



Filed by:

G. Scott Shepherd, Site Development Specialist II - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - gshepherd@sbsite.com

November 9, 2020

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

RE: Notice of Exempt Modification
146 Brown Rd., Brooklyn, CT 06234
Latitude: 41.798361
Longitude: -71.935889
T-Mobile Site #: CT11513D_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 137-foot level of the existing 150-foot Monopole Tower at 146 Brown Rd., Brooklyn, CT. and retains rights to three (3) antennas that are currently not installed on the Tower. The 150-foot tower is owned by SBA Towers II, LLC. The property is owned by Cynthia and Richard Perkins. T-Mobile now intends to remove and replace three (3) L700MHz antennas with three (3) new 600/700/1900 MHz antennas. The new antennas would be installed at the 137-foot level of the tower.

Please note: Per the Connecticut Siting Council Website: CSC COVID 19 Guidelines.
In order to prevent the spread of Coronavirus and protect the health and safety of our members and staff, as of March 18, 2020, the Connecticut Siting Council shall convert to full remote operations until March 30, 2020. Please be advised that during this time period, all hard copy filing requirements will be waived in lieu of an electronic filing. Please also be advised that the March 26, 2020 regular meeting shall be held via teleconference. The Council's website is not equipped with an on-line filing fee receipt service. Therefore, filing fees and/or direct cost charges associated with matters received electronically during the above-mentioned time period will be directly invoiced at a later date.

Planned Modifications:

TOWER

Remove:

- (3) Low Profile Platform/Sector Mount

Remove and Replace:

- (3) Commscope/LNX-6515DS-VTM –antenna (remove) – RFS APXVAARR24_43-U-NA20 – antenna (replace)

Install New:

- (3) Ericsson KRY 112 1441/1 TMAs
- (3) Ericsson 4449 B71+B12 – RRUs
- (1) Site Pro RMQP-4096-HK Low Profile Mount Kit
- (3) 1-5/8" Hybrid

Existing Equipment to Remain

- (3) RFS APXV16DWV-16DWV-S-E-A20 antennas
- (3) Ericsson KRY 112 144/1 TMAs
- (3) Kathrein 782 11056 – Bias Ts
- (9) 1-5/8" coax

Entitlements:

- (3) EMS/RR90-19-XXDPQ antennas (not installed)
- (3) 1-5/8" coax

GROUND

Install New:

- Equipment inside existing 6201 cabinet

This facility was approved by the Council on January 12, 2004 under Docket 264. Approval was given for a tower not to exceed 150' above ground level, sufficient to accommodate antennas of carriers, Quinebaug Valley Emergency Communications Inc., and other entities both public and private. A recalculated RF report was to be provided when circumstances in operation caused a change in power density. Upon establishment of any new applicable RF standards, the facility was to be brought into compliance with same. The certificate holder was to permit public or private entities to share space for fair consideration or to provide reasons precluding such tower sharing. Reasonable space on the tower was to be provided for no compensation for any municipal antennas provided tower space was available and such antennas were compatible with the structural integrity of the tower. Any obsolete antennas were to be removed within sixty days. There were no further post construction stipulations set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of Brooklyn's First Selectman, Richard Ives, and Zoning Enforcement Officer, Martha Fraekel, as well as to the property owner. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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 modification 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 modification 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 telecommunication facility constitute an exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

G. Scott Shepherd
Site Development Specialist II
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3807 + T
508.366.2610 + F
508.868.6000 + C
gshepherd@sbsite.com

Attachments

cc: Richard Ives, First Selectman / with attachments
The Town of Brooklyn, 4 Wolf Den Road, Brooklyn, CT 06234
Martha Fraenkel, Zoning Enforcement Officer / with attachments
Town of Brooklyn, Clifford B. Green Memorial Center, 69 South Main Street, Suite 22, Brooklyn, CT 06234
Cynthia and Richard Perkins / with attachments
159 Brown Rd., Brooklyn, CT 06234

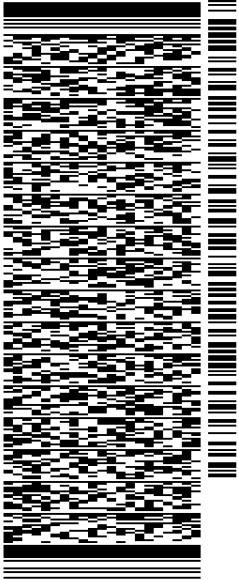
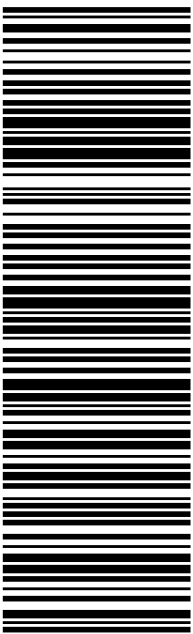
EXHIBIT LIST

Exhibit 1	Check Copy	X To be invoiced at a later date
Exhibit 2	Notification Receipts	X
Exhibit 3	Property Card	X
Exhibit 4	Property Map	X
Exhibit 5	Original Zoning Approval	CSC 1/12/04
Exhibit 6	Construction Drawings	B&T Group 9/12/19
Exhibit 7	Structural Analysis	TES 7/24/19
Exhibit 8	EME Report	Transcom Engineering 6/14/19

EXHIBIT 1

Normally, Exhibit 1
would contain the copy
of the check for the
filing fee.

EXHIBIT 2

ORIGIN ID: BFFA (508) 614-0389 RICK WOODS SBA COMMUNICATIONS CORPORATION 134 FLANDERS RD SUITE 125 WESTBOROUGH, MA 01581 UNITED STATES US		SHIP DATE: 09NOV20 ACTWGT: 1.00 LB CAD: 105843304/NET4280
TO MELANIE A. BACHMAN EXEC. DIR CONNECTICUT SITING COUNCIL TEN FRANKLIN SQUARE NEW BRITAIN CT 06051 (508) 251-0720 X 3807 INV: REF: 1056-92009-6089 PO: DEPT:		BILL SENDER
		
		
TRK# 7720 2658 3020 TUE - 10 NOV 10:30A 0201 PRIORITY OVERNIGHT EB BDLA 06051 CT-US BDL		
		

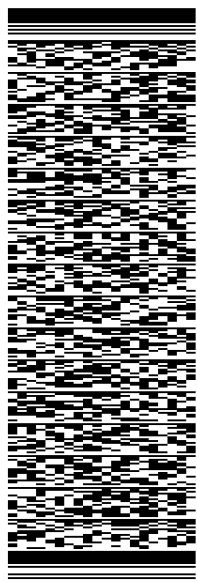
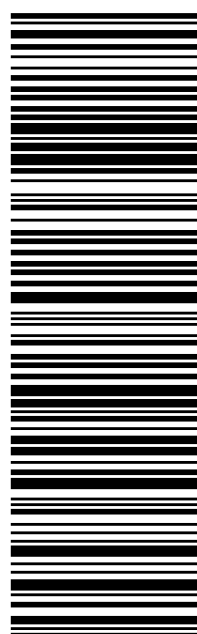
56BJ5/BAB9/B766

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID: BFFA (508) 614-0389 RICK WOODS SBA COMMUNICATIONS CORPORATION 134 FLANDERS RD SUITE 125 WESTBOROUGH, MA 01581 UNITED STATES US		SHIP DATE: 09NOV20 ACTWGT: 1.00 LB CAD: 105843304/NET4280 BILL SENDER
TO RICHARD IVES, FIRST SELECTMAN TOWN OF BROOKLYN 4 WOLF DEN RD.		
BROOKLYN CT 06234 (508) 251-0720 X 3807 REF: 1056-92009-6089 INV: DEPT:		
		
		
		
TRK# 7720 2662 1183 TUE - 10 NOV 12:00P 0201 PRIORITY OVERNIGHT		
EB GONA 06234 CT-US BDL		
		

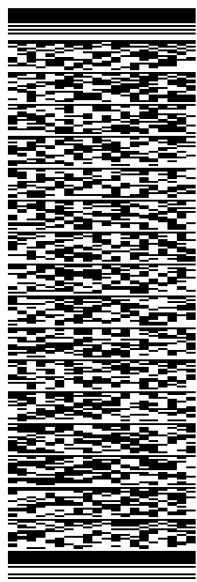
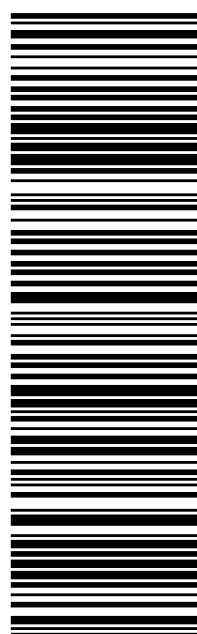
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TO MARTHA FRAENKEL, ZONE ENF. OFFICER TOWN OF BROOKLYN 4 WOLF DEN RD.		
BROOKLYN CT 06234 (508) 251-0720 X 3807 REF: 1056-92009-6089 INV: DEPT:		
		
		
		
TRK# 7720 2663 9623 TUE - 10 NOV 12:00P 0201 PRIORITY OVERNIGHT		
EB GONA 06234 CT-US BDL		
		

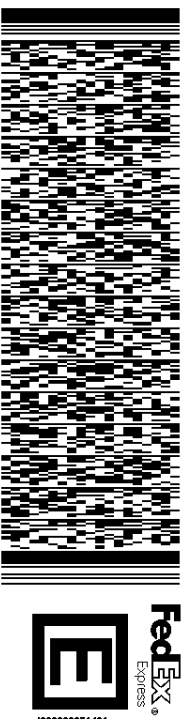
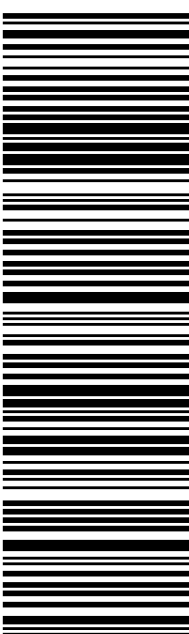
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TO CYNTHIA & RICHARD PERKINS 159 BROWN RD. BROOKLYN CT 06234 (508) 251-0720 X 3807 INV: REF: 1056-92009-6089 PO: DEPT:		BILL SENDER
		
		
J2020071401uv		
TRK# 7720 2666 3087 0201	TUE - 10 NOV 12:00P PRIORITY OVERNIGHT	06234 CT-US BDL
		
EB GONA		

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EXHIBIT 3

159 BROWN RD

Location

159 BROWN RD

Mblu

34/ / 34/ /

Acct#

00132200

Owner

PERKINS CYNTHIA E &
RICHARD H &

Assessment

\$156,490

Appraisal

\$252,400

PID

1473

Building Count

1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$161,300	\$91,100	\$252,400
Assessment			
Valuation Year	Improvements	Land	Total
2016	\$112,900	\$43,590	\$156,490

Owner of Record

Owner

PERKINS CYNTHIA E & RICHARD H &

Sale Price

\$0

Co-Owner

PERKINS ANNIE D

Certificate

Care Of

Book & Page

571/ 183

Address

159 BROWN RD
BROOKLYN, CT 06234

Sale Date

02/09/2016

Instrument

29

Qualified

U

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
PERKINS CYNTHIA E & RICHARD H &	\$0		571/ 183	29	02/09/2016
PERKINS CYNTHIA E & RICHARD H	\$45,000		562/ 256	25	07/13/2015
INGALLS RALPH G FAMILY TRUST	\$0		369/ 196		09/12/2005
INGALLS RALPH G	\$0		34/ 311		04/22/1958

Building Information

Building 1 : Section 1

Year Built:

2016

Living Area:

1,508

Replacement Cost:

\$161,268

Building Percent 100
Good:
Replacement Cost
Less Depreciation: \$161,300

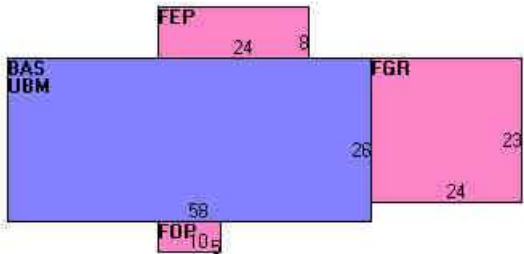
Building Attributes	
Field	Description
Style	Ranch
Model	Residential
Grade:	C
Stories:	1
Occupancy	1
Exterior Wall 1	Board & Batten
Exterior Wall 2	Vinyl Siding
Roof Structure:	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Flr 1	Wood Laminate
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	00
Total Bedrooms:	2 Bedrooms
Total Bthrms:	2
Total Half Baths:	
Total Xtra Fixtrs:	1
Total Rooms:	5
Bath Style:	Average
Kitchen Style:	Modern

Building Photo



(http://images.vgsi.com/photos/BrooklynCTPhotos//\00\00\32\6'

Building Layout



(http://images.vgsi.com/photos/BrooklynCTPhotos//Sketches/14'

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,508	1,508
FEP	Porch, Enclosed	192	0
FGR	Garage	552	0
FOP	Porch, Open	50	0
UBM	Basement, Unfinished	1,508	0
		3,810	1,508

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use		Land Line Valuation	
Use Code	1010	Size (Acres)	15.19
Description	Single Fam MDL-01	Frontage	
Zone	RA	Depth	
Neighborhood	0050	Assessed Value	\$43,590
Alt Land Appr Category	No	Appraised Value	\$91,100

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$161,300	\$91,100	\$252,400
2017	\$161,300	\$91,100	\$252,400
2016	\$161,300	\$91,100	\$252,400

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$112,900	\$43,590	\$156,490
2017	\$112,900	\$43,590	\$156,490
2016	\$112,900	\$43,590	\$156,490

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EXHIBIT 4

Google Maps

159 Brown Rd



159 Brown Rd

Brooklyn, CT 06234



Directions



Save



Nearby



Send to your
phone



Share



R328+56 Brooklyn, Connecticut

EXHIBIT 5

DOCKET NO. 264 - Tower Ventures II, LLC application for a	Connecticut
Certificate of Environmental Compatibility and Public Need for	
the construction, maintenance and operation of a wireless	Siting
telecommunications facility at either 146 Brown Road or Brown	
Road (Lot 34) Brooklyn, Connecticut.	Council

January 12, 2004

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Tower Ventures II, LLC for the construction, maintenance and operation of a wireless telecommunications facility at Site A-2, located at Lot 34, Brown Road, Brooklyn, Connecticut. The Council denies certification of Site A-1 located at 146 Brown Road, Brooklyn, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Omnipoint Holdings d/b/a T-Mobile, AT&T Wireless PCS LLC, Quinebaug Valley Emergency Communications, Inc. and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level.
2. The compound site shall be moved approximately 75 feet to the south.
3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a detailed site development plan that depicts the location of the access road, compound, tower, utility line, erosion and sedimentation control features, extent of site clearing and grading, and landscaping. Erosion and sedimentation controls shall be consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; and
 - b) specifications for the tower, tower foundation, antennas, equipment building, and security fence.
4. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

Docket No. 264
Decision & Order
Page 2

5. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
6. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided tower space is available and such antennas are compatible with the structural integrity of the tower.
7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

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

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

The parties and intervenors to this proceeding are:

Applicant

Tower Ventures II, LLC.

Intervenor

Omnipoint Facilities Network 2, L.L.C.,
A Subsidiary of T-Mobile, USA, Inc.

Intervenor

AT&T Wireless PCS, LLC
d/b/a AT&T Wireless

Its Representative

Scott T. Penner, Esq.
Hurwitz & Sagarin, LLC
147 N. Broad Street
Milford, CT 06460

Its Representative

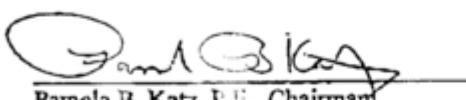
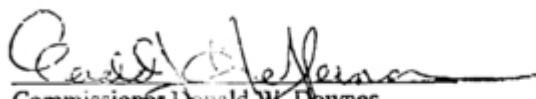
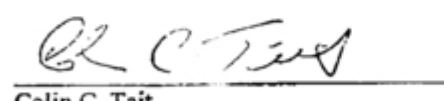
Stephen J. Humes, Esq.
LeBoeuf, Lamb, Greene & MacRae, L.L.P.
Goodwin Square
225 Asylum Street
Hartford, CT 06103

Its Representative

Christopher B. Fisher, Esq.
Cuddy & Feder LLP
90 Maple Avenue
White Plains, New York 10601

CERTIFICATION

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in **DOCKET NO. 264 - Tower Ventures II, LLC** application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at either 146 Brown Road or Brown Road (Lot 34) Brooklyn, Connecticut, and voted as follows to approve proposed Site A-2 site located at Brown Road, Lot 34, Brooklyn, Connecticut, and deny certification of proposed Site A-1 located at 146 Brown Road, Connecticut:

<u>Council Members</u>	<u>Vote Cast</u>
 Pamela B. Katz, P.E., Chairman	Yes
 Commissioner Donald W. Downes Designee: Gerald J. Heffernan	Yes
 Commissioner Arthur J. Rocque, Jr. Designee: Brian J. Emerick	Yes
_____ Philip Ashton	Absent
 Daniel P. Lynch, Jr.	Abstain
 James J. Murphy, Jr.	Yes
_____ Brian O'Neill	Yes
 Colin C. Tait	Yes
 Edward S. Wilensky	Yes

Dated at New Britain, Connecticut, January 12, 2004.

STATE OF CONNECTICUT)

ss. New Britain, Connecticut :

COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the Findings of Fact, Opinion, and Decision and Order issued by the Connecticut Siting Council, State of Connecticut.

