



NORTHEAST
SITE SOLUTIONS

Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
4 Angela's Way
Burlington CT 06013
860-209-4690
denise@northeastsitesolutions.com

March 6, 2019

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Exempt Modification Application
382 Colebrook River Road, Colebrook CT 06021
Latitude: 41.992083
Longitude: -73.039805
T-Mobile Site#: CTNH549B- MWAAV

Dear Ms. Bachman:

T-Mobile is requesting to file an exempt modification for an existing 150-foot monopole tower located at 382 Colebrook River Road, Colebrook CT. T-Mobile currently has approval for twelve (12) antennas at the 117-foot level of the existing 150-foot tower. The tower is owned by SBA and property is owned by 382 Colebrook LLC. T-Mobile now intends to install one (1) IBR1300 Dish. The new dish would be installed at the 117-foot and level of the tower.

Planned Modifications:
Remove: NONE
Remove and Replace: NONE

Install New:
(1)IBR1300 Dish
(1)Fiber line
(2)CAT6 Cables

Existing to Remain:
(4) APXVAA24 Antenna
(4) APXV18 Antenna
(4) APXV18 Antenna
(8) RRU
(4) 1-5/8" Fiber lines

This facility was approved by the CT Siting Council Docket No.296, February 2, 2005. This modification complies with this original approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-SOj-73, a copy of this letter is being sent to First Selectman Thomas McKeon, Elected Official and Michael Halloran, Land Use Administrator and Zoning Enforcement Officer for the Town of Colebrook, as well as the property owner and the tower owner.

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

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

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

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

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

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

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

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

Sincerely,

Denise Sabo

Mobile: 860-209-4690

Fax: 413-521-0558

Office: 4 Angela's Way, Burlington CT 06013

Email: denise@northeastsitesolutions.com

Attachments

cc: Thomas McKeon- First Selectman

Michael Halloran – Land Use Administrator and Zoning Enforcement Officer

SBA - Tower owner

382 Colebrook LLC – Land owner

Exhibit A

382 COLEBROOK RIVER ROAD

Location 382 COLEBROOK RIVER ROAD

Mblu 23 / 13 /

Acct#

Owner 382 COLEBROOK LLC

Assessment \$549,000

Appraisal \$784,300

PID 698

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$599,400	\$184,900	\$784,300
Assessment			
Valuation Year	Improvements	Land	Total
2015	\$419,600	\$129,400	\$549,000

Owner of Record

Owner 382 COLEBROOK LLC
Co-Owner
Address 202 HANG DOG LANE
 WETHERSFIELD, CT 06109

Sale Price \$0
Certificate
Book & Page 87 / 269
Sale Date 11/16/2015
Instrument 03

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
382 COLEBROOK LLC	\$0		87 / 269	03	11/16/2015
OLIVERI JOHN	\$275,000		87 / 266	14	11/16/2015
US BANK TRUST NA TRUSTEE FOR	\$0		87 / 205	14	10/26/2015
US BANK TRUST NA TRUSTEE	\$0		87 / 161	14	09/30/2015
JOHNSON LEONARD D ESTATE OF &	\$0		84 / 667	08	04/18/2013

Building Information

Building 1 : Section 1

Year Built: 1975
Replacement Cost: \$316,840
Building Percent 77
Good:

Building Photo

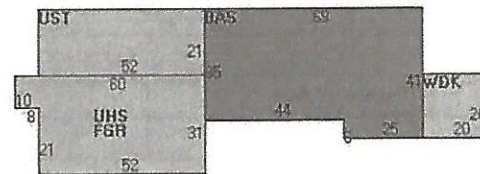
Replacement Cost
Less Depreciation: \$244,000

Building Photo

Building Attributes	
Field	Description
Style	Ranch
Model	Residential
Grade:	Average +10
Stories:	1 Story
Occupancy	1
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Standing Seam
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Flr 1	Concr-Finished
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Forced Air-Duc
AC Type:	None
Total Bedrooms:	2 Bedrooms
Total Bthrms:	1
Total Half Baths:	0
Total Xtra Fixtrs:	
Total Rooms:	5 Rooms
Bath Style:	Average
Kitchen Style:	Avg

(<http://images.vgsi.com/photos/ColebrookCTPhotos//00\00\05\67.jpg>)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	2,565	2,565
FGR	Garage	1,692	0
UHS	Unfinished Half Story	1,692	0
UST	Unfinished Storage	1,092	0
WDK	Wood Deck	400	0
		7,441	2,565

Extra Features

Extra Features		Legend
No Data for Extra Features		

Land

Land Use

Use Code 1-3
Description 1 Family
Zone GB
Neighborhood R04

Land Line Valuation

Size (Acres) 18.9
Frontage 0
Depth 0
Assessed Value \$129,400

Alt Land Appr No
Category

Appraised Value \$184,900

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CTW	CELL TOWER			1 UNITS	\$300,000	1
MAS	MASONRY OUTB			240 S.F.	\$16,800	1
MAS	MASONRY OUTB			360 S.F.	\$25,200	1
MAS	MASONRY OUTB			192 S.F.	\$13,400	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$599,400	\$184,900	\$784,300
2013	\$435,600	\$131,000	\$566,600
2012	\$435,600	\$131,000	\$566,600

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$419,600	\$129,400	\$549,000
2013	\$305,000	\$91,700	\$396,700
2012	\$305,000	\$91,700	\$396,700

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Exhibit B

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MODIFICATION TO EXISTING WIRELESS
TELECOMMUNICATION FACILITY BY

T-Mobile

T-MOBILE NORTHEAST LLC


SITE NUMBER: CTNH549B
SITE NAME: CTNH549B
SBA SITE NUMBER: CT1613-A
SITE ADDRESS: 382 COLEBROOK RIVER ROAD
COLEBROOK, CT 06021

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANGER
NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET
NEWTON, MA 02460
617-212-3123

PROFESSIONAL SEAL



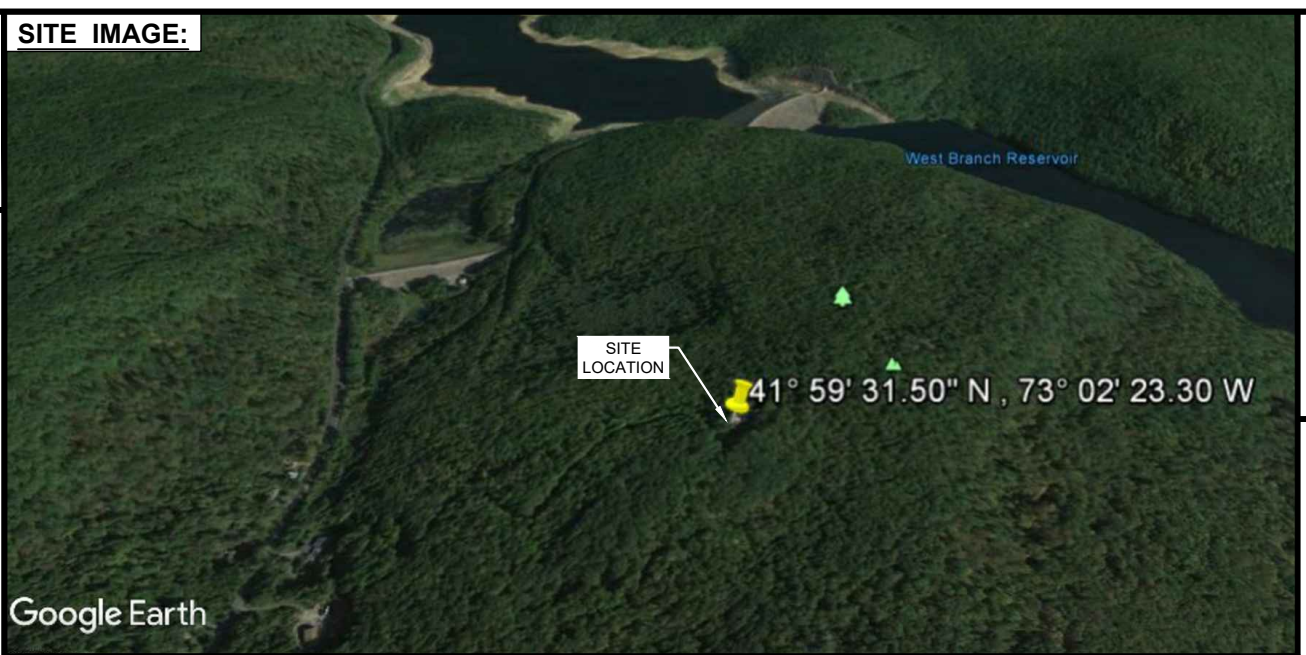
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REV	DESCRIPTION	DATE
A	PRELIMINARY	03/26/18

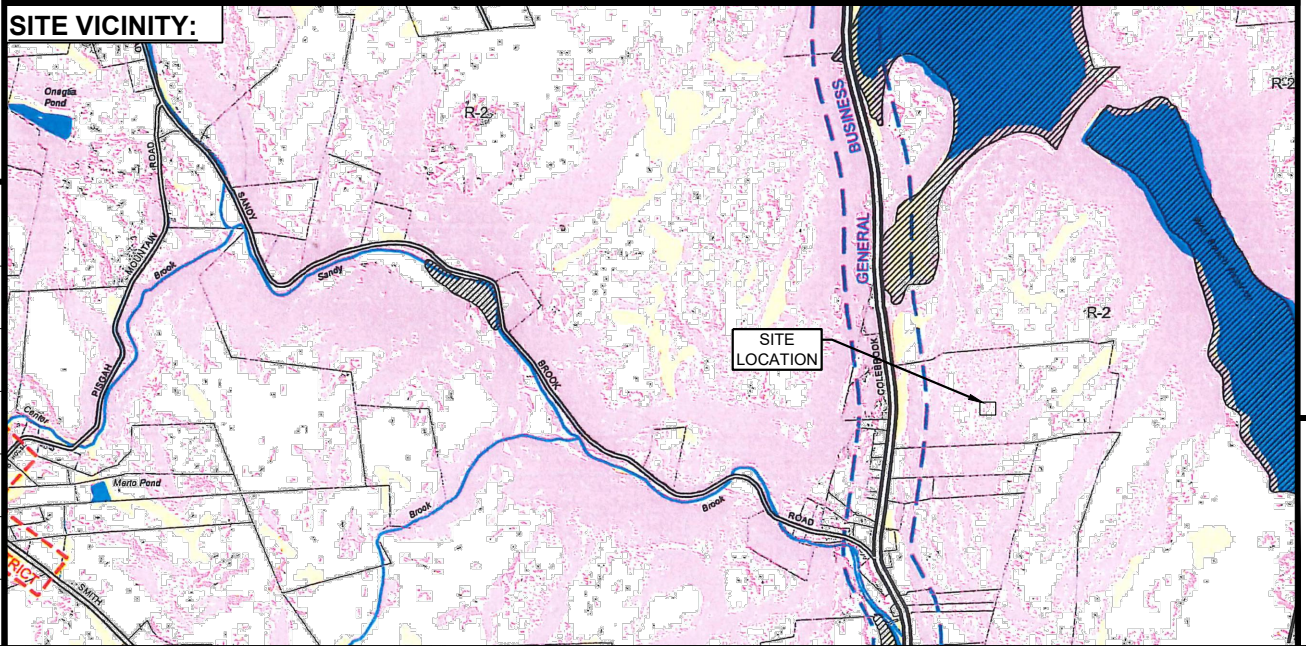
SITE NUMBER: CTNH549B
ADDRESS: 382 COLEBROOK RIVER ROAD
COLEBROOK, CT 06021

SHEET TITLE:
. T-1: TITLE SHEET

PROJECT SCOPE:
ADDITION OF A BACKHAUL RADIO MICROWAVE DISH, (1) FIBER AND (2) CAT6 CABLES TO EXISTING TOWER.



- PROJECT NOTES:**
- THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION: HANDICAPPED ACCESS IS NOT REQUIRED. POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED. NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
 - CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
 - DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.
 - PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT, A STRUCTURAL EVALUATION SHOULD BE PERFORMED TO CERTIFY THAT THE EXISTING/PROPOSED STRUCTURE AND COMPONENTS HAVE ADEQUATE STRUCTURAL CAPACITY PER ALL THE APPLICABLE CODES AND STANDARDS IN THE PROJECT JURISDICTION. CONTRACTOR SHOULD REVIEW THE REPORT AND ADHERE TO THE REPORT FULLY AND ALL THE RECOMMENDATIONS THEREIN, INCLUDING BUT NOT LIMITED TO ANTENNA PLACEMENT, COAX ROUTING, STRUCTURAL IMPROVEMENTS, ETC.



T-MOBILE APPROVALS:

APPROVAL TYPE	DATE
FSA CM	DATE
RF ENGINEER	DATE
FOPS	DATE
T-MOBILE ENGINEERING AND DEVELOPMENT	DATE
	DATE
	DATE

PROJECT INFORMATION:

ADDRESS: 382 COLEBROOK RIVER ROAD
COLEBROOK, CT 06021

COORDINATES: 41° 59' 31.50" N , 73° 02' 23.30 W

STRUCTURE TYPE: EXISTING 120' LATTICE TOWER

JURISDICTION: TOWN OF COLEBROOK, CT SITING COUNCIL

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

PROJECT TEAM:

APPLICANT: T-MOBILE NORTHEAST, LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROPERTY OWNER : N/F 382 COLEBROOK, LLC,
202 HANG DOG LANE
WETHERSFIELD, CT 06109

TOWER OWNER : SBA TOWERS II, LLC

PROJECT MANGER: NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
SHELDON FREINCLE
SHELDON@NORTHEASTSITESOLUTIONS.COM
201-776-8521

CONSULTANTS: FORESITE LLC
462 WALNUT ST
NEWTON, MA 02460
SAEED MOSSAVAT
SMOSSAVAT@FORESITELLC.COM
617-212-3123

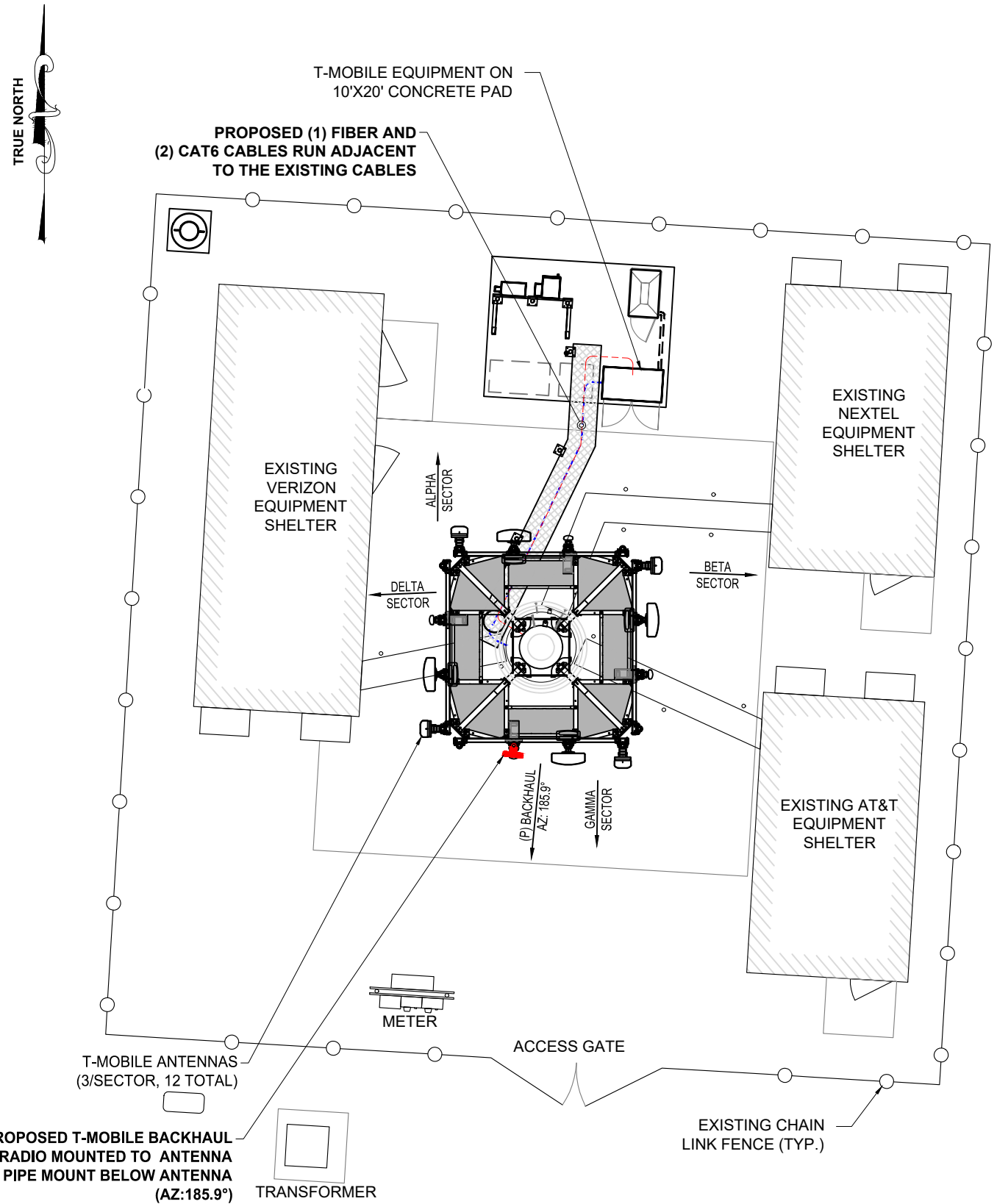
SHEET INDEX:

T-1: TITLE SHEET

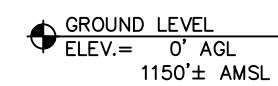
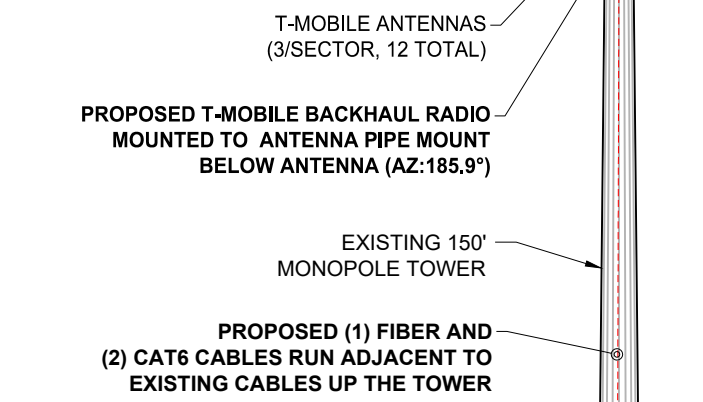
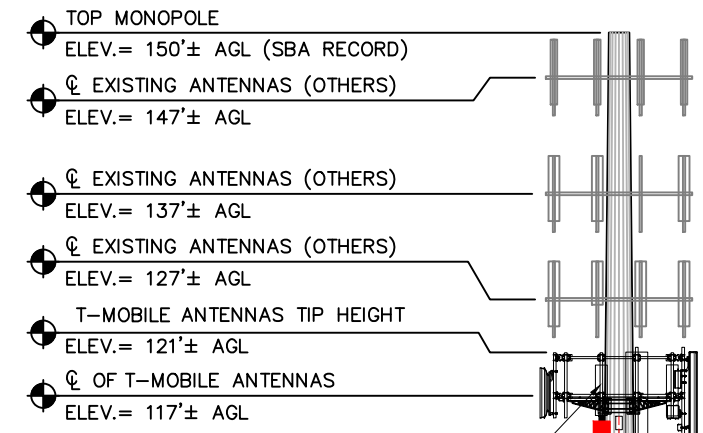
LE-1: PLANS AND ELEVATIONS

LE-2: DETAILS

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PLAN
N.T.S. (1) LE-1



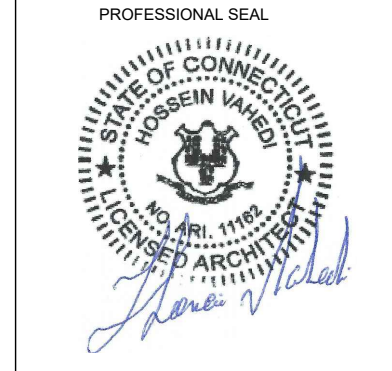
ELEVATION
N.T.S. (2) LE-1

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANGER
NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET
NEWTON, MA 02460
617-212-3123



