0.000	0.025
109.00	-0.93	-0.27	0.00	-1.50	0.00	1.50	791.68	395.84	105.49	85.75	6.82	-1.126	0.000	0.019
110.00	-0.87	-0.25	0.00	-1.23	0.00	1.23	791.68	395.84	105.49	85.75	7.06	-1.144	0.000	0.015
113.00	-0.60	-0.11	0.00	-0.48	0.00	0.48	791.68	395.84	105.49	85.75	7.79	-1.173	0.000	0.006
114.00	-0.25	-0.09	0.00	-0.37	0.00	0.37	791.68	395.84	105.49	85.75	8.04	-1.178	0.000	0.005
115.00	-0.20	-0.07	0.00	-0.28	0.00	0.28	791.68	395.84	105.49	85.75	8.29	-1.182	0.000	0.004
119.00	0.00	-0.07	0.00	0.00	0.00	0.00	791.68	395.84	105.49	85.75	9.28	-1.188	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 97 mph Wind	10.7	0.00	19.56	0.00	0.00	635.06
0.9D + 1.6W 97 mph Wind	10.7	0.00	14.67	0.00	0.00	631.21
1.2D + 1.0Di + 1.0Wi 50 mph Wind	4.4	0.00	33.57	0.00	0.00	301.11
1.2D + 1.0E	0.5	0.00	19.57	0.00	0.00	38.84
0.9D + 1.0E	0.5	0.00	14.68	0.00	0.00	38.52
1.0D + 1.0W 60 mph Wind	2.6	0.00	16.31	0.00	0.00	151.25

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 97 mph Wind	-6.09	-3.45	0.00	-79.36	0.00	-79.36	1660.79	830.40	2029.12	1016.07	79.00	0.463
0.9D + 1.6W 97 mph Wind	-4.55	-3.42	0.00	-78.01	0.00	-78.01	1660.79	830.40	2029.12	1016.07	79.00	0.454
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-13.86	-2.03	0.00	-47.76	0.00	-47.76	1660.79	830.40	2029.12	1016.07	79.00	0.290
1.2D + 1.0E	-6.16	-0.29	0.00	-9.25	0.00	-9.25	1660.79	830.40	2029.12	1016.07	79.00	0.060
0.9D + 1.0E	-4.62	-0.29	0.00	-9.11	0.00	-9.11	1660.79	830.40	2029.12	1016.07	79.00	0.057
1.0D + 1.0W 60 mph Wind	-5.13	-0.82	0.00	-18.78	0.00	-18.78	1660.79	830.40	2029.12	1016.07	79.00	0.113

Base Plate Summary

Structure:	CT13616-A-SB	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	1550.00
Axial (kip):	19.00
Shear (kip):	23.00
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	635.06
Axial (kip):	19.56
Shear (kip):	10.72

Base Plate	
Yield (ksi):	50.00
Width (in):	46.00
Style:	Clipped
Polygon Sides:	0.00
Clip Length (in):	6.00
Effective Len (in):	9.38
Moment (kip-in):	185.27
Allow Stress (ksi):	67.50
Applied Stress (ksi):	15.53
Stress Ratio:	0.23

Anchor Bolts	
Bolt Circle:	48.00
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):	55.72
Allowable (kip):	260.00
Ratio:	0.22
Tension	
Force (kip):	50.12
Allowable (kip):	260.00
Ratio:	0.20

Monopole Mat Foundation Design

			Date: 6/28/2022
Customer Name:	Verizon	**EIA/TIA Standard:**	TIA-222-G
Site Name:		**Structure Height (Ft.):**	119
Site Number:	CT13616-A-SBA	**Engineer Name:**	H. You
Engr. Number:	130961	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