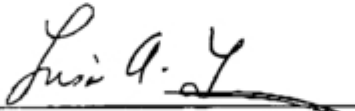
ATTEST:



S. Derck Phelps
Executive Director
Connecticut Siting Council

I certify that a copy of the Findings of Fact, Opinion, and Decision and Order in Docket No. 262 has been forwarded by Certified First Class Return Receipt Requested mail on January 14, 2004, to all parties and intervenors of record as listed on the attached service list, July 25, 2003.

ATTEST:



Lisa A. Fontaine
Administrative Assistant
Connecticut Siting Council



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

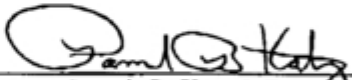
E-Mail: siting.council@po.state.ct.us

Web Site: www.state.ct.us/csc/index.htm

CERTIFICATE
OF
ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED
DOCKET NO. 264

Pursuant to General Statutes § 16-50k, as amended, the Connecticut Siting Council hereby issues a Certificate of Environmental Compatibility and Public Need to Tower Ventures II, LLC for the construction, maintenance and operation of a wireless telecommunications facility at Brown Road, Lot 34, Brooklyn, Connecticut. This Certificate is issued in accordance with and subject to the terms and conditions set forth in the Decision and Order of the Council on January 12, 2004.

By order of the Council,


Pamela B. Katz, P.E., Chairman

January 12, 2004

EXHIBIT 6

SITE NAME: TWR VNTR - BROOKLYN

146 BROWN RD
BROOKLYN, CT 06234

SITE NUMBER: CT11513D

SITE CONFIG: 67D04G



B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com



T-MOBILE NORTHEAST, LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766



SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581

CT11513D

TWR VNTR -
BROOKLYN

146 BROWN RD
BROOKLYN, CT 06234

PROJECT NO: 136040.002.01

CHECKED BY: GEH

ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
0	6/28/19	JCO	FOR REVIEW
1	7/23/19	JCO	MOUNT REPLACEMENT
2	9/12/19	JCO	FOR REVIEW

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20



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

SHEET NUMBER: REVISION:

T-1

2

PROJECT NOTES

GENERAL NOTES:

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC, ROUTINE MAINTENANCE AND THEREFORE, DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL STRUCTURAL NOTES:

TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

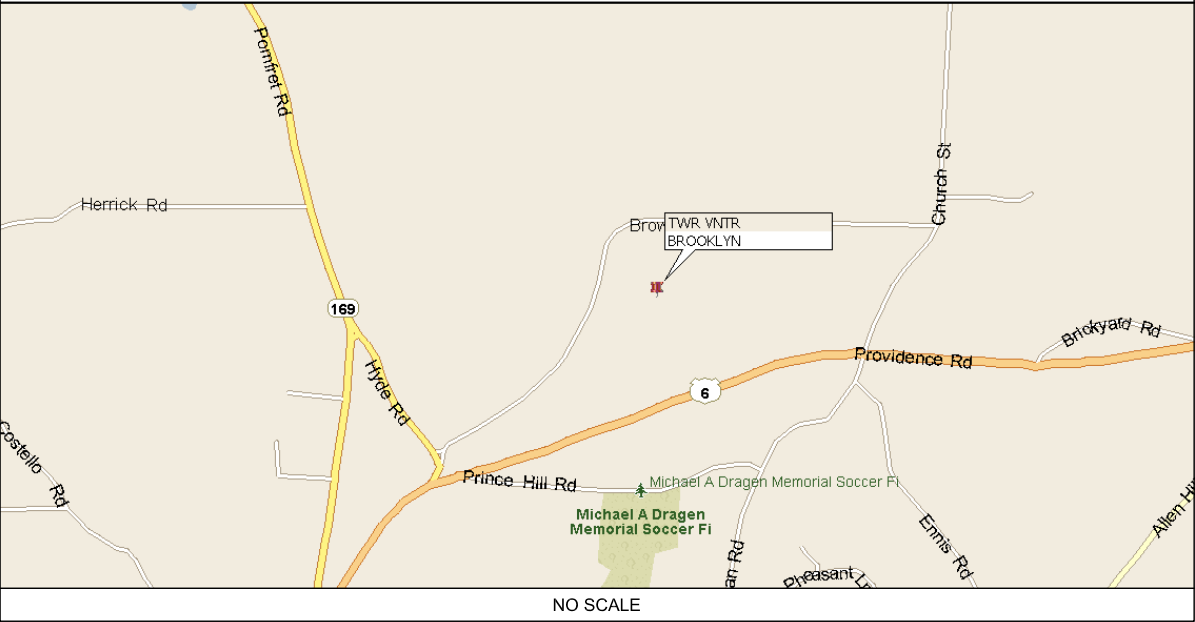
ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND HAS DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOAD. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

B+T GROUP ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTIONS ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES.

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS	LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS NOT PERMITTED	DIPLEXERS:	UNRESTRICTED
SECTOR B:	ACCESS NOT PERMITTED	RADIO CABINETS:	UNRESTRICTED
SECTOR C:	ACCESS NOT PERMITTED	PPC DISCONNECT:	UNRESTRICTED
RRH:	ACCESS NOT PERMITTED	MAIN CIRCUIT D/C:	UNRESTRICTED
TMA:	ACCESS NOT PERMITTED	NIU/T DEMARC:	UNRESTRICTED
GPS/LMU:	CAUTION: OSHA APPROVED PORTABLE 6" STEP-LADDER REQUIRED	OTHER/SPECIAL:	NONE

LOCATION MAP



APPROVALS

TITLE	SIGNATURE	DATE
PROJECT MANAGER:		
CONSTRUCTION:		
RF ENGINEERING:		
ZONING/SITE ACQ.:		
OPERATIONS:		
TOWER OWNER:		

ACCEPTANCE DOES NOT CONSTITUTE APPROVAL OF DESIGN, CALCULATIONS, ANALYSIS, TEST METHODS OF MATERIALS DEVELOPED OR SELECTED BY THE SUBCONTRACTOR AND DOES NOT RELIEVE SUBCONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.

PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY
T-MOBILE EQUIPMENT MODERNIZATION

ZONING JURISDICTION: (TOWN OF BROOKLYN) BASED ON INFORMATION PROVIDED BY T-MOBILE, REGULATORY COMPLIANCE AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409 AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW OR ADMINISTRATIVE REVIEW).

SITE ADDRESS: 146 BROWN RD
BROOKLYN, CT 06234

LATITUDE: 41.798361° N
LONGITUDE: 71.935846° W

JURISDICTION: NATIONAL, STATE & LOCAL CODES & ORDINANCES

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

TOWER OWNER: SBA TOWERS II, LLC

SBA SITE ID: CT13612-A

SBA SITE NAME: INGALLS

SBA REGIONAL SITE MANAGER: STEPHEN ROTH
(860) 539-4920
sroth@sbasite.com

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
C-1	COMPOUND AND ELEVATION PLAN	2
C-2	EXISTING AND PROPOSED ANTENNA PLANS	2
C-3	DETAILS	2
RF-1	RFDS DIAGRAMS	2
E-1	GROUNDING DETAILS AND NOTES	2



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GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI OR NFPA) LIGHTING PROTECTION CODE AND GENERAL COMPLIANCE WITH TELECORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATION OR ADVERSE FINDING TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GE'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 & 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BUS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDED FITTINGS OR BY BINDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20' OR MORE OF 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BAR TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR:

SBA COMMUNICATIONS CORP.

SUBCONTRACTOR:

GENERAL CONTRACTOR (CONSTRUCTION)

OWNER:

T-MOBILE
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALL AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES AND GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY, SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS NOTED OTHERWISE, PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WETHER SHALL BE HOT DIPPED GALVANIZED. TOUCH-UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW, USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, AL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION, EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT IF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: IBC 2015

ELECTRICAL CODE: NEC 2017

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318;
BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION; ASD, FOURTEENTH EDITION

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G;
STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES;
REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHOD OF CONSTRUCTION OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS					
AGL	ABOVE GRADE LEVEL	GC	GENERAL CONTRACTOR	REF.	REFERENCE
AWG	AMERICAN WIRE GAUGE	MAX.	MAXIMUM	REQ.	REQUIRED
BCW	BARE COPPER WIRE	MGB	MASTER GROUND BAR	RF	RADIO FREQUENCY
BTS	BASE TRANSCEIVER STATION	MIN.	MINIMUM	T.B.D.	TO BE DETERMINED
(E)	EXISTING	(N)	PROPOSED	T.B.R.	TO BE REMOVED
EG	EQUIPMENT GROUND	N.T.S.	NOT TO SCALE	T.B.R.R.	TO BE REMOVED AND REPLACED
EGR	EQUIPMENT GROUND RING	RE:	REFERENCE	(TYP)	TYPICAL



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TWR VNTR -
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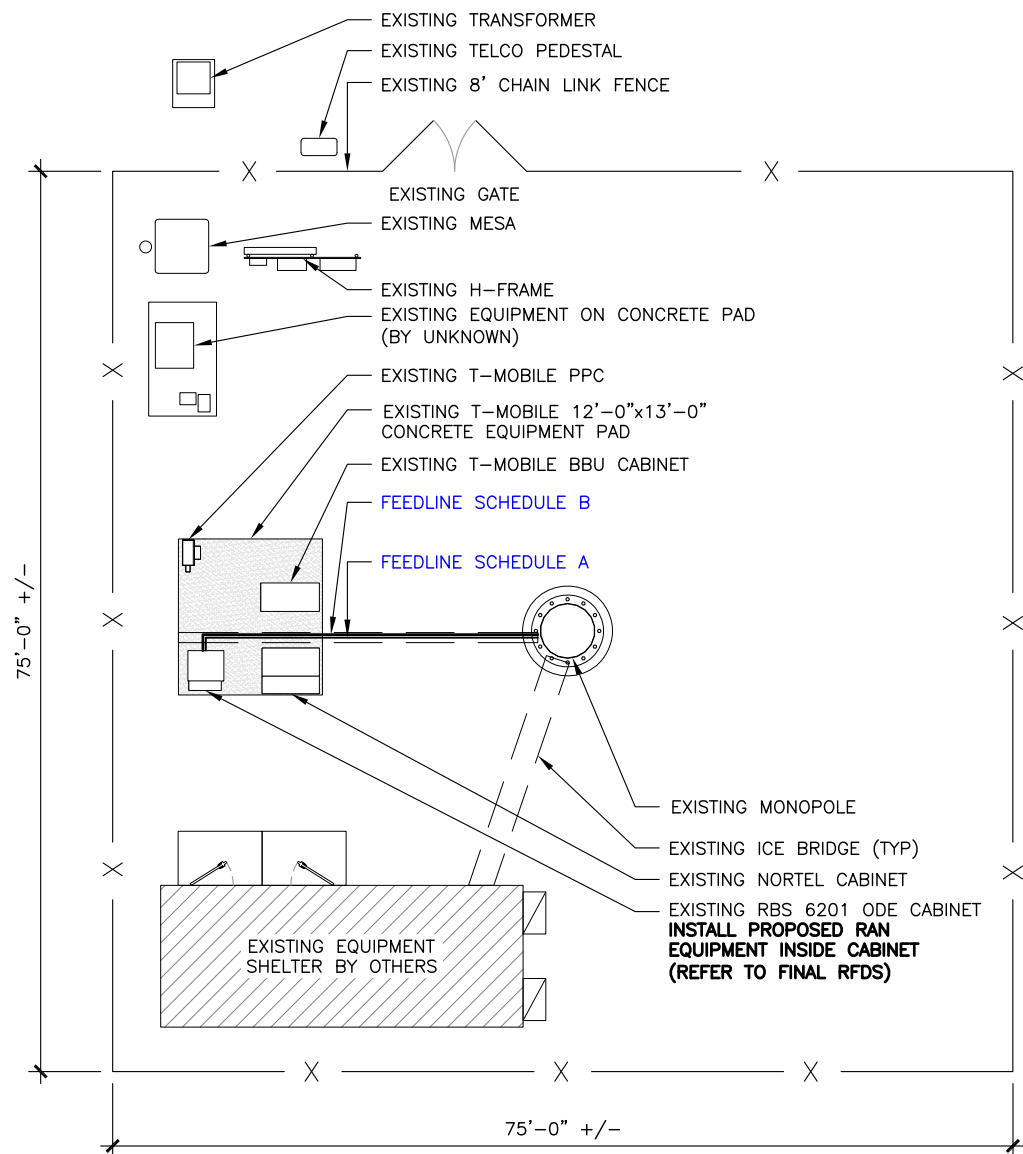
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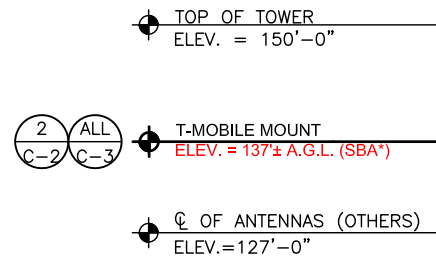
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SPECIAL PRE-CONSTRUCTION WORK NOTE:

GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.



1 OVERALL SITE PLAN
SCALE: 11x17 SCALE: 3/32"=1'-0"
22x34 SCALE: 3/16"=1'-0"

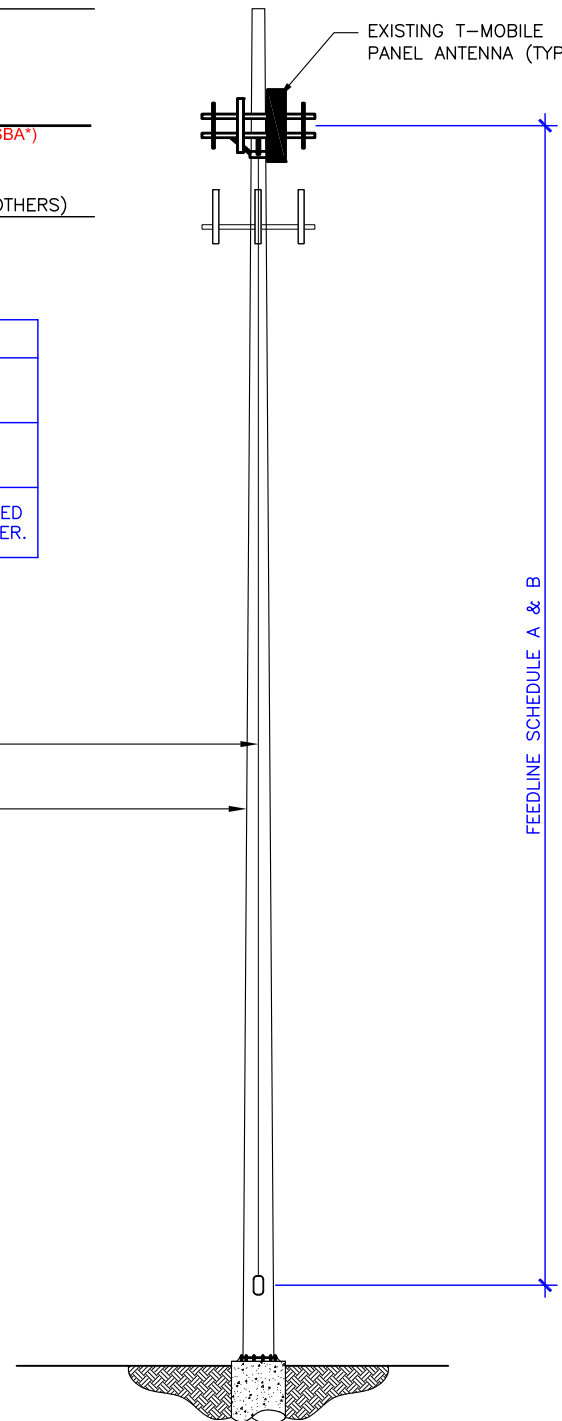


FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO REMAIN: (9) 1 5/8" COAX TO T-MOBILE RAD @ 137'	INSIDE POLE
B	PROPOSED: (3) 6x12 HYBRID FIBER TO T-MOBILE RAD @ 137'	INSIDE POLE

EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.