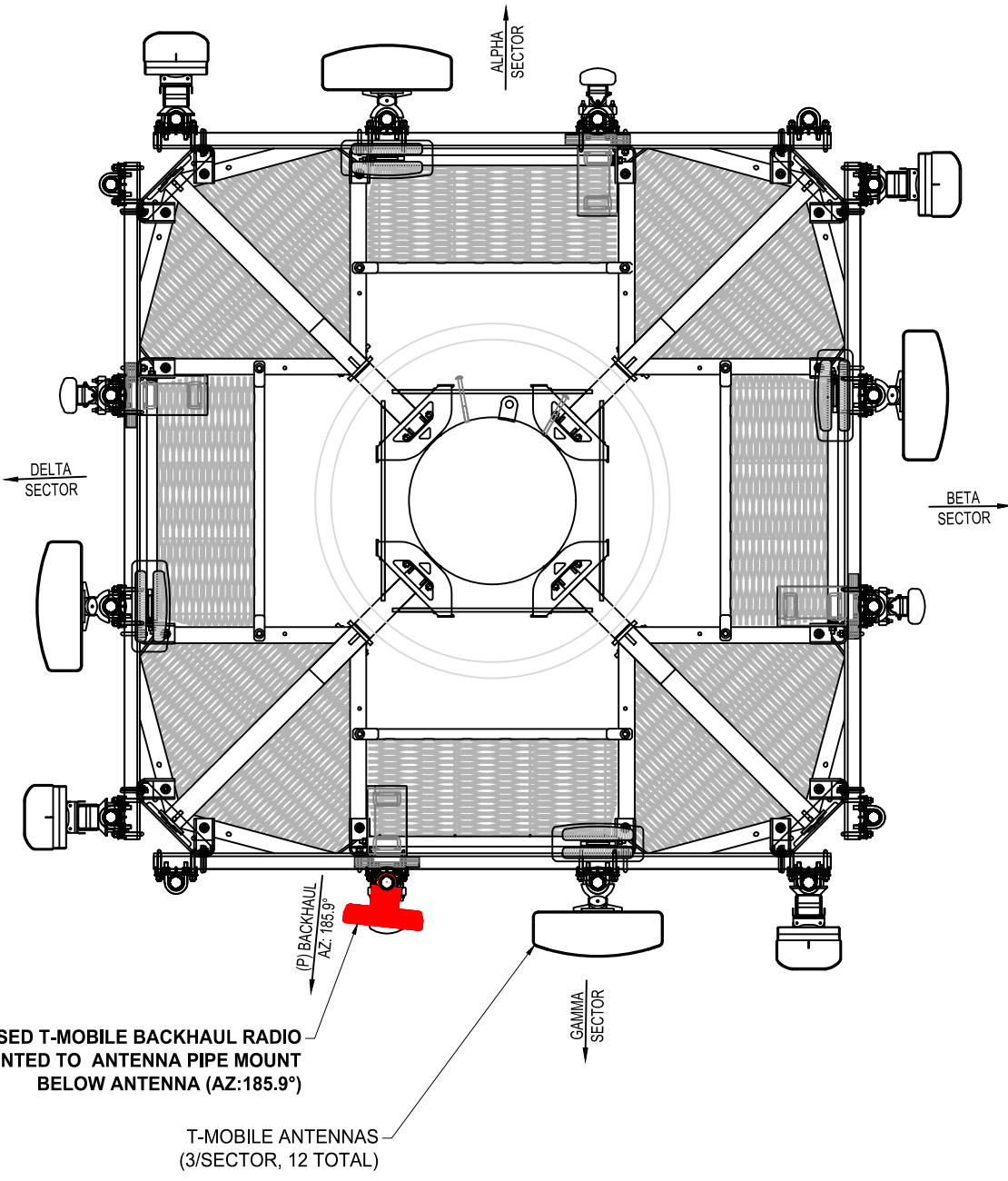
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REV	DESCRIPTION	DATE
A	PRELIMINARY	03/26/18

SITE NUMBER: CTNH549B
ADDRESS: 382 COLEBROOK RIVER ROAD
COLEBROOK, CT 06021

SHEET TITLE:
LE-1: PLAN AND ELEVATION

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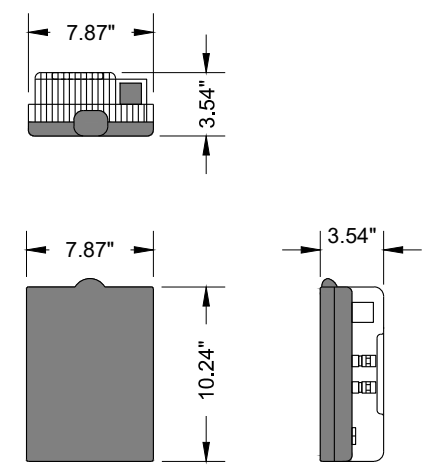


PROPOSED T-MOBILE BACKHAUL RADIO MOUNTED TO ANTENNA PIPE MOUNT BELOW ANTENNA (AZ:185.9°)

T-MOBILE ANTENNAS (3/SECTOR, 12 TOTAL)

ANTENNA PLAN
N.T.S

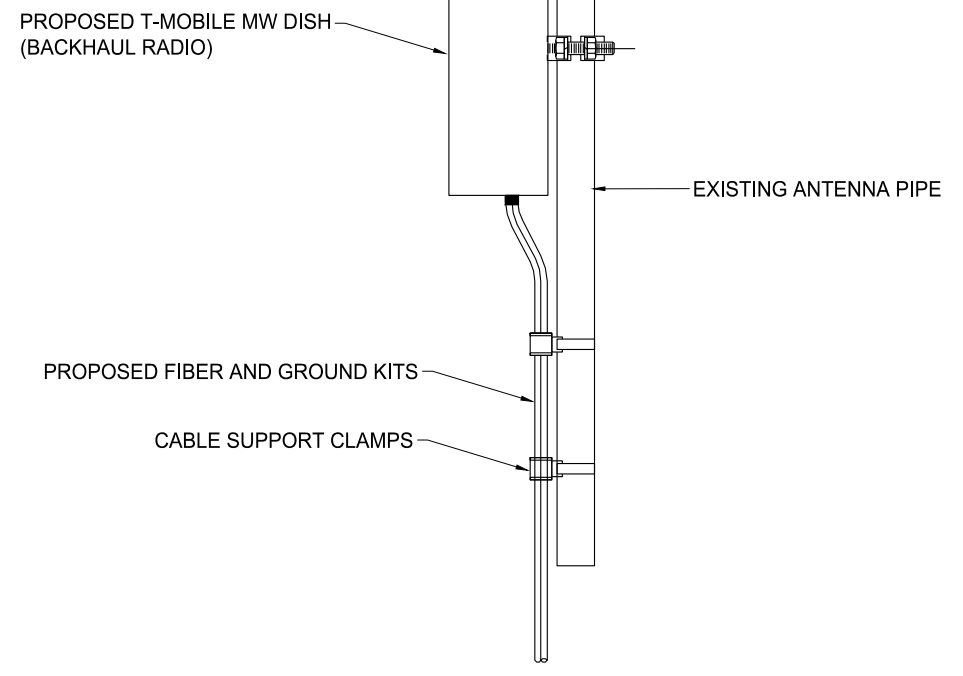
1
LE-2



MANUFACTURER: FASTBACK
MODEL: IBR 1300
FOOTPRINT: 10.24"HX7.87"WX3.54"D
WEIGHT: 8.82 LBS

BACKHAUL RADIO SPECIFICATIONS
N.T.S

2
LE-2



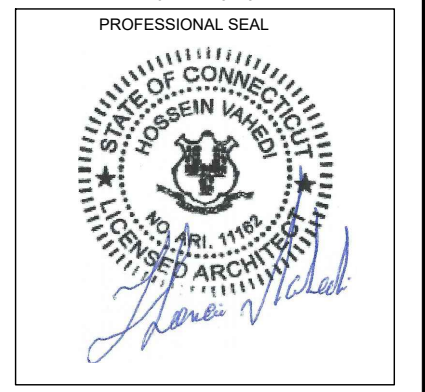
BACKHAUL RADIO MOUNTING DETAIL
N.T.S

3
LE-2

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANGER
NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET
NEWTON, MA 02460
617-212-3123



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REV	DESCRIPTION	DATE
A	PRELIMINARY	03/26/18

SITE NUMBER: CTNH549B
ADDRESS: 382 COLEBROOK RIVER ROAD
COLEBROOK, CT 06021

SHEET TITLE:
LE-2: ANTENNA PLAN AND DETAILS

Exhibit C



Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 150 ft PennSummit Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13613-A

Customer Site Name: Johnson

Carrier Name: T-Mobile

Carrier Site ID / Name: CTNH549B / CTNH549B

Site Location: 382 Colebrook River Rd

Colebrook, Connecticut

Litchfield County

Latitude: 41.992083

Longitude: -73.039805

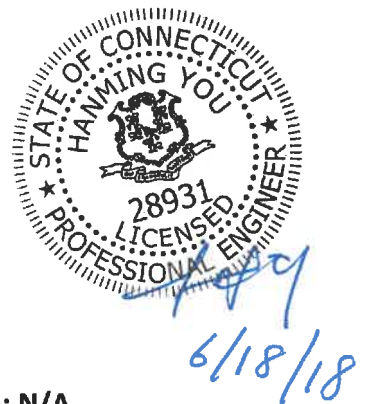
Analysis Result:

Max Structural Usage: 54.5% [Pass]

Max Foundation Usage: 33% [Pass]

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

Report Prepared By: Gustavo Zaragoza





Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 150 ft PennSummit Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13613-A

Customer Site Name: Johnson

Carrier Name: T-Mobile

Carrier Site ID / Name: CTNH549B / CTNH549B

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Colebrook, Connecticut

Litchfield County

Latitude: 41.992083

Longitude: -73.039805

Analysis Result:

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Max Foundation Usage: 33% [Pass]

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

Report Prepared By: Gustavo Zaragoza

Introduction

The purpose of this report is to summarize the analysis results on the 150 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	Paul J. Ford; Job #29205-0113; 5/24/2005
Foundation Drawing	Paul J. Ford; Job #29205-0113; 5/24/2005
Geotechnical Report	JGI Eastern, Inc; Project #05268G; 5/16/2005

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 $V_{ult} = 115$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 89$ mph (3-Sec. Gust)
Wind Speed with Ice:	40 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.174$, $S_1 = 0.065$

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	150.0	12	Decibel DB846G90A-XY	Low Profile Platform	(12) 1 5/8"	Nextel
2	139.0	6	Powerwave 7770	Low Profile Platform	(12) 1 5/8" (1) 3/4" DC (1) 7/16" Fiber	AT&T
3		1	Kathrein 800 10764			
4		2	KMW AM-X-CD-16-65-00T-RET			
5		6	Powerwave LGP 21401			
6		6	Powerwave LGP 13519			
7		6	Ericsson RRUS 11			
8		1	Raycap DC6-48-60-18-8F - SP			
9		1	Commscope ABT-DFDM-ADBH - Bias T			
10		127.0	12			
11	3		Antel BXA-70080-6CF-EDIN			
12	3		Antel BXA-171085-8BF-EDIN			
13	6		RFS FD9R6004/2C-3L			
14	117.0	4	Ericsson Air 32 KRD901146-1_B66A_B2A	SitePro F4P-10W w/ F4P-HRK10 Handrail Kit	(4) 1 5/8" Fiber	T-Mobile
15		4	RFS APXVAA24_43-U-A20			
16		4	RFS APXV18-206517S-A20			
17		4	Ericsson S11B12			
18		4	Ericsson RRU 2217 B2			
20	65.0	2	Motorola RRA4905A	Direct	(2) 1/2"	Verizon

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
19	117.0	1	Fastback IBR1300	Low Profile Platform	(1) 1/2" Fiber (2) CAT6	T-Mobile

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	54.5%	40.8%	46.6%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	4200.0	39.0	36.0
Analysis Reactions	2768.6	25.1	48.4
Factored Reactions*	5670.0	52.7	48.6
% of Design Reactions	48.8%	47.6%	99.5%

* 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 ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.9307 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.
4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.
5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.
6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
7. 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.
8. 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.
9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 54.52% at 51.0ft

Structure: CT13613-A-SBA
Site Name: Johnson
Height: 150.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-G
Exposure: B
Gh: 1.1

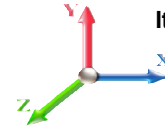
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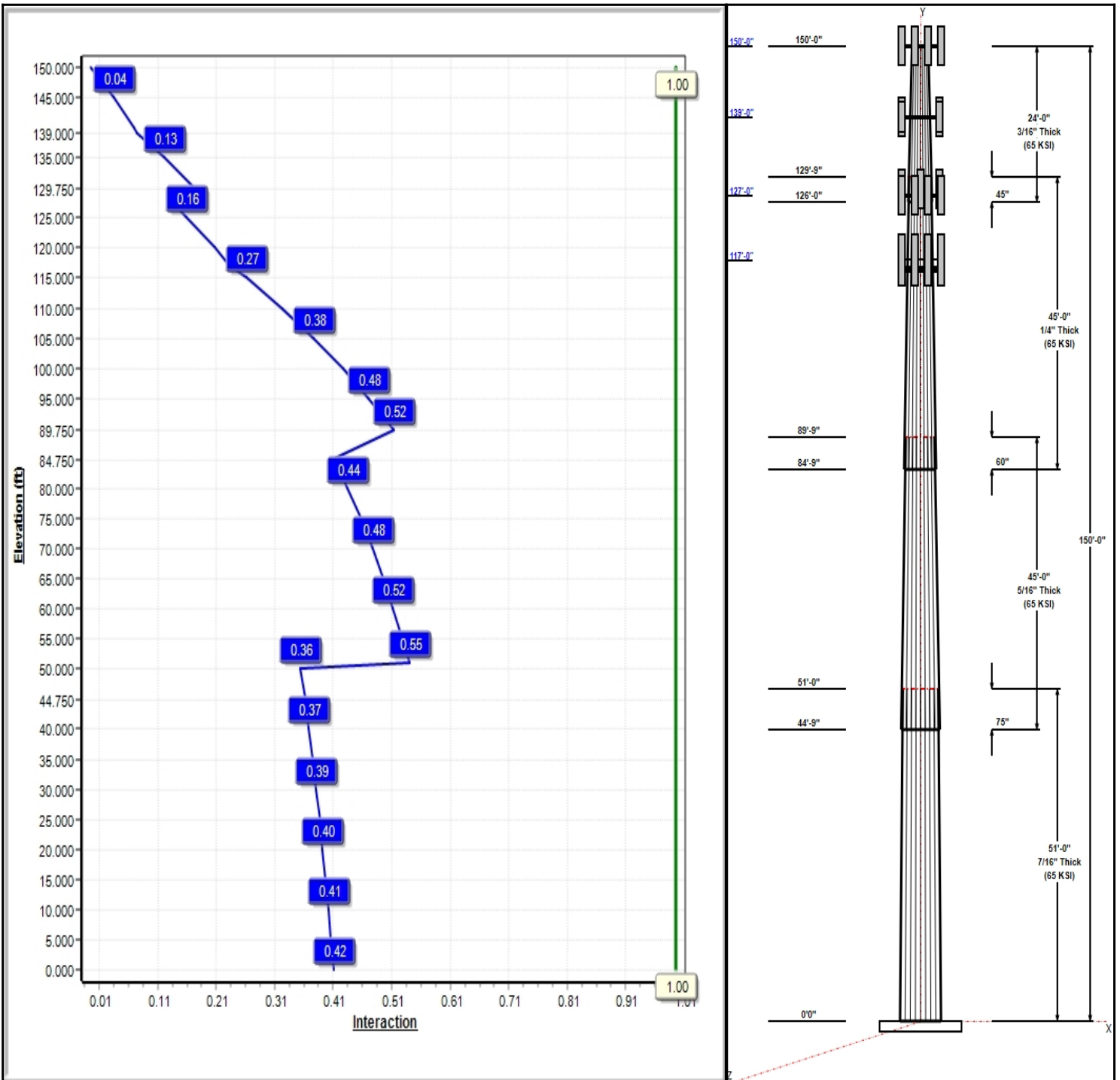
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 89 mph Wind



Iterations: 22

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Structure: CT13613-A-SBA

Type: Tapered
Site Name: Johnson
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.26000

6/18/2018

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	51.00	46.74	60.00	0.438		0.26000	65
2	45.00	37.29	48.99	0.313	Slip	0.26000	65
3	45.00	27.39	39.09	0.250	Slip	0.26000	65
4	24.00	22.50	28.74	0.188	Slip	0.26000	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
150.00	150.00	1	Low Profile Platform	Nextel
150.00	150.00	12	Decibel DB846G90A-XY	Nextel
139.00	139.00	1	Low Profile Platform	AT&T
139.00	139.00	6	Powerwave 7770	AT&T
139.00	139.00	1	Kathrein 800 10764	AT&T
139.00	139.00	2	KMW	AT&T
139.00	139.00	6	Powerwave LGP 21401	AT&T
139.00	139.00	6	Powerwave LGP 13519	AT&T
139.00	139.00	6	Ericsson RRUS 11	AT&T
139.00	139.00	1	Raycap DC6-48-60-18-8F -	AT&T
139.00	139.00	1	Commscope	AT&T
127.00	127.00	1	Low Profile Platform	Verizon
127.00	127.00	12	Antel LPA-80080/6CF	Verizon
127.00	128.00	3	Antel	Verizon
127.00	128.00	3	Antel	Verizon
127.00	128.00	6	RFS FD9R6004/2C-3L	Verizon
117.00	117.00	1	SitePro F4P-10W	T-Mobile
117.00	117.00	1	F4P-HRK10	T-Mobile
117.00	117.00	4	Ericsson Air 32	T-Mobile
117.00	117.00	4	RFS	T-Mobile
117.00	117.00	4	RFS	T-Mobile
117.00	117.00	4	Ericsson S11B12	T-Mobile
117.00	117.00	4	Ericsson RRU 2217 B2	T-Mobile
117.00	117.00	1	Fastback IBR1300	T-Mobile
65.00	65.00	2	Motorola RRA4905A	Verizon

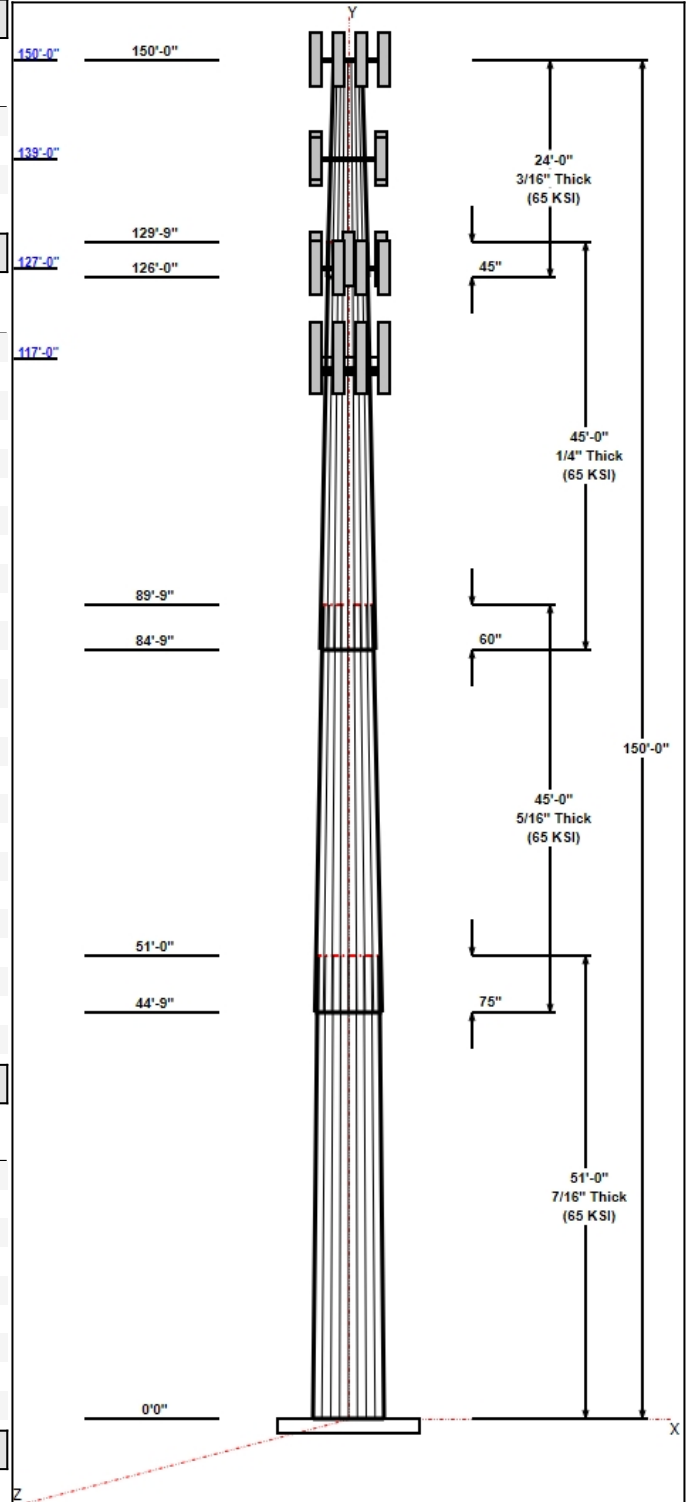
Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	150.00	Inside	1 5/8" Coax	Nextel
0.00	139.00	Inside	1 5/8" Coax	AT&T
0.00	139.00	Inside	3/4" DC	AT&T
0.00	139.00	Inside	7/16" Fiber	AT&T
0.00	127.00	Inside	1 5/8" Coax	Verizon
0.00	117.00	Inside	1 5/8" Fiber	T-Mobile
0.00	117.00	Inside	1/2" Fiber	T-Mobile
0.00	117.00	Inside	CAT6	T-Mobile
0.00	65.00	Outside	1/2" Coax	Verizon

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
20	2.25" 18J	75.0	Cluster

Base Plate



Structure: CT13613-A-SBA

Type: Tapered
Site Name: Johnson
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.26000

6/18/2018

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Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	66.0	50.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 89 mph Wind	2768.6	25.1	48.4
0.9D + 1.6W 89 mph Wind	2746.5	25.0	36.3
1.2D + 1.0Di + 1.0Wi 40 mph Wind	642.7	5.7	86.8
1.2D + 1.0E	82.6	0.8	48.4
0.9D + 1.0E	81.7	0.8	36.3
1.0D + 1.0W 60 mph Wind	782.5	7.1	40.4