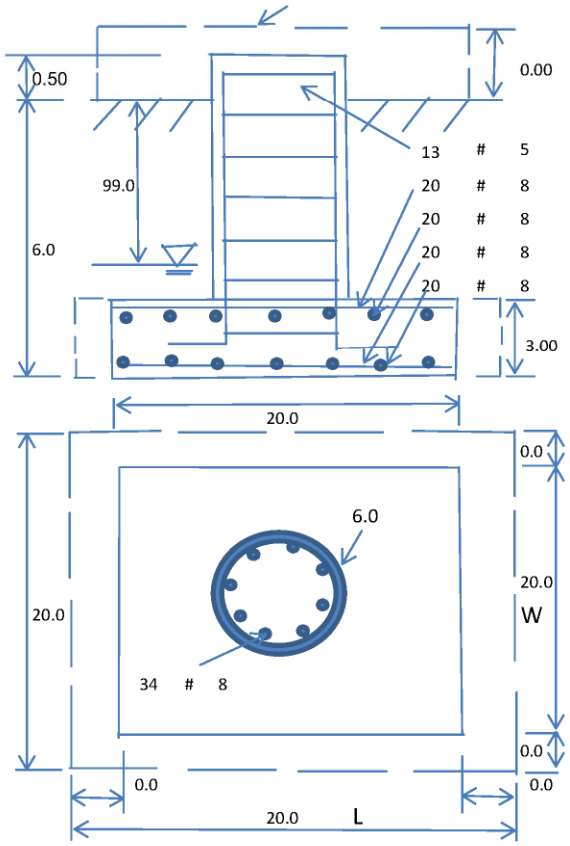
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	19.6	Shear Force (Kips):	10.7
Uplift Force (Kips):	0.0	Moment (Kips-ft):	635.1
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	6.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	3.00
Length of Pad (ft.):	20	Width of Pad (ft.):	20
Final Length of pad (ft)	20.0	Final width of pad (ft):	20.0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	34	Tie Spacing (in):	6.0	
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):	20	Qty. of Rebar in Pad (W):	20	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	20	Qty. of Rebar in Pad (W):	20	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	47.6	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	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.):	1115.18	Total Dry Soil Weight (Kips):	133.82
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	133.82	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1298.96	Total Dry Concrete Weight (Kips):	194.84
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	194.84	Total Vertical Load on Base (Kips):	348.27

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1020	<	Allowable Factored Soil Bearing (psf):	9000	0.11	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3154.0	>	Design Factored Momont (kips-ft):	583	0.18	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	5.41	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):	0.79		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	3716.1	>	Design Factored Moment (Mu, Kips-F	672.6	0.18	OK!
Calculated Shear Capacity (Kips):	572.6	>	Design Factored Shear (Kips):	10.7	0.02	OK!
Calculated Tension Capacity (Tn, Kips):	1450.4	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	5363.2	>	Design Factored Axial Load (Pu Kips):	19.6	0.00	OK!
Moment & Axial Strength Combination:	0.18	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.007		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	640.8	>	One-Way Factored Shear (L-D. Kips):	60.7	0.09	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	640.8	>	One-Way Factored Shear (W-D., Kips)	60.7	0.09	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	540.5	>	One-Way Factored Shear (C-C, Kips):	47.9	0.09	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0020	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0020		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2255.7	>	Moment at Bottom (L-Dir. K-Ft):	293.4	0.13	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2255.7	>	Moment at Bottom (W-Dir. K-Ft):	293.4	0.13	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	3169.0	>	Moment at Bottom (C-C Dir. K-Ft):	414.9	0.13	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0020	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0020		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2255.7	>	Moment at the top (L-Dir K-Ft):	88.0	0.04	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2255.7	>	Moment at the top (W-Dir K-Ft):	88.0	0.04	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3169.0	>	Moment at the top (C-C Dir. K-Ft):	82.8	0.03	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	254.0	k-ft.	Max. factored shear stress v_{u_CD}:		0.3	Psi
Max. factored shear stress v_{u_AB}:	3.1	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	3.1	Psi	Check Usage of Punching Shear Capacity:		0.02	OK!

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
onair@optonline.net

October 12, 2022

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

Re: Derby North CT – Mount Assessment (MA) – ANTMO MT6407-850-LTE
SBA Site # CT13616-A; 71 Pleasant View Rd., Derby, CT 06418

Dear Andrew:

Verizon is proposing the following antenna modifications within the above referenced flagpole structure.