T-MOBILE FEEDLINES
ROUTED INSIDE TOWER

EXISTING MONOPOLE



2 ELEVATION PHOTO DETAIL
SCALE: N.T.S.

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-Mobile

T-MOBILE NORTHEAST, LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766

SBA

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
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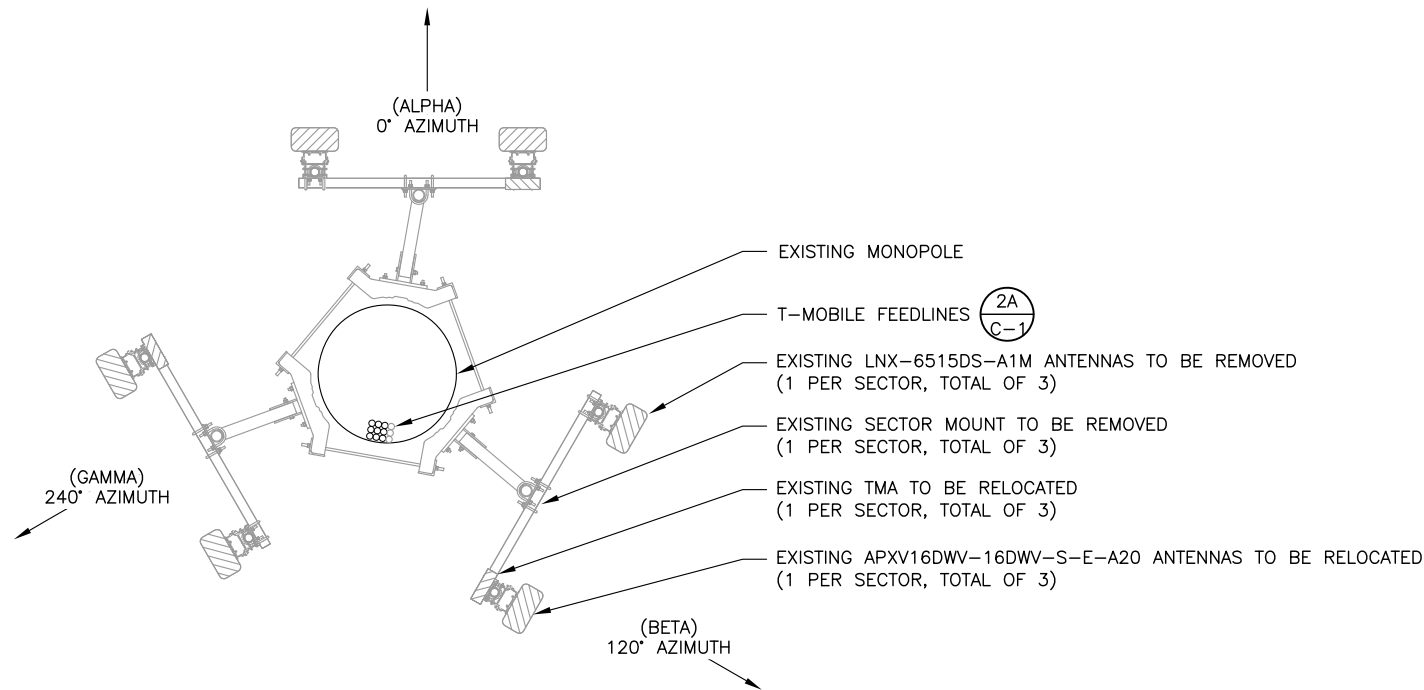
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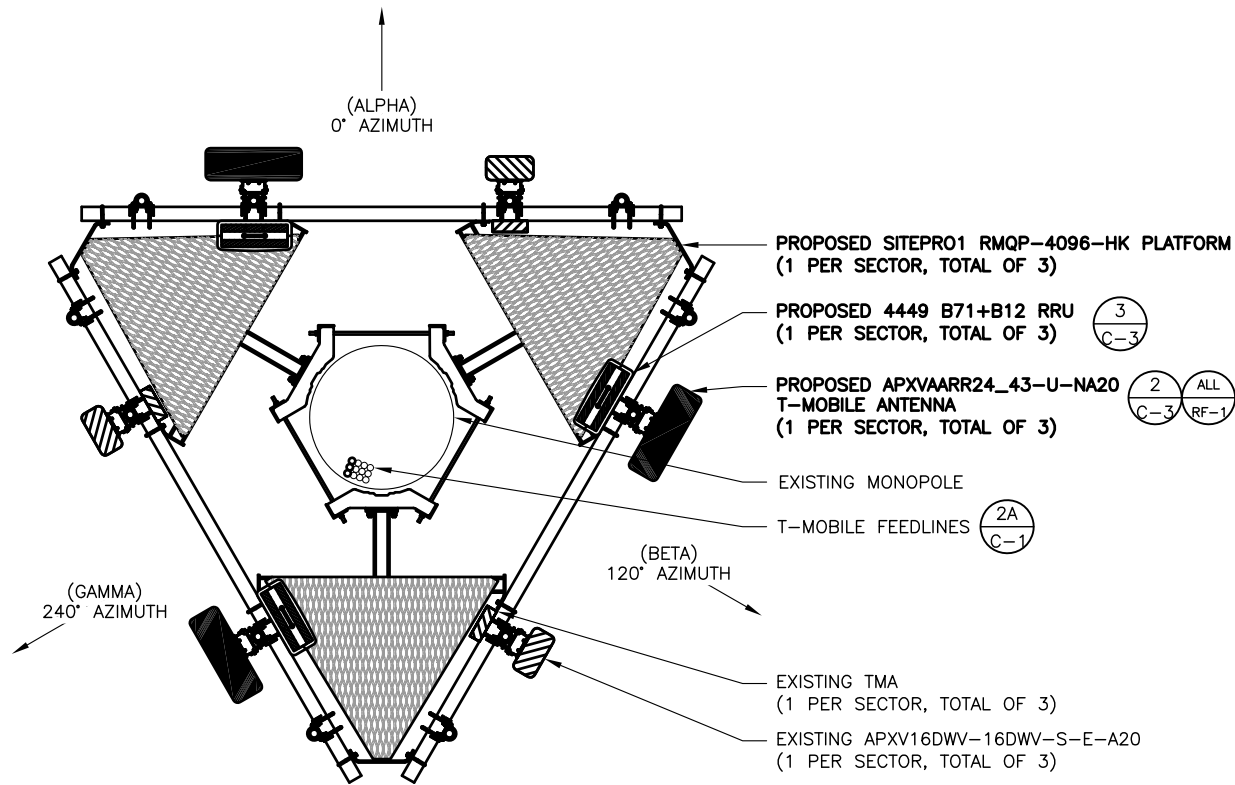
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1A EXISTING ANTENNA PLAN
SCALE: 0' 1' 2' 4' 10'
11x17 SCALE: 1/4"=1'-0"
22x34 SCALE: 1/2"=1'-0"



1B PROPOSED ANTENNA PLAN
SCALE: 0' 1' 2' 4' 10'
11x17 SCALE: 1/4"=1'-0"
22x34 SCALE: 1/2"=1'-0"

NOTE:
AT TIME OF CONSTRUCTION, CONTRACTOR TO VERIFY AZIMUTHS OF EXISTING ANTENNAS. IF DIFFERENT FROM RFDS, PLEASE NOTIFY THE RF ENGINEER AND CONSTRUCTION MANAGER WITH ACTUAL AZIMUTH TO ENSURE T-MOBILE'S DATABASE IS ACCURATE AND UP-TO-DATE.

SPECIAL PRE-CONSTRUCTION WORK NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.

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SBA

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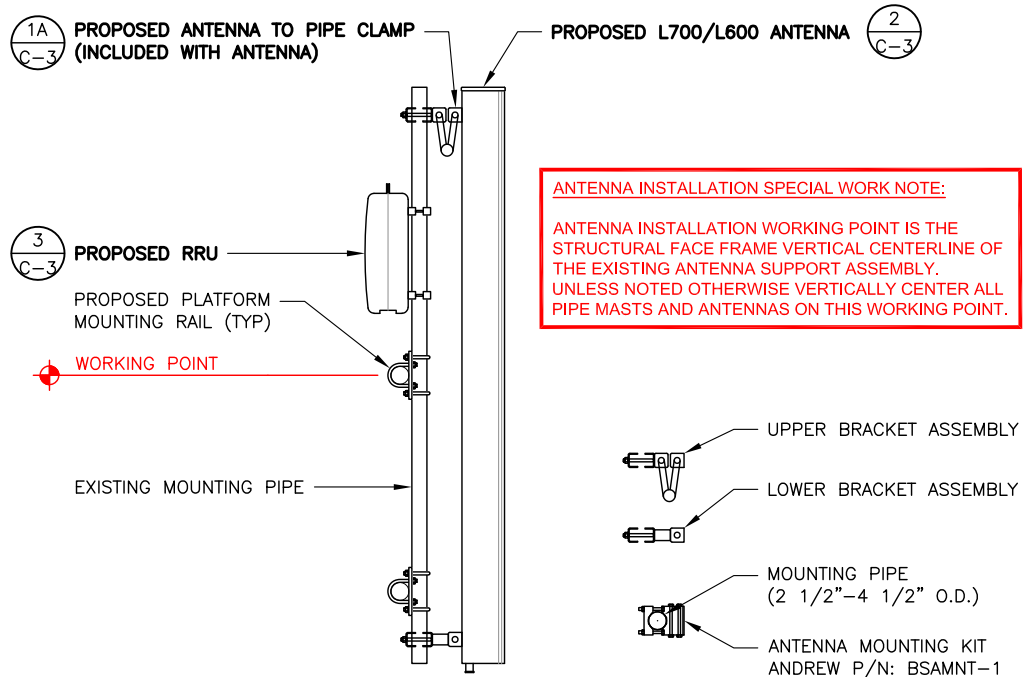


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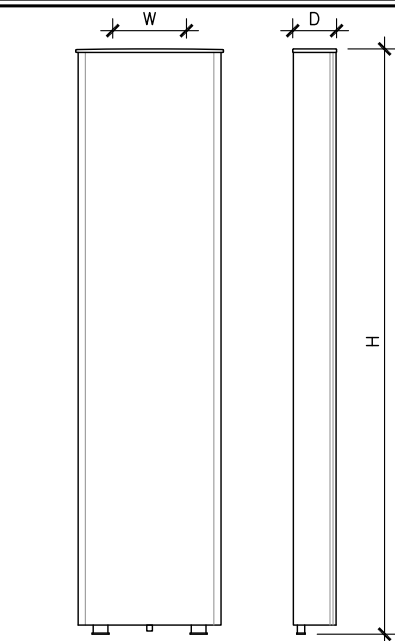
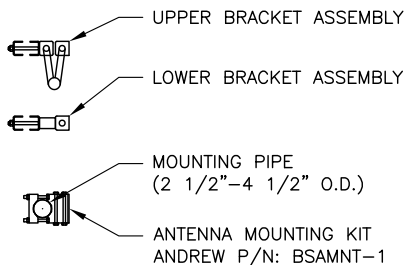
2



1 PROPOSED L700/L600 ANTENNA & RRU MOUNTING DETAIL
SCALE: N.T.S.

1A L700/L600 ANTENNA MOUNTING BRACKET
SCALE: N.T.S.

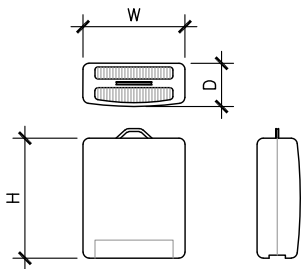
ANTENNA INSTALLATION SPECIAL WORK NOTE:
ANTENNA INSTALLATION WORKING POINT IS THE STRUCTURAL FACE FRAME VERTICAL CENTERLINE OF THE EXISTING ANTENNA SUPPORT ASSEMBLY. UNLESS NOTED OTHERWISE VERTICALLY CENTER ALL PIPE MASTS AND ANTENNAS ON THIS WORKING POINT.



2 L700/L600 ANTENNA DETAIL
SCALE: N.T.S.

L700/L600 ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAARR24_43-U-NA20
WIDTH	24"
DEPTH	8.7"
HEIGHT	95.9"
WEIGHT	128 LBS

SPECIAL PRE-CONSTRUCTION WORK NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.



3 REMOTE RADIO UNIT (RRU)
SCALE: N.T.S.

RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4449 B71+B12
WIDTH	13.18"
DEPTH	9.25"
HEIGHT	15"
WEIGHT	74 LBS

ANTENNA MOUNT STRUCTURAL DESIGN NOTE:
ENGINEER-OF-RECORD HAS MADE A VISUAL ASSESSMENT ONLY OF EXISTING ANTENNA MOUNT ASSEMBLIES, WITHOUT THE BENEFIT OF A RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS, AND RECOMMENDS THAT EXISTING AND PROPOSED TOWER TOP EQUIPMENT BE INSTALLED AS DEPICTED HEREIN. STRUCTURAL DETAILS AS DEPICTED HEREIN FOR MODIFICATION OF EXISTING ANTENNA MOUNT ASSEMBLIES ARE PRELIMINARY ONLY AND THAT FINAL CONSTRUCTION DETAILS MAY BE SUBJECT TO CHANGE PENDING THE COMPLETION OF A SEPARATE SUPPLEMENTAL ANTENNA MOUNT STRUCTURAL ASSESSMENT, SUPPLEMENTAL STRUCTURAL MAPPING/CONDITIONS ASSESSMENT REPORT AND/OR SUPPLEMENTAL RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS.

FINAL ANTENNA SCHEDULE									
SECTOR	TECH	ANTENNA MODEL	AZIMUTH	RAD CENTER	M-TILT	E-TILT	RADIOS	CABLE TYPE	CABLE LENGTH
ALPHA	L7/L6	APXVAARR24_43-U-NA20	0°	137'	0	2/2	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	170'
	L19/G19	APXV16DWV-16DWV-S-E-A20	0°	137'	0	2	(1) TWIN 1A TMA	(2) 1 5/8" COAX	170'
BETA	L7/L6	APXVAARR24_43-U-NA20	120°	137'	0	2/2	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	170'
	L19/G19	APXV16DWV-16DWV-S-E-A20	120°	137'	0	2	(1) TWIN 1A TMA	(2) 1 5/8" COAX	170'
GAMMA	L7/L6	APXVAARR24_43-U-NA20	240°	137'	0	2/2	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	170'
	L19/G19	APXV16DWV-16DWV-S-E-A20	240°	137'	0	2	(1) TWIN 1A TMA	(2) 1 5/8" COAX	170'

4 FINAL ANTENNA SCHEDULE
SCALE: N.T.S.



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CT11513D

**TWR VNTR -
BROOKLYN**

146 BROWN RD
BROOKLYN, CT 06234

PROJECT NO: 136040.002.01
CHECKED BY: GEH

ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
0	6/28/19	JCO	FOR REVIEW
1	7/23/19	JCO	MOUNT REPLACEMENT
2	9/12/19	JCO	FOR REVIEW

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

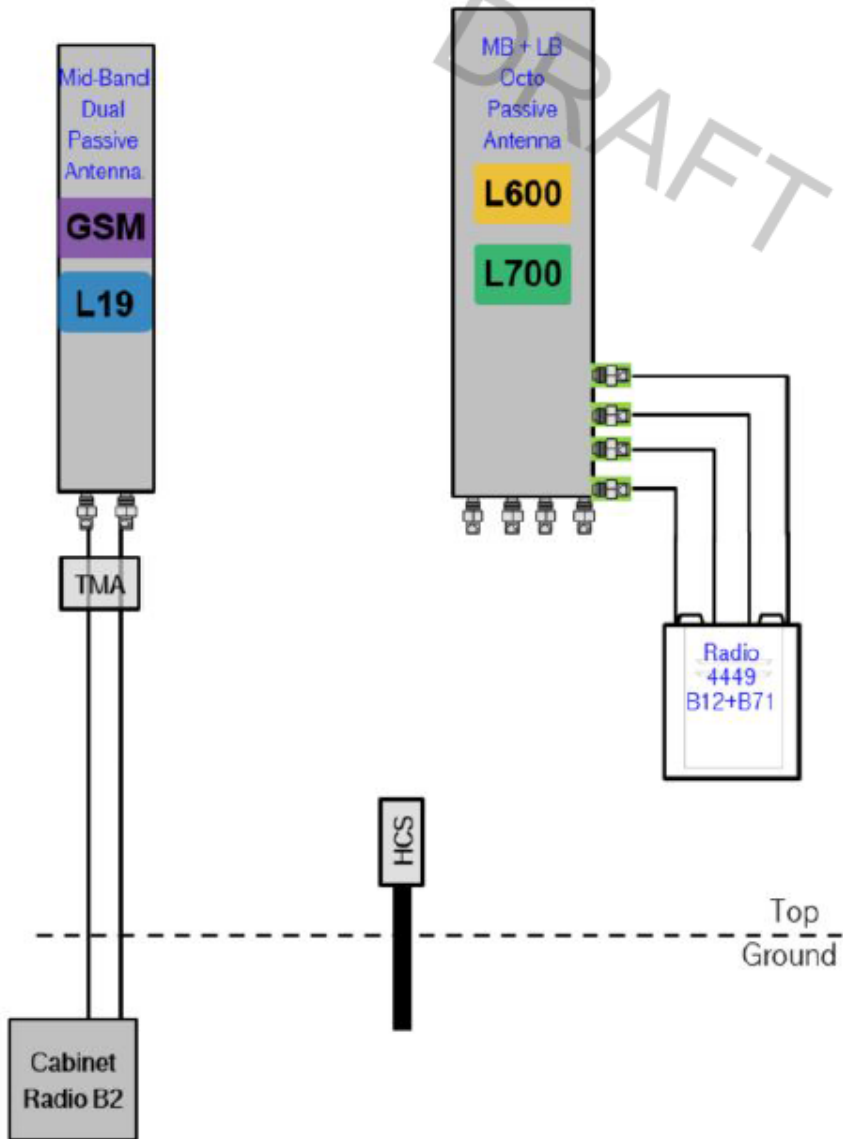


9/12/19

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SHEET NUMBER:
C-3

REVISION:
2



RF DESIGN GENERAL NOTE:

1. RF DESIGN BASED ON RFDS DATED 5/8/19. GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY THAT THE LATEST RFDS AND RAN WIRING DIAGRAM IS USED FOR EQUIPMENT INSTALLATION.
2. PRIOR TO INSTALLATION OF TOWER TOP EQUIPMENT, GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY AZIMUTHS OF EXISTING ANTENNAS. DISCREPANCIES AND ACTUAL AZIMUTHS SHALL BE REPORTED IMMEDIATELY TO RF ENGINEER AND T-MOBILE CONSTRUCTION MANAGER.

RFDS FOOTNOTES:

1. INFORMATION IN BOLD RED TEXT IS PROVIDED BY A&E AND HIGHLIGHTS IMPORTANT DISCREPANCIES BETWEEN RFDS AND ACTUAL FIELD MEASUREMENTS OR SBA-PROVIDED RECORD INFORMATION.
- * SBA-PROVIDED ANTENNA RAD AGL BASED ON COLOCATION APPLICATION AND SHALL SUPERCEDE ANY CONFLICTING RFDS ANTENNA RAD AGL.
- ** HYBRID TRUNK FEEDLINE LENGTHS AS PROVIDED BY A&E BASED ON SCALED DIMENSIONS FROM RBS TO ANTENNA/RRU CONNECTIONS PLUS 20' FOR (2) 10' COILS EACH AT TOP AND BOTTOM TERMINATIONS. T-MOBILE CONSTRUCTION MANAGER SHALL CONFIRM ALL EQUIPMENT SCHEDULES, PART NUMBERS AND FEEDLINE/JUMPER LENGTHS BEFORE PREPARING A BILL OF MATERIALS.