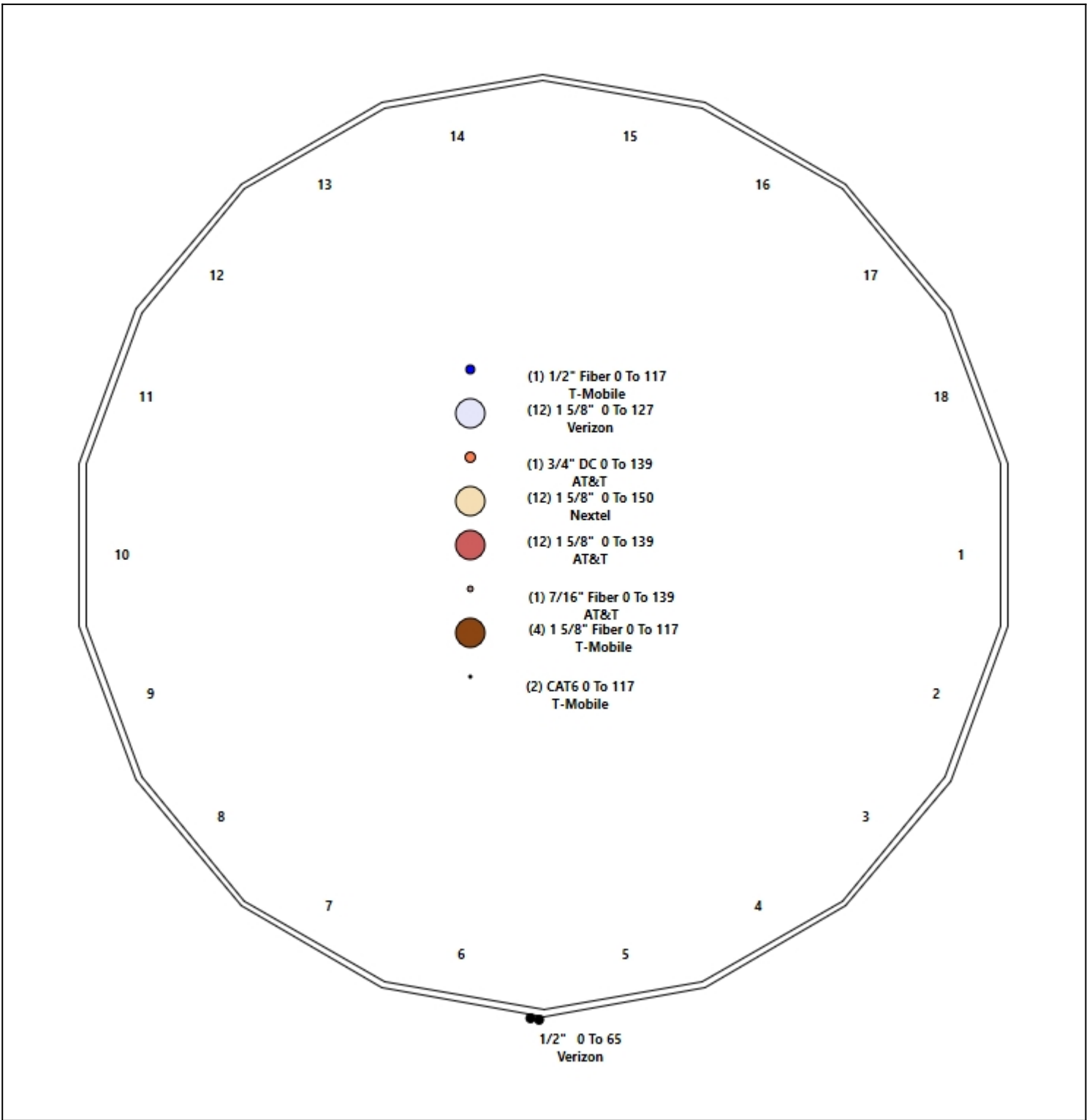
Structure: CT13613-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Johnson
Height: 150.00 (ft)

6/18/2018



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Shaft Properties

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	51.000	0.4375	65		0.00	12,755
2	18	45.000	0.3125	65	Slip	75.00	6,504
3	18	45.000	0.2500	65	Slip	60.00	4,008
4	18	24.000	0.1875	65	Slip	45.00	1,236
Total Shaft Weight:							24,504

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	60.00	0.00	82.71	37071.59	22.77	137.14	46.74	51.00	64.29	17415.4	17.43	106.8	0.260000
2	48.99	44.75	48.28	14453.71	26.23	156.77	37.29	89.75	36.68	6335.88	19.63	119.3	0.260000
3	39.09	84.75	30.82	5873.84	26.16	156.36	27.39	129.75	21.53	2004.07	17.91	109.5	0.260000
4	28.74	126.0	16.99	1750.16	25.62	153.28	22.50	150.00	13.28	835.20	19.75	120.0	0.260000

Load Summary

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	150.00	Low Profile Platform	1	1500.00	22.00	1.00	3245.22	45.549	1.00	0.00	0.00
2	150.00	Decibel DB846G90A-XY	12	15.40	5.01	1.12	244.68	6.674	1.12	0.00	0.00
3	139.00	Low Profile Platform	1	1500.00	22.00	1.00	3231.97	45.370	1.00	0.00	0.00
4	139.00	Powerwave 7770	6	35.00	5.50	0.73	221.12	6.928	0.73	0.00	0.00
5	139.00	Kathrein 800 10764	1	40.80	5.88	1.00	209.53	8.715	1.00	0.00	0.00
6	139.00	KMW AM-X-CD-16-65-00T-RET	2	48.50	8.02	0.90	263.23	11.717	0.90	0.00	0.00
7	139.00	Powerwave LGP 21401	6	17.50	0.00	0.67	49.83	0.000	0.67	0.00	0.00
8	139.00	Powerwave LGP 13519	6	5.30	0.34	0.67	17.87	0.941	0.67	0.00	0.00
9	139.00	Ericsson RRUS 11	6	50.70	2.52	0.67	144.37	3.684	0.67	0.00	0.00
10	139.00	Raycap DC6-48-60-18-8F - SP	1	31.80	0.92	1.00	113.61	1.500	1.00	0.00	0.00
11	139.00	Commscope ABT-DFDM-ADBH -	1	1.10	0.05	1.00	4.05	0.305	1.00	0.00	0.00
12	127.00	Low Profile Platform	1	1500.00	22.00	1.00	3216.41	45.160	1.00	0.00	0.00
13	127.00	Antel LPA-80080/6CF	12	21.00	4.33	1.70	295.03	5.931	1.70	0.00	0.00
14	127.00	Antel BXA-70080-6CF-EDIN	3	18.00	5.76	0.87	184.13	8.871	0.87	0.00	1.00
15	127.00	Antel BXA-171085-8BF-EDIN	3	10.50	2.94	0.84	96.45	5.115	0.84	0.00	1.00
16	127.00	RFS FD9R6004/2C-3L	6	3.10	0.37	0.67	13.63	0.968	0.67	0.00	1.00
17	117.00	SitePro F4P-10W	1	2396.00	58.98	1.00	5441.59	50.016	1.00	0.00	0.00
18	117.00	F4P-HRK10	1	478.27	9.00	1.00	1086.21	22.892	1.00	0.00	0.00
19	117.00	Ericsson Air 32	4	105.80	6.51	0.87	340.86	7.994	0.87	0.00	0.00
20	117.00	RFS APXVAA24_43-U-A20	4	99.00	20.24	0.73	711.39	22.739	0.73	0.00	0.00
21	117.00	RFS APXV18-206517S-A20	4	26.40	5.17	0.73	147.16	8.259	0.73	0.00	0.00
22	117.00	Ericsson S11B12	4	51.00	2.83	0.67	141.53	3.704	0.67	0.00	0.00
23	117.00	Ericsson RRU 2217 B2	4	44.00	2.57	0.67	126.30	3.410	0.67	0.00	0.00
24	117.00	Fastback IBR1300	1	8.82	0.67	1.00	31.87	1.121	1.00	0.00	0.00
25	65.00	Motorola RRA4905A	2	1.00	0.14	1.00	12.56	0.616	1.00	0.00	0.00
Totals:			93	10,052.49			33,000.17				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	150.00	(12) 1 5/8" Coax	0.00	Inside
0.00	139.00	(12) 1 5/8" Coax	0.00	Inside
0.00	139.00	(1) 3/4" DC	0.00	Inside
0.00	139.00	(1) 7/16" Fiber	0.00	Inside
0.00	127.00	(12) 1 5/8" Coax	0.00	Inside
0.00	117.00	(4) 1 5/8" Fiber	0.00	Inside
0.00	117.00	(1) 1/2" Fiber	0.00	Inside
0.00	117.00	(2) CAT6	0.00	Inside
0.00	65.00	(2) 1/2" Coax	0.65	Outside

Shaft Section Properties

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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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		0.4375	60.000	82.707	37071.6	22.77	137.14	74.6	1216.	0.0
5.00		0.4375	58.700	80.902	34696.8	22.25	134.17	75.2	1164.	1391.8
10.00		0.4375	57.400	79.097	32425.7	21.72	131.20	75.8	1112.	1361.1
15.00		0.4375	56.100	77.292	30255.9	21.20	128.23	76.5	1062.	1330.4
20.00		0.4375	54.800	75.486	28185.2	20.68	125.26	77.1	1013.	1299.7
25.00		0.4375	53.500	73.681	26211.1	20.15	122.29	77.7	965.0	1269.0
30.00		0.4375	52.200	71.876	24331.5	19.63	119.31	78.3	918.1	1238.2
35.00		0.4375	50.900	70.071	22543.9	19.10	116.34	78.9	872.4	1207.5
40.00		0.4375	49.600	68.266	20846.1	18.58	113.37	79.5	827.8	1176.8
44.75	Bot - Section 2	0.4375	48.365	66.551	19314.2	18.08	110.55	80.1	786.6	1089.5
45.00		0.4375	48.300	66.461	19235.7	18.06	110.40	80.2	784.4	97.6
50.00		0.4375	47.000	64.656	17710.5	17.53	107.43	80.8	742.2	1924.8
51.00	Top - Section 1	0.3125	47.365	46.669	13054.0	25.31	151.57	0.0	0.0	378.6
55.00		0.3125	46.325	45.637	12207.4	24.73	148.24	72.3	519.0	628.2
60.00		0.3125	45.025	44.348	11201.6	23.99	144.08	73.2	490.0	765.5
65.00		0.3125	43.725	43.058	10252.7	23.26	139.92	74.0	461.8	743.6
70.00		0.3125	42.425	41.769	9359.0	22.53	135.76	74.9	434.5	721.6
75.00		0.3125	41.125	40.479	8518.7	21.79	131.60	75.8	408.0	699.7
80.00		0.3125	39.825	39.190	7730.3	21.06	127.44	76.6	382.3	677.7
84.75	Bot - Section 3	0.3125	38.590	37.965	7027.9	20.36	123.49	77.4	358.7	623.5
85.00		0.3125	38.525	37.901	6992.2	20.33	123.28	77.5	357.5	58.5
89.75	Top - Section 2	0.2500	37.790	29.787	5303.6	25.24	151.16	0.0	0.0	1092.1
90.00		0.2500	37.725	29.735	5276.1	25.20	150.90	71.8	275.5	25.3
95.00		0.2500	36.425	28.704	4745.8	24.28	145.70	72.8	256.6	497.1
100.00		0.2500	35.125	27.672	4252.3	23.36	140.50	73.9	238.4	479.6
105.00		0.2500	33.825	26.641	3794.3	22.45	135.30	75.0	220.9	462.0
110.00		0.2500	32.525	25.609	3370.4	21.53	130.10	76.1	204.1	444.5
115.00		0.2500	31.225	24.578	2979.3	20.61	124.90	77.2	187.9	426.9
117.00		0.2500	30.705	24.165	2831.8	20.25	122.82	77.6	181.6	165.9
120.00		0.2500	29.925	23.546	2619.7	19.70	119.70	78.2	172.4	243.5
125.00		0.2500	28.625	22.515	2290.3	18.78	114.50	79.3	157.6	391.8
126.00	Bot - Section 4	0.2500	28.365	22.308	2227.9	18.60	113.46	79.5	154.7	76.3
127.00		0.2500	28.105	22.102	2166.7	18.41	112.42	79.7	151.8	133.1
129.75	Top - Section 3	0.1875	27.765	16.411	1576.9	24.70	148.08	0.0	0.0	359.7
130.00		0.1875	27.700	16.373	1565.8	24.64	147.73	72.4	111.3	13.9
135.00		0.1875	26.400	15.599	1354.2	23.42	140.80	73.9	101.0	272.0
139.00		0.1875	25.360	14.980	1199.3	22.44	135.25	75.0	93.1	208.1
140.00		0.1875	25.100	14.826	1162.5	22.19	133.87	75.3	91.2	50.7
145.00		0.1875	23.800	14.052	989.9	20.97	126.93	76.7	81.9	245.7
150.00		0.1875	22.500	13.278	835.2	19.75	120.00	78.2	73.1	232.5

24504.2

Wind Loading - Shaft

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II

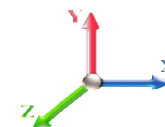


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Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	13.485	14.83	378.06	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	13.485	14.83	369.87	0.650	0.000	5.00	25.111	16.32	387.4	0.0	1670.2
10.00		1.00	0.70	13.485	14.83	361.67	0.650	0.000	5.00	24.561	15.96	378.9	0.0	1633.3
15.00		1.00	0.70	13.485	14.83	353.48	0.650	0.000	5.00	24.011	15.61	370.4	0.0	1596.5
20.00		1.00	0.70	13.485	14.83	345.29	0.650	0.000	5.00	23.461	15.25	361.9	0.0	1559.6
25.00		1.00	0.70	13.485	14.83	337.10	0.650	0.000	5.00	22.911	14.89	353.4	0.0	1522.8
30.00		1.00	0.70	13.496	14.85	329.05	0.650	0.000	5.00	22.361	14.53	345.2	0.0	1485.9
35.00		1.00	0.73	14.104	15.51	328.00	0.650	0.000	5.00	21.811	14.18	351.9	0.0	1449.0
40.00		1.00	0.76	14.652	16.12	325.78	0.650	0.000	5.00	21.260	13.82	356.4	0.0	1412.2
44.75	Bot - Section 2	1.00	0.79	15.130	16.64	322.80	0.650	0.000	4.75	19.688	12.80	340.8	0.0	1307.4
45.00		1.00	0.79	15.154	16.67	322.62	0.650	0.000	0.25	1.036	0.67	18.0	0.0	117.1
50.00		1.00	0.81	15.617	17.18	318.70	0.650	0.000	5.00	20.425	13.28	364.9	0.0	2309.7
51.00	Top - Section 1	1.00	0.82	15.705	17.28	317.83	0.650	0.000	1.00	4.019	2.61	72.2	0.0	454.4
55.00		1.00	0.83	16.048	17.65	318.43	0.650	0.000	4.00	15.856	10.31	291.1	0.0	753.8
60.00		1.00	0.85	16.452	18.10	313.36	0.650	0.000	5.00	19.325	12.56	363.7	0.0	918.6
65.00	Appurtenance(s)	1.00	0.87	16.833	18.52	307.81	0.650	0.000	5.00	18.775	12.20	361.5	0.0	892.3
70.00		1.00	0.89	17.193	18.91	301.84	0.650	0.000	5.00	18.225	11.85	358.5	0.0	865.9
75.00		1.00	0.91	17.535	19.29	295.49	0.650	0.000	5.00	17.675	11.49	354.6	0.0	839.6
80.00		1.00	0.93	17.861	19.65	288.80	0.650	0.000	5.00	17.125	11.13	349.9	0.0	813.3
84.75	Bot - Section 3	1.00	0.94	18.158	19.97	282.16	0.650	0.000	4.75	15.759	10.24	327.4	0.0	748.2
85.00		1.00	0.94	18.173	19.99	281.80	0.650	0.000	0.25	0.826	0.54	17.2	0.0	70.2
89.75	Top - Section 2	1.00	0.96	18.458	20.30	274.90	0.650	0.000	4.75	15.437	10.03	326.0	0.0	1310.5
90.00		1.00	0.96	18.473	20.32	278.21	0.650	0.000	0.25	0.799	0.52	16.9	0.0	30.4
95.00		1.00	0.97	18.760	20.64	270.71	0.650	0.000	5.00	15.686	10.20	336.7	0.0	596.6
100.00		1.00	0.99	19.037	20.94	262.97	0.650	0.000	5.00	15.136	9.84	329.6	0.0	575.5
105.00		1.00	1.00	19.304	21.23	255.01	0.650	0.000	5.00	14.586	9.48	322.1	0.0	554.4
110.00		1.00	1.02	19.563	21.52	246.84	0.650	0.000	5.00	14.036	9.12	314.1	0.0	533.4
115.00		1.00	1.03	19.813	21.79	238.48	0.650	0.000	5.00	13.486	8.77	305.7	0.0	512.3
117.00	Appurtenance(s)	1.00	1.03	19.911	21.90	235.09	0.650	0.000	2.00	5.240	3.41	119.4	0.0	199.0
120.00		1.00	1.04	20.055	22.06	229.95	0.650	0.000	3.00	7.696	5.00	176.6	0.0	292.2
125.00		1.00	1.05	20.290	22.32	221.25	0.650	0.000	5.00	12.386	8.05	287.5	0.0	470.2
126.00	Bot - Section 4	1.00	1.06	20.337	22.37	219.49	0.650	0.000	1.00	2.411	1.57	56.1	0.0	91.5
127.00	Appurtenance(s)	1.00	1.06	20.383	22.42	217.72	0.650	0.000	1.00	2.421	1.57	56.5	0.0	159.7
129.75	Top - Section 3	1.00	1.06	20.508	22.56	212.83	0.650	0.000	2.75	6.544	4.25	153.5	0.0	431.7
130.00		1.00	1.07	20.519	22.57	215.30	0.650	0.000	0.25	0.587	0.38	13.8	0.0	16.7
135.00		1.00	1.08	20.742	22.82	206.30	0.650	0.000	5.00	11.445	7.44	271.6	0.0	326.4
139.00	Appurtenance(s)	1.00	1.09	20.915	23.01	199.01	0.650	0.000	4.00	8.760	5.69	209.6	0.0	249.7
140.00		1.00	1.09	20.958	23.05	197.17	0.650	0.000	1.00	2.135	1.39	51.2	0.0	60.9
145.00		1.00	1.10	21.169	23.29	187.90	0.650	0.000	5.00	10.345	6.72	250.5	0.0	294.8
150.00	Appurtenance(s)	1.00	1.11	21.375	23.51	178.49	0.650	0.000	5.00	9.795	6.37	239.5	0.0	279.0
Totals:									150.00			9,961.9		29,405.0

Discrete Appurtenance Forces

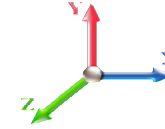
Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	150.00	Low Profile Platform	1	21.375	23.513	1.00	1.00	22.00	1800.00	0.000	0.000	827.65	0.00	0.00
2	150.00	Decibel DB846G90A-XY	12	21.375	23.513	1.01	0.90	60.60	221.76	0.000	0.000	2279.85	0.00	0.00
3	139.00	KMW	2	20.915	23.007	0.81	0.90	12.99	116.40	0.000	0.000	478.26	0.00	0.00
4	139.00	Low Profile Platform	1	20.915	23.007	1.00	1.00	22.00	1800.00	0.000	0.000	809.84	0.00	0.00
5	139.00	Powerwave 7770	6	20.915	23.007	0.58	0.80	19.27	252.00	0.000	0.000	709.42	0.00	0.00
6	139.00	Kathrein 800 10764	1	20.915	23.007	1.00	1.00	5.88	48.96	0.000	0.000	216.45	0.00	0.00
7	139.00	Powerwave LGP 13519	6	20.915	23.007	0.54	0.80	1.09	38.16	0.000	0.000	40.25	0.00	0.00
8	139.00	Powerwave LGP 21401	6	20.915	23.007	0.54	0.80	0.00	126.00	0.000	0.000	0.00	0.00	0.00
9	139.00	Ericsson RRUS 11	6	20.915	23.007	0.54	0.80	8.10	365.04	0.000	0.000	298.33	0.00	0.00
10	139.00	Raycap DC6-48-60-18-8F	1	20.915	23.007	1.00	1.00	0.92	38.16	0.000	0.000	33.87	0.00	0.00
11	139.00	Commscope	1	20.915	23.007	1.00	1.00	0.05	1.32	0.000	0.000	1.84	0.00	0.00
12	127.00	RFS FD9R6004/2C-3L	6	20.428	22.471	0.54	0.80	1.19	22.32	0.000	1.000	42.78	0.00	42.78
13	127.00	Antel	3	20.428	22.471	0.67	0.80	5.93	37.80	0.000	1.000	213.10	0.00	213.10
14	127.00	Antel LPA-80080/6CF	12	20.383	22.421	1.36	0.80	70.67	302.40	0.000	0.000	2535.02	0.00	0.00
15	127.00	Low Profile Platform	1	20.383	22.421	1.00	1.00	22.00	1800.00	0.000	0.000	789.22	0.00	0.00
16	127.00	Antel	3	20.428	22.471	0.70	0.80	12.03	64.80	0.000	1.000	432.41	0.00	432.41
17	117.00	RFS	4	19.911	21.902	0.55	0.75	44.33	475.20	0.000	0.000	1553.28	0.00	0.00
18	117.00	SitePro F4P-10W	1	19.911	21.902	1.00	1.00	58.98	2875.20	0.000	0.000	2066.81	0.00	0.00
19	117.00	F4P-HRK10	1	19.911	21.902	1.00	1.00	9.00	573.92	0.000	0.000	315.38	0.00	0.00
20	117.00	Ericsson Air 32	4	19.911	21.902	0.65	0.75	16.99	507.84	0.000	0.000	595.41	0.00	0.00
21	117.00	Ericsson S11B12	4	19.911	21.902	0.50	0.75	5.69	244.80	0.000	0.000	199.33	0.00	0.00
22	117.00	RFS	4	19.911	21.902	0.55	0.75	11.32	126.72	0.000	0.000	396.76	0.00	0.00
23	117.00	Ericsson RRU 2217 B2	4	19.911	21.902	0.50	0.75	5.17	211.20	0.000	0.000	181.02	0.00	0.00
24	117.00	Fastback IBR1300	1	19.911	21.902	1.00	1.00	0.67	10.58	0.000	0.000	23.48	0.00	0.00
25	65.00	Motorola RRA4905A	2	16.833	18.516	1.00	1.00	0.28	2.40	0.000	0.000	8.30	0.00	0.00