- Remove (3) existing SBNHH-1D65B panel antennas
- Remove (3) existing TBC0030F2V1-2 triplexers
- Add (3) new APXVBLL09B-43-C-120 panel antennas
- Add (3) new MT6407-77A integrated panel antennas
- Add (3) TMAT19G21B68-21 tower mounted amplifiers (TMA's)

All proposed Verizon components will fit within the 10 ft. high vertical shroud between the 100-110 ft. elevation, however due to the wider panel antennas specified, the existing 27" diameter shroud will be replaced with a larger, 36" diameter shroud, designed by the manufacturer and analyzed within the Structural Analysis Report for this project, by Tower Engineering Solutions, dated 06-28-22.

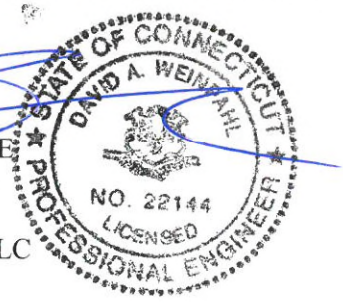
Verizon's proposed antennas and TMA's will be mounted directly to the 5" diameter pole spine, without the use of any secondary "mounting" pipes in the design. Effectively, the spine serves as Verizon's antenna "mount" and was already calculated within the SA report (see attached), yielding the following:

- **Max. Usage: 33.6%**
- **PASS**

Based on the analysis results, the existing mount was determined to be adequate to safely support the proposed Verizon equipment per TIA-222 standard and the attached design loading from the SA report. Our findings are based on the assumption that the hosting structure and all structural members and appurtenances were properly designed, detailed, fabricated, installed and have been properly maintained since erection. Should you have any questions, please do not hesitate to contact our office.

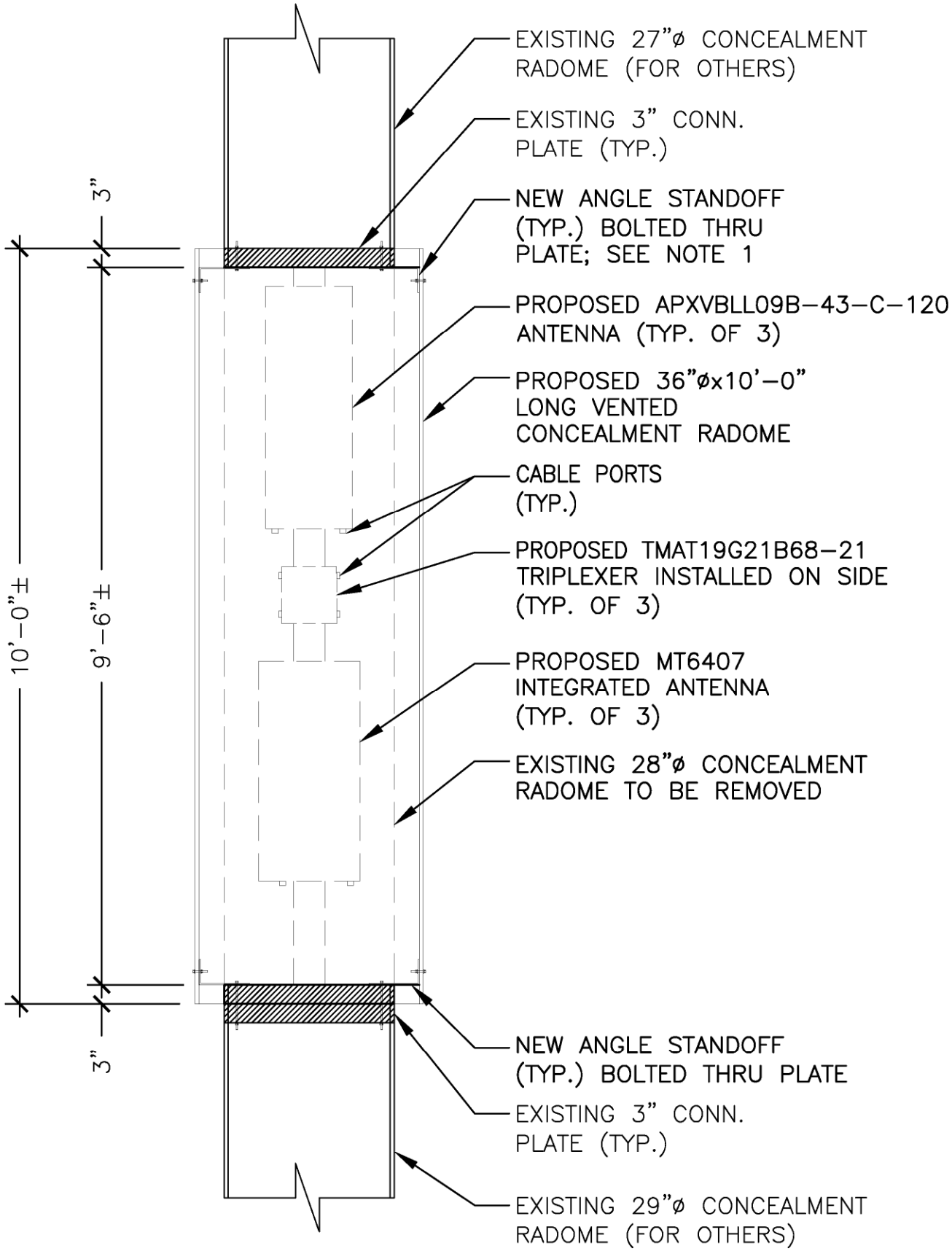
If you have any further questions, please feel free to contact our office.