Existing RAN Equipment	
Template:	704G
Enclosure	1
Enclosure Type	RBS 6201 ODE
Baseband	DUG20 (G1900) DUS41
Radio	RUS01 B2 (x6) RUS01 B12 (x6)

Proposed RAN Equipment	
Template:	67D04G
Enclosure	1
Enclosure Type	RBS 6201 ODE
Baseband	DUG20 (G1900) BB 6630 L1900 N600 BB 6630 L700 L600
Hybrid Cable System	Ericsson 6x12 HCS "Select Length & AWG" (x3)
Radio	RUS01 B2 (x3) RUS01 B2 (x3) G1900 L1900

RAN Scope of Work:

*** Existing Cabinets are RBS6201 ODE and Nortel Cabinet***

Replace (1) DUS41 with (1) BB6630 for LTE.
Add (1) BB6630 for future 5G N600.

Remove all (6) RUS01 B12 from cabinet.

Existing: (12) Coaxial Lines;
Remove (3) Coaxial Lines.
Add (3) 6X12 HCS.

Sector 1 (Proposed) view from behind							
Coverage Type	A - Outdoor Macro						
Antenna	1			2			
Antenna Model	RFS - APX160W-180W-S-E-A20 (Omni)			RFS - APX160W-180W-S-E-A20 (Omni)			
Azimuth	0			120			
M. Tilt	0			0			
Height	137			137			
Ports	P1	P2	P3	P4	P5	P6	
Active Tech.	L700 (L600) N600	L700 (L600) N600			L1900 (G1900)		
Dark Tech.							
Restricted Tech.							
Decom. Tech.							
E. Tilt	0	0			0		
Cables	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2)			1-5/8" Coax - 170 ft. (x2)		
TMA's					Generic Twin Style 1A - PCS (AAntenna)		
Diplexers / Combiners							
Radio	Radio 4449 B71+B12 (A: Antenna)	Radio 4449 B71+B12 (A: Antenna)					
Sector Equipment							
Unconnected Equipment:	Cable: 1-5/8" Coax - 170 ft.						
Scope of Work:	Replace LB Dual in Position 1 with (1) LB/MB Omni. Add (1) Radio 4449 B71+B12 for L600 and L700 to Position 1 at antenna.						

Sector 2 (Proposed) view from behind							
Coverage Type	A - Outdoor Macro						
Antenna	1			2			
Antenna Model	RFS - APX160W-180W-S-E-A20 (Omni)			RFS - APX160W-180W-S-E-A20 (Omni)			
Azimuth	120			240			
M. Tilt	0			0			
Height	137			137			
Ports	P1	P2	P3	P4	P5	P6	
Active Tech.	L700 (L600) N600	L700 (L600) N600			L1900 (G1900)		
Dark Tech.							
Restricted Tech.							
Decom. Tech.							
E. Tilt	0	0			0		
Cables	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2)			1-5/8" Coax - 170 ft. (x2)		
TMA's					Generic Twin Style 1A - PCS (AAntenna)		
Diplexers / Combiners							
Radio	Radio 4449 B71+B12 (A: Antenna)	Radio 4449 B71+B12 (A: Antenna)					
Sector Equipment							
Unconnected Equipment:	Cable: 1-5/8" Coax - 170 ft.						
Scope of Work:	Replace LB Dual in Position 1 with (1) LB/MB Omni. Add (1) Radio 4449 B71+B12 for L600 and L700 to Position 1 at antenna.						

Sector 3 (Proposed) view from behind							
Coverage Type	A - Outdoor Macro						
Antenna	1			2			
Antenna Model	RFS - APX160W-180W-S-E-A20 (Omni)			RFS - APX160W-180W-S-E-A20 (Omni)			
Azimuth	240			0			
M. Tilt	0			0			
Height	137			137			
Ports	P1	P2	P3	P4	P5	P6	
Active Tech.	L700 (L600) N600	L700 (L600) N600			L1900 (G1900)		
Dark Tech.							
Restricted Tech.							
Decom. Tech.							
E. Tilt	0	0			0		
Cables	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2)			1-5/8" Coax - 170 ft. (x2)		
TMA's					Generic Twin Style 1A - PCS (AAntenna)		
Diplexers / Combiners							
Radio	Radio 4449 B71+B12 (A: Antenna)	Radio 4449 B71+B12 (A: Antenna)					
Sector Equipment							
Unconnected Equipment:	Cable: 1-5/8" Coax - 170 ft.						
Scope of Work:	Replace LB Dual in Position 1 with (1) LB/MB Omni. Add (1) Radio 4449 B71+B12 for L600 and L700 to Position 1 at antenna.						



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TWR VNTR -
BROOKLYN

146 BROWN RD
BROOKLYN, CT 06234

PROJECT NO: 136040.002.01

CHECKED BY: GEH

ISSUED FOR:

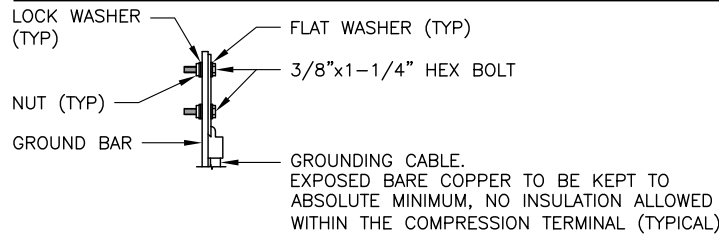
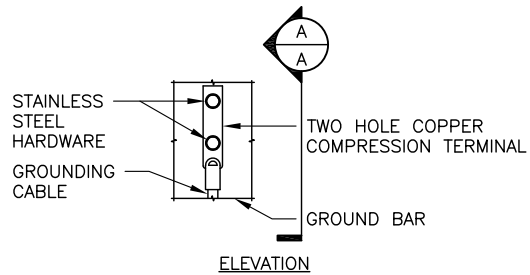
REV	DATE	DRWN	DESCRIPTION
0	6/28/19	JCO	FOR REVIEW
1	7/23/19	JCO	MOUNT REPLACEMENT
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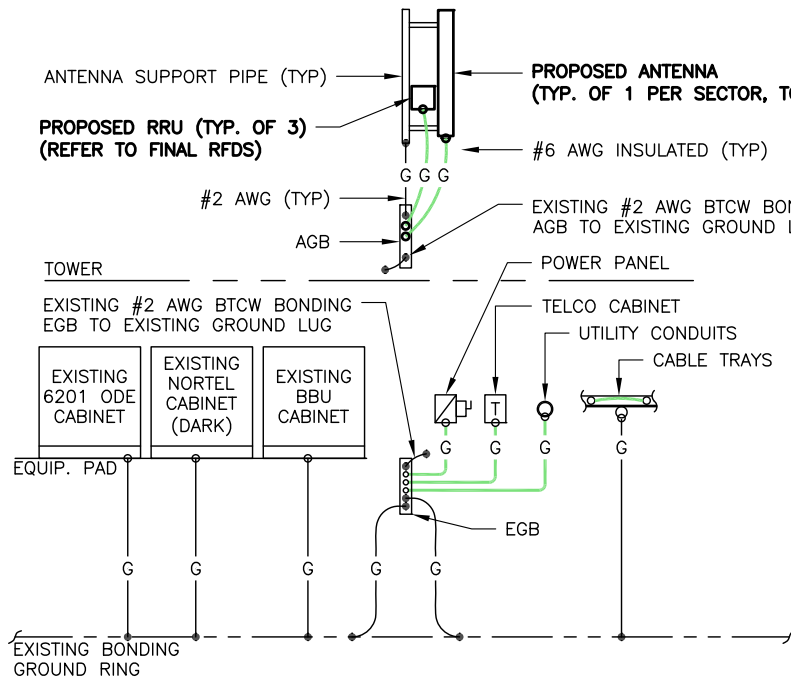
SHEET NUMBER: RF-1 REVISION: 2



- NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

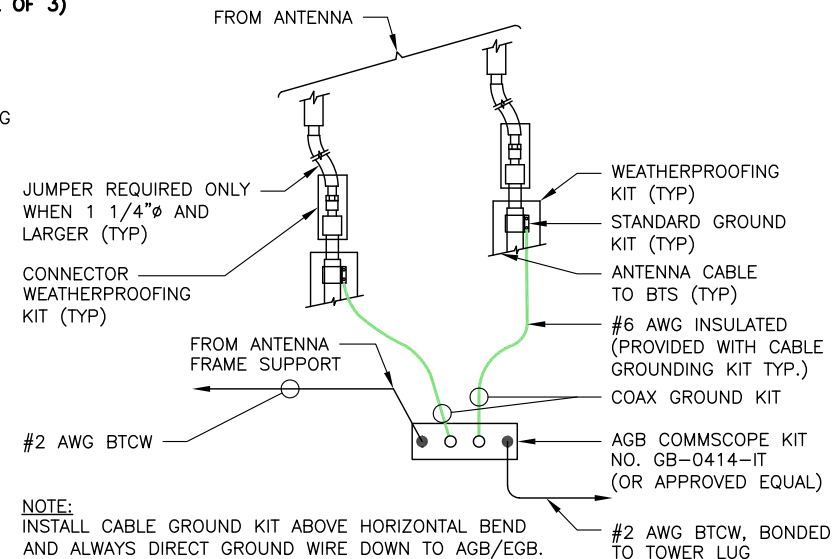
1 TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



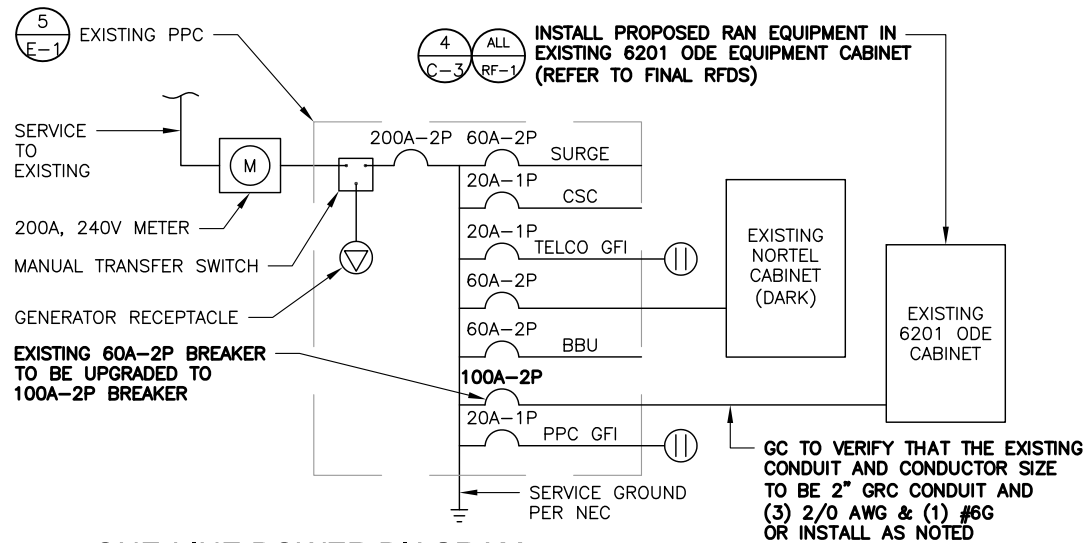
2 TYPICAL GROUNDING RISER DIAGRAM

SCALE: N.T.S.



3 TOWER TOP CABLE GROUNDING DETAIL

SCALE: N.T.S.



4 ONE-LINE POWER DIAGRAM

SCALE: N.T.S.

ELECTRICAL LEGEND	
A	AMPERE
BTW	BARE TINNED (SOLID) COPPER WIRE
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
KWH	KILOWATT - HOUR
PPC	POWER PROTECTION CABINET
V	VOLT
5/8"x8"	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
⊕	GROUND
⊕	EXOTHERMIC CONNECTION (CAD WELD)
⊕	MECHANICAL CONNECTION
AGB/EGB	ANTENNA GROUND BAR/EQUIPMENT GROUND BAR
MGB	MASTER GROUND BAR
G	GROUND COPPER WIRE, SIZED AS NOTED
---	EXPOSED WIRING, SIZE AS NOTED
---	INSULATED WIRING, SIZE AS NOTED
⊕	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

5 TOWER BOTTOM CABLE GROUNDING DETAIL

SCALE: N.T.S.

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E-1	2

EXHIBIT 7



Tower Engineering Solutions

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

Structural Analysis Report

Existing 150 ft. EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13612-A

Customer Site Name: Ingalls

Carrier Name: T-Mobile (App#: 116845, V1)

Carrier Site ID / Name: CT11513D / Ingalls

Site Location: 146 Brown Rd

Brooklyn, Connecticut

Windham County

Latitude: 41.798361

Longitude: -71.935889

Analysis Result:

Max Structural Usage: 85.1% [Pass]

Max Foundation Usage: 49.0% [Pass]

Additional Usage Caused by New Mount: +7.6%



7/24/19

Report Prepared By : Delu Zhou

Introduction

The purpose of this report is to summarize the analysis results on the 150 ft. EEI 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	Engineered Endeavors Incorporated, Project # 12401, Drawing # GS55101, dated 03/18/2004
Foundation Drawing	Engineered Endeavors Incorporated, Project # 12401, Drawing # S12401-150.0, dated 03/18/2004
Geotechnical Report	Jaworski Geotech Inc. Geotechnical Report, dated 04/19/2004
Modification Drawings	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 130.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 101.0$ mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft.
Seismic Parameters:	$S_S = 0.171$, $S_1 = 0.062$

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
-	137.5	3	RFS / APX16PV-16PVL - Panel	(3) WiMax Style T-Frame (Site Pro P/N RMV5-3096)	(18) 1-5/8"	T-Mobile
-		3	Commscope / LNX-6515DS-VTM - Panel			
-		3	EMS / RR90-19-XXDPQ - Panel			
-		6	Ericsson / KRY 112 144/1			
-		3	Kathrein / 782 11056			
8	128.0	6	Commscope / SBNHH-1D65B - Panel	(1) Low Profile Platform	(12) 1 5/8" (2) 1 5/8" Fiber	Verizon
9		6	Antel / LPA-80080-6CF - Panel			
10	127.0	3	ALU / RRH4x45-AWS			
11		3	ALU / RRH2X60-700			
12		3	ALU / RRH2X60-PCS			
13		6	RFS / FD9R6004/2C-3L			
14		2	RFS / DB-T1-6Z-8AB-0Z			

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	137.0	3	RFS APX16DWV-16DWVS-E-A20 Panel	(1) Low Profile Mount [SitePro RMQP-4096-HK]	(15) 1-5/8" (3) 1-5/8" Hybrid	T-Mobile
2		3	RFS APXVAARR24_43-U-NA20 Panel			
3		3	EMS - RR90-19-XXDPQ - Panel			
4		3	KRY 112 144/1 TMA			
5		3	Ericsson KRY 112 489/2 TMA			
6		3	Ericsson 4449 B71+B12 RRU			
7		3	Kathrein 782 11056 Bias Ts			

All transmission lines are considered running inside of the pole shafts.