Totals: 12,062.99

15,048.07

Total Applied Force Summary

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		387.37	1926.25	0.00	0.00
10.00		378.88	1889.40	0.00	0.00
15.00		370.40	1852.54	0.00	0.00
20.00		361.91	1815.69	0.00	0.00
25.00		353.43	1778.83	0.00	0.00
30.00		345.24	1741.98	0.00	0.00
35.00		351.91	1705.12	0.00	0.00
40.00		356.37	1668.27	0.00	0.00
44.75		340.77	1550.72	0.00	0.00
45.00		17.95	129.95	0.00	0.00
50.00		364.90	2565.80	0.00	0.00
51.00		72.21	505.58	0.00	0.00
55.00		291.10	958.69	0.00	0.00
60.00		363.71	1174.67	0.00	0.00
65.00	(2) attachments	369.83	1150.75	0.00	0.00
70.00		358.45	1120.10	0.00	0.00
75.00		354.56	1093.78	0.00	0.00
80.00		349.92	1067.45	0.00	0.00
84.75		327.36	989.70	0.00	0.00
85.00		17.18	82.87	0.00	0.00
89.75		325.98	1551.93	0.00	0.00
90.00		16.88	43.09	0.00	0.00
95.00		336.65	850.73	0.00	0.00
100.00		329.64	829.67	0.00	0.00
105.00		322.12	808.61	0.00	0.00
110.00		314.13	787.55	0.00	0.00
115.00		305.67	766.49	0.00	0.00
117.00	(23) attachments	5450.85	5326.17	0.00	0.00
120.00		176.56	429.03	0.00	0.00
125.00		287.51	698.21	0.00	0.00
126.00		56.10	137.11	0.00	0.00
127.00	(25) attachments	4068.98	2432.66	0.00	688.30
129.75		153.53	515.90	0.00	0.00
130.00		13.77	24.39	0.00	0.00
135.00		271.56	479.50	0.00	0.00
139.00	(30) attachments	2797.85	3158.27	0.00	0.00
140.00		51.19	75.83	0.00	0.00
145.00		250.52	369.67	0.00	0.00
150.00	(13) attachments	3347.02	2375.64	0.00	0.00
Totals:		25,009.97	48,428.56	0.00	688.30

Linear Appurtenance Segment Forces (Factored)

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	13.485	0.00	1.92
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	13.485	0.00	1.92
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	13.485	0.00	1.92
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	13.485	0.00	1.92
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	13.485	0.00	1.92
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	13.496	0.00	1.92
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	14.104	0.00	1.92
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	14.652	0.00	1.92
44.75	1/2" Coax	Yes	4.75	0.000	0.65	0.26	0.00	0.013	0.000	15.130	0.00	1.82
45.00	1/2" Coax	Yes	0.25	0.000	0.65	0.01	0.00	0.013	0.000	15.154	0.00	0.10
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	15.617	0.00	1.92
51.00	1/2" Coax	Yes	1.00	0.000	0.65	0.05	0.00	0.014	0.000	15.705	0.00	0.38
55.00	1/2" Coax	Yes	4.00	0.000	0.65	0.22	0.00	0.014	0.000	16.048	0.00	1.54
60.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	16.452	0.00	1.92
65.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	16.833	0.00	1.92
Totals:											0.0	25.0

Calculated Forces

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II

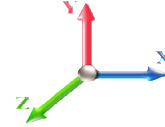


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Load Case: 1.2D + 1.6W 89 mph Wind

Iterations 22

Dead Load Factor 1.20
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-48.41	-25.05	0.00	-2768.6	0.00	2768.62	5554.25	2777.13	13600.6	6810.41	0.00	0.000	0.000	0.415
5.00	-46.43	-24.75	0.00	-2643.3	0.00	2643.35	5477.89	2738.95	13118.7	6569.12	0.06	-0.104	0.000	0.411
10.00	-44.50	-24.45	0.00	-2519.6	0.00	2519.60	5399.54	2699.77	12640.4	6329.59	0.22	-0.210	0.000	0.406
15.00	-42.60	-24.15	0.00	-2397.3	0.00	2397.36	5319.17	2659.59	12165.9	6092.00	0.50	-0.318	0.000	0.402
20.00	-40.74	-23.86	0.00	-2276.6	0.00	2276.61	5236.81	2618.40	11695.6	5856.50	0.89	-0.427	0.000	0.397
25.00	-38.92	-23.56	0.00	-2157.3	0.00	2157.33	5152.44	2576.22	11229.8	5623.26	1.40	-0.539	0.000	0.391
30.00	-37.14	-23.28	0.00	-2039.5	0.00	2039.51	5066.07	2533.04	10768.8	5392.43	2.03	-0.653	0.000	0.386
35.00	-35.39	-22.97	0.00	-1923.1	0.00	1923.14	4977.70	2488.85	10313.0	5164.19	2.77	-0.769	0.000	0.380
40.00	-33.68	-22.66	0.00	-1808.2	0.00	1808.27	4887.33	2443.67	9862.71	4938.68	3.64	-0.887	0.000	0.373
44.75	-32.11	-22.33	0.00	-1700.6	0.00	1700.63	4799.62	2399.81	9440.25	4727.14	4.58	-1.000	0.000	0.367
45.00	-31.96	-22.34	0.00	-1695.0	0.00	1695.04	4794.96	2397.48	9418.17	4716.08	4.63	-1.007	0.000	0.366
50.00	-29.37	-21.97	0.00	-1583.3	0.00	1583.32	4700.58	2350.29	8979.75	4496.55	5.75	-1.128	0.000	0.358
51.00	-28.84	-21.92	0.00	-1561.3	0.00	1561.35	3008.41	1504.20	5823.48	2916.07	5.99	-1.153	0.000	0.545
55.00	-27.84	-21.67	0.00	-1473.6	0.00	1473.68	2970.26	1485.13	5621.72	2815.04	7.00	-1.252	0.000	0.533
60.00	-26.61	-21.36	0.00	-1365.3	0.00	1365.32	2920.78	1460.39	5370.82	2689.40	8.40	-1.418	0.000	0.517
65.00	-25.41	-21.03	0.00	-1258.5	0.00	1258.53	2869.29	1434.64	5121.68	2564.65	9.98	-1.584	0.000	0.500
70.00	-24.24	-20.71	0.00	-1153.3	0.00	1153.37	2815.80	1407.90	4874.61	2440.93	11.73	-1.752	0.000	0.481
75.00	-23.10	-20.39	0.00	-1049.8	0.00	1049.81	2760.31	1380.15	4629.95	2318.41	13.65	-1.919	0.000	0.461
80.00	-21.99	-20.07	0.00	-947.85	0.00	947.85	2702.81	1351.41	4388.01	2197.26	15.75	-2.086	0.000	0.440
84.75	-20.99	-19.73	0.00	-852.54	0.00	852.54	2646.34	1323.17	4160.98	2083.58	17.91	-2.243	0.000	0.417
85.00	-20.87	-19.74	0.00	-847.61	0.00	847.61	2643.31	1321.66	4149.11	2077.64	18.03	-2.252	0.000	0.416
89.75	-19.31	-19.38	0.00	-753.84	0.00	753.84	1922.43	961.22	2968.94	1486.68	20.35	-2.407	0.000	0.518
90.00	-19.23	-19.40	0.00	-748.99	0.00	748.99	1920.55	960.27	2960.86	1482.63	20.47	-2.415	0.000	0.516
95.00	-18.34	-19.08	0.00	-652.02	0.00	652.02	1881.78	940.89	2799.79	1401.97	23.11	-2.604	0.000	0.475
100.00	-17.47	-18.77	0.00	-556.62	0.00	556.62	1841.02	920.51	2640.02	1321.97	25.93	-2.785	0.000	0.431
105.00	-16.62	-18.45	0.00	-462.79	0.00	462.79	1798.25	899.12	2481.89	1242.79	28.94	-2.956	0.000	0.382
110.00	-15.81	-18.14	0.00	-370.53	0.00	370.53	1753.48	876.74	2325.70	1164.58	32.12	-3.112	0.000	0.328
115.00	-15.03	-17.81	0.00	-279.85	0.00	279.85	1706.70	853.35	2171.78	1087.50	35.46	-3.249	0.000	0.267
117.00	-10.01	-12.08	0.00	-244.23	0.00	244.23	1687.43	843.72	2110.92	1057.03	36.83	-3.299	0.000	0.237
120.00	-9.57	-11.89	0.00	-208.00	0.00	208.00	1657.93	828.96	2020.46	1011.73	38.92	-3.367	0.000	0.212
125.00	-8.88	-11.57	0.00	-148.55	0.00	148.55	1607.15	803.57	1872.06	937.42	42.50	-3.464	0.000	0.164
126.00	-8.75	-11.51	0.00	-136.98	0.00	136.98	1596.75	798.38	1842.76	922.75	43.23	-3.482	0.000	0.154
127.00	-6.56	-7.30	0.00	-124.78	0.00	124.78	1586.28	793.14	1813.59	908.14	43.96	-3.499	0.000	0.142
129.75	-6.05	-7.12	0.00	-104.70	0.00	104.70	1068.62	534.31	1212.20	607.00	45.99	-3.540	0.000	0.178
130.00	-6.03	-7.11	0.00	-102.92	0.00	102.92	1067.16	533.58	1207.67	604.73	46.18	-3.544	0.000	0.176
135.00	-5.56	-6.81	0.00	-67.38	0.00	67.38	1036.93	518.46	1117.63	559.65	49.93	-3.621	0.000	0.126
139.00	-2.58	-3.82	0.00	-40.13	0.00	40.13	1011.29	505.65	1046.45	524.00	52.98	-3.666	0.000	0.079
140.00	-2.51	-3.77	0.00	-36.30	0.00	36.30	1004.68	502.34	1028.80	515.16	53.75	-3.675	0.000	0.073
145.00	-2.15	-3.49	0.00	-17.47	0.00	17.47	970.44	485.22	941.49	471.44	57.62	-3.708	0.000	0.039
150.00	0.00	-3.35	0.00	0.00	0.00	0.00	934.20	467.10	856.03	428.65	61.51	-3.721	0.000	0.000

Wind Loading - Shaft

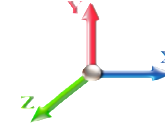
Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 13

Load Case: 0.9D + 1.6W 89 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	13.485	14.83	378.06	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	13.485	14.83	369.87	0.650	0.000	5.00	25.111	16.32	387.4	0.0	1252.6
10.00		1.00	0.70	13.485	14.83	361.67	0.650	0.000	5.00	24.561	15.96	378.9	0.0	1225.0
15.00		1.00	0.70	13.485	14.83	353.48	0.650	0.000	5.00	24.011	15.61	370.4	0.0	1197.3
20.00		1.00	0.70	13.485	14.83	345.29	0.650	0.000	5.00	23.461	15.25	361.9	0.0	1169.7
25.00		1.00	0.70	13.485	14.83	337.10	0.650	0.000	5.00	22.911	14.89	353.4	0.0	1142.1
30.00		1.00	0.70	13.496	14.85	329.05	0.650	0.000	5.00	22.361	14.53	345.2	0.0	1114.4
35.00		1.00	0.73	14.104	15.51	328.00	0.650	0.000	5.00	21.811	14.18	351.9	0.0	1086.8
40.00		1.00	0.76	14.652	16.12	325.78	0.650	0.000	5.00	21.260	13.82	356.4	0.0	1059.1
44.75	Bot - Section 2	1.00	0.79	15.130	16.64	322.80	0.650	0.000	4.75	19.688	12.80	340.8	0.0	980.6
45.00		1.00	0.79	15.154	16.67	322.62	0.650	0.000	0.25	1.036	0.67	18.0	0.0	87.9
50.00		1.00	0.81	15.617	17.18	318.70	0.650	0.000	5.00	20.425	13.28	364.9	0.0	1732.3
51.00	Top - Section 1	1.00	0.82	15.705	17.28	317.83	0.650	0.000	1.00	4.019	2.61	72.2	0.0	340.8
55.00		1.00	0.83	16.048	17.65	318.43	0.650	0.000	4.00	15.856	10.31	291.1	0.0	565.4
60.00		1.00	0.85	16.452	18.10	313.36	0.650	0.000	5.00	19.325	12.56	363.7	0.0	688.9
65.00	Appurtenance(s)	1.00	0.87	16.833	18.52	307.81	0.650	0.000	5.00	18.775	12.20	361.5	0.0	669.2
70.00		1.00	0.89	17.193	18.91	301.84	0.650	0.000	5.00	18.225	11.85	358.5	0.0	649.5
75.00		1.00	0.91	17.535	19.29	295.49	0.650	0.000	5.00	17.675	11.49	354.6	0.0	629.7
80.00		1.00	0.93	17.861	19.65	288.80	0.650	0.000	5.00	17.125	11.13	349.9	0.0	610.0
84.75	Bot - Section 3	1.00	0.94	18.158	19.97	282.16	0.650	0.000	4.75	15.759	10.24	327.4	0.0	561.2
85.00		1.00	0.94	18.173	19.99	281.80	0.650	0.000	0.25	0.826	0.54	17.2	0.0	52.6
89.75	Top - Section 2	1.00	0.96	18.458	20.30	274.90	0.650	0.000	4.75	15.437	10.03	326.0	0.0	982.9
90.00		1.00	0.96	18.473	20.32	278.21	0.650	0.000	0.25	0.799	0.52	16.9	0.0	22.8
95.00		1.00	0.97	18.760	20.64	270.71	0.650	0.000	5.00	15.686	10.20	336.7	0.0	447.4
100.00		1.00	0.99	19.037	20.94	262.97	0.650	0.000	5.00	15.136	9.84	329.6	0.0	431.6
105.00		1.00	1.00	19.304	21.23	255.01	0.650	0.000	5.00	14.586	9.48	322.1	0.0	415.8
110.00		1.00	1.02	19.563	21.52	246.84	0.650	0.000	5.00	14.036	9.12	314.1	0.0	400.0
115.00		1.00	1.03	19.813	21.79	238.48	0.650	0.000	5.00	13.486	8.77	305.7	0.0	384.2
117.00	Appurtenance(s)	1.00	1.03	19.911	21.90	235.09	0.650	0.000	2.00	5.240	3.41	119.4	0.0	149.3
120.00		1.00	1.04	20.055	22.06	229.95	0.650	0.000	3.00	7.696	5.00	176.6	0.0	219.2
125.00		1.00	1.05	20.290	22.32	221.25	0.650	0.000	5.00	12.386	8.05	287.5	0.0	352.7
126.00	Bot - Section 4	1.00	1.06	20.337	22.37	219.49	0.650	0.000	1.00	2.411	1.57	56.1	0.0	68.6
127.00	Appurtenance(s)	1.00	1.06	20.383	22.42	217.72	0.650	0.000	1.00	2.421	1.57	56.5	0.0	119.8
129.75	Top - Section 3	1.00	1.06	20.508	22.56	212.83	0.650	0.000	2.75	6.544	4.25	153.5	0.0	323.8
130.00		1.00	1.07	20.519	22.57	215.30	0.650	0.000	0.25	0.587	0.38	13.8	0.0	12.6
135.00		1.00	1.08	20.742	22.82	206.30	0.650	0.000	5.00	11.445	7.44	271.6	0.0	244.8
139.00	Appurtenance(s)	1.00	1.09	20.915	23.01	199.01	0.650	0.000	4.00	8.760	5.69	209.6	0.0	187.3
140.00		1.00	1.09	20.958	23.05	197.17	0.650	0.000	1.00	2.135	1.39	51.2	0.0	45.6
145.00		1.00	1.10	21.169	23.29	187.90	0.650	0.000	5.00	10.345	6.72	250.5	0.0	221.1
150.00	Appurtenance(s)	1.00	1.11	21.375	23.51	178.49	0.650	0.000	5.00	9.795	6.37	239.5	0.0	209.2
Totals:								150.00			9,961.9	22,053.8		

Discrete Appurtenance Forces

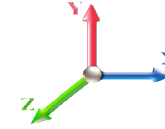
Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 89 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	150.00	Low Profile Platform	1	21.375	23.513	1.00	1.00	22.00	1350.00	0.000	0.000	827.65	0.00	0.00
2	150.00	Decibel DB846G90A-XY	12	21.375	23.513	1.01	0.90	60.60	166.32	0.000	0.000	2279.85	0.00	0.00
3	139.00	KMW	2	20.915	23.007	0.81	0.90	12.99	87.30	0.000	0.000	478.26	0.00	0.00
4	139.00	Low Profile Platform	1	20.915	23.007	1.00	1.00	22.00	1350.00	0.000	0.000	809.84	0.00	0.00
5	139.00	Powerwave 7770	6	20.915	23.007	0.58	0.80	19.27	189.00	0.000	0.000	709.42	0.00	0.00
6	139.00	Kathrein 800 10764	1	20.915	23.007	1.00	1.00	5.88	36.72	0.000	0.000	216.45	0.00	0.00
7	139.00	Powerwave LGP 13519	6	20.915	23.007	0.54	0.80	1.09	28.62	0.000	0.000	40.25	0.00	0.00
8	139.00	Powerwave LGP 21401	6	20.915	23.007	0.54	0.80	0.00	94.50	0.000	0.000	0.00	0.00	0.00
9	139.00	Ericsson RRUS 11	6	20.915	23.007	0.54	0.80	8.10	273.78	0.000	0.000	298.33	0.00	0.00
10	139.00	Raycap DC6-48-60-18-8F	1	20.915	23.007	1.00	1.00	0.92	28.62	0.000	0.000	33.87	0.00	0.00
11	139.00	Commscope	1	20.915	23.007	1.00	1.00	0.05	0.99	0.000	0.000	1.84	0.00	0.00
12	127.00	RFS FD9R6004/2C-3L	6	20.428	22.471	0.54	0.80	1.19	16.74	0.000	1.000	42.78	0.00	42.78
13	127.00	Antel	3	20.428	22.471	0.67	0.80	5.93	28.35	0.000	1.000	213.10	0.00	213.10
14	127.00	Antel LPA-80080/6CF	12	20.383	22.421	1.36	0.80	70.67	226.80	0.000	0.000	2535.02	0.00	0.00
15	127.00	Low Profile Platform	1	20.383	22.421	1.00	1.00	22.00	1350.00	0.000	0.000	789.22	0.00	0.00
16	127.00	Antel	3	20.428	22.471	0.70	0.80	12.03	48.60	0.000	1.000	432.41	0.00	432.41
17	117.00	RFS	4	19.911	21.902	0.55	0.75	44.33	356.40	0.000	0.000	1553.28	0.00	0.00
18	117.00	SitePro F4P-10W	1	19.911	21.902	1.00	1.00	58.98	2156.40	0.000	0.000	2066.81	0.00	0.00
19	117.00	F4P-HRK10	1	19.911	21.902	1.00	1.00	9.00	430.44	0.000	0.000	315.38	0.00	0.00
20	117.00	Ericsson Air 32	4	19.911	21.902	0.65	0.75	16.99	380.88	0.000	0.000	595.41	0.00	0.00
21	117.00	Ericsson S11B12	4	19.911	21.902	0.50	0.75	5.69	183.60	0.000	0.000	199.33	0.00	0.00
22	117.00	RFS	4	19.911	21.902	0.55	0.75	11.32	95.04	0.000	0.000	396.76	0.00	0.00
23	117.00	Ericsson RRU 2217 B2	4	19.911	21.902	0.50	0.75	5.17	158.40	0.000	0.000	181.02	0.00	0.00
24	117.00	Fastback IBR1300	1	19.911	21.902	1.00	1.00	0.67	7.94	0.000	0.000	23.48	0.00	0.00
25	65.00	Motorola RRA4905A	2	16.833	18.516	1.00	1.00	0.28	1.80	0.000	0.000	8.30	0.00	0.00