Very truly yours,



David A. Weinpahl, P.E.
CT License No. 22144
Managing Partner
On Air Engineering, LLC

DW:dw
enclosures



1
DE-4

CONCEALMENT SECTION - PROPOSED

Scale: 3/8" = 1'-0"

Calculated Forces

Structure:	CT13616-A-SBA	**Code:**	TIA-222-G	6/28/2022	
Site Name:	St. Judes	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	101.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 3	**Struct Class:**	II	Page: 11	

TES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60

Iterations 29

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	-19.56	-10.72	0.00	-635.06	0.00	635.06	2770.05	1385.03	4672.11	2339.53	0.00	0.000	0.000	0.279
5.00	-18.65	-10.10	0.00	-581.46	0.00	581.46	2737.33	1368.66	4531.89	2269.31	0.05	-0.100	0.000	0.263
10.00	-17.67	-9.52	0.00	-530.96	0.00	530.96	2703.94	1351.97	4392.63	2199.58	0.21	-0.196	0.000	0.248
15.00	-16.70	-8.98	0.00	-483.35	0.00	483.35	2669.88	1334.94	4254.38	2130.35	0.47	-0.290	0.000	0.233
20.00	-15.75	-8.48	0.00	-438.43	0.00	438.43	2635.15	1317.58	4117.21	2061.66	0.82	-0.379	0.000	0.219
25.00	-14.82	-8.00	0.00	-396.04	0.00	396.04	2599.76	1299.88	3981.17	1993.54	1.26	-0.465	0.000	0.204
30.00	-13.90	-7.55	0.00	-356.03	0.00	356.03	2563.70	1281.85	3846.33	1926.02	1.80	-0.548	0.000	0.190
35.00	-13.00	-7.11	0.00	-318.26	0.00	318.26	2526.98	1263.49	3712.75	1859.13	2.41	-0.626	0.000	0.176
40.00	-12.12	-6.66	0.00	-282.73	0.00	282.73	2489.59	1244.79	3580.49	1792.91	3.11	-0.701	0.000	0.163
40.50	-12.03	-6.62	0.00	-279.40	0.00	279.40	2485.81	1242.91	3567.34	1786.32	3.18	-0.708	0.000	0.161
45.00	-10.74	-6.22	0.00	-249.59	0.00	249.59	1840.21	920.11	2636.97	1320.44	3.88	-0.771	0.000	0.195
50.00	-10.01	-5.79	0.00	-218.48	0.00	218.48	1815.76	907.88	2545.53	1274.66	4.72	-0.837	0.000	0.177
55.00	-9.31	-5.37	0.00	-189.53	0.00	189.53	1790.64	895.32	2454.70	1229.18	5.64	-0.910	0.000	0.159
60.00	-8.61	-4.96	0.00	-162.68	0.00	162.68	1764.86	882.43	2364.54	1184.03	6.63	-0.977	0.000	0.142
65.00	-7.93	-4.55	0.00	-137.90	0.00	137.90	1738.40	869.20	2275.11	1139.25	7.69	-1.039	0.000	0.126
70.00	-7.26	-4.15	0.00	-115.15	0.00	115.15	1711.29	855.64	2186.47	1094.86	8.81	-1.095	0.000	0.109
75.00	-6.60	-3.76	0.00	-94.40	0.00	94.40	1683.50	841.75	2098.69	1050.90	9.98	-1.144	0.000	0.094
79.00	-6.09	-3.45	0.00	-79.36	0.00	79.36	1660.79	830.40	2029.12	1016.07	10.95	-1.179	0.000	0.082