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:	61.3%	53.5%	85.1%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2809.4	27.6	64.7

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 1.0506 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

Usage Diagram - Max Ratio 61.33% at 82.1ft

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Gh: 1.1

Base Elev: 1.500 (ft)

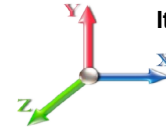
Page: 1



Dead Load Factor: 1.20

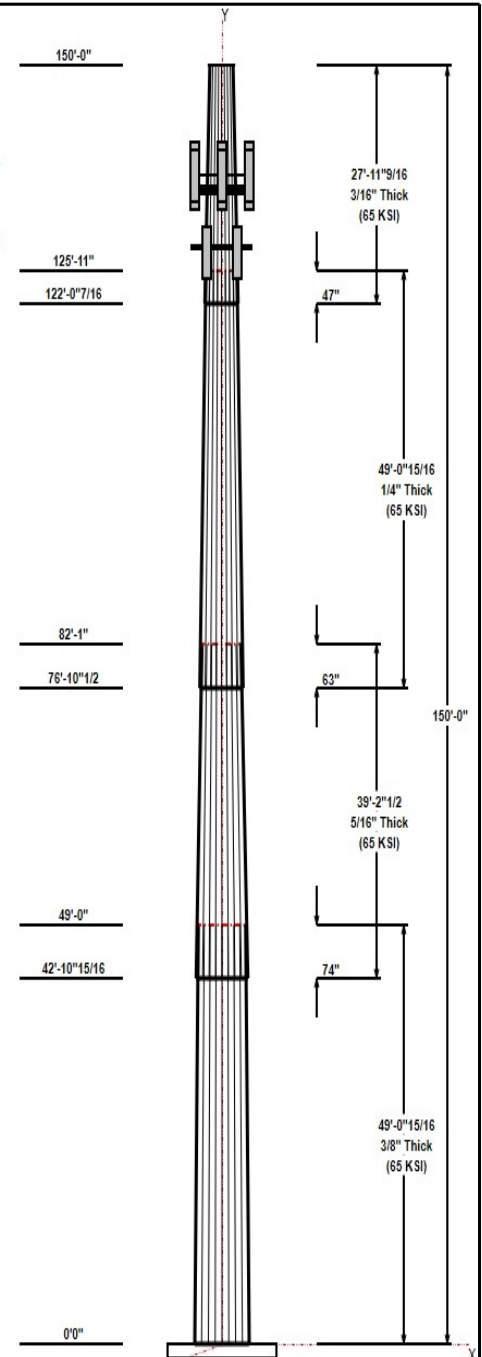
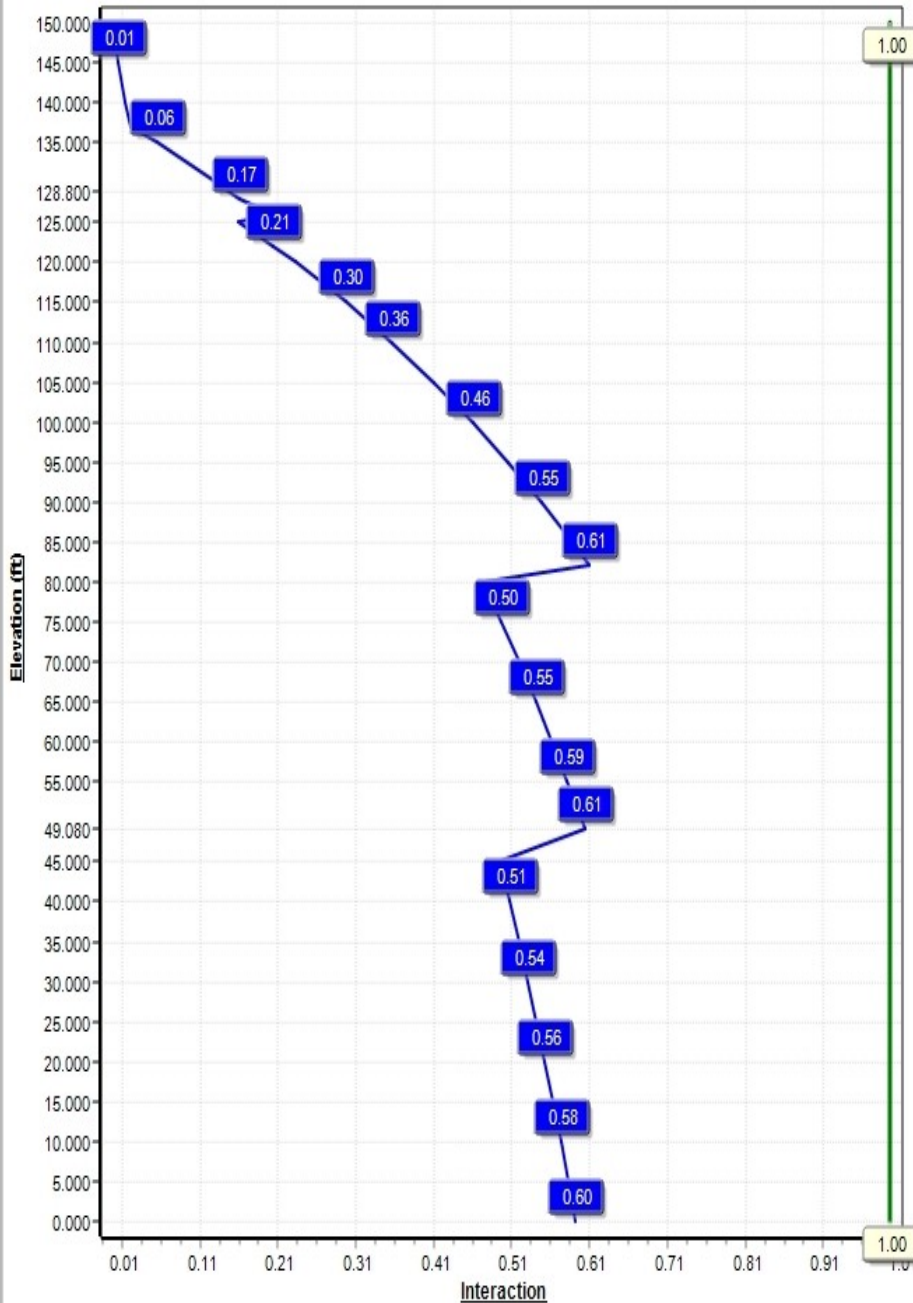
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 101 mph Wind



Iterations: 24

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Structure: CT13612-A-SBA

Type: Tapered
Site Name: Ingalls
Height: 150.00 (ft)
Base Elev: 1.50 (ft)

Base Shape: 18 Sided
Taper: 0.23521

7/24/2019

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	49.08	43.46	55.00	0.375		0.23521	65
2	39.21	36.31	45.53	0.313	Slip	0.23521	65
3	49.08	26.50	38.04	0.250	Slip	0.23521	65
4	27.96	21.22	27.80	0.188	Slip	0.23521	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
150.00	156.00	1	Lightning Rod 1"x10'	
137.00	137.00	3	APX16DWV-16DWVS-E-A	T-Mobile
137.00	137.00	3	APXVAARR24_43-U-NA20	T-Mobile
137.00	137.00	3	Ericsson KRY 112 489/2	T-Mobile
137.00	137.00	3	Ericsson 4449 B71+B12	T-Mobile
137.00	137.00	1	Low Profile Mount	T-Mobile
137.00	137.00	3	KRY 112 144/1	T-Mobile
137.00	137.00	3	RR90-19-XXDPQ	T-Mobile
137.00	137.00	3	Kathrein 782 11056 Bias	T-Mobile
128.80	128.80	1	Low Profile Platform	Verizon
128.00	128.00	6	SBNHH-1D65B	Verizon
128.00	128.00	6	LPA-80080-6CF	Verizon
127.00	127.00	3	RRH4x45-AWS	Verizon
127.00	127.00	3	RRH2X60-PCS	Verizon
127.00	127.00	3	RRH2X60-700	Verizon
127.00	127.00	2	DB-T1-6Z-8AB-0Z	Verizon
127.00	127.00	6	RFS FD9R6004/2C-3L	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
8.00	150.00	Outside	Safety Cable	
8.00	150.00	Outside	Safety Cable	
8.00	137.00	Inside	1-5/8" Coax	T-Mobile
8.00	137.00	Inside	1-5/8" Hybrid	T-Mobile
8.00	128.00	Inside	1 5/8" Coax	Verizon
8.00	127.00	Inside	1 5/8" Fiber	Verizon

Anchor Bolts

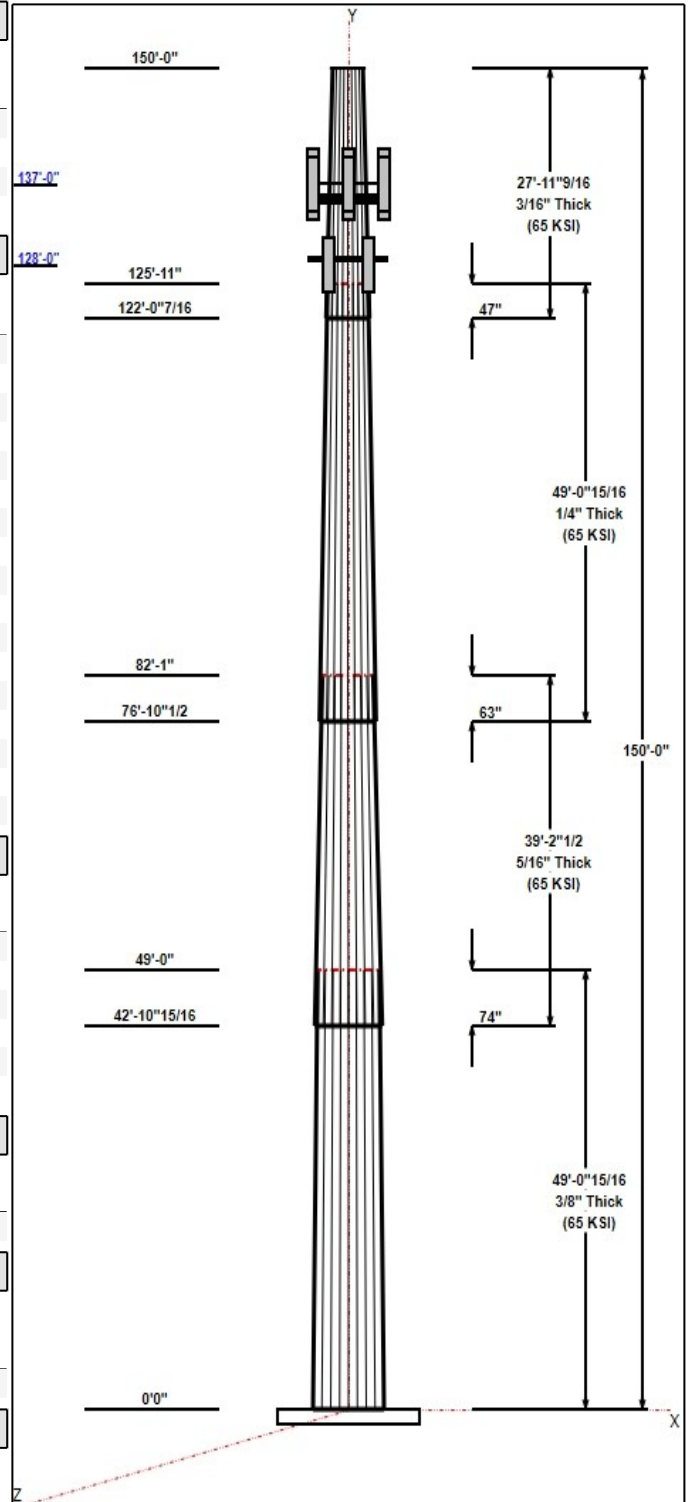
Qty	Specifications	Grade (ksi)	Arrangement
16	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.0000	70.0	60.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	2809.4	27.6	36.7
0.9D + 1.6W 101 mph Wind	2787.3	27.6	27.5
1.2D + 1.0Di + 1.0Wi 50 mph Wind	805.9	7.9	64.7
1.2D + 1.0E	113.8	1.1	36.8
0.9D + 1.0E	112.9	1.1	27.6



Structure: CT13612-A-SBA

Type: Tapered
Site Name: Ingalls
Height: 150.00 (ft)
Base Elev: 1.50 (ft)

Base Shape: 18 Sided
Taper: 0.23521

7/24/2019

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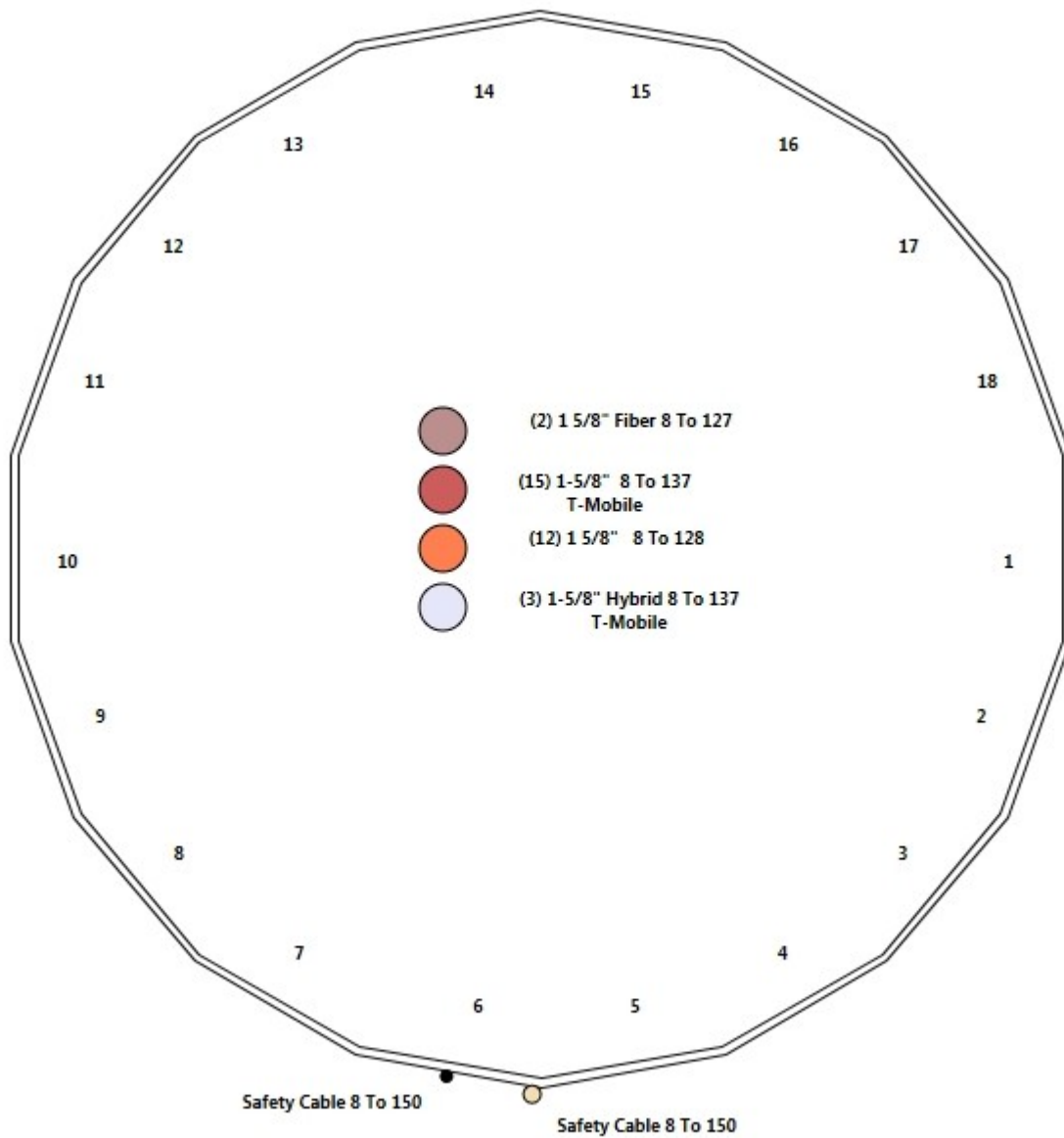
1.0D + 1.0W 60 mph Wind	616.9	6.1	30.6
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Structure: CT13612-A-SBA - Coax Line Placement

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

7/24/2019

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Shaft Properties

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
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	49.080	0.3750	65		0.00	9,711
2	18	39.210	0.3125	65	Slip	74.00	5,374
3	18	49.080	0.2500	65	Slip	63.00	4,243
4	18	27.963	0.1875	65	Slip	47.00	1,377
Total Shaft Weight:							20,705

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	55.00	0.00	65.02	24510.38	24.45	146.67	43.46	49.08	51.27	12023.3	19.02	115.8	0.235213
2	45.53	42.91	44.85	11586.41	24.28	145.70	36.31	82.12	35.70	5844.63	19.08	116.1	0.235213
3	38.04	76.87	29.99	5411.66	25.42	152.17	26.50	125.95	20.83	1813.12	17.28	106.0	0.235213
4	27.80	122.0	16.43	1582.13	24.73	148.24	21.22	150.00	12.52	699.35	18.54	113.1	0.235213

Load Summary

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
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	Lightning Rod 1"x10'	1	62.00	2.32	1.00	145.85	8.050	1.00	0.00	6.00
2	137.00	APX16DWV-16DWVS-E-A20	3	40.70	6.61	0.72	195.54	9.491	0.72	0.00	0.00
3	137.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	720.47	22.784	0.70	0.00	0.00
4	137.00	Ericsson KRY 112 489/2	3	15.40	0.71	0.67	41.62	1.535	0.67	0.00	0.00
5	137.00	Ericsson 4449 B71+B12	3	74.00	1.65	0.67	170.63	2.359	0.67	0.00	0.00
6	137.00	Low Profile Mount [RMQP-4096-HK]	1	2120.00	50.00	1.00	5056.37	98.939	1.00	0.00	0.00
7	137.00	KRY 112 144/1	3	11.00	0.41	0.67	25.26	1.038	0.67	0.00	0.00
8	137.00	RR90-19-XXDPQ	3	32.00	5.88	0.68	275.53	9.885	0.69	0.00	0.00
9	137.00	Kathrein 782 11056 Bias Ts	3	1.80	0.28	0.67	6.04	0.811	0.67	0.00	0.00
10	128.80	Low Profile Platform	1	1400.00	22.00	1.00	3006.09	45.219	1.00	0.00	0.00
11	128.00	SBNHH-1D65B	6	50.71	8.08	0.83	331.11	9.785	0.84	0.00	0.00
12	128.00	LPA-80080-6CF	6	21.00	4.33	0.88	242.29	6.137	0.88	0.00	0.00
13	127.00	RRH4x45-AWS	3	62.00	2.52	0.67	174.34	4.125	0.67	0.00	0.00
14	127.00	RRH2X60-PCS	3	55.00	2.20	0.67	174.32	3.059	0.67	0.00	0.00
15	127.00	RRH2X60-700	3	60.00	3.50	0.67	174.60	4.536	0.67	0.00	0.00
16	127.00	DB-T1-6Z-8AB-0Z	2	44.00	4.80	0.75	243.41	5.971	0.75	0.00	0.00
17	127.00	RFS FD9R6004/2C-3L	6	3.00	0.36	0.50	13.20	0.942	0.50	0.00	0.00
Totals:			53	5,557.96			18,089.80				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
8.00	150.00	(1) Safety Cable	0.00	Outside
8.00	150.00	(1) Safety Cable	0.00	Outside
8.00	137.00	(15) 1-5/8" Coax	0.00	Inside
8.00	137.00	(3) 1-5/8" Hybrid	0.00	Inside
8.00	128.00	(12) 1 5/8" Coax	0.00	Inside
8.00	127.00	(2) 1 5/8" Fiber	0.00	Inside