Totals: 9,047.24

15,048.07

Total Applied Force Summary

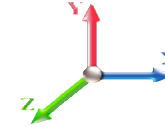
Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 89 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		387.37	1444.69	0.00	0.00
10.00		378.88	1417.05	0.00	0.00
15.00		370.40	1389.41	0.00	0.00
20.00		361.91	1361.77	0.00	0.00
25.00		353.43	1334.12	0.00	0.00
30.00		345.24	1306.48	0.00	0.00
35.00		351.91	1278.84	0.00	0.00
40.00		356.37	1251.20	0.00	0.00
44.75		340.77	1163.04	0.00	0.00
45.00		17.95	97.46	0.00	0.00
50.00		364.90	1924.35	0.00	0.00
51.00		72.21	379.18	0.00	0.00
55.00		291.10	719.02	0.00	0.00
60.00		363.71	881.00	0.00	0.00
65.00	(2) attachments	369.83	863.06	0.00	0.00
70.00		358.45	840.08	0.00	0.00
75.00		354.56	820.33	0.00	0.00
80.00		349.92	800.59	0.00	0.00
84.75		327.36	742.27	0.00	0.00
85.00		17.18	62.15	0.00	0.00
89.75		325.98	1163.95	0.00	0.00
90.00		16.88	32.32	0.00	0.00
95.00		336.65	638.04	0.00	0.00
100.00		329.64	622.25	0.00	0.00
105.00		322.12	606.45	0.00	0.00
110.00		314.13	590.66	0.00	0.00
115.00		305.67	574.86	0.00	0.00
117.00	(23) attachments	5450.85	3994.62	0.00	0.00
120.00		176.56	321.77	0.00	0.00
125.00		287.51	523.65	0.00	0.00
126.00		56.10	102.84	0.00	0.00
127.00	(25) attachments	4068.98	1824.49	0.00	688.30
129.75		153.53	386.92	0.00	0.00
130.00		13.77	18.29	0.00	0.00
135.00		271.56	359.63	0.00	0.00
139.00	(30) attachments	2797.85	2368.70	0.00	0.00
140.00		51.19	56.87	0.00	0.00
145.00		250.52	277.25	0.00	0.00
150.00	(13) attachments	3347.02	1781.73	0.00	0.00
Totals:		25,009.97	36,321.42	0.00	688.30

Linear Appurtenance Segment Forces (Factored)

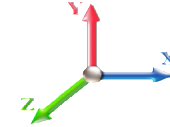
Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 89 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	13.485	0.00	1.44
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	13.485	0.00	1.44
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	13.485	0.00	1.44
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	13.485	0.00	1.44
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	13.485	0.00	1.44
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	13.496	0.00	1.44
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	14.104	0.00	1.44
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	14.652	0.00	1.44
44.75	1/2" Coax	Yes	4.75	0.000	0.65	0.26	0.00	0.013	0.000	15.130	0.00	1.37
45.00	1/2" Coax	Yes	0.25	0.000	0.65	0.01	0.00	0.013	0.000	15.154	0.00	0.07
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	15.617	0.00	1.44
51.00	1/2" Coax	Yes	1.00	0.000	0.65	0.05	0.00	0.014	0.000	15.705	0.00	0.29
55.00	1/2" Coax	Yes	4.00	0.000	0.65	0.22	0.00	0.014	0.000	16.048	0.00	1.15
60.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	16.452	0.00	1.44
65.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	16.833	0.00	1.44
Totals:											0.0	18.7

Calculated Forces

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II

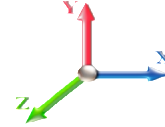


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Load Case: 0.9D + 1.6W 89 mph Wind

Iterations 22

Dead Load Factor 0.90
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-36.30	-25.04	0.00	-2746.5	0.00	2746.53	5554.25	2777.13	13600.6	6810.41	0.00	0.000	0.000	0.410
5.00	-34.81	-24.72	0.00	-2621.3	0.00	2621.32	5477.89	2738.95	13118.7	6569.12	0.06	-0.103	0.000	0.405
10.00	-33.35	-24.40	0.00	-2497.7	0.00	2497.74	5399.54	2699.77	12640.4	6329.59	0.22	-0.208	0.000	0.401
15.00	-31.91	-24.08	0.00	-2375.7	0.00	2375.76	5319.17	2659.59	12165.9	6092.00	0.50	-0.315	0.000	0.396
20.00	-30.51	-23.77	0.00	-2255.3	0.00	2255.37	5236.81	2618.40	11695.6	5856.50	0.88	-0.424	0.000	0.391
25.00	-29.13	-23.46	0.00	-2136.5	0.00	2136.54	5152.44	2576.22	11229.8	5623.26	1.39	-0.535	0.000	0.386
30.00	-27.78	-23.16	0.00	-2019.2	0.00	2019.24	5066.07	2533.04	10768.8	5392.43	2.01	-0.647	0.000	0.380
35.00	-26.46	-22.84	0.00	-1903.4	0.00	1903.46	4977.70	2488.85	10313.0	5164.19	2.75	-0.762	0.000	0.374
40.00	-25.17	-22.52	0.00	-1789.2	0.00	1789.25	4887.33	2443.67	9862.71	4938.68	3.61	-0.878	0.000	0.368
44.75	-23.99	-22.18	0.00	-1682.3	0.00	1682.30	4799.62	2399.81	9440.25	4727.14	4.54	-0.991	0.000	0.361
45.00	-23.87	-22.19	0.00	-1676.7	0.00	1676.75	4794.96	2397.48	9418.17	4716.08	4.59	-0.997	0.000	0.361
50.00	-21.93	-21.82	0.00	-1565.8	0.00	1565.80	4700.58	2350.29	8979.75	4496.55	5.70	-1.117	0.000	0.353
51.00	-21.53	-21.76	0.00	-1543.9	0.00	1543.99	3008.41	1504.20	5823.48	2916.07	5.94	-1.142	0.000	0.537
55.00	-20.76	-21.50	0.00	-1456.9	0.00	1456.95	2970.26	1485.13	5621.72	2815.04	6.94	-1.240	0.000	0.525
60.00	-19.83	-21.18	0.00	-1349.4	0.00	1349.44	2920.78	1460.39	5370.82	2689.40	8.32	-1.404	0.000	0.509
65.00	-18.92	-20.84	0.00	-1243.5	0.00	1243.56	2869.29	1434.64	5121.68	2564.65	9.88	-1.568	0.000	0.492
70.00	-18.03	-20.51	0.00	-1139.3	0.00	1139.38	2815.80	1407.90	4874.61	2440.93	11.62	-1.734	0.000	0.473
75.00	-17.16	-20.18	0.00	-1036.8	0.00	1036.84	2760.31	1380.15	4629.95	2318.41	13.52	-1.899	0.000	0.454
80.00	-16.32	-19.84	0.00	-935.96	0.00	935.96	2702.81	1351.41	4388.01	2197.26	15.60	-2.064	0.000	0.432
84.75	-15.56	-19.51	0.00	-841.70	0.00	841.70	2646.34	1323.17	4160.98	2083.58	17.73	-2.219	0.000	0.410
85.00	-15.47	-19.51	0.00	-836.82	0.00	836.82	2643.31	1321.66	4149.11	2077.64	17.85	-2.228	0.000	0.409
89.75	-14.30	-19.16	0.00	-744.13	0.00	744.13	1922.43	961.22	2968.94	1486.68	20.14	-2.380	0.000	0.508
90.00	-14.23	-19.17	0.00	-739.34	0.00	739.34	1920.55	960.27	2960.86	1482.63	20.27	-2.389	0.000	0.506
95.00	-13.55	-18.85	0.00	-643.50	0.00	643.50	1881.78	940.89	2799.79	1401.97	22.87	-2.575	0.000	0.467
100.00	-12.89	-18.53	0.00	-549.27	0.00	549.27	1841.02	920.51	2640.02	1321.97	25.67	-2.754	0.000	0.423
105.00	-12.24	-18.21	0.00	-456.63	0.00	456.63	1798.25	899.12	2481.89	1242.79	28.64	-2.922	0.000	0.375
110.00	-11.63	-17.90	0.00	-365.57	0.00	365.57	1753.48	876.74	2325.70	1164.58	31.79	-3.076	0.000	0.321
115.00	-11.04	-17.58	0.00	-276.09	0.00	276.09	1706.70	853.35	2171.78	1087.50	35.08	-3.212	0.000	0.261
117.00	-7.35	-11.92	0.00	-240.94	0.00	240.94	1687.43	843.72	2110.92	1057.03	36.44	-3.261	0.000	0.232
120.00	-7.02	-11.73	0.00	-205.19	0.00	205.19	1657.93	828.96	2020.46	1011.73	38.51	-3.328	0.000	0.207
125.00	-6.50	-11.42	0.00	-146.53	0.00	146.53	1607.15	803.57	1872.06	937.42	42.05	-3.424	0.000	0.161
126.00	-6.40	-11.36	0.00	-135.11	0.00	135.11	1596.75	798.38	1842.76	922.75	42.77	-3.441	0.000	0.151
127.00	-4.82	-7.19	0.00	-123.06	0.00	123.06	1586.28	793.14	1813.59	908.14	43.49	-3.458	0.000	0.139
129.75	-4.44	-7.02	0.00	-103.29	0.00	103.29	1068.62	534.31	1212.20	607.00	45.49	-3.499	0.000	0.174
130.00	-4.42	-7.00	0.00	-101.54	0.00	101.54	1067.16	533.58	1207.67	604.73	45.68	-3.502	0.000	0.172
135.00	-4.07	-6.72	0.00	-66.51	0.00	66.51	1036.93	518.46	1117.63	559.65	49.39	-3.579	0.000	0.123
139.00	-1.88	-3.78	0.00	-39.65	0.00	39.65	1011.29	505.65	1046.45	524.00	52.40	-3.623	0.000	0.078
140.00	-1.83	-3.72	0.00	-35.88	0.00	35.88	1004.68	502.34	1028.80	515.16	53.16	-3.632	0.000	0.072
145.00	-1.56	-3.45	0.00	-17.27	0.00	17.27	970.44	485.22	941.49	471.44	56.98	-3.665	0.000	0.038
150.00	0.00	-3.35	0.00	0.00	0.00	0.00	934.20	467.10	856.03	428.65	60.83	-3.677	0.000	0.000

Wind Loading - Shaft

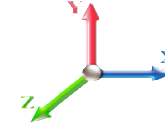
Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	2.724	3.00	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	2.724	3.00	0.00	1.200	1.656	5.00	26.491	31.79	95.2	626.1	2296.3
10.00		1.00	0.70	2.724	3.00	0.00	1.200	1.775	5.00	26.040	31.25	93.6	657.9	2291.2
15.00		1.00	0.70	2.724	3.00	0.00	1.200	1.848	5.00	25.551	30.66	91.9	670.9	2267.4
20.00		1.00	0.70	2.724	3.00	0.00	1.200	1.902	5.00	25.046	30.06	90.1	675.6	2235.2
25.00		1.00	0.70	2.724	3.00	0.00	1.200	1.945	5.00	24.532	29.44	88.2	675.5	2198.3
30.00		1.00	0.70	2.726	3.00	0.00	1.200	1.981	5.00	24.011	28.81	86.4	672.3	2158.2
35.00		1.00	0.73	2.849	3.13	0.00	1.200	2.012	5.00	23.487	28.18	88.3	666.7	2115.7
40.00		1.00	0.76	2.960	3.26	0.00	1.200	2.039	5.00	22.960	27.55	89.7	659.4	2071.6
44.75	Bot - Section 2	1.00	0.79	3.056	3.36	0.00	1.200	2.062	4.75	21.320	25.58	86.0	618.6	1926.0
45.00		1.00	0.79	3.061	3.37	0.00	1.200	2.063	0.25	1.122	1.35	4.5	32.9	150.1
50.00		1.00	0.81	3.155	3.47	0.00	1.200	2.085	5.00	22.162	26.59	92.3	649.0	2958.8
51.00	Top - Section 1	1.00	0.82	3.172	3.49	0.00	1.200	2.089	1.00	4.367	5.24	18.3	129.4	583.8
55.00		1.00	0.83	3.242	3.57	0.00	1.200	2.105	4.00	17.259	20.71	73.9	510.7	1264.5
60.00		1.00	0.85	3.323	3.66	0.00	1.200	2.123	5.00	21.094	25.31	92.5	626.9	1545.5
65.00	Appurtenance(s)	1.00	0.87	3.400	3.74	0.00	1.200	2.140	5.00	20.558	24.67	92.3	614.7	1507.0
70.00		1.00	0.89	3.473	3.82	0.00	1.200	2.156	5.00	20.022	24.03	91.8	601.9	1467.9
75.00		1.00	0.91	3.542	3.90	0.00	1.200	2.171	5.00	19.484	23.38	91.1	588.6	1428.2
80.00		1.00	0.93	3.608	3.97	0.00	1.200	2.185	5.00	18.946	22.73	90.2	574.8	1388.1
84.75	Bot - Section 3	1.00	0.94	3.668	4.03	0.00	1.200	2.198	4.75	17.499	21.00	84.7	533.2	1281.5
85.00		1.00	0.94	3.671	4.04	0.00	1.200	2.198	0.25	0.918	1.10	4.4	28.4	98.5
89.75	Top - Section 2	1.00	0.96	3.728	4.10	0.00	1.200	2.210	4.75	17.187	20.62	84.6	525.9	1836.4
90.00		1.00	0.96	3.731	4.10	0.00	1.200	2.211	0.25	0.891	1.07	4.4	27.6	58.0
95.00		1.00	0.97	3.789	4.17	0.00	1.200	2.223	5.00	17.539	21.05	87.7	537.9	1134.5
100.00		1.00	0.99	3.845	4.23	0.00	1.200	2.234	5.00	16.998	20.40	86.3	522.7	1098.2
105.00		1.00	1.00	3.899	4.29	0.00	1.200	2.245	5.00	16.457	19.75	84.7	507.1	1061.5
110.00		1.00	1.02	3.952	4.35	0.00	1.200	2.256	5.00	15.916	19.10	83.0	491.2	1024.6
115.00		1.00	1.03	4.002	4.40	0.00	1.200	2.266	5.00	15.374	18.45	81.2	475.1	987.4
117.00	Appurtenance(s)	1.00	1.03	4.022	4.42	0.00	1.200	2.270	2.00	5.997	7.20	31.8	187.4	386.5
120.00		1.00	1.04	4.051	4.46	0.00	1.200	2.276	3.00	8.833	10.60	47.2	275.2	567.5
125.00		1.00	1.05	4.099	4.51	0.00	1.200	2.285	5.00	14.290	17.15	77.3	442.1	912.3
126.00	Bot - Section 4	1.00	1.06	4.108	4.52	0.00	1.200	2.287	1.00	2.792	3.35	15.1	87.7	179.3
127.00	Appurtenance(s)	1.00	1.06	4.117	4.53	0.00	1.200	2.289	1.00	2.802	3.36	15.2	88.2	247.9
129.75	Top - Section 3	1.00	1.06	4.142	4.56	0.00	1.200	2.293	2.75	7.595	9.11	41.5	237.3	669.0
130.00		1.00	1.07	4.145	4.56	0.00	1.200	2.294	0.25	0.682	0.82	3.7	21.5	38.3
135.00		1.00	1.08	4.190	4.61	0.00	1.200	2.303	5.00	13.364	16.04	73.9	413.7	740.0
139.00	Appurtenance(s)	1.00	1.09	4.225	4.65	0.00	1.200	2.309	4.00	10.299	12.36	57.4	319.9	569.7
140.00		1.00	1.09	4.233	4.66	0.00	1.200	2.311	1.00	2.520	3.02	14.1	79.3	140.1
145.00		1.00	1.10	4.276	4.70	0.00	1.200	2.319	5.00	12.277	14.73	69.3	379.1	673.9
150.00	Appurtenance(s)	1.00	1.11	4.318	4.75	0.00	1.200	2.327	5.00	11.734	14.08	66.9	361.5	640.5
Totals:									150.00			2,571.0	46,199.2	

Discrete Appurtenance Forces

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	150.00	Low Profile Platform	1	4.318	4.749	1.00	1.00	45.55	3245.22	0.000	0.000	216.33	0.00	0.00
2	150.00	Decibel DB846G90A-XY	12	4.318	4.749	1.01	0.90	80.73	2973.14	0.000	0.000	383.41	0.00	0.00
3	139.00	KMW	2	4.225	4.647	0.81	0.90	18.98	452.86	0.000	0.000	88.21	0.00	0.00
4	139.00	Low Profile Platform	1	4.225	4.647	1.00	1.00	45.37	3231.97	0.000	0.000	210.85	0.00	0.00
5	139.00	Powerwave 7770	6	4.225	4.647	0.58	0.80	24.27	1578.75	0.000	0.000	112.81	0.00	0.00
6	139.00	Kathrein 800 10764	1	4.225	4.647	1.00	1.00	8.72	181.19	0.000	0.000	40.50	0.00	0.00
7	139.00	Powerwave LGP 13519	6	4.225	4.647	0.54	0.80	3.03	97.36	0.000	0.000	14.06	0.00	0.00
8	139.00	Powerwave LGP 21401	6	4.225	4.647	0.54	0.80	0.00	424.98	0.000	0.000	0.00	0.00	0.00
9	139.00	Ericsson RRUS 11	6	4.225	4.647	0.54	0.80	11.85	835.23	0.000	0.000	55.06	0.00	0.00
10	139.00	Raycap DC6-48-60-18-8F	1	4.225	4.647	1.00	1.00	1.50	102.27	0.000	0.000	6.97	0.00	0.00
11	139.00	Commscope	1	4.225	4.647	1.00	1.00	0.30	3.57	0.000	0.000	1.42	0.00	0.00
12	127.00	RFS FD9R6004/2C-3L	6	4.126	4.539	0.54	0.80	3.11	71.67	0.000	1.000	14.12	0.00	14.12
13	127.00	Antel	3	4.126	4.539	0.67	0.80	10.31	239.55	0.000	1.000	46.80	0.00	46.80
14	127.00	Antel LPA-80080/6CF	12	4.117	4.529	1.36	0.80	96.80	3842.82	0.000	0.000	438.40	0.00	0.00
15	127.00	Low Profile Platform	1	4.117	4.529	1.00	1.00	45.16	3216.41	0.000	0.000	204.53	0.00	0.00
16	127.00	Antel	3	4.126	4.539	0.70	0.80	18.52	454.28	0.000	1.000	84.08	0.00	84.08
17	117.00	RFS	4	4.022	4.424	0.55	0.75	49.80	2510.78	0.000	0.000	220.31	0.00	0.00
18	117.00	SitePro F4P-10W	1	4.022	4.424	1.00	1.00	150.02	5229.79	0.000	0.000	663.67	0.00	0.00
19	117.00	F4P-HRK10	1	4.022	4.424	1.00	1.00	22.89	1660.13	0.000	0.000	101.27	0.00	0.00
20	117.00	Ericsson Air 32	4	4.022	4.424	0.65	0.75	20.86	1283.68	0.000	0.000	92.30	0.00	0.00
21	117.00	Ericsson S11B12	4	4.022	4.424	0.50	0.75	7.44	542.50	0.000	0.000	32.93	0.00	0.00
22	117.00	RFS	4	4.022	4.424	0.55	0.75	18.09	503.36	0.000	0.000	80.02	0.00	0.00
23	117.00	Ericsson RRU 2217 B2	4	4.022	4.424	0.50	0.75	6.85	481.98	0.000	0.000	30.32	0.00	0.00
24	117.00	Fastback IBR1300	1	4.022	4.424	1.00	1.00	1.12	29.45	0.000	0.000	4.96	0.00	0.00
25	65.00	Motorola RRA4905A	2	3.400	3.740	1.00	1.00	1.23	20.13	0.000	0.000	4.61	0.00	0.00

Totals: 33,213.05

3,147.93

Total Applied Force Summary

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		95.25	2577.84	0.00	0.00
10.00		93.63	2575.86	0.00	0.00
15.00		91.87	2554.00	0.00	0.00
20.00		90.05	2523.37	0.00	0.00
25.00		88.20	2487.66	0.00	0.00
30.00		86.41	2448.57	0.00	0.00
35.00		88.32	2407.06	0.00	0.00
40.00		89.70	2363.70	0.00	0.00
44.75		86.01	2204.22	0.00	0.00
45.00		4.53	164.73	0.00	0.00
50.00		92.28	3252.29	0.00	0.00
51.00		18.29	642.49	0.00	0.00
55.00		73.85	1499.84	0.00	0.00
60.00		92.53	1840.20	0.00	0.00
65.00	(2) attachments	96.88	1822.36	0.00	0.00
70.00		91.78	1722.05	0.00	0.00
75.00		91.10	1682.40	0.00	0.00
80.00		90.23	1642.28	0.00	0.00
84.75		84.72	1522.94	0.00	0.00
85.00		4.45	111.24	0.00	0.00
89.75		84.59	2077.88	0.00	0.00
90.00		4.39	70.73	0.00	0.00
95.00		87.73	1388.67	0.00	0.00
100.00		86.28	1352.33	0.00	0.00
105.00		84.71	1315.68	0.00	0.00
110.00		83.02	1278.75	0.00	0.00
115.00		81.22	1241.56	0.00	0.00
117.00	(23) attachments	1257.62	12729.79	0.00	0.00
120.00		47.24	704.25	0.00	0.00
125.00		77.31	1140.30	0.00	0.00
126.00		15.14	224.86	0.00	0.00
127.00	(25) attachments	803.15	8118.21	0.00	145.00
129.75		41.53	753.22	0.00	0.00
130.00		3.73	45.92	0.00	0.00
135.00		73.91	893.16	0.00	0.00
139.00	(30) attachments	587.31	7600.34	0.00	0.00
140.00		14.08	155.12	0.00	0.00
145.00		69.30	748.74	0.00	0.00
150.00	(13) attachments	666.62	6933.74	0.00	0.00
Totals:		5,718.94	86,818.37	0.00	145.00