79.00	-6.09	-3.45	0.00	-79.36	0.00	79.36	930.23	465.11	237.26	173.90	10.95	-1.179	0.000	0.463
80.00	-5.94	-3.41	0.00	-75.91	0.00	75.91	930.23	465.11	237.26	173.90	11.20	-1.188	0.000	0.443
84.00	-5.09	-3.04	0.00	-62.26	0.00	62.26	930.23	465.11	237.26	173.90	12.45	-1.771	0.000	0.364
85.00	-4.95	-2.98	0.00	-59.22	0.00	59.22	930.23	465.11	237.26	173.90	12.83	-1.899	0.000	0.346
87.00	-4.45	-2.85	0.00	-53.25	0.00	53.25	930.23	465.11	237.26	173.90	13.68	-2.136	0.000	0.311
89.00	-4.20	-2.72	0.00	-47.55	0.00	47.55	930.23	465.11	237.26	173.90	14.62	-2.349	0.000	0.278
89.00	-4.20	-2.72	0.00	-47.55	0.00	47.55	930.23	465.11	237.26	173.90	14.62	-2.349	0.000	0.278
90.00	-4.07	-2.66	0.00	-44.84	0.00	44.84	930.23	465.11	237.26	173.90	15.12	-2.447	0.000	0.262
94.00	-3.41	-2.37	0.00	-34.20	0.00	34.20	930.23	465.11	237.26	173.90	17.32	-2.780	0.000	0.200
95.00	-3.29	-2.30	0.00	-31.83	0.00	31.83	930.23	465.11	237.26	173.90	17.91	-2.850	0.000	0.187
97.00	-2.57	-2.13	0.00	-27.23	0.00	27.23	930.23	465.11	237.26	173.90	19.13	-2.975	0.000	0.159
99.00	-2.33	-1.99	0.00	-22.96	0.00	22.96	930.23	465.11	237.26	173.90	20.40	-3.081	0.000	0.135
99.00	-2.33	-1.99	0.00	-22.96	0.00	22.96	541.19	270.59	86.27	63.23	20.40	-3.081	0.000	0.368
100.00	-2.25	-1.92	0.00	-20.97	0.00	20.97	541.19	270.59	86.27	63.23	21.05	-3.127	0.000	0.336
103.00	-1.99	-1.67	0.00	-15.21	0.00	15.21	541.19	270.59	86.27	63.23	23.26	-3.878	0.000	0.244
103.50	-1.67	-1.61	0.00	-14.37	0.00	14.37	541.19	270.59	86.27	63.23	23.67	-3.980	0.000	0.230
104.00	-1.45	-1.56	0.00	-13.57	0.00	13.57	541.19	270.59	86.27	63.23	24.09	-4.077	0.000	0.217
105.00	-1.38	-1.48	0.00	-12.01	0.00	12.01	541.19	270.59	86.27	63.23	24.96	-4.254	0.000	0.192
108.00	-1.07	-1.22	0.00	-7.56	0.00	7.56	541.19	270.59	86.27	63.23	27.77	-4.659	0.000	0.122
109.00	-1.03	-1.13	0.00	-6.34	0.00	6.34	541.19	270.59	86.27	63.23	28.76	-4.756	0.000	0.102
109.00	-1.03	-1.13	0.00	-6.34	0.00	6.34	791.68	395.84	105.49	85.75	28.76	-4.756	0.000	0.075
110.00	-0.96	-1.06	0.00	-5.20	0.00	5.20	791.68	395.84	105.49	85.75	29.76	-4.835	0.000	0.062
113.00	-0.68	-0.47	0.00	-2.02	0.00	2.02	791.68	395.84	105.49	85.75	32.84	-4.958	0.000	0.024
114.00	-0.27	-0.37	0.00	-1.55	0.00	1.55	791.68	395.84	105.49	85.75	33.88	-4.978	0.000	0.018
115.00	-0.22	-0.29	0.00	-1.18	0.00	1.18	791.68	395.84	105.49	85.75	34.92	-4.993	0.000	0.014
119.00	0.00	-0.27	0.00	0.00	0.00	0.00	791.68	395.84	105.49	85.75	39.11	-5.020	0.000	0.000