Shaft Section Properties

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 7



Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3750	55.000	65.015	24510.4	24.45	146.67	72.6	877.7	0.0
5.00		0.3750	53.824	63.615	22961.1	23.90	143.53	73.3	840.2	1094.3
10.00		0.3750	52.648	62.216	21478.5	23.34	140.39	73.9	803.5	1070.4
15.00		0.3750	51.472	60.816	20061.2	22.79	137.26	74.6	767.7	1046.6
20.00		0.3750	50.296	59.416	18707.6	22.24	134.12	75.2	732.6	1022.8
25.00		0.3750	49.120	58.016	17416.3	21.69	130.99	75.9	698.4	999.0
30.00		0.3750	47.944	56.616	16185.9	21.13	127.85	76.5	664.9	975.2
35.00		0.3750	46.768	55.217	15014.8	20.58	124.71	77.2	632.3	951.4
40.00		0.3750	45.591	53.817	13901.6	20.03	121.58	77.8	600.6	927.5
42.91	Bot - Section 2	0.3750	44.906	53.001	13279.1	19.70	119.75	78.2	582.4	529.5
45.00		0.3750	44.415	52.417	12844.9	19.47	118.44	78.5	569.6	691.0
49.08	Top - Section 1	0.3125	44.081	43.411	10506.8	23.46	141.06	0.0	0.0	1329.1
50.00		0.3125	43.864	43.196	10351.7	23.34	140.37	73.9	464.8	135.6
55.00		0.3125	42.688	42.030	9535.6	22.68	136.60	74.7	440.0	725.0
60.00		0.3125	41.512	40.863	8763.5	22.01	132.84	75.5	415.8	705.2
65.00		0.3125	40.336	39.697	8034.2	21.35	129.08	76.3	392.3	685.3
70.00		0.3125	39.160	38.531	7346.6	20.69	125.31	77.1	369.5	665.5
75.00		0.3125	37.984	37.364	6699.4	20.02	121.55	77.9	347.4	645.6
76.87	Bot - Section 3	0.3125	37.543	36.927	6467.0	19.77	120.14	78.1	339.3	236.8
80.00		0.3125	36.808	36.198	6091.3	19.36	117.79	78.6	325.9	704.9
82.12	Top - Section 2	0.2500	36.808	29.008	4898.3	24.55	147.23	0.0	0.0	470.8
85.00		0.2500	36.132	28.471	4631.4	24.07	144.53	73.1	252.5	281.3
90.00		0.2500	34.956	27.538	4190.7	23.24	139.82	74.1	236.1	476.5
95.00		0.2500	33.780	26.605	3779.0	22.41	135.12	75.0	220.3	460.6
100.00		0.2500	32.604	25.672	3395.1	21.59	130.41	76.0	205.1	444.7
105.00		0.2500	31.428	24.739	3038.2	20.76	125.71	77.0	190.4	428.8
110.00		0.2500	30.252	23.805	2707.2	19.93	121.01	78.0	176.3	413.0
115.00		0.2500	29.075	22.872	2401.1	19.10	116.30	78.9	162.7	397.1
120.00		0.2500	27.899	21.939	2119.0	18.27	111.60	79.9	149.6	381.2
122.04	Bot - Section 4	0.2500	27.420	21.559	2010.8	17.93	109.68	80.3	144.4	150.7
125.00		0.2500	26.723	21.006	1860.0	17.44	106.89	80.9	137.1	378.2
125.95	Top - Section 3	0.1875	26.874	15.881	1429.0	23.86	143.33	0.0	0.0	119.6
127.00		0.1875	26.628	15.735	1389.8	23.63	142.02	73.6	102.8	56.3
128.00		0.1875	26.393	15.595	1353.0	23.41	140.76	73.9	101.0	53.3
128.80		0.1875	26.205	15.483	1324.1	23.23	139.76	74.1	99.5	42.3
130.00		0.1875	25.922	15.315	1281.5	22.97	138.25	74.4	97.4	62.9
135.00		0.1875	24.746	14.615	1113.7	21.86	131.98	75.7	88.6	254.6
137.00		0.1875	24.276	14.335	1050.9	21.42	129.47	76.2	85.3	98.5
140.00		0.1875	23.570	13.915	961.2	20.75	125.71	77.0	80.3	144.2
145.00		0.1875	22.394	13.215	823.4	19.65	119.43	78.3	72.4	230.8
150.00		0.1875	21.218	12.515	699.3	18.54	113.16	79.6	64.9	218.9

20704.9

Wind Loading - Shaft

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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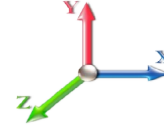


Load Case: 1.2D + 1.6W 101 mph Wind

Iterations 24

Dead Load Factor 1.20

Wind Load Factor 1.60



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.20	433.37	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	424.11	0.650	0.000	5.00	23.021	14.96	555.4	0.0	1313.1
10.00		1.00	0.85	21.088	23.20	414.84	0.650	0.000	5.00	22.524	14.64	543.4	0.0	1284.5
15.00		1.00	0.87	21.487	23.64	409.39	0.650	0.000	5.00	22.026	14.32	541.4	0.0	1255.9
20.00		1.00	0.92	22.718	24.99	411.34	0.650	0.000	5.00	21.529	13.99	559.5	0.0	1227.4
25.00		1.00	0.96	23.740	26.11	410.66	0.650	0.000	5.00	21.031	13.67	571.2	0.0	1198.8
30.00		1.00	0.99	24.620	27.08	408.19	0.650	0.000	5.00	20.533	13.35	578.3	0.0	1170.2
35.00		1.00	1.02	25.396	27.94	404.40	0.650	0.000	5.00	20.036	13.02	582.1	0.0	1141.6
40.00		1.00	1.05	26.091	28.70	399.59	0.650	0.000	5.00	19.538	12.70	583.2	0.0	1113.1
42.91	Bot - Section 2	1.00	1.07	26.467	29.11	396.41	0.650	0.000	2.91	11.155	7.25	337.7	0.0	635.4
45.00		1.00	1.08	26.724	29.40	393.98	0.650	0.000	2.09	7.996	5.20	244.5	0.0	829.2
49.08	Top - Section 1	1.00	1.10	27.201	29.92	388.89	0.650	0.000	4.08	15.384	10.00	478.7	0.0	1594.9
50.00		1.00	1.10	27.305	30.04	393.29	0.650	0.000	0.92	3.423	2.23	106.9	0.0	162.7
55.00		1.00	1.12	27.843	30.63	386.50	0.650	0.000	5.00	18.310	11.90	583.2	0.0	870.0
60.00		1.00	1.14	28.344	31.18	379.22	0.650	0.000	5.00	17.812	11.58	577.6	0.0	846.2
65.00		1.00	1.16	28.814	31.70	371.52	0.650	0.000	5.00	17.315	11.25	570.8	0.0	822.4
70.00		1.00	1.18	29.257	32.18	363.45	0.650	0.000	5.00	16.817	10.93	562.9	0.0	798.6
75.00		1.00	1.20	29.677	32.64	355.05	0.650	0.000	5.00	16.320	10.61	554.1	0.0	774.8
76.87	Bot - Section 3	1.00	1.20	29.828	32.81	351.83	0.650	0.000	1.87	5.986	3.89	204.3	0.0	284.1
80.00		1.00	1.21	30.075	33.08	346.36	0.650	0.000	3.13	9.968	6.48	343.0	0.0	845.9
82.12	Top - Section 2	1.00	1.22	30.238	33.26	342.59	0.650	0.000	2.12	6.658	4.33	230.3	0.0	564.9
85.00		1.00	1.23	30.454	33.50	342.14	0.650	0.000	2.88	8.878	5.77	309.3	0.0	337.6
90.00		1.00	1.24	30.817	33.90	332.96	0.650	0.000	5.00	15.038	9.77	530.2	0.0	571.8
95.00		1.00	1.26	31.164	34.28	323.57	0.650	0.000	5.00	14.541	9.45	518.4	0.0	552.7
100.00		1.00	1.27	31.497	34.65	313.97	0.650	0.000	5.00	14.043	9.13	506.0	0.0	533.7
105.00		1.00	1.28	31.818	35.00	304.18	0.650	0.000	5.00	13.546	8.80	493.1	0.0	514.6
110.00		1.00	1.29	32.126	35.34	294.21	0.650	0.000	5.00	13.048	8.48	479.5	0.0	495.6
115.00		1.00	1.31	32.424	35.67	284.09	0.650	0.000	5.00	12.550	8.16	465.5	0.0	476.5
120.00		1.00	1.32	32.713	35.98	273.80	0.650	0.000	5.00	12.053	7.83	451.1	0.0	457.4
122.04	Bot - Section 4	1.00	1.32	32.827	36.11	269.57	0.650	0.000	2.04	4.767	3.10	179.0	0.0	180.9
125.00		1.00	1.33	32.991	36.29	263.38	0.650	0.000	2.96	6.882	4.47	259.8	0.0	453.8
125.95	Top - Section 3	1.00	1.33	33.044	36.35	261.37	0.650	0.000	0.95	2.177	1.42	82.3	0.0	143.5
127.00	Appurtenance(s)	1.00	1.33	33.101	36.41	262.87	0.650	0.000	1.05	2.369	1.54	89.7	0.0	67.6
128.00	Appurtenance(s)	1.00	1.34	33.155	36.47	260.76	0.650	0.000	1.00	2.243	1.46	85.1	0.0	64.0
128.80	Appurtenance(s)	1.00	1.34	33.198	36.52	259.07	0.650	0.000	0.80	1.780	1.16	67.6	0.0	50.8
130.00		1.00	1.34	33.262	36.59	256.53	0.650	0.000	1.20	2.647	1.72	100.7	0.0	75.5
135.00		1.00	1.35	33.524	36.88	245.85	0.650	0.000	5.00	10.719	6.97	411.1	0.0	305.5
137.00	Appurtenance(s)	1.00	1.36	33.627	36.99	241.55	0.650	0.000	2.00	4.148	2.70	159.6	0.0	118.2
140.00		1.00	1.36	33.779	37.16	235.06	0.650	0.000	3.00	6.073	3.95	234.7	0.0	173.0
145.00		1.00	1.37	34.027	37.43	224.15	0.650	0.000	5.00	9.724	6.32	378.5	0.0	277.0
150.00	Appurtenance(s)	1.00	1.38	34.268	37.69	213.13	0.650	0.000	5.00	9.226	6.00	361.7	0.0	262.7
Totals:									150.00			15,471.2		24,845.8

Discrete Appurtenance Forces

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

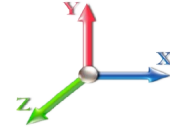


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Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	150.00	Lightning Rod 1"x10'	1	34.550	38.004	1.00	1.00	2.32	74.40	0.000	6.000	141.07	0.00	846.44
2	137.00	Kathrein 782 11056 Bias	3	33.627	36.990	0.54	0.80	0.45	6.48	0.000	0.000	26.65	0.00	0.00
3	137.00	RR90-19-XXDPQ	3	33.627	36.990	0.54	0.80	9.60	115.20	0.000	0.000	567.93	0.00	0.00
4	137.00	KRY 112 144/1	3	33.627	36.990	0.54	0.80	0.66	39.60	0.000	0.000	39.02	0.00	0.00
5	137.00	Low Profile Mount	1	33.627	36.990	1.00	1.00	50.00	2544.00	0.000	0.000	2959.18	0.00	0.00
6	137.00	Ericsson 4449 B71+B12	3	33.627	36.990	0.54	0.80	2.65	266.40	0.000	0.000	157.03	0.00	0.00
7	137.00	Ericsson KRY 112 489/2	3	33.627	36.990	0.54	0.80	1.14	55.44	0.000	0.000	67.57	0.00	0.00
8	137.00	APXVAARR24 43-U-NA2	3	33.627	36.990	0.56	0.80	34.00	460.80	0.000	0.000	2012.43	0.00	0.00
9	137.00	APX16DWV-16DWVS-E-A	3	33.627	36.990	0.58	0.80	11.42	146.52	0.000	0.000	676.00	0.00	0.00
10	128.80	Low Profile Platform	1	33.198	36.517	1.00	1.00	22.00	1680.00	0.000	0.000	1285.42	0.00	0.00
11	128.00	LPA-80080-6CF	6	33.155	36.470	0.70	0.80	18.29	151.20	0.000	0.000	1067.26	0.00	0.00
12	128.00	SBNHH-1D65B	6	33.155	36.470	0.66	0.80	32.19	365.11	0.000	0.000	1878.40	0.00	0.00
13	127.00	RFS FD9R6004/2C-3L	6	33.101	36.411	0.40	0.80	0.86	21.60	0.000	0.000	50.33	0.00	0.00
14	127.00	DB-T1-6Z-8AB-OZ	2	33.101	36.411	0.68	0.90	6.48	105.60	0.000	0.000	377.51	0.00	0.00
15	127.00	RRH2X60-700	3	33.101	36.411	0.54	0.80	5.63	216.00	0.000	0.000	327.87	0.00	0.00
16	127.00	RRH2X60-PCS	3	33.101	36.411	0.54	0.80	3.54	198.00	0.000	0.000	206.09	0.00	0.00
17	127.00	RRH4x45-AWS	3	33.101	36.411	0.54	0.80	4.05	223.20	0.000	0.000	236.07	0.00	0.00

Totals: 6,669.55 12,075.81

Total Applied Force Summary

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

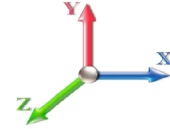


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Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		555.37	1313.10	0.00	0.00
10.00		543.37	1368.27	0.00	0.00
15.00		541.42	1465.30	0.00	0.00
20.00		559.52	1436.72	0.00	0.00
25.00		571.18	1408.15	0.00	0.00
30.00		578.33	1379.57	0.00	0.00
35.00		582.10	1350.99	0.00	0.00
40.00		583.19	1322.41	0.00	0.00
42.91		337.75	757.35	0.00	0.00
45.00		244.46	916.55	0.00	0.00
49.08		478.73	1765.75	0.00	0.00
50.00		106.93	201.20	0.00	0.00
55.00		583.21	1079.38	0.00	0.00
60.00		577.58	1055.56	0.00	0.00
65.00		570.76	1031.75	0.00	0.00
70.00		562.88	1007.93	0.00	0.00
75.00		554.05	984.12	0.00	0.00
76.87		204.27	362.58	0.00	0.00
80.00		342.96	976.86	0.00	0.00
82.12		230.33	653.83	0.00	0.00
85.00		309.29	458.04	0.00	0.00
90.00		530.17	781.12	0.00	0.00
95.00		518.40	762.07	0.00	0.00
100.00		506.01	743.01	0.00	0.00
105.00		493.05	723.96	0.00	0.00
110.00		479.55	704.91	0.00	0.00
115.00		465.54	685.86	0.00	0.00
120.00		451.06	666.81	0.00	0.00
122.04		179.02	266.15	0.00	0.00
125.00		259.76	577.89	0.00	0.00
125.95		82.29	183.42	0.00	0.00
127.00	(17) attachments	1287.59	875.79	0.00	0.00
128.00	(12) attachments	3030.74	619.51	0.00	0.00
128.80	(1) attachments	1353.03	1750.16	0.00	0.00
130.00		100.71	104.56	0.00	0.00
135.00		411.08	426.81	0.00	0.00
137.00	(22) attachments	6665.38	3801.16	0.00	0.00
140.00		234.68	177.76	0.00	0.00
145.00		378.51	284.83	0.00	0.00
150.00	(1) attachments	502.76	344.94	0.00	846.44
Totals:		27,547.00	36,776.13	0.00	846.44

Linear Appurtenance Segment Forces (Factored)

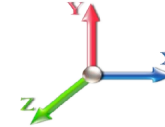
Structure: CT13612-A-SBA **Code:** EIA/TIA-222-G 7/24/2019
Site Name: Ingalls **Exposure:** C
Height: 150.00 (ft) **Crest Height:** 0.00
Base Elev: 1.500 (ft) **Site Class:** D - Stiff Soil
Gh: 1.1 **Topography:** 1 **Struct Class:** II Page: 11



Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	2.50
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	0.66
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.487	0.00	6.24
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.487	0.00	1.64
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.718	0.00	6.24
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.718	0.00	1.64
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.740	0.00	6.24
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.740	0.00	1.64
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.620	0.00	6.24
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.620	0.00	1.64
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.396	0.00	6.24
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.396	0.00	1.64
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.091	0.00	6.24
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.091	0.00	1.64
42.91	Safety Cable	Yes	2.91	0.000	0.00	0.00	0.00	0.000	0.000	26.467	0.00	3.64
42.91	Safety Cable	Yes	2.91	0.000	0.00	0.00	0.00	0.000	0.000	26.467	0.00	0.95
45.00	Safety Cable	Yes	2.09	0.000	0.00	0.00	0.00	0.000	0.000	26.724	0.00	2.60
45.00	Safety Cable	Yes	2.09	0.000	0.00	0.00	0.00	0.000	0.000	26.724	0.00	0.68
49.08	Safety Cable	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	27.201	0.00	5.09
49.08	Safety Cable	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	27.201	0.00	1.34
50.00	Safety Cable	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	27.305	0.00	1.15
50.00	Safety Cable	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	27.305	0.00	0.30
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.843	0.00	6.24
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.843	0.00	1.64
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.344	0.00	6.24
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.344	0.00	1.64
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.814	0.00	6.24
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.814	0.00	1.64
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.257	0.00	6.24
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.257	0.00	1.64
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.677	0.00	6.24
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.677	0.00	1.64
76.87	Safety Cable	Yes	1.87	0.000	0.00	0.00	0.00	0.000	0.000	29.828	0.00	2.34
76.87	Safety Cable	Yes	1.87	0.000	0.00	0.00	0.00	0.000	0.000	29.828	0.00	0.61
80.00	Safety Cable	Yes	3.13	0.000	0.00	0.00	0.00	0.000	0.000	30.075	0.00	3.90
80.00	Safety Cable	Yes	3.13	0.000	0.00	0.00	0.00	0.000	0.000	30.075	0.00	1.02
82.12	Safety Cable	Yes	2.12	0.000	0.00	0.00	0.00	0.000	0.000	30.238	0.00	2.65
82.12	Safety Cable	Yes	2.12	0.000	0.00	0.00	0.00	0.000	0.000	30.238	0.00	0.70
85.00	Safety Cable	Yes	2.88	0.000	0.00	0.00	0.00	0.000	0.000	30.454	0.00	3.59
85.00	Safety Cable	Yes	2.88	0.000	0.00	0.00	0.00	0.000	0.000	30.454	0.00	0.94
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.817	0.00	6.24
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.817	0.00	1.64
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.164	0.00	6.24
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.164	0.00	1.64
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.497	0.00	6.24
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.497	0.00	1.64
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.818	0.00	6.24