Linear Appurtenance Segment Forces (Factored)

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	1.65	0.00	0.011	0.000	2.724	0.00	27.40
10.00	1/2" Coax	Yes	5.00	0.000	0.65	1.75	0.00	0.011	0.000	2.724	0.00	30.49
15.00	1/2" Coax	Yes	5.00	0.000	0.65	1.81	0.00	0.011	0.000	2.724	0.00	32.49
20.00	1/2" Coax	Yes	5.00	0.000	0.65	1.86	0.00	0.012	0.000	2.724	0.00	34.00
25.00	1/2" Coax	Yes	5.00	0.000	0.65	1.89	0.00	0.012	0.000	2.724	0.00	35.22
30.00	1/2" Coax	Yes	5.00	0.000	0.65	1.92	0.00	0.012	0.000	2.726	0.00	36.26
35.00	1/2" Coax	Yes	5.00	0.000	0.65	1.95	0.00	0.012	0.000	2.849	0.00	37.17
40.00	1/2" Coax	Yes	5.00	0.000	0.65	1.97	0.00	0.013	0.000	2.960	0.00	37.97
44.75	1/2" Coax	Yes	4.75	0.000	0.65	1.89	0.00	0.013	0.000	3.056	0.00	36.73
45.00	1/2" Coax	Yes	0.25	0.000	0.65	0.10	0.00	0.013	0.000	3.061	0.00	1.94
50.00	1/2" Coax	Yes	5.00	0.000	0.65	2.01	0.00	0.013	0.000	3.155	0.00	39.36
51.00	1/2" Coax	Yes	1.00	0.000	0.65	0.40	0.00	0.014	0.000	3.172	0.00	7.90
55.00	1/2" Coax	Yes	4.00	0.000	0.65	1.62	0.00	0.014	0.000	3.242	0.00	31.98
60.00	1/2" Coax	Yes	5.00	0.000	0.65	2.04	0.00	0.014	0.000	3.323	0.00	40.54
65.00	1/2" Coax	Yes	5.00	0.000	0.65	2.05	0.00	0.014	0.000	3.400	0.00	41.08
Totals:											0.0	470.5

Calculated Forces

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II

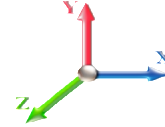


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Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph Wind

Iterations 22

Dead Load Factor 1.20
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-86.82	-5.74	0.00	-642.73	0.00	642.73	5554.25	2777.13	13600.6	6810.41	0.00	0.000	0.000	0.110
5.00	-84.24	-5.68	0.00	-614.05	0.00	614.05	5477.89	2738.95	13118.7	6569.12	0.01	-0.024	0.000	0.109
10.00	-81.66	-5.62	0.00	-585.66	0.00	585.66	5399.54	2699.77	12640.4	6329.59	0.05	-0.049	0.000	0.108
15.00	-79.10	-5.56	0.00	-557.57	0.00	557.57	5319.17	2659.59	12165.9	6092.00	0.12	-0.074	0.000	0.106
20.00	-76.58	-5.50	0.00	-529.79	0.00	529.79	5236.81	2618.40	11695.6	5856.50	0.21	-0.099	0.000	0.105
25.00	-74.09	-5.44	0.00	-502.30	0.00	502.30	5152.44	2576.22	11229.8	5623.26	0.33	-0.125	0.000	0.104
30.00	-71.64	-5.38	0.00	-475.10	0.00	475.10	5066.07	2533.04	10768.8	5392.43	0.47	-0.152	0.000	0.102
35.00	-69.23	-5.32	0.00	-448.20	0.00	448.20	4977.70	2488.85	10313.0	5164.19	0.64	-0.179	0.000	0.101
40.00	-66.86	-5.25	0.00	-421.61	0.00	421.61	4887.33	2443.67	9862.71	4938.68	0.85	-0.206	0.000	0.099
44.75	-64.66	-5.17	0.00	-396.66	0.00	396.66	4799.62	2399.81	9440.25	4727.14	1.07	-0.233	0.000	0.097
45.00	-64.49	-5.18	0.00	-395.37	0.00	395.37	4794.96	2397.48	9418.17	4716.08	1.08	-0.234	0.000	0.097
50.00	-61.24	-5.10	0.00	-369.45	0.00	369.45	4700.58	2350.29	8979.75	4496.55	1.34	-0.263	0.000	0.095
51.00	-60.59	-5.09	0.00	-364.35	0.00	364.35	3008.41	1504.20	5823.48	2916.07	1.39	-0.268	0.000	0.145
55.00	-59.09	-5.04	0.00	-343.99	0.00	343.99	2970.26	1485.13	5621.72	2815.04	1.63	-0.292	0.000	0.142
60.00	-57.25	-4.98	0.00	-318.78	0.00	318.78	2920.78	1460.39	5370.82	2689.40	1.96	-0.330	0.000	0.138
65.00	-55.42	-4.91	0.00	-293.89	0.00	293.89	2869.29	1434.64	5121.68	2564.65	2.32	-0.369	0.000	0.134
70.00	-53.70	-4.84	0.00	-269.35	0.00	269.35	2815.80	1407.90	4874.61	2440.93	2.73	-0.408	0.000	0.129
75.00	-52.01	-4.77	0.00	-245.15	0.00	245.15	2760.31	1380.15	4629.95	2318.41	3.18	-0.447	0.000	0.125
80.00	-50.37	-4.70	0.00	-221.29	0.00	221.29	2702.81	1351.41	4388.01	2197.26	3.67	-0.486	0.000	0.119
84.75	-48.84	-4.62	0.00	-198.96	0.00	198.96	2646.34	1323.17	4160.98	2083.58	4.17	-0.523	0.000	0.114
85.00	-48.73	-4.63	0.00	-197.80	0.00	197.80	2643.31	1321.66	4149.11	2077.64	4.20	-0.525	0.000	0.114
89.75	-46.65	-4.54	0.00	-175.80	0.00	175.80	1922.43	961.22	2968.94	1486.68	4.74	-0.561	0.000	0.143
90.00	-46.58	-4.56	0.00	-174.67	0.00	174.67	1920.55	960.27	2960.86	1482.63	4.77	-0.563	0.000	0.142
95.00	-45.19	-4.49	0.00	-151.89	0.00	151.89	1881.78	940.89	2799.79	1401.97	5.38	-0.607	0.000	0.132
100.00	-43.83	-4.42	0.00	-129.44	0.00	129.44	1841.02	920.51	2640.02	1321.97	6.04	-0.649	0.000	0.122
105.00	-42.52	-4.35	0.00	-107.35	0.00	107.35	1798.25	899.12	2481.89	1242.79	6.74	-0.689	0.000	0.110
110.00	-41.24	-4.27	0.00	-85.62	0.00	85.62	1753.48	876.74	2325.70	1164.58	7.49	-0.725	0.000	0.097
115.00	-40.00	-4.19	0.00	-64.26	0.00	64.26	1706.70	853.35	2171.78	1087.50	8.26	-0.757	0.000	0.083
117.00	-27.28	-2.77	0.00	-55.88	0.00	55.88	1687.43	843.72	2110.92	1057.03	8.58	-0.768	0.000	0.069
120.00	-26.58	-2.72	0.00	-47.57	0.00	47.57	1657.93	828.96	2020.46	1011.73	9.07	-0.784	0.000	0.063
125.00	-25.44	-2.63	0.00	-33.97	0.00	33.97	1607.15	803.57	1872.06	937.42	9.90	-0.806	0.000	0.052
126.00	-25.21	-2.62	0.00	-31.33	0.00	31.33	1596.75	798.38	1842.76	922.75	10.07	-0.810	0.000	0.050
127.00	-17.11	-1.70	0.00	-28.57	0.00	28.57	1586.28	793.14	1813.59	908.14	10.24	-0.814	0.000	0.042
129.75	-16.35	-1.65	0.00	-23.89	0.00	23.89	1068.62	534.31	1212.20	607.00	10.72	-0.823	0.000	0.055
130.00	-16.31	-1.65	0.00	-23.48	0.00	23.48	1067.16	533.58	1207.67	604.73	10.76	-0.824	0.000	0.054
135.00	-15.42	-1.57	0.00	-15.24	0.00	15.24	1036.93	518.46	1117.63	559.65	11.63	-0.842	0.000	0.042
139.00	-7.83	-0.87	0.00	-8.98	0.00	8.98	1011.29	505.65	1046.45	524.00	12.34	-0.852	0.000	0.025
140.00	-7.67	-0.85	0.00	-8.11	0.00	8.11	1004.68	502.34	1028.80	515.16	12.52	-0.854	0.000	0.023
145.00	-6.92	-0.77	0.00	-3.85	0.00	3.85	970.44	485.22	941.49	471.44	13.42	-0.861	0.000	0.015
150.00	0.00	-0.67	0.00	0.00	0.00	0.00	934.20	467.10	856.03	428.65	14.32	-0.864	0.000	0.000

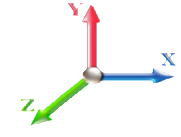
Seismic Segment Forces (Factored)

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E				Iterations 20
Gust Response Factor	1.10	Sds	0.09	Ss 0.17
Dead Load Factor	1.20	Seismic Load Factor	1.00	S1 0.07
Wind Load Factor	0.00	Structure Frequency	0.42	SA 0.01
				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		1391.8	0.00	0.03	0.02	13.67	
10.00		1361.1	0.01	0.05	0.03	18.97	
15.00		1330.3	0.02	0.06	0.04	21.17	
20.00		1299.6	0.03	0.07	0.04	21.97	
25.00		1268.9	0.05	0.07	0.04	22.19	
30.00		1238.2	0.08	0.07	0.04	22.20	
35.00		1207.5	0.10	0.07	0.04	22.18	
40.00		1176.8	0.13	0.07	0.03	22.13	
44.75	Bot - Section 2	1089.5	0.17	0.07	0.03	20.85	
45.00		97.62	0.17	0.07	0.03	1.87	
50.00		1924.7	0.21	0.06	0.02	36.91	
51.00	Top - Section 1	378.64	0.22	0.06	0.02	7.24	
55.00		628.19	0.25	0.05	0.02	11.67	
60.00		765.49	0.30	0.04	0.01	12.95	
65.00	Appurtenance(s)	745.56	0.35	0.03	0.01	10.23	
70.00		721.62	0.41	0.01	0.01	6.24	
75.00		699.68	0.47	-0.01	0.01	1.29	
80.00		677.74	0.54	-0.03	0.01	-3.89	
84.75	Bot - Section 3	623.54	0.60	-0.05	0.01	-7.71	
85.00		58.46	0.61	-0.06	0.02	-0.74	
89.75	Top - Section 2	1092.0	0.68	-0.08	0.03	-19.12	
90.00		25.32	0.68	-0.08	0.03	-0.45	
95.00		497.14	0.76	-0.10	0.04	-10.05	
100.00		479.59	0.84	-0.12	0.07	-9.65	
105.00		462.04	0.93	-0.12	0.10	-8.07	
110.00		444.49	1.02	-0.11	0.14	-5.49	
115.00		426.94	1.11	-0.06	0.19	-2.07	
117.00	Appurtenance(s)	4353.7	1.15	-0.04	0.22	-5.22	
120.00		243.53	1.21	0.01	0.26	1.22	
125.00		391.84	1.31	0.14	0.35	6.76	
126.00	Bot - Section 4	76.26	1.33	0.17	0.37	1.53	
127.00	Appurtenance(s)	1989.2	1.35	0.20	0.39	45.42	
129.75	Top - Section 3	359.73	1.41	0.31	0.45	11.20	
130.00		13.94	1.42	0.32	0.45	0.45	
135.00		271.98	1.53	0.58	0.58	13.36	
139.00	Appurtenance(s)	2529.8	1.62	0.85	0.70	163.61	
140.00		50.71	1.65	0.93	0.73	3.49	
145.00		245.66	1.77	1.39	0.92	22.39	
150.00	Appurtenance(s)	1917.3	1.89	1.98	1.14	222.70	
Totals:		34,556.7				693.4	Total Wind: 25,010.0

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

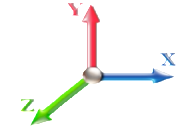
Calculated Forces

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E						Iterations 20
Gust Response Factor	1.10		Sds	0.09		Ss 0.17
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.03	S1 0.07
Wind Load Factor	0.00	Structure Frequency	0.42	SA	0.01	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	-48.43	-0.77	0.00	-82.56	0.00	82.56	5554.25	2777.13	13600.6	6810.41	0.00	0.00	0.00	0.021
5.00	-46.50	-0.76	0.00	-78.73	0.00	78.73	5477.89	2738.95	13118.7	6569.12	0.00	0.00	0.00	0.020
10.00	-44.61	-0.74	0.00	-74.95	0.00	74.95	5399.54	2699.77	12640.4	6329.59	0.01	-0.01	0.00	0.020
15.00	-42.76	-0.72	0.00	-71.26	0.00	71.26	5319.17	2659.59	12165.9	6092.00	0.01	-0.01	0.00	0.020
20.00	-40.94	-0.70	0.00	-67.66	0.00	67.66	5236.81	2618.40	11695.6	5856.50	0.03	-0.01	0.00	0.019
25.00	-39.17	-0.68	0.00	-64.16	0.00	64.16	5152.44	2576.22	11229.8	5623.26	0.04	-0.02	0.00	0.019
30.00	-37.42	-0.66	0.00	-60.76	0.00	60.76	5066.07	2533.04	10768.8	5392.43	0.06	-0.02	0.00	0.019
35.00	-35.72	-0.64	0.00	-57.47	0.00	57.47	4977.70	2488.85	10313.0	5164.19	0.08	-0.02	0.00	0.018
40.00	-34.05	-0.62	0.00	-54.27	0.00	54.27	4887.33	2443.67	9862.71	4938.68	0.11	-0.03	0.00	0.018
44.75	-32.50	-0.60	0.00	-51.34	0.00	51.34	4799.62	2399.81	9440.25	4727.14	0.14	-0.03	0.00	0.018
45.00	-32.37	-0.60	0.00	-51.19	0.00	51.19	4794.96	2397.48	9418.17	4716.08	0.14	-0.03	0.00	0.018
50.00	-29.80	-0.56	0.00	-48.21	0.00	48.21	4700.58	2350.29	8979.75	4496.55	0.17	-0.03	0.00	0.017
51.00	-29.30	-0.55	0.00	-47.65	0.00	47.65	3008.41	1504.20	5823.48	2916.07	0.18	-0.03	0.00	0.026
55.00	-28.34	-0.54	0.00	-45.44	0.00	45.44	2970.26	1485.13	5621.72	2815.04	0.21	-0.04	0.00	0.026
60.00	-27.16	-0.53	0.00	-42.73	0.00	42.73	2920.78	1460.39	5370.82	2689.40	0.25	-0.04	0.00	0.025
65.00	-26.01	-0.52	0.00	-40.08	0.00	40.08	2869.29	1434.64	5121.68	2564.65	0.30	-0.05	0.00	0.025
70.00	-24.89	-0.52	0.00	-37.46	0.00	37.46	2815.80	1407.90	4874.61	2440.93	0.35	-0.05	0.00	0.024
75.00	-23.80	-0.52	0.00	-34.88	0.00	34.88	2760.31	1380.15	4629.95	2318.41	0.41	-0.06	0.00	0.024
80.00	-22.73	-0.52	0.00	-32.29	0.00	32.29	2702.81	1351.41	4388.01	2197.26	0.47	-0.06	0.00	0.023
84.75	-21.74	-0.52	0.00	-29.83	0.00	29.83	2646.34	1323.17	4160.98	2083.58	0.54	-0.07	0.00	0.023
85.00	-21.66	-0.52	0.00	-29.70	0.00	29.70	2643.31	1321.66	4149.11	2077.64	0.55	-0.07	0.00	0.022
89.75	-20.11	-0.52	0.00	-27.23	0.00	27.23	1922.43	961.22	2968.94	1486.68	0.62	-0.08	0.00	0.029
90.00	-20.06	-0.52	0.00	-27.10	0.00	27.10	1920.55	960.27	2960.86	1482.63	0.62	-0.08	0.00	0.029
95.00	-19.21	-0.52	0.00	-24.51	0.00	24.51	1881.78	940.89	2799.79	1401.97	0.71	-0.08	0.00	0.028
100.00	-18.38	-0.52	0.00	-21.90	0.00	21.90	1841.02	920.51	2640.02	1321.97	0.80	-0.09	0.00	0.027
105.00	-17.58	-0.52	0.00	-19.29	0.00	19.29	1798.25	899.12	2481.89	1242.79	0.89	-0.10	0.00	0.025
110.00	-16.79	-0.52	0.00	-16.68	0.00	16.68	1753.48	876.74	2325.70	1164.58	1.00	-0.10	0.00	0.024
115.00	-16.02	-0.52	0.00	-14.07	0.00	14.07	1706.70	853.35	2171.78	1087.50	1.11	-0.11	0.00	0.022
117.00	-10.70	-0.51	0.00	-13.02	0.00	13.02	1687.43	843.72	2110.92	1057.03	1.16	-0.11	0.00	0.019
120.00	-10.27	-0.51	0.00	-11.48	0.00	11.48	1657.93	828.96	2020.46	1011.73	1.23	-0.12	0.00	0.018
125.00	-9.57	-0.50	0.00	-8.92	0.00	8.92	1607.15	803.57	1872.06	937.42	1.35	-0.12	0.00	0.015
126.00	-9.43	-0.50	0.00	-8.42	0.00	8.42	1596.75	798.38	1842.76	922.75	1.38	-0.12	0.00	0.015
127.00	-7.00	-0.45	0.00	-7.91	0.00	7.91	1586.28	793.14	1813.59	908.14	1.41	-0.12	0.00	0.013
129.75	-6.48	-0.44	0.00	-6.67	0.00	6.67	1068.62	534.31	1212.20	607.00	1.48	-0.13	0.00	0.017
130.00	-6.46	-0.44	0.00	-6.56	0.00	6.56	1067.16	533.58	1207.67	604.73	1.48	-0.13	0.00	0.017
135.00	-5.98	-0.43	0.00	-4.36	0.00	4.36	1036.93	518.46	1117.63	559.65	1.62	-0.13	0.00	0.014
139.00	-2.82	-0.26	0.00	-2.65	0.00	2.65	1011.29	505.65	1046.45	524.00	1.73	-0.13	0.00	0.008
140.00	-2.74	-0.25	0.00	-2.40	0.00	2.40	1004.68	502.34	1028.80	515.16	1.76	-0.14	0.00	0.007
145.00	-2.38	-0.23	0.00	-1.14	0.00	1.14	970.44	485.22	941.49	471.44	1.90	-0.14	0.00	0.005
150.00	0.00	-0.22	0.00	0.00	0.00	0.00	934.20	467.10	856.03	428.65	2.05	-0.14	0.00	0.000

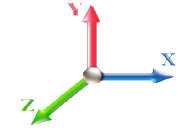
Seismic Segment Forces (Factored)

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0E				Iterations 19
Gust Response Factor	1.10	Sds	0.09	Ss 0.17
Dead Load Factor	0.90	Seismic Load Factor	1.00	S1 0.07
Wind Load Factor	0.00	Structure Frequency	0.42	SA 0.01
				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		1391.8	0.00	0.03	0.02	13.67	
10.00		1361.1	0.01	0.05	0.03	18.97	
15.00		1330.3	0.02	0.06	0.04	21.17	
20.00		1299.6	0.03	0.07	0.04	21.97	
25.00		1268.9	0.05	0.07	0.04	22.19	
30.00		1238.2	0.08	0.07	0.04	22.20	
35.00		1207.5	0.10	0.07	0.04	22.18	
40.00		1176.8	0.13	0.07	0.03	22.13	
44.75	Bot - Section 2	1089.5	0.17	0.07	0.03	20.85	
45.00		97.62	0.17	0.07	0.03	1.87	
50.00		1924.7	0.21	0.06	0.02	36.91	
51.00	Top - Section 1	378.64	0.22	0.06	0.02	7.24	
55.00		628.19	0.25	0.05	0.02	11.67	
60.00		765.49	0.30	0.04	0.01	12.95	
65.00	Appurtenance(s)	745.56	0.35	0.03	0.01	10.23	
70.00		721.62	0.41	0.01	0.01	6.24	
75.00		699.68	0.47	-0.01	0.01	1.29	
80.00		677.74	0.54	-0.03	0.01	-3.89	
84.75	Bot - Section 3	623.54	0.60	-0.05	0.01	-7.71	
85.00		58.46	0.61	-0.06	0.02	-0.74	
89.75	Top - Section 2	1092.0	0.68	-0.08	0.03	-19.12	
90.00		25.32	0.68	-0.08	0.03	-0.45	
95.00		497.14	0.76	-0.10	0.04	-10.05	
100.00		479.59	0.84	-0.12	0.07	-9.65	
105.00		462.04	0.93	-0.12	0.10	-8.07	
110.00		444.49	1.02	-0.11	0.14	-5.49	
115.00		426.94	1.11	-0.06	0.19	-2.07	
117.00	Appurtenance(s)	4353.7	1.15	-0.04	0.22	-5.22	
120.00		243.53	1.21	0.01	0.26	1.22	
125.00		391.84	1.31	0.14	0.35	6.76	
126.00	Bot - Section 4	76.26	1.33	0.17	0.37	1.53	
127.00	Appurtenance(s)	1989.2	1.35	0.20	0.39	45.42	
129.75	Top - Section 3	359.73	1.41	0.31	0.45	11.20	
130.00		13.94	1.42	0.32	0.45	0.45	
135.00		271.98	1.53	0.58	0.58	13.36	
139.00	Appurtenance(s)	2529.8	1.62	0.85	0.70	163.61	
140.00		50.71	1.65	0.93	0.73	3.49	
145.00		245.66	1.77	1.39	0.92	22.39	
150.00	Appurtenance(s)	1917.3	1.89	1.98	1.14	222.70	
Totals:		34,556.7				693.4	Total Wind: 25,010.0