Introduction

The purpose of this report is to summarize the analysis results on the 119 ft PennSummit 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	Original structural design report prepared by PennSummit Tubular, LLC & Paul J. Ford and Company. Dated 08-17-2006. Design No 26805. Job No 29206-0266. / Original antenna concealment cylinder fabrication drawings prepared by Stealth Concealment Solutions, Inc. Dated 03-17-2003. Job No. FOUR-4C-100-40. Previous structural report prepared by Tower Engineering Solutions. Dated 01-21-2016. TES Project No 20131.
Foundation Drawing	Original foundation design prepared by PennSummit Tubular, LLC & Paul J. Ford and Company. Dated 08-17-2006. Design No 26805. Job No 29206-0266.
Geotechnical Report	Geotechnical report prepared by JGI Eastern, Inc. Dated 07-31-2006. Project No 06496G.
Modification Drawings	N/A
Mount Analysis	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)
(Based on IBC 2015)	Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G, 2015 IBC & 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	3
Crest Height:	101 ft.
Seismic Parameters:	S_S = 0.194, S_1 = 0.063

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.

ATTACHMENT 4

CUMULATIVE MPE TABLE

Carrier	MPE %
Dish	10.04 %
T-Mobile	0.70 %
Sprint	7.00 %
Sprint/Clearwire	0.12 %
Metro PCS	0.82 %
***Verizon Wireless**	**11.38 %**
Site Total	*30.06 %*

*See attached Verizon Wireless General Power Density table for full detail.

Note: the data for the carriers in the above table was compiled from the Fox Hill Telecomm Radio Frequency Emissions Analysis Report, dated May 2, 2022 submitted by Dish on June 30, 2022 (TS-DISH-037-220708).

Site Name: ***DERBY NORTH CT***
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW 700	751	2	526	1052	107.8	0.0033	0.5007	0.65%
VZW Cellular	874	2	551	1102	107.8	0.0034	0.5827	0.59%
VZW PCS	1975	2	760	1521	107.8	0.0047	1.0000	0.47%
VZW AWS	2120	2	1030	2061	107.8	0.0064	1.0000	0.64%
VZW CBAND	3730.08	2	13335	26670	103	0.0904	1.0000	9.04%
Total Percentage of Maximum Permissible Exposure								11.38%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992
**Calculation includes a -10 dB Off Beam Antenna Pattern Adjustment pursuant to Attachments B and C of the Siting Council's November 10, 2015 Memorandum for Exempt Modification filings

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used.

ATTACHMENT 5

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

October 19, 2022

Via Certificate of Mailing

Richard Dziekan, Mayor
City of Derby
1 Elizabeth Street
Derby, CT 06418

Re: **Proposed Modifications to an Existing Telecommunications Facility at 71 Pleasant View Road in Derby, Connecticut**

Dear Mayor Dziekan:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to modify its existing wireless telecommunications facility at 71 Pleasant View Road in Derby, Connecticut (the "Property"). Cellco intends to replace certain existing antennas with new antennas at the same levels on the flag pole tower. In order to accommodate Cellco's new antennas, that portion of the flag pole tower antenna screening shroud around the Cellco antennas will need to increase from 27 inches in diameter to 36 inches diameter. Equipment associated with Cellco's antennas will not change as part of these facility modifications.

As presented in the Sub-Petition, the proposed facility modifications constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

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

October 19, 2022

Via Certificate of Mailing

Joseph Ballaro, Building Official
City of Derby
1 Elizabeth Street
Derby, CT 06418

Re: **Proposed Modifications to an Existing Telecommunications Facility at 71 Pleasant View Road in Derby, Connecticut**

Dear Mr. Ballaro:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to modify its existing wireless telecommunications facility at 71 Pleasant View Road in Derby, Connecticut (the "Property"). Cellco intends to replace certain existing antennas with new antennas at the same levels on the flag pole tower. In order to accommodate Cellco's new antennas, that portion of the flag pole tower antenna screening shroud around the Cellco antennas will need to increase from 27 inches in diameter to 36 inches diameter. Equipment associated with Cellco's antennas will not change as part of these facility modifications.