Linear Appurtenance Segment Forces (Factored)

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

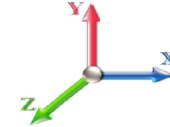
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Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.818	0.00	1.64
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.126	0.00	6.24
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.126	0.00	1.64
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.424	0.00	6.24
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.424	0.00	1.64
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.713	0.00	6.24
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.713	0.00	1.64
122.04	Safety Cable	Yes	2.04	0.000	0.00	0.00	0.00	0.000	0.000	32.827	0.00	2.54
122.04	Safety Cable	Yes	2.04	0.000	0.00	0.00	0.00	0.000	0.000	32.827	0.00	0.67
125.00	Safety Cable	Yes	2.96	0.000	0.00	0.00	0.00	0.000	0.000	32.991	0.00	3.70
125.00	Safety Cable	Yes	2.96	0.000	0.00	0.00	0.00	0.000	0.000	32.991	0.00	0.97
125.95	Safety Cable	Yes	0.95	0.000	0.00	0.00	0.00	0.000	0.000	33.044	0.00	1.19
125.95	Safety Cable	Yes	0.95	0.000	0.00	0.00	0.00	0.000	0.000	33.044	0.00	0.31
127.00	Safety Cable	Yes	1.05	0.000	0.00	0.00	0.00	0.000	0.000	33.101	0.00	1.31
127.00	Safety Cable	Yes	1.05	0.000	0.00	0.00	0.00	0.000	0.000	33.101	0.00	0.34
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.155	0.00	1.25
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.155	0.00	0.33
128.80	Safety Cable	Yes	0.80	0.000	0.00	0.00	0.00	0.000	0.000	33.198	0.00	1.00
128.80	Safety Cable	Yes	0.80	0.000	0.00	0.00	0.00	0.000	0.000	33.198	0.00	0.26
130.00	Safety Cable	Yes	1.20	0.000	0.00	0.00	0.00	0.000	0.000	33.262	0.00	1.50
130.00	Safety Cable	Yes	1.20	0.000	0.00	0.00	0.00	0.000	0.000	33.262	0.00	0.39
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.524	0.00	6.24
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.524	0.00	1.64
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.627	0.00	2.50
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.627	0.00	0.66
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.779	0.00	3.74
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.779	0.00	0.98
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.027	0.00	6.24
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.027	0.00	1.64
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.268	0.00	6.24
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.268	0.00	1.64
Totals:											0.0	223.7

Calculated Forces

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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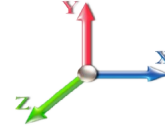


Load Case: 1.2D + 1.6W 101 mph Wind

Iterations 24

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	-36.74	-27.60	0.00	-2809.4	0.00	2809.43	4250.57	2125.28	9550.04	4782.12	0.00	0.000	0.000	0.596
5.00	-35.35	-27.14	0.00	-2671.4	0.00	2671.45	4196.29	2098.14	9223.72	4618.72	0.09	-0.159	0.000	0.587
10.00	-33.91	-26.69	0.00	-2535.7	0.00	2535.75	4140.37	2070.19	8899.17	4456.20	0.34	-0.320	0.000	0.577
15.00	-32.37	-26.23	0.00	-2402.3	0.00	2402.32	4082.82	2041.41	8576.63	4294.69	0.76	-0.484	0.000	0.567
20.00	-30.86	-25.74	0.00	-2271.1	0.00	2271.18	4023.63	2011.81	8256.33	4134.30	1.36	-0.650	0.000	0.557
25.00	-29.39	-25.24	0.00	-2142.4	0.00	2142.46	3962.80	1981.40	7938.51	3975.15	2.13	-0.817	0.000	0.547
30.00	-27.95	-24.73	0.00	-2016.2	0.00	2016.25	3900.33	1950.16	7623.41	3817.37	3.08	-0.987	0.000	0.536
35.00	-26.53	-24.20	0.00	-1892.6	0.00	1892.62	3836.22	1918.11	7311.28	3661.07	4.20	-1.159	0.000	0.524
40.00	-25.17	-23.65	0.00	-1771.6	0.00	1771.63	3770.47	1885.24	7002.35	3506.38	5.51	-1.333	0.000	0.512
42.91	-24.38	-23.33	0.00	-1702.7	0.00	1702.74	3731.41	1865.70	6823.91	3417.03	6.36	-1.436	0.000	0.505
45.00	-23.43	-23.11	0.00	-1654.0	0.00	1654.07	3703.09	1851.54	6696.86	3353.41	7.00	-1.511	0.000	0.500
49.08	-21.64	-22.61	0.00	-1559.7	0.00	1559.79	2883.58	1441.79	5189.66	2598.69	8.36	-1.656	0.000	0.608
50.00	-21.39	-22.54	0.00	-1538.9	0.00	1538.99	2874.90	1437.45	5148.29	2577.97	8.68	-1.690	0.000	0.605
55.00	-20.26	-22.00	0.00	-1426.2	0.00	1426.27	2826.79	1413.40	4924.46	2465.89	10.56	-1.894	0.000	0.586
60.00	-19.14	-21.45	0.00	-1316.2	0.00	1316.27	2777.04	1388.52	4702.55	2354.77	12.65	-2.098	0.000	0.566
65.00	-18.06	-20.91	0.00	-1209.0	0.00	1209.00	2725.66	1362.83	4482.79	2244.72	14.96	-2.303	0.000	0.545
70.00	-17.01	-20.37	0.00	-1104.4	0.00	1104.45	2672.63	1336.31	4265.41	2135.88	17.48	-2.508	0.000	0.524
75.00	-16.00	-19.81	0.00	-1002.6	0.00	1002.62	2617.96	1308.98	4050.67	2028.35	20.22	-2.712	0.000	0.501
76.87	-15.61	-19.61	0.00	-965.52	0.00	965.52	2597.06	1298.53	3970.94	1988.42	21.30	-2.790	0.000	0.492
80.00	-14.62	-19.25	0.00	-904.20	0.00	904.20	2561.66	1280.83	3838.80	1922.25	23.17	-2.919	0.000	0.476
82.12	-13.94	-19.01	0.00	-863.32	0.00	863.32	1893.43	946.71	2847.18	1425.71	24.49	-3.007	0.000	0.613
85.00	-13.44	-18.72	0.00	-808.64	0.00	808.64	1872.76	936.38	2763.64	1383.87	26.34	-3.124	0.000	0.592
90.00	-12.62	-18.20	0.00	-715.04	0.00	715.04	1835.56	917.78	2619.34	1311.62	29.73	-3.358	0.000	0.552
95.00	-11.82	-17.68	0.00	-624.06	0.00	624.06	1796.72	898.36	2476.41	1240.05	33.37	-3.585	0.000	0.510
100.00	-11.05	-17.17	0.00	-535.66	0.00	535.66	1756.24	878.12	2335.09	1169.28	37.24	-3.803	0.000	0.465
105.00	-10.30	-16.66	0.00	-449.83	0.00	449.83	1714.12	857.06	2195.60	1099.43	41.34	-4.010	0.000	0.416
110.00	-9.58	-16.16	0.00	-366.52	0.00	366.52	1670.37	835.18	2058.21	1030.63	45.64	-4.201	0.000	0.362
115.00	-8.89	-15.67	0.00	-285.70	0.00	285.70	1624.97	812.48	1923.13	963.00	50.13	-4.372	0.000	0.303
120.00	-8.23	-15.19	0.00	-207.33	0.00	207.33	1577.93	788.97	1790.62	896.64	54.79	-4.518	0.000	0.237
122.04	-7.97	-14.99	0.00	-176.41	0.00	176.41	1558.31	779.15	1737.43	870.01	56.72	-4.571	0.000	0.208
125.00	-7.40	-14.69	0.00	-131.97	0.00	131.97	1529.26	764.63	1660.91	831.69	59.58	-4.635	0.000	0.164
125.95	-7.22	-14.60	0.00	-117.97	0.00	117.97	1048.18	524.09	1150.34	576.03	60.51	-4.654	0.000	0.212
127.00	-6.45	-13.25	0.00	-102.69	0.00	102.69	1042.37	521.19	1133.34	567.51	61.53	-4.672	0.000	0.188
128.00	-6.08	-10.18	0.00	-89.44	0.00	89.44	1036.75	518.37	1117.13	559.39	62.51	-4.691	0.000	0.166
128.80	-4.44	-8.69	0.00	-81.30	0.00	81.30	1032.20	516.10	1104.19	552.91	63.30	-4.706	0.000	0.152
130.00	-4.34	-8.58	0.00	-70.87	0.00	70.87	1025.31	512.65	1084.83	543.22	64.48	-4.725	0.000	0.135
135.00	-3.94	-8.14	0.00	-27.96	0.00	27.96	995.56	497.78	1004.87	503.18	69.46	-4.780	0.000	0.060
137.00	-0.71	-1.18	0.00	-11.69	0.00	11.69	983.21	491.60	973.24	487.34	71.46	-4.790	0.000	0.025
140.00	-0.55	-0.93	0.00	-8.15	0.00	8.15	964.18	482.09	926.23	463.80	74.47	-4.798	0.000	0.018
145.00	-0.30	-0.53	0.00	-3.50	0.00	3.50	931.15	465.58	849.16	425.21	79.49	-4.807	0.000	0.009
150.00	0.00	-0.50	0.00	-0.85	0.00	0.85	896.49	448.25	773.89	387.52	84.52	-4.811	0.000	0.002

Wind Loading - Shaft

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

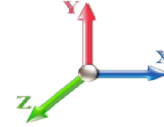
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Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.20	433.37	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	424.11	0.650	0.000	5.00	23.021	14.96	555.4	0.0	984.8
10.00		1.00	0.85	21.088	23.20	414.84	0.650	0.000	5.00	22.524	14.64	543.4	0.0	963.4
15.00		1.00	0.87	21.487	23.64	409.39	0.650	0.000	5.00	22.026	14.32	541.4	0.0	942.0
20.00		1.00	0.92	22.718	24.99	411.34	0.650	0.000	5.00	21.529	13.99	559.5	0.0	920.5
25.00		1.00	0.96	23.740	26.11	410.66	0.650	0.000	5.00	21.031	13.67	571.2	0.0	899.1
30.00		1.00	0.99	24.620	27.08	408.19	0.650	0.000	5.00	20.533	13.35	578.3	0.0	877.7
35.00		1.00	1.02	25.396	27.94	404.40	0.650	0.000	5.00	20.036	13.02	582.1	0.0	856.2
40.00		1.00	1.05	26.091	28.70	399.59	0.650	0.000	5.00	19.538	12.70	583.2	0.0	834.8
42.91	Bot - Section 2	1.00	1.07	26.467	29.11	396.41	0.650	0.000	2.91	11.155	7.25	337.7	0.0	476.5
45.00		1.00	1.08	26.724	29.40	393.98	0.650	0.000	2.09	7.996	5.20	244.5	0.0	621.9
49.08	Top - Section 1	1.00	1.10	27.201	29.92	388.89	0.650	0.000	4.08	15.384	10.00	478.7	0.0	1196.2
50.00		1.00	1.10	27.305	30.04	393.29	0.650	0.000	0.92	3.423	2.23	106.9	0.0	122.0
55.00		1.00	1.12	27.843	30.63	386.50	0.650	0.000	5.00	18.310	11.90	583.2	0.0	652.5
60.00		1.00	1.14	28.344	31.18	379.22	0.650	0.000	5.00	17.812	11.58	577.6	0.0	634.7
65.00		1.00	1.16	28.814	31.70	371.52	0.650	0.000	5.00	17.315	11.25	570.8	0.0	616.8
70.00		1.00	1.18	29.257	32.18	363.45	0.650	0.000	5.00	16.817	10.93	562.9	0.0	598.9
75.00		1.00	1.20	29.677	32.64	355.05	0.650	0.000	5.00	16.320	10.61	554.1	0.0	581.1
76.87	Bot - Section 3	1.00	1.20	29.828	32.81	351.83	0.650	0.000	1.87	5.986	3.89	204.3	0.0	213.1
80.00		1.00	1.21	30.075	33.08	346.36	0.650	0.000	3.13	9.968	6.48	343.0	0.0	634.5
82.12	Top - Section 2	1.00	1.22	30.238	33.26	342.59	0.650	0.000	2.12	6.658	4.33	230.3	0.0	423.7
85.00		1.00	1.23	30.454	33.50	342.14	0.650	0.000	2.88	8.878	5.77	309.3	0.0	253.2
90.00		1.00	1.24	30.817	33.90	332.96	0.650	0.000	5.00	15.038	9.77	530.2	0.0	428.8
95.00		1.00	1.26	31.164	34.28	323.57	0.650	0.000	5.00	14.541	9.45	518.4	0.0	414.5
100.00		1.00	1.27	31.497	34.65	313.97	0.650	0.000	5.00	14.043	9.13	506.0	0.0	400.2
105.00		1.00	1.28	31.818	35.00	304.18	0.650	0.000	5.00	13.546	8.80	493.1	0.0	386.0
110.00		1.00	1.29	32.126	35.34	294.21	0.650	0.000	5.00	13.048	8.48	479.5	0.0	371.7
115.00		1.00	1.31	32.424	35.67	284.09	0.650	0.000	5.00	12.550	8.16	465.5	0.0	357.4
120.00		1.00	1.32	32.713	35.98	273.80	0.650	0.000	5.00	12.053	7.83	451.1	0.0	343.1
122.04	Bot - Section 4	1.00	1.32	32.827	36.11	269.57	0.650	0.000	2.04	4.767	3.10	179.0	0.0	135.7
125.00		1.00	1.33	32.991	36.29	263.38	0.650	0.000	2.96	6.882	4.47	259.8	0.0	340.4
125.95	Top - Section 3	1.00	1.33	33.044	36.35	261.37	0.650	0.000	0.95	2.177	1.42	82.3	0.0	107.6
127.00	Appurtenance(s)	1.00	1.33	33.101	36.41	262.87	0.650	0.000	1.05	2.369	1.54	89.7	0.0	50.7
128.00	Appurtenance(s)	1.00	1.34	33.155	36.47	260.76	0.650	0.000	1.00	2.243	1.46	85.1	0.0	48.0
128.80	Appurtenance(s)	1.00	1.34	33.198	36.52	259.07	0.650	0.000	0.80	1.780	1.16	67.6	0.0	38.1
130.00		1.00	1.34	33.262	36.59	256.53	0.650	0.000	1.20	2.647	1.72	100.7	0.0	56.6
135.00		1.00	1.35	33.524	36.88	245.85	0.650	0.000	5.00	10.719	6.97	411.1	0.0	229.2
137.00	Appurtenance(s)	1.00	1.36	33.627	36.99	241.55	0.650	0.000	2.00	4.148	2.70	159.6	0.0	88.7
140.00		1.00	1.36	33.779	37.16	235.06	0.650	0.000	3.00	6.073	3.95	234.7	0.0	129.8
145.00		1.00	1.37	34.027	37.43	224.15	0.650	0.000	5.00	9.724	6.32	378.5	0.0	207.7
150.00	Appurtenance(s)	1.00	1.38	34.268	37.69	213.13	0.650	0.000	5.00	9.226	6.00	361.7	0.0	197.0
Totals:									150.00			15,471.2		18,634.4

Discrete Appurtenance Forces

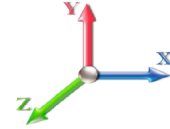
Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
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Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	150.00	Lightning Rod 1"x10'	1	34.550	38.004	1.00	1.00	2.32	55.80	0.000	6.000	141.07	0.00	846.44
2	137.00	Kathrein 782 11056 Bias	3	33.627	36.990	0.54	0.80	0.45	4.86	0.000	0.000	26.65	0.00	0.00
3	137.00	RR90-19-XXDPQ	3	33.627	36.990	0.54	0.80	9.60	86.40	0.000	0.000	567.93	0.00	0.00
4	137.00	KRY 112 144/1	3	33.627	36.990	0.54	0.80	0.66	29.70	0.000	0.000	39.02	0.00	0.00
5	137.00	Low Profile Mount	1	33.627	36.990	1.00	1.00	50.00	1908.00	0.000	0.000	2959.18	0.00	0.00
6	137.00	Ericsson 4449 B71+B12	3	33.627	36.990	0.54	0.80	2.65	199.80	0.000	0.000	157.03	0.00	0.00
7	137.00	Ericsson KRY 112 489/2	3	33.627	36.990	0.54	0.80	1.14	41.58	0.000	0.000	67.57	0.00	0.00
8	137.00	APXVAARR24 43-U-NA2	3	33.627	36.990	0.56	0.80	34.00	345.60	0.000	0.000	2012.43	0.00	0.00
9	137.00	APX16DWV-16DWVS-E-A	3	33.627	36.990	0.58	0.80	11.42	109.89	0.000	0.000	676.00	0.00	0.00
10	128.80	Low Profile Platform	1	33.198	36.517	1.00	1.00	22.00	1260.00	0.000	0.000	1285.42	0.00	0.00
11	128.00	LPA-80080-6CF	6	33.155	36.470	0.70	0.80	18.29	113.40	0.000	0.000	1067.26	0.00	0.00
12	128.00	SBNHH-1D65B	6	33.155	36.470	0.66	0.80	32.19	273.83	0.000	0.000	1878.40	0.00	0.00
13	127.00	RFS FD9R6004/2C-3L	6	33.101	36.411	0.40	0.80	0.86	16.20	0.000	0.000	50.33	0.00	0.00
14	127.00	DB-T1-6Z-8AB-OZ	2	33.101	36.411	0.68	0.90	6.48	79.20	0.000	0.000	377.51	0.00	0.00
15	127.00	RRH2X60-700	3	33.101	36.411	0.54	0.80	5.63	162.00	0.000	0.000	327.87	0.00	0.00
16	127.00	RRH2X60-PCS	3	33.101	36.411	0.54	0.80	3.54	148.50	0.000	0.000	206.09	0.00	0.00
17	127.00	RRH4x45-AWS	3	33.101	36.411	0.54	0.80	4.05	167.40	0.000	0.000	236.07	0.00	0.00