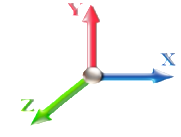
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 0.9D + 1.0E						Iterations 19
Gust Response Factor	1.10			Sds	0.09	Ss 0.17
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.03	S1 0.07
Wind Load Factor	0.00	Structure Frequency	0.42	SA	0.01	Seismic Importance Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-36.32	-0.77	0.00	-81.74	0.00	81.74	5554.25	2777.13	13600.6	6810.41	0.00	0.00	0.00	0.019
5.00	-34.88	-0.75	0.00	-77.92	0.00	77.92	5477.89	2738.95	13118.7	6569.12	0.00	0.00	0.00	0.018
10.00	-33.46	-0.74	0.00	-74.15	0.00	74.15	5399.54	2699.77	12640.4	6329.59	0.01	-0.01	0.018	0.018
15.00	-32.07	-0.72	0.00	-70.47	0.00	70.47	5319.17	2659.59	12165.9	6092.00	0.01	-0.01	0.018	0.018
20.00	-30.71	-0.70	0.00	-66.88	0.00	66.88	5236.81	2618.40	11695.6	5856.50	0.03	-0.01	0.017	0.017
25.00	-29.37	-0.68	0.00	-63.40	0.00	63.40	5152.44	2576.22	11229.8	5623.26	0.04	-0.02	0.017	0.017
30.00	-28.07	-0.65	0.00	-60.02	0.00	60.02	5066.07	2533.04	10768.8	5392.43	0.06	-0.02	0.017	0.017
35.00	-26.79	-0.63	0.00	-56.75	0.00	56.75	4977.70	2488.85	10313.0	5164.19	0.08	-0.02	0.016	0.016
40.00	-25.54	-0.61	0.00	-53.58	0.00	53.58	4887.33	2443.67	9862.71	4938.68	0.11	-0.03	0.016	0.016
44.75	-24.37	-0.59	0.00	-50.68	0.00	50.68	4799.62	2399.81	9440.25	4727.14	0.13	-0.03	0.016	0.016
45.00	-24.28	-0.59	0.00	-50.53	0.00	50.53	4794.96	2397.48	9418.17	4716.08	0.14	-0.03	0.016	0.016
50.00	-22.35	-0.55	0.00	-47.58	0.00	47.58	4700.58	2350.29	8979.75	4496.55	0.17	-0.03	0.015	0.015
51.00	-21.97	-0.55	0.00	-47.02	0.00	47.02	3008.41	1504.20	5823.48	2916.07	0.18	-0.03	0.023	0.023
55.00	-21.25	-0.54	0.00	-44.83	0.00	44.83	2970.26	1485.13	5621.72	2815.04	0.21	-0.04	0.023	0.023
60.00	-20.37	-0.52	0.00	-42.15	0.00	42.15	2920.78	1460.39	5370.82	2689.40	0.25	-0.04	0.023	0.023
65.00	-19.51	-0.52	0.00	-39.53	0.00	39.53	2869.29	1434.64	5121.68	2564.65	0.29	-0.05	0.022	0.022
70.00	-18.67	-0.51	0.00	-36.96	0.00	36.96	2815.80	1407.90	4874.61	2440.93	0.35	-0.05	0.022	0.022
75.00	-17.85	-0.51	0.00	-34.40	0.00	34.40	2760.31	1380.15	4629.95	2318.41	0.41	-0.06	0.021	0.021
80.00	-17.05	-0.51	0.00	-31.86	0.00	31.86	2702.81	1351.41	4388.01	2197.26	0.47	-0.06	0.021	0.021
84.75	-16.31	-0.51	0.00	-29.43	0.00	29.43	2646.34	1323.17	4160.98	2083.58	0.54	-0.07	0.020	0.020
85.00	-16.24	-0.51	0.00	-29.30	0.00	29.30	2643.31	1321.66	4149.11	2077.64	0.54	-0.07	0.020	0.020
89.75	-15.08	-0.51	0.00	-26.87	0.00	26.87	1922.43	961.22	2968.94	1486.68	0.61	-0.07	0.026	0.026
90.00	-15.05	-0.51	0.00	-26.75	0.00	26.75	1920.55	960.27	2960.86	1482.63	0.61	-0.07	0.026	0.026
95.00	-14.41	-0.51	0.00	-24.19	0.00	24.19	1881.78	940.89	2799.79	1401.97	0.70	-0.08	0.025	0.025
100.00	-13.79	-0.51	0.00	-21.63	0.00	21.63	1841.02	920.51	2640.02	1321.97	0.79	-0.09	0.024	0.024
105.00	-13.18	-0.51	0.00	-19.06	0.00	19.06	1798.25	899.12	2481.89	1242.79	0.88	-0.10	0.023	0.023
110.00	-12.59	-0.51	0.00	-16.49	0.00	16.49	1753.48	876.74	2325.70	1164.58	0.99	-0.10	0.021	0.021
115.00	-12.02	-0.51	0.00	-13.92	0.00	13.92	1706.70	853.35	2171.78	1087.50	1.10	-0.11	0.020	0.020
117.00	-8.02	-0.51	0.00	-12.89	0.00	12.89	1687.43	843.72	2110.92	1057.03	1.14	-0.11	0.017	0.017
120.00	-7.70	-0.51	0.00	-11.37	0.00	11.37	1657.93	828.96	2020.46	1011.73	1.21	-0.11	0.016	0.016
125.00	-7.18	-0.50	0.00	-8.84	0.00	8.84	1607.15	803.57	1872.06	937.42	1.34	-0.12	0.014	0.014
126.00	-7.07	-0.50	0.00	-8.34	0.00	8.34	1596.75	798.38	1842.76	922.75	1.36	-0.12	0.013	0.013
127.00	-5.25	-0.45	0.00	-7.85	0.00	7.85	1586.28	793.14	1813.59	908.14	1.39	-0.12	0.012	0.012
129.75	-4.86	-0.44	0.00	-6.61	0.00	6.61	1068.62	534.31	1212.20	607.00	1.46	-0.13	0.015	0.015
130.00	-4.84	-0.44	0.00	-6.50	0.00	6.50	1067.16	533.58	1207.67	604.73	1.47	-0.13	0.015	0.015
135.00	-4.48	-0.42	0.00	-4.32	0.00	4.32	1036.93	518.46	1117.63	559.65	1.60	-0.13	0.012	0.012
139.00	-2.12	-0.25	0.00	-2.64	0.00	2.64	1011.29	505.65	1046.45	524.00	1.71	-0.13	0.007	0.007
140.00	-2.06	-0.25	0.00	-2.38	0.00	2.38	1004.68	502.34	1028.80	515.16	1.74	-0.13	0.007	0.007
145.00	-1.78	-0.23	0.00	-1.13	0.00	1.13	970.44	485.22	941.49	471.44	1.88	-0.14	0.004	0.004
150.00	0.00	-0.22	0.00	0.00	0.00	0.00	934.20	467.10	856.03	428.65	2.02	-0.14	0.000	0.000

Wind Loading - Shaft

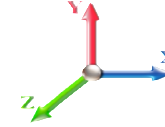
Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	254.87	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	249.35	0.650	0.000	5.00	25.111	16.32	110.0	0.0	1391.8
10.00		1.00	0.70	6.129	6.74	243.83	0.650	0.000	5.00	24.561	15.96	107.6	0.0	1361.1
15.00		1.00	0.70	6.129	6.74	238.30	0.650	0.000	5.00	24.011	15.61	105.2	0.0	1330.4
20.00		1.00	0.70	6.129	6.74	232.78	0.650	0.000	5.00	23.461	15.25	102.8	0.0	1299.7
25.00		1.00	0.70	6.129	6.74	227.26	0.650	0.000	5.00	22.911	14.89	100.4	0.0	1269.0
30.00		1.00	0.70	6.134	6.75	221.83	0.650	0.000	5.00	22.361	14.53	98.1	0.0	1238.2
35.00		1.00	0.73	6.410	7.05	221.12	0.650	0.000	5.00	21.811	14.18	100.0	0.0	1207.5
40.00		1.00	0.76	6.659	7.33	219.62	0.650	0.000	5.00	21.260	13.82	101.2	0.0	1176.8
44.75	Bot - Section 2	1.00	0.79	6.876	7.56	217.62	0.650	0.000	4.75	19.688	12.80	96.8	0.0	1089.5
45.00		1.00	0.79	6.887	7.58	217.50	0.650	0.000	0.25	1.036	0.67	5.1	0.0	97.6
50.00		1.00	0.81	7.098	7.81	214.85	0.650	0.000	5.00	20.425	13.28	103.7	0.0	1924.8
51.00	Top - Section 1	1.00	0.82	7.138	7.85	214.27	0.650	0.000	1.00	4.019	2.61	20.5	0.0	378.6
55.00		1.00	0.83	7.294	8.02	214.67	0.650	0.000	4.00	15.856	10.31	82.7	0.0	628.2
60.00		1.00	0.85	7.477	8.22	211.26	0.650	0.000	5.00	19.325	12.56	103.3	0.0	765.5
65.00	Appurtenance(s)	1.00	0.87	7.650	8.42	207.52	0.650	0.000	5.00	18.775	12.20	102.7	0.0	743.6
70.00		1.00	0.89	7.814	8.60	203.49	0.650	0.000	5.00	18.225	11.85	101.8	0.0	721.6
75.00		1.00	0.91	7.969	8.77	199.21	0.650	0.000	5.00	17.675	11.49	100.7	0.0	699.7
80.00		1.00	0.93	8.118	8.93	194.70	0.650	0.000	5.00	17.125	11.13	99.4	0.0	677.7
84.75	Bot - Section 3	1.00	0.94	8.253	9.08	190.22	0.650	0.000	4.75	15.759	10.24	93.0	0.0	623.5
85.00		1.00	0.94	8.260	9.09	189.98	0.650	0.000	0.25	0.826	0.54	4.9	0.0	58.5
89.75	Top - Section 2	1.00	0.96	8.389	9.23	185.32	0.650	0.000	4.75	15.437	10.03	92.6	0.0	1092.1
90.00		1.00	0.96	8.396	9.24	187.56	0.650	0.000	0.25	0.799	0.52	4.8	0.0	25.3
95.00		1.00	0.97	8.526	9.38	182.50	0.650	0.000	5.00	15.686	10.20	95.6	0.0	497.1
100.00		1.00	0.99	8.652	9.52	177.28	0.650	0.000	5.00	15.136	9.84	93.6	0.0	479.6
105.00		1.00	1.00	8.774	9.65	171.91	0.650	0.000	5.00	14.586	9.48	91.5	0.0	462.0
110.00		1.00	1.02	8.891	9.78	166.41	0.650	0.000	5.00	14.036	9.12	89.2	0.0	444.5
115.00		1.00	1.03	9.005	9.91	160.78	0.650	0.000	5.00	13.486	8.77	86.8	0.0	426.9
117.00	Appurtenance(s)	1.00	1.03	9.049	9.95	158.49	0.650	0.000	2.00	5.240	3.41	33.9	0.0	165.9
120.00		1.00	1.04	9.115	10.03	155.02	0.650	0.000	3.00	7.696	5.00	50.2	0.0	243.5
125.00		1.00	1.05	9.222	10.14	149.15	0.650	0.000	5.00	12.386	8.05	81.7	0.0	391.8
126.00	Bot - Section 4	1.00	1.06	9.243	10.17	147.97	0.650	0.000	1.00	2.411	1.57	15.9	0.0	76.3
127.00	Appurtenance(s)	1.00	1.06	9.264	10.19	146.78	0.650	0.000	1.00	2.421	1.57	16.0	0.0	133.1
129.75	Top - Section 3	1.00	1.06	9.321	10.25	143.48	0.650	0.000	2.75	6.544	4.25	43.6	0.0	359.7
130.00		1.00	1.07	9.326	10.26	145.15	0.650	0.000	0.25	0.587	0.38	3.9	0.0	13.9
135.00		1.00	1.08	9.427	10.37	139.08	0.650	0.000	5.00	11.445	7.44	77.1	0.0	272.0
139.00	Appurtenance(s)	1.00	1.09	9.506	10.46	134.16	0.650	0.000	4.00	8.760	5.69	59.5	0.0	208.1
140.00		1.00	1.09	9.525	10.48	132.92	0.650	0.000	1.00	2.135	1.39	14.5	0.0	50.7
145.00		1.00	1.10	9.621	10.58	126.67	0.650	0.000	5.00	10.345	6.72	71.2	0.0	245.7
150.00	Appurtenance(s)	1.00	1.11	9.715	10.69	120.33	0.650	0.000	5.00	9.795	6.37	68.0	0.0	232.5
Totals:									150.00			2,829.7		24,504.2

Discrete Appurtenance Forces

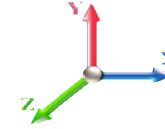
Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	150.00	Low Profile Platform	1	9.715	10.686	1.00	1.00	22.00	1500.00	0.000	0.000	235.10	0.00	0.00
2	150.00	Decibel DB846G90A-XY	12	9.715	10.686	1.01	0.90	60.60	184.80	0.000	0.000	647.60	0.00	0.00
3	139.00	KMW	2	9.506	10.456	0.81	0.90	12.99	97.00	0.000	0.000	135.85	0.00	0.00
4	139.00	Low Profile Platform	1	9.506	10.456	1.00	1.00	22.00	1500.00	0.000	0.000	230.04	0.00	0.00
5	139.00	Powerwave 7770	6	9.506	10.456	0.58	0.80	19.27	210.00	0.000	0.000	201.51	0.00	0.00
6	139.00	Kathrein 800 10764	1	9.506	10.456	1.00	1.00	5.88	40.80	0.000	0.000	61.48	0.00	0.00
7	139.00	Powerwave LGP 13519	6	9.506	10.456	0.54	0.80	1.09	31.80	0.000	0.000	11.43	0.00	0.00
8	139.00	Powerwave LGP 21401	6	9.506	10.456	0.54	0.80	0.00	105.00	0.000	0.000	0.00	0.00	0.00
9	139.00	Ericsson RRUS 11	6	9.506	10.456	0.54	0.80	8.10	304.20	0.000	0.000	84.74	0.00	0.00
10	139.00	Raycap DC6-48-60-18-8F	1	9.506	10.456	1.00	1.00	0.92	31.80	0.000	0.000	9.62	0.00	0.00
11	139.00	Commscope	1	9.506	10.456	1.00	1.00	0.05	1.10	0.000	0.000	0.52	0.00	0.00
12	127.00	RFS FD9R6004/2C-3L	6	9.284	10.213	0.54	0.80	1.19	18.60	0.000	1.000	12.15	0.00	12.15
13	127.00	Antel	3	9.284	10.213	0.67	0.80	5.93	31.50	0.000	1.000	60.53	0.00	60.53
14	127.00	Antel LPA-80080/6CF	12	9.264	10.190	1.36	0.80	70.67	252.00	0.000	0.000	720.08	0.00	0.00
15	127.00	Low Profile Platform	1	9.264	10.190	1.00	1.00	22.00	1500.00	0.000	0.000	224.18	0.00	0.00
16	127.00	Antel	3	9.284	10.213	0.70	0.80	12.03	54.00	0.000	1.000	122.83	0.00	122.83
17	117.00	RFS	4	9.049	9.954	0.55	0.75	44.33	396.00	0.000	0.000	441.22	0.00	0.00
18	117.00	SitePro F4P-10W	1	9.049	9.954	1.00	1.00	58.98	2396.00	0.000	0.000	587.09	0.00	0.00
19	117.00	F4P-HRK10	1	9.049	9.954	1.00	1.00	9.00	478.27	0.000	0.000	89.59	0.00	0.00
20	117.00	Ericsson Air 32	4	9.049	9.954	0.65	0.75	16.99	423.20	0.000	0.000	169.13	0.00	0.00
21	117.00	Ericsson S11B12	4	9.049	9.954	0.50	0.75	5.69	204.00	0.000	0.000	56.62	0.00	0.00
22	117.00	RFS	4	9.049	9.954	0.55	0.75	11.32	105.60	0.000	0.000	112.70	0.00	0.00
23	117.00	Ericsson RRU 2217 B2	4	9.049	9.954	0.50	0.75	5.17	176.00	0.000	0.000	51.42	0.00	0.00
24	117.00	Fastback IBR1300	1	9.049	9.954	1.00	1.00	0.67	8.82	0.000	0.000	6.67	0.00	0.00
25	65.00	Motorola RRA4905A	2	7.650	8.415	1.00	1.00	0.28	2.00	0.000	0.000	2.36	0.00	0.00

Totals: 10,052.49

4,274.48

Total Applied Force Summary

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		110.03	1605.21	0.00	0.00
10.00		107.62	1574.50	0.00	0.00
15.00		105.21	1543.79	0.00	0.00
20.00		102.80	1513.07	0.00	0.00
25.00		100.39	1482.36	0.00	0.00
30.00		98.07	1451.65	0.00	0.00
35.00		99.96	1420.94	0.00	0.00
40.00		101.23	1390.22	0.00	0.00
44.75		96.80	1292.26	0.00	0.00
45.00		5.10	108.29	0.00	0.00
50.00		103.65	2138.17	0.00	0.00
51.00		20.51	421.32	0.00	0.00
55.00		82.69	798.91	0.00	0.00
60.00		103.31	978.89	0.00	0.00
65.00	(2) attachments	105.05	958.96	0.00	0.00
70.00		101.82	933.42	0.00	0.00
75.00		100.71	911.48	0.00	0.00
80.00		99.40	889.54	0.00	0.00
84.75		92.99	824.75	0.00	0.00
85.00		4.88	69.05	0.00	0.00
89.75		92.60	1293.28	0.00	0.00
90.00		4.79	35.91	0.00	0.00
95.00		95.63	708.94	0.00	0.00
100.00		93.64	691.39	0.00	0.00
105.00		91.50	673.84	0.00	0.00
110.00		89.23	656.29	0.00	0.00
115.00		86.83	638.74	0.00	0.00
117.00	(23) attachments	1548.34	4438.47	0.00	0.00
120.00		50.15	357.53	0.00	0.00
125.00		81.67	581.84	0.00	0.00
126.00		15.93	114.26	0.00	0.00
127.00	(25) attachments	1155.81	2027.22	0.00	195.51
129.75		43.61	429.91	0.00	0.00
130.00		3.91	20.32	0.00	0.00
135.00		77.14	399.58	0.00	0.00
139.00	(30) attachments	794.74	2631.89	0.00	0.00
140.00		14.54	63.19	0.00	0.00
145.00		71.16	308.06	0.00	0.00
150.00	(13) attachments	950.74	1979.70	0.00	0.00
	Totals:	7,104.21	40,357.13	0.00	195.51

Linear Appurtenance Segment Forces (Factored)

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	6.129	0.00	1.60
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	6.129	0.00	1.60
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	6.129	0.00	1.60
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	6.129	0.00	1.60
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	6.129	0.00	1.60
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	6.134	0.00	1.60
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	6.410	0.00	1.60
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	6.659	0.00	1.60
44.75	1/2" Coax	Yes	4.75	0.000	0.65	0.26	0.00	0.013	0.000	6.876	0.00	1.52
45.00	1/2" Coax	Yes	0.25	0.000	0.65	0.01	0.00	0.013	0.000	6.887	0.00	0.08
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	7.098	0.00	1.60
51.00	1/2" Coax	Yes	1.00	0.000	0.65	0.05	0.00	0.014	0.000	7.138	0.00	0.32
55.00	1/2" Coax	Yes	4.00	0.000	0.65	0.22	0.00	0.014	0.000	7.294	0.00	1.28
60.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	7.477	0.00	1.60
65.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	7.650	0.00	1.60
Totals:											0.0	20.8

Calculated Forces

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II

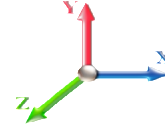


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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 21