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Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson+Cole

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Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

October 19, 2022

Via Certificate of Mailing

Our Lady, Queen of the Apostles Parish
212 Elizabeth Street
Derby, CT 06418

Re: **Proposed Modifications to an Existing Telecommunications Facility at 71 Pleasant View Road in Derby, Connecticut**

Dear Sir or Madam:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to modify its existing wireless telecommunications facility at 71 Pleasant View Road in Derby, Connecticut (the "Property"). Cellco intends to replace certain existing antennas with new antennas at the same levels on the flag pole tower. In order to accommodate Cellco's new antennas, that portion of the flag pole tower antenna screening shroud around the Cellco antennas will need to increase from 27 inches in diameter to 36 inches diameter. Equipment associated with Cellco's antennas will not change as part of these facility modifications.

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Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

ATTACHMENT 6

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

October 19, 2022

Via Certificate of Mailing

«Name_and_Address»

Re: **Proposed Modifications to a Telecommunications Facility at 71 Pleasant View Road, Derby, Connecticut**

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to modify its existing wireless telecommunications facility at 71 Pleasant View Road in Derby, Connecticut (the "Property"). Cellco intends to replace certain existing antennas with new antennas at the same levels on the flag pole tower. In order to accommodate Cellco's new antennas, that portion of the flag pole tower antenna screening shroud around the Cellco antennas will need to increase from 27 inches in diameter to 36 inches diameter. Equipment associated with Cellco's antennas will not change as part of these facility modifications.

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Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

This notice is being sent to you because you are listed as an owner of land that abuts the Property. If you have any questions regarding the Sub-Petition, the Council's process for reviewing the Sub-Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact me or the Council directly at 860-827-2935.

Sincerely,

Kenneth C. Baldwin

Attachment

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTING PROPERTY OWNERS

71 PLEASANT VIEW ROAD
DERBY, CONNECTICUT

	Property Address	**Owner's and Mailing Address**
1.	155 David Humphreys Road	City of Derby David Humphreys Road Derby, CT 06418
2.	Shelton Street	Joseph Francis Oliwa 12 Shelton Street Derby, CT 06418
3.	Shelton Street	Cecelia E. Sroka 689 Benham Street Hamden, CT 06514
4.	Shelton Street	Virginia Ramsey 2028 Burning Tree Lane Denton, TX 76209
5.	Shelton Street	Sophiann Oliwa 10 Shelton Street Derby, CT 06418
6.	24 Lombardi Drive	Amedeo Durante 24 Lombardi Drive Derby, CT 06418
7.	18 Lombardi Drive	Lee and Emre Akter 18 Lombardi Drive Derby, CT 06418
8.	14 Lombardi Drive	Lawrence and Patricia Commune 14 Lombardi Drive Derby, CT 06418
9.	8 Lombardi Drive	Carmen and Theresa Mongillo 8 Lombardi Drive Derby, CT 06418

	Property Address	Owner's and Mailing Address
10.	3 Lombardi Drive	Suzanne Frosceno 3 Lombardi Drive Derby, CT 06418
11.	1 Lombardi Drive	Lucy Fabiano Revocable Trust 101 Sentinel Hill Road Derby, CT 06418
12.	173 Sentinel Hill Road	Scott Grim 173 Sentinel Hill Road Derby, CT 06418
13.	176 Sentinel Hill Road	Manvel and Ana Maria 176 Sentinel Hill Road Derby, CT 06418
14.	186 Sentinel Hill Road	Forwards Management LLC 214 Benton Street Stratford, CT 06615
15.	194 Sentinel Hill Road	Bruce Wilson 194 Sentinel Hill Road Derby, CT 06418
16.	195 Sentinel Hill Road	Timothy and Nancy Marren 195 Sentinel Hill Road Derby, CT 06418
17.	39 Pleasant View Road	Walter Florczak 39 Pleasant View Road Derby, CT 06418
18.	47 Pleasant View Road	Diana Garafalo 47 Pleasant View Road Derby, CT 06418
19.	55 Pleasant View Road	Kenneth and Diane Betlej 55 Pleasant View Road Derby, CT 06418
20.	63 Pleasant View Road	Carmine and Rosann Lizza 63 Pleasant View Road Derby, CT 06418

	Property Address	Owner's and Mailing Address
21.	62 Pleasant View Road	Elizabeth Begnoche 62 Pleasant View Road Derby, CT 06418
22.	70 Pleasant View Road	Lawrence and Judith King 70 Pleasant View Road Derby, CT 06418
23.	78 Pleasant View Road	Dany Noel 78 Pleasant View Road Derby, CT 06418
24.	79 Pleasant View Road	Griffiths LLC 27 Misty Lane Shelton, CT 06484
25.	87 Pleasant View Road	Shanell Green 87 Pleasant View Road Derby, CT 06418
26.	95 Pleasant View Road	Joseph Martin 95 Pleasant View Road Derby, CT 06418

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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		6	OLD STATE HOUSE STATION 06103 OCT 19 2022 USPS Post 2022 US POSTAGE $003.75⁰ ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Amedeo Durante 24 Lombardi Drive Derby, CT 06418				
2.	Bruce Wilson 194 Sentinel Hill Road Derby, CT 06418				
3.	Carmen and Theresa Mongillo 8 Lombardi Drive Derby, CT 06418				
4.	Carmine and Rosann Lizza 63 Pleasant View Road Derby, CT 06418				
5.	Cecelia E. Sroka 689 Benham Street Hamden, CT 06514				
6.	City of Derby David Humphreys Road Derby, CT 06418				

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Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		6	OLD STATE HOUSE STATION 06103 OCT 19 2022 USPS Firstpost 10/19/2022 US POSTAGE $003.75 ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Dany Noel 78 Pleasant View Road Derby, CT 06418				
2.	Diana Garafalo 47 Pleasant View Road Derby, CT 06418				
3.	Elizabeth Begnoche 62 Pleasant View Road Derby, CT 06418				
4.	Forwards Management LLC 214 Benton Street Stratford, CT 06615				
5.	Griffiths LLC 27 Misty Lane Shelton, CT 06484				
6.	Joseph Francis Oliwa 12 Shelton Street Derby, CT 06418				

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Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103			OLD STATE HOUSE ST... JN 06103 OCT 19 2022 USPS Postage 10/19/2022 US POSTAGE $003.75 ZIP 06103 041L1220937
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Joseph Martin 95 Pleasant View Road Derby, CT 06418				
2.	Kenneth and Diane Betlej 55 Pleasant View Road Derby, CT 06418				
3.	Lawrence and Judith King 70 Pleasant View Road Derby, CT 06418				
4.	Lawrence and Patricia Commune 14 Lombardi Drive Derby, CT 06418				
5.	Lee and Emre Akter 18 Lombardi Drive Derby, CT 06418				
6.	Lucy Fabiano Revocable Trust 101 Sentinel Hill Road Derby, CT 06418				

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Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103			OLD STATE HOUSE STATION 06103 OCT 19 2022 USPS Postmark 10/19/2022 USPS POSTAGE $003.75 ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Manvel and Ana Maria 176 Sentinel Hill Road Derby, CT 06418				
2.	Scott Grim 173 Sentinel Hill Road Derby, CT 06418				
3.	Shanell Green 87 Pleasant View Road Derby, CT 06418				
4.	Sophiann Oliwa 10 Shelton Street Derby, CT 06418				
5.	Suzanne Frosceno 3 Lombardi Drive Derby, CT 06418				
6.	Timothy and Nancy Marren 195 Sentinel Hill Road Derby, CT 06418				

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Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		5	neopost 10/19/2022 US POSTAGE $003.75⁰ ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		OLD STATE HOUSE STATION 06103 OCT 19 2022 USPS

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Virginia Ramsey 2028 Burning Tree Lane Denton, TX 76209				
2.	Walter Florczak 39 Pleasant View Road Derby, CT 06418				
3.	Richard Dziekan, Mayor City of Derby 1 Elizabeth Street Derby, CT 06418				
4.	Joseph Ballaro, Building Official City of Derby 1 Elizabeth Street Derby, CT 06418				
5.	Our Lady, Queen of the Apostles Parish 212 Elizabeth Street Derby, CT 06418				
6.					