Dead Load Factor 1.00
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-40.36	-7.11	0.00	-782.54	0.00	782.54	5554.25	2777.13	13600.6	6810.41	0.00	0.000	0.000	0.122
5.00	-38.75	-7.02	0.00	-746.98	0.00	746.98	5477.89	2738.95	13118.7	6569.12	0.02	-0.029	0.000	0.121
10.00	-37.17	-6.93	0.00	-711.86	0.00	711.86	5399.54	2699.77	12640.4	6329.59	0.06	-0.059	0.000	0.119
15.00	-35.62	-6.85	0.00	-677.19	0.00	677.19	5319.17	2659.59	12165.9	6092.00	0.14	-0.090	0.000	0.118
20.00	-34.10	-6.76	0.00	-642.96	0.00	642.96	5236.81	2618.40	11695.6	5856.50	0.25	-0.121	0.000	0.116
25.00	-32.62	-6.67	0.00	-609.17	0.00	609.17	5152.44	2576.22	11229.8	5623.26	0.40	-0.152	0.000	0.115
30.00	-31.16	-6.59	0.00	-575.80	0.00	575.80	5066.07	2533.04	10768.8	5392.43	0.57	-0.185	0.000	0.113
35.00	-29.74	-6.50	0.00	-542.86	0.00	542.86	4977.70	2488.85	10313.0	5164.19	0.78	-0.217	0.000	0.111
40.00	-28.35	-6.41	0.00	-510.36	0.00	510.36	4887.33	2443.67	9862.71	4938.68	1.03	-0.250	0.000	0.109
44.75	-27.05	-6.31	0.00	-479.91	0.00	479.91	4799.62	2399.81	9440.25	4727.14	1.29	-0.283	0.000	0.107
45.00	-26.94	-6.32	0.00	-478.34	0.00	478.34	4794.96	2397.48	9418.17	4716.08	1.31	-0.284	0.000	0.107
50.00	-24.80	-6.21	0.00	-446.75	0.00	446.75	4700.58	2350.29	8979.75	4496.55	1.63	-0.319	0.000	0.105
51.00	-24.38	-6.20	0.00	-440.53	0.00	440.53	3008.41	1504.20	5823.48	2916.07	1.69	-0.326	0.000	0.159
55.00	-23.58	-6.12	0.00	-415.75	0.00	415.75	2970.26	1485.13	5621.72	2815.04	1.98	-0.354	0.000	0.156
60.00	-22.59	-6.03	0.00	-385.13	0.00	385.13	2920.78	1460.39	5370.82	2689.40	2.37	-0.400	0.000	0.151
65.00	-21.63	-5.94	0.00	-354.96	0.00	354.96	2869.29	1434.64	5121.68	2564.65	2.82	-0.447	0.000	0.146
70.00	-20.69	-5.85	0.00	-325.27	0.00	325.27	2815.80	1407.90	4874.61	2440.93	3.31	-0.494	0.000	0.141
75.00	-19.78	-5.75	0.00	-296.04	0.00	296.04	2760.31	1380.15	4629.95	2318.41	3.86	-0.542	0.000	0.135
80.00	-18.88	-5.66	0.00	-267.27	0.00	267.27	2702.81	1351.41	4388.01	2197.26	4.45	-0.589	0.000	0.129
84.75	-18.06	-5.57	0.00	-240.38	0.00	240.38	2646.34	1323.17	4160.98	2083.58	5.06	-0.633	0.000	0.122
85.00	-17.99	-5.57	0.00	-238.99	0.00	238.99	2643.31	1321.66	4149.11	2077.64	5.09	-0.636	0.000	0.122
89.75	-16.69	-5.47	0.00	-212.54	0.00	212.54	1922.43	961.22	2968.94	1486.68	5.75	-0.679	0.000	0.152
90.00	-16.65	-5.47	0.00	-211.17	0.00	211.17	1920.55	960.27	2960.86	1482.63	5.78	-0.682	0.000	0.151
95.00	-15.94	-5.38	0.00	-183.82	0.00	183.82	1881.78	940.89	2799.79	1401.97	6.52	-0.735	0.000	0.140
100.00	-15.25	-5.29	0.00	-156.92	0.00	156.92	1841.02	920.51	2640.02	1321.97	7.32	-0.786	0.000	0.127
105.00	-14.57	-5.20	0.00	-130.47	0.00	130.47	1798.25	899.12	2481.89	1242.79	8.17	-0.834	0.000	0.113
110.00	-13.91	-5.11	0.00	-104.46	0.00	104.46	1753.48	876.74	2325.70	1164.58	9.07	-0.878	0.000	0.098
115.00	-13.27	-5.02	0.00	-78.90	0.00	78.90	1706.70	853.35	2171.78	1087.50	10.01	-0.917	0.000	0.080
117.00	-8.86	-3.40	0.00	-68.86	0.00	68.86	1687.43	843.72	2110.92	1057.03	10.40	-0.931	0.000	0.070
120.00	-8.50	-3.35	0.00	-58.64	0.00	58.64	1657.93	828.96	2020.46	1011.73	10.99	-0.950	0.000	0.063
125.00	-7.92	-3.26	0.00	-41.88	0.00	41.88	1607.15	803.57	1872.06	937.42	12.00	-0.977	0.000	0.050
126.00	-7.81	-3.25	0.00	-38.62	0.00	38.62	1596.75	798.38	1842.76	922.75	12.20	-0.982	0.000	0.047
127.00	-5.80	-2.06	0.00	-35.18	0.00	35.18	1586.28	793.14	1813.59	908.14	12.41	-0.987	0.000	0.042
129.75	-5.37	-2.01	0.00	-29.52	0.00	29.52	1068.62	534.31	1212.20	607.00	12.98	-0.999	0.000	0.054
130.00	-5.35	-2.00	0.00	-29.02	0.00	29.02	1067.16	533.58	1207.67	604.73	13.04	-1.000	0.000	0.053
135.00	-4.95	-1.92	0.00	-19.01	0.00	19.01	1036.93	518.46	1117.63	559.65	14.09	-1.022	0.000	0.039
139.00	-2.33	-1.08	0.00	-11.33	0.00	11.33	1011.29	505.65	1046.45	524.00	14.96	-1.034	0.000	0.024
140.00	-2.27	-1.06	0.00	-10.25	0.00	10.25	1004.68	502.34	1028.80	515.16	15.17	-1.037	0.000	0.022
145.00	-1.96	-0.99	0.00	-4.93	0.00	4.93	970.44	485.22	941.49	471.44	16.27	-1.046	0.000	0.012
150.00	0.00	-0.95	0.00	0.00	0.00	0.00	934.20	467.10	856.03	428.65	17.36	-1.050	0.000	0.000

Final Analysis Summary

Structure: CT13613-A-SBA	Code: EIA/TIA-222-G	6/18/2018
Site Name: Johnson	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: A - Hard Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 89 mph Wind	25.1	0.00	48.41	0.00	0.00	2768.62
0.9D + 1.6W 89 mph Wind	25.0	0.00	36.30	0.00	0.00	2746.53
1.2D + 1.0Di + 1.0Wi 40 mph Wind	5.7	0.00	86.82	0.00	0.00	642.73
1.2D + 1.0E	0.8	0.00	48.43	0.00	0.00	82.56
0.9D + 1.0E	0.8	0.00	36.32	0.00	0.00	81.74
1.0D + 1.0W 60 mph Wind	7.1	0.00	40.36	0.00	0.00	782.54

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 89 mph Wind	-28.84	-21.92	0.00	-1561.3	0.00	-1561.3	3008.41	1504.2	5823.48	2916.07	51.00	0.545
0.9D + 1.6W 89 mph Wind	-21.53	-21.76	0.00	-1543.9	0.00	-1543.9	3008.41	1504.2	5823.48	2916.07	51.00	0.537
1.2D + 1.0Di + 1.0Wi 40 mph Wind	-60.59	-5.09	0.00	-364.35	0.00	-364.35	3008.41	1504.2	5823.48	2916.07	51.00	0.145
1.2D + 1.0E	-20.11	-0.52	0.00	-27.23	0.00	-27.23	1922.43	961.22	2968.94	1486.68	89.75	0.029
0.9D + 1.0E	-15.08	-0.51	0.00	-26.87	0.00	-26.87	1922.43	961.22	2968.94	1486.68	89.75	0.026
1.0D + 1.0W 60 mph Wind	-24.38	-6.20	0.00	-440.53	0.00	-440.53	3008.41	1504.2	5823.48	2916.07	51.00	0.159



Monopole Mat Foundation Design

Date
6/18/2018

Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	150
Site Number:	CT13613	Engineer Name:	H. You
Engr. Number:	54860	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations
Monopole
Analysis

Structure Type:

Analysis or Design?

Base Reactions (Factored):

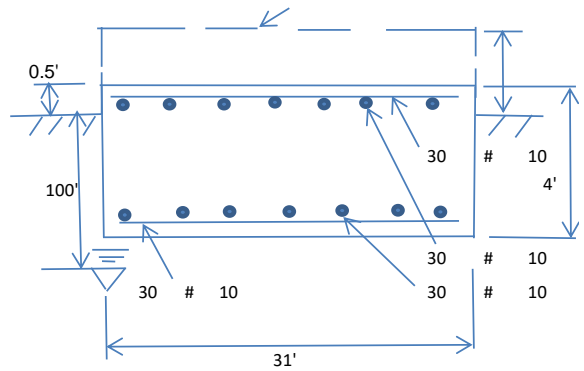
Axial Load (Kips):	48.4	Shear Force (Kips):	25.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2768.6

Allowable overstress %: 5.0%

Foundation Geometries:

Anchor Bolt Circle (ft.):	5.58	Depth of Base BG (ft.):	3.50
Thickness of Pad (ft.):	4.00	Width of Pad (ft.):	31
Length of Pad (ft.):	31	Width of Pad (ft.):	31

Final Length of pad (ft) 31.0 Final width of pad (ft): 31.0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Pad Rebar Yield (Ksi):	60	Tie Spacing (in):	12.0	
Pad Steel Rebar Size (#):	10			
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

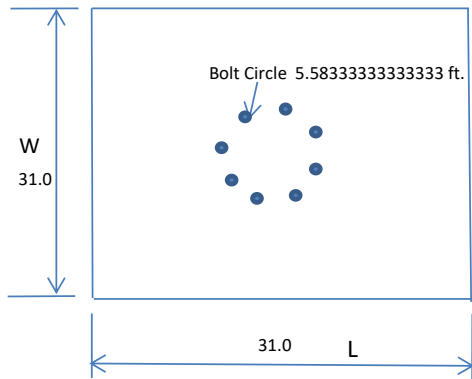
Rebar at the bottom of the concrete pad:

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

Rebar at the top of the concrete pad:

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

Apply 1.35 factor for e/w Per G: 1.35



Soil Design Parameters:

Water Table B.G.S. (ft):	100.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	8000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3844.00	Total Dry Concrete Weight (Kips):	576.60
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	576.60	Total Vertical Load on Base (Kips):	625.03

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	1468	<	Allowable Factored Soil Bearing (psf):	6000	0.24	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8794.2	>	Design Factored Momnt (kips-ft):	2870	0.33	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	3.06					OK!

Load/
Capacity
Ratio

Check the capacities of Reinforcing Concrete:

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

Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	1356.2	>	One-Way Factored Shear (L-D. Kips):	273.9	0.20	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1356.2	>	One-Way Factored Shear (W-D., Kips)	273.9	0.20	OK!
One-Way Design Shear Capacity (Corner-Corner, Kips):	1651.9	>	One-Way Factored Shear (C-C, Kips):	411.2	0.25	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0023	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0023		
Lower Steel Pad Moment Capacity (L-Direction, Kips-ft):	7401.5	>	Moment at Bottom (L-Direct, K-Ft):	1199.8	0.16	OK!
Lower Steel Pad Moment Capacity (W-Direction, Kips-ft):	7401.5	>	Moment at Bottom (W-Direct, K-Ft):	1199.8	0.16	OK!
Lower Steel Pad Moment Capacity (Corner-Corner, K-ft):	10420.2	>	Moment at Bottom (C-C Dir, K-Ft):	1696.7	0.16	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0023	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0023		
Upper Steel Pad Moment Capacity (L-Direction, Kips-ft):	7401.5	>	Moment at the top (L-Dir Kips-Ft):	353.3	0.05	OK!
Upper Steel Pad Moment Capacity (W-Direction, Kips-ft):	7401.5	>	Moment at the top (W-Dir Kips-Ft):	353.3	0.05	OK!
Upper Steel Pad Moment Capacity (Corner-Corner, K-ft):	10420.2	>	Moment at the top (C-C Direc, K-Ft):	439.4	0.04	OK!

Exhibit D



RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTNH549B (MW Add)

SBA Colebrook
382 Colebrook River Road
Colebrook, CT 06021

March 30, 2018

EBI Project Number: 6218002384

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	8.823 %



March 30, 2018

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CTNH549B – SBA Colebrook**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **382 Colebrook River Road, Colebrook, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz Bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively, and the general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 5 GHz microwave bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **382 Colebrook River Road, Colebrook, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas for both coverage and microwave backhaul, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel
- 4) 1 LTE channel (600 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 5) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 6) 1 microwave backhaul channel (5 GHz) was considered for this facility. This channel has a transmit power of 1 Watt.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas for both coverage and microwave backhaul, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Ericsson AIR32 B66A/B2P & RFS APXV18-206517S-C-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels, the **RFS APXVAA24-43-U-A20** for 600 MHz & 700 MHz channels and the **Fastback IBR1300** for 5 GHz microwave backhaul. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B66A/B2P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **RFS APXV18-206517S-C-A20** has a maximum gain of **16.99 dBd** at its main lobe at 1900 MHz. The **RFS APXVAA24-43-U-A20** has a maximum gain of **13.55 dBd** at its main lobe at 700 MHz and a maximum gain of **13.15 dBd** at its main lobe at 600 MHz. The **Fastback IBR1300** has a maximum gain of **10 dBd** at its main lobe at 5 GHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas for both coverage and microwave backhaul, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerline of the proposed antennas is **117 feet** above ground level (AGL).
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 12) All calculations were done with respect to uncontrolled / general population threshold limits.



T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C	Sector:	D
Antenna #:	1	Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B66A/B2P	Make / Model:	Ericsson AIR32 B66A/B2P	Make / Model:	Ericsson AIR32 B66A/B2P	Make / Model:	Ericsson AIR32 B66A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	117	Height (AGL):	117	Height (AGL):	117	Height (AGL):	117
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	2.724	Antenna B1 MPE%	2.724	Antenna C1 MPE%	2.724	Antenna D1 MPE%	2.724
Antenna #:	2	Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXV18-206517S-C-A20	Make / Model:	RFS APXV18-206517S-C-A20	Make / Model:	RFS APXV18-206517S-C-A20	Make / Model:	RFS APXV18-206517S-C-A20
Gain:	16.9 dBd	Gain:	16.9 dBd	Gain:	16.9 dBd	Gain:	16.9 dBd
Height (AGL):	117	Height (AGL):	117	Height (AGL):	117	Height (AGL):	117
Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)
Channel Count	2	Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	2,806.41	ERP (W):	2,806.41	ERP (W):	2,806.41	ERP (W):	2,806.41
Antenna A2 MPE%	0.819	Antenna B2 MPE%	0.819	Antenna C2 MPE%	0.819	Antenna D2 MPE%	0.819
Antenna #:	3	Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAA24-43-U-A20	Make / Model:	RFS APXVAA24-43-U-A20	Make / Model:	RFS APXVAA24-43-U-A20	Make / Model:	RFS APXVAA24-43-U-A20
Gain:	13.15 / 13.55 dBd	Gain:	13.15 / 13.55 dBd	Gain:	13.15 / 13.55 dBd	Gain:	13.15 / 13.55 dBd
Height (AGL):	117	Height (AGL):	117	Height (AGL):	117	Height (AGL):	117
Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz
Channel Count	2	Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	1,299.01	ERP (W):	1,299.01	ERP (W):	1,299.01	ERP (W):	1,299.01
Antenna A3 MPE%	0.876	Antenna B3 MPE%	0.876	Antenna C3 MPE%	0.876	Antenna D3 MPE%	0.876

Microwave Backhaul Data								
Make / Model:	Gain	Height (AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Fastback IBR1300	10 dBd	117	5 GHz	1	1	10.00	0.003	C



Site Summary Tables

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Sector C)	4.423 %
Nextel	0.380 %
AT&T	1.820 %
Verizon Wireless	2.200 %
Site Total MPE %:	8.823 %

T-Mobile Sector A Total:	4.420 %
T-Mobile Sector B Total:	4.420 %
T-Mobile Sector C Total:	4.423 %
T-Mobile Sector D Total:	4.420 %
Site Total: 8.823 %	

T-Mobile Max Power Values (Sector C)

T-Mobile _Max Power Values (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	117	13.62	AWS - 2100 MHz	1000	1.362%
T-Mobile PCS - 1900 MHz LTE	2	2,334.27	117	13.62	PCS - 1900 MHz	1000	1.362%
T-Mobile PCS - 1900 MHz UMTS	2	1,403.21	117	8.19	PCS - 1900 MHz	1000	0.819%
T-Mobile 600 MHz LTE	1	619.61	117	1.81	600 MHz	400	0.452%
T-Mobile 700 MHz LTE	1	679.39	117	1.98	700 MHz	467	0.424%
T-Mobile 5 GHz Microwave	1	10.00	117	0.03	5 GHz	1000	0.003%
						Total*:	4.423%

*NOTE: Totals may vary by 0.01% due to summing of remainders

Summary

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


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

T-Mobile Sector	Power Density Value (%)
Sector A:	4.420 %
Sector B:	4.420 %
Sector C:	4.423 %
Sector D:	4.420 %
T-Mobile Per Sector Maximum (Sector C):	4.423 %
Site Total:	8.823 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **8.823%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit E




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03/12/2019

Mailed from 06002 062S0000000312

PRIORITY MAIL 1-DAY™

DEBORAH CHASE
 T-MOBILE USA- NSS
 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351

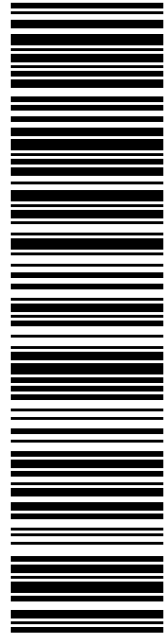
Expected Delivery Date: 03/13/19
 Ref#: NH549 ZAP
0024

Carrier -- Leave if No Response

B001

SHIP TO: THOMAS MCKEON
 FIRST SELECTMAN-COLEBROOK
 PO BOX 5
 COLEBROOK CT 06021-0005

USPS TRACKING #



9405 5036 9930 0444 1958 66

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9405 5036 9930 0444 1958 66	
Trans. #:	458882047
Print Date:	03/11/2019
Ship Date:	03/12/2019
Expected Delivery Date:	03/13/2019
Priority Mail® Postage:	\$7.35
Total	\$7.35
From:	DEBORAH CHASE T-MOBILE USA- NSS 35 GRIFFIN RD S BLOOMFIELD CT 06002-1351
	Ref#: NH549 ZAP
To:	THOMAS MCKEON FIRST SELECTMAN-COLEBROOK PO BOX 5 COLEBROOK CT 06021-0005
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.	



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03/11/2019

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PRIORITY MAIL 1-DAY™

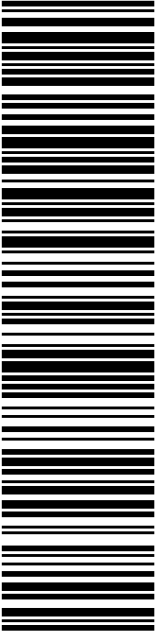
Expected Delivery Date: 03/12/19
 Ref#: NH549 ZAP
0024

Carrier -- Leave if No Response

B001

SHIP TO: MICHAEL HALLORAN
 LAND USE ADMIN& ZONING ENFORCEMENT OFFICER
 PO BOX 5
 COLEBROOK CT 06021-0005

USPS TRACKING #



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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0444 1958 73

Trans. #: 458882047	Priority Mail® Postage: \$7.35
Print Date: 03/11/2019	Total: \$7.35
Ship Date: 03/11/2019	
Expected Delivery Date: 03/12/2019	


From: DEBORAH CHASE Ref#: NH549 ZAP
 T-MOBILE/NSS
 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351

To: MICHAEL HALLORAN
 LAND USE ADMIN& ZONING ENFORCEMENT OFFICER
 PO BOX 5
 COLEBROOK CT 06021-0005

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



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Expected Delivery Date: 03/13/19

DEBORAH CHASE
 T-MOBILE USA- NSS
 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351

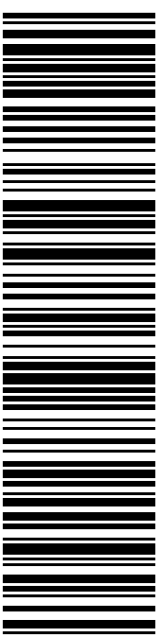
0024

Carrier -- Leave if No Response

C034

SHIP TO: 382 COLEBROOK LLC
 382 COLEBROOK LLC
 202 HANG DOG LN
 WETHERSFIELD CT 06109-4025

USPS TRACKING #



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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0444 1958 97

Trans. #: 458882047	Priority Mail® Postage: \$7.35
Print Date: 03/11/2019	Total: \$7.35
Ship Date: 03/12/2019	
Expected Delivery Date: 03/13/2019	


From: DEBORAH CHASE
 T-MOBILE USA- NSS
 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351

To: 382 COLEBROOK LLC
 382 COLEBROOK LLC
 202 HANG DOG LN
 WETHERSFIELD CT 06109-4025

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03/11/2019

Mailed from 06002 062S0000000310

9405 5036 9930 0444 1959 03 0073 5000 0063 3487
\$7.35



PRIORITY MAIL 2-DAY™


Expected Delivery Date: 03/13/19
 Ref#: NH549 ZAP
0004

Carrier -- Leave if No Response

C036

SHIP TO: CSC APPLICATIONS
 SBA COMMUNICATIONS GROUP
 8051 CONGRESS AVE
 BOCA RATON FL 33487-1310

USPS TRACKING #



9405 5036 9930 0444 1959 03

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0444 1959 03

Trans. #: 458882047	Priority Mail® Postage: \$7.35
Print Date: 03/11/2019	Total \$7.35
Ship Date: 03/11/2019	
Expected Delivery Date: 03/13/2019	

From: DEBORAH CHASE
 T-MOBILE/NSS
 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351

Ref#: NH549 ZAP

To: CSC APPLICATIONS
 SBA COMMUNICATIONS GROUP
 8051 CONGRESS AVE
 BOCA RATON FL 33487-1310

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



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