Totals: 5,002.16

12,075.81

Total Applied Force Summary

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

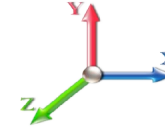


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Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		555.37	984.83	0.00	0.00
10.00		543.37	1026.20	0.00	0.00
15.00		541.42	1098.98	0.00	0.00
20.00		559.52	1077.54	0.00	0.00
25.00		571.18	1056.11	0.00	0.00
30.00		578.33	1034.68	0.00	0.00
35.00		582.10	1013.24	0.00	0.00
40.00		583.19	991.81	0.00	0.00
42.91		337.75	568.01	0.00	0.00
45.00		244.46	687.42	0.00	0.00
49.08		478.73	1324.31	0.00	0.00
50.00		106.93	150.90	0.00	0.00
55.00		583.21	809.53	0.00	0.00
60.00		577.58	791.67	0.00	0.00
65.00		570.76	773.81	0.00	0.00
70.00		562.88	755.95	0.00	0.00
75.00		554.05	738.09	0.00	0.00
76.87		204.27	271.94	0.00	0.00
80.00		342.96	732.64	0.00	0.00
82.12		230.33	490.37	0.00	0.00
85.00		309.29	343.53	0.00	0.00
90.00		530.17	585.84	0.00	0.00
95.00		518.40	571.55	0.00	0.00
100.00		506.01	557.26	0.00	0.00
105.00		493.05	542.97	0.00	0.00
110.00		479.55	528.68	0.00	0.00
115.00		465.54	514.39	0.00	0.00
120.00		451.06	500.10	0.00	0.00
122.04		179.02	199.61	0.00	0.00
125.00		259.76	433.42	0.00	0.00
125.95		82.29	137.57	0.00	0.00
127.00	(17) attachments	1287.59	656.84	0.00	0.00
128.00	(12) attachments	3030.74	464.63	0.00	0.00
128.80	(1) attachments	1353.03	1312.62	0.00	0.00
130.00		100.71	78.42	0.00	0.00
135.00		411.08	320.11	0.00	0.00
137.00	(22) attachments	6665.38	2850.87	0.00	0.00
140.00		234.68	133.32	0.00	0.00
145.00		378.51	213.62	0.00	0.00
150.00	(1) attachments	502.76	258.71	0.00	846.44
Totals:		27,547.00	27,582.10	0.00	846.44

Linear Appurtenance Segment Forces (Factored)

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

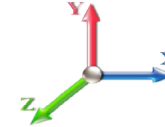
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Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	1.87
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	0.49
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.487	0.00	4.68
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.487	0.00	1.23
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.718	0.00	4.68
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.718	0.00	1.23
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.740	0.00	4.68
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.740	0.00	1.23
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.620	0.00	4.68
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.620	0.00	1.23
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.396	0.00	4.68
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.396	0.00	1.23
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.091	0.00	4.68
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.091	0.00	1.23
42.91	Safety Cable	Yes	2.91	0.000	0.00	0.00	0.00	0.000	0.000	26.467	0.00	2.73
42.91	Safety Cable	Yes	2.91	0.000	0.00	0.00	0.00	0.000	0.000	26.467	0.00	0.72
45.00	Safety Cable	Yes	2.09	0.000	0.00	0.00	0.00	0.000	0.000	26.724	0.00	1.95
45.00	Safety Cable	Yes	2.09	0.000	0.00	0.00	0.00	0.000	0.000	26.724	0.00	0.51
49.08	Safety Cable	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	27.201	0.00	3.82
49.08	Safety Cable	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	27.201	0.00	1.00
50.00	Safety Cable	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	27.305	0.00	0.86
50.00	Safety Cable	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	27.305	0.00	0.23
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.843	0.00	4.68
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.843	0.00	1.23
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.344	0.00	4.68
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.344	0.00	1.23
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.814	0.00	4.68
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.814	0.00	1.23
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.257	0.00	4.68
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.257	0.00	1.23
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.677	0.00	4.68
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.677	0.00	1.23
76.87	Safety Cable	Yes	1.87	0.000	0.00	0.00	0.00	0.000	0.000	29.828	0.00	1.75
76.87	Safety Cable	Yes	1.87	0.000	0.00	0.00	0.00	0.000	0.000	29.828	0.00	0.46
80.00	Safety Cable	Yes	3.13	0.000	0.00	0.00	0.00	0.000	0.000	30.075	0.00	2.93
80.00	Safety Cable	Yes	3.13	0.000	0.00	0.00	0.00	0.000	0.000	30.075	0.00	0.77
82.12	Safety Cable	Yes	2.12	0.000	0.00	0.00	0.00	0.000	0.000	30.238	0.00	1.99
82.12	Safety Cable	Yes	2.12	0.000	0.00	0.00	0.00	0.000	0.000	30.238	0.00	0.52
85.00	Safety Cable	Yes	2.88	0.000	0.00	0.00	0.00	0.000	0.000	30.454	0.00	2.69
85.00	Safety Cable	Yes	2.88	0.000	0.00	0.00	0.00	0.000	0.000	30.454	0.00	0.71
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.817	0.00	4.68
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.817	0.00	1.23
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.164	0.00	4.68
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.164	0.00	1.23
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.497	0.00	4.68
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.497	0.00	1.23
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.818	0.00	4.68

Linear Appurtenance Segment Forces (Factored)

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

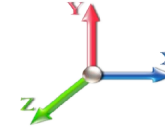


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Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.818	0.00	1.23
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.126	0.00	4.68
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.126	0.00	1.23
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.424	0.00	4.68
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.424	0.00	1.23
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.713	0.00	4.68
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.713	0.00	1.23
122.04	Safety Cable	Yes	2.04	0.000	0.00	0.00	0.00	0.000	0.000	32.827	0.00	1.91
122.04	Safety Cable	Yes	2.04	0.000	0.00	0.00	0.00	0.000	0.000	32.827	0.00	0.50
125.00	Safety Cable	Yes	2.96	0.000	0.00	0.00	0.00	0.000	0.000	32.991	0.00	2.77
125.00	Safety Cable	Yes	2.96	0.000	0.00	0.00	0.00	0.000	0.000	32.991	0.00	0.73
125.95	Safety Cable	Yes	0.95	0.000	0.00	0.00	0.00	0.000	0.000	33.044	0.00	0.89
125.95	Safety Cable	Yes	0.95	0.000	0.00	0.00	0.00	0.000	0.000	33.044	0.00	0.23
127.00	Safety Cable	Yes	1.05	0.000	0.00	0.00	0.00	0.000	0.000	33.101	0.00	0.98
127.00	Safety Cable	Yes	1.05	0.000	0.00	0.00	0.00	0.000	0.000	33.101	0.00	0.26
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.155	0.00	0.94
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.155	0.00	0.25
128.80	Safety Cable	Yes	0.80	0.000	0.00	0.00	0.00	0.000	0.000	33.198	0.00	0.75
128.80	Safety Cable	Yes	0.80	0.000	0.00	0.00	0.00	0.000	0.000	33.198	0.00	0.20
130.00	Safety Cable	Yes	1.20	0.000	0.00	0.00	0.00	0.000	0.000	33.262	0.00	1.12
130.00	Safety Cable	Yes	1.20	0.000	0.00	0.00	0.00	0.000	0.000	33.262	0.00	0.29
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.524	0.00	4.68
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.524	0.00	1.23
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.627	0.00	1.87
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.627	0.00	0.49
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.779	0.00	2.81
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.779	0.00	0.74
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.027	0.00	4.68
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.027	0.00	1.23
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.268	0.00	4.68
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.268	0.00	1.23
Totals:											0.0	167.8

Calculated Forces

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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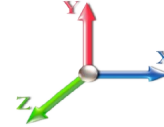


Load Case: 0.9D + 1.6W 101 mph Wind

Iterations 24

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	-27.54	-27.58	0.00	-2787.3	0.00	2787.31	4250.57	2125.28	9550.04	4782.12	0.00	0.000	0.000	0.590
5.00	-26.48	-27.10	0.00	-2649.3	0.00	2649.39	4196.29	2098.14	9223.72	4618.72	0.09	-0.158	0.000	0.580
10.00	-25.39	-26.63	0.00	-2513.8	0.00	2513.88	4140.37	2070.19	8899.17	4456.20	0.34	-0.318	0.000	0.570
15.00	-24.22	-26.15	0.00	-2380.7	0.00	2380.76	4082.82	2041.41	8576.63	4294.69	0.76	-0.480	0.000	0.560
20.00	-23.07	-25.64	0.00	-2250.0	0.00	2250.03	4023.63	2011.81	8256.33	4134.30	1.35	-0.644	0.000	0.550
25.00	-21.95	-25.12	0.00	-2121.8	0.00	2121.82	3962.80	1981.40	7938.51	3975.15	2.11	-0.810	0.000	0.539
30.00	-20.85	-24.59	0.00	-1996.2	0.00	1996.22	3900.33	1950.16	7623.41	3817.37	3.05	-0.978	0.000	0.528
35.00	-19.78	-24.05	0.00	-1873.2	0.00	1873.28	3836.22	1918.11	7311.28	3661.07	4.17	-1.148	0.000	0.517
40.00	-18.74	-23.49	0.00	-1753.0	0.00	1753.04	3770.47	1885.24	7002.35	3506.38	5.46	-1.320	0.000	0.505
42.91	-18.15	-23.16	0.00	-1684.6	0.00	1684.62	3731.41	1865.70	6823.91	3417.03	6.30	-1.423	0.000	0.498
45.00	-17.42	-22.94	0.00	-1636.2	0.00	1636.28	3703.09	1851.54	6696.86	3353.41	6.94	-1.497	0.000	0.493
49.08	-16.08	-22.45	0.00	-1542.7	0.00	1542.71	2883.58	1441.79	5189.66	2598.69	8.28	-1.641	0.000	0.599
50.00	-15.88	-22.37	0.00	-1522.0	0.00	1522.06	2874.90	1437.45	5148.29	2577.97	8.60	-1.674	0.000	0.596
55.00	-15.01	-21.81	0.00	-1410.2	0.00	1410.22	2826.79	1413.40	4924.46	2465.89	10.46	-1.875	0.000	0.577
60.00	-14.17	-21.26	0.00	-1301.1	0.00	1301.17	2777.04	1388.52	4702.55	2354.77	12.54	-2.078	0.000	0.558
65.00	-13.34	-20.71	0.00	-1194.8	0.00	1194.88	2725.66	1362.83	4482.79	2244.72	14.82	-2.280	0.000	0.537
70.00	-12.54	-20.16	0.00	-1091.3	0.00	1091.35	2672.63	1336.31	4265.41	2135.88	17.32	-2.483	0.000	0.516
75.00	-11.78	-19.60	0.00	-990.58	0.00	990.58	2617.96	1308.98	4050.67	2028.35	20.03	-2.684	0.000	0.493
76.87	-11.48	-19.40	0.00	-953.87	0.00	953.87	2597.06	1298.53	3970.94	1988.42	21.09	-2.762	0.000	0.484
80.00	-10.73	-19.04	0.00	-893.21	0.00	893.21	2561.66	1280.83	3838.80	1922.25	22.94	-2.889	0.000	0.469
82.12	-10.22	-18.81	0.00	-852.77	0.00	852.77	1893.43	946.71	2847.18	1425.71	24.25	-2.975	0.000	0.604
85.00	-9.84	-18.51	0.00	-798.68	0.00	798.68	1872.76	936.38	2763.64	1383.87	26.08	-3.091	0.000	0.583
90.00	-9.21	-17.98	0.00	-706.14	0.00	706.14	1835.56	917.78	2619.34	1311.62	29.44	-3.322	0.000	0.544
95.00	-8.61	-17.46	0.00	-616.22	0.00	616.22	1796.72	898.36	2476.41	1240.05	33.04	-3.546	0.000	0.502
100.00	-8.02	-16.95	0.00	-528.90	0.00	528.90	1756.24	878.12	2335.09	1169.28	36.87	-3.762	0.000	0.457
105.00	-7.46	-16.45	0.00	-444.13	0.00	444.13	1714.12	857.06	2195.60	1099.43	40.92	-3.966	0.000	0.409
110.00	-6.91	-15.96	0.00	-361.88	0.00	361.88	1670.37	835.18	2058.21	1030.63	45.17	-4.154	0.000	0.356
115.00	-6.39	-15.47	0.00	-282.10	0.00	282.10	1624.97	812.48	1923.13	963.00	49.61	-4.324	0.000	0.297
120.00	-5.90	-14.99	0.00	-204.74	0.00	204.74	1577.93	788.97	1790.62	896.64	54.22	-4.468	0.000	0.232
122.04	-5.70	-14.81	0.00	-174.20	0.00	174.20	1558.31	779.15	1737.43	870.01	56.13	-4.520	0.000	0.204
125.00	-5.28	-14.52	0.00	-130.33	0.00	130.33	1529.26	764.63	1660.91	831.69	58.96	-4.583	0.000	0.161
125.95	-5.15	-14.42	0.00	-116.49	0.00	116.49	1048.18	524.09	1150.34	576.03	59.87	-4.601	0.000	0.208
127.00	-4.59	-13.09	0.00	-101.39	0.00	101.39	1042.37	521.19	1133.34	567.51	60.88	-4.619	0.000	0.184
128.00	-4.37	-10.03	0.00	-88.30	0.00	88.30	1036.75	518.37	1117.13	559.39	61.85	-4.639	0.000	0.162
128.80	-3.17	-8.58	0.00	-80.27	0.00	80.27	1032.20	516.10	1104.19	552.91	62.63	-4.653	0.000	0.149
130.00	-3.09	-8.47	0.00	-69.98	0.00	69.98	1025.31	512.65	1084.83	543.22	63.80	-4.672	0.000	0.132
135.00	-2.80	-8.04	0.00	-27.61	0.00	27.61	995.56	497.78	1004.87	503.18	68.72	-4.726	0.000	0.058
137.00	-0.51	-1.16	0.00	-11.53	0.00	11.53	983.21	491.60	973.24	487.34	70.71	-4.736	0.000	0.024
140.00	-0.40	-0.92	0.00	-8.04	0.00	8.04	964.18	482.09	926.23	463.80	73.68	-4.744	0.000	0.018
145.00	-0.22	-0.52	0.00	-3.46	0.00	3.46	931.15	465.58	849.16	425.21	78.65	-4.753	0.000	0.008
150.00	0.00	-0.50	0.00	-0.85	0.00	0.85	896.49	448.25	773.89	387.52	83.62	-4.757	0.000	0.002

Wind Loading - Shaft

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

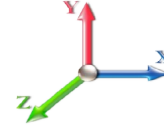
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	1.468	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.700	5.00	24.438	29.33	166.7	591.3	1904.4
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.800	5.00	24.024	28.83	163.9	613.8	1898.3
15.00		1.00	0.87	5.266	5.79	0.00	1.200	1.866	5.00	23.581	28.30	163.9	623.4	1879.3
20.00		1.00	0.92	5.568	6.12	0.00	1.200	1.916	5.00	23.125	27.75	170.0	626.6	1854.0
25.00		1.00	0.96	5.818	6.40	0.00	1.200	1.957	5.00	22.662	27.19	174.0	625.9	1824.7
30.00		1.00	0.99	6.034	6.64	0.00	1.200	1.991	5.00	22.192	26.63	176.8	622.6	1792.8
35.00		1.00	1.02	6.224	6.85	0.00	1.200	2.020	5.00	21.719	26.06	178.4	617.3	1758.9
40.00		1.00	1.05	6.394	7.03	0.00	1.200	2.046	5.00	21.244	25.49	179.3	610.5	1723.6
42.91	Bot - Section 2	1.00	1.07	6.486	7.13	0.00	1.200	2.060	2.91	12.155	14.59	104.1	353.1	988.5
45.00		1.00	1.08	6.549	7.20	0.00	1.200	2.070	2.09	8.716	10.46	75.4	254.8	1084.0
49.08	Top - Section 1	1.00	1.10	6.666	7.33	0.00	1.200	2.087	4.08	16.804	20.16	147.9	492.4	2087.3
50.00		1.00	1.10	6.692	7.36	0.00	1.200	2.091	0.92	3.744	4.49	33.1	110.7	273.4
55.00		1.00	1.12	6.823	7.51	0.00	1.200	2.110	5.00	20.069	24.08	180.8	592.1	1462.1
60.00		1.00	1.14	6.946	7.64	0.00	1.200	2.128	5.00	19.586	23.50	179.6	581.7	1427.9
65.00		1.00	1.16	7.062	7.77	0.00	1.200	2.145	5.00	19.102	22.92	178.1	570.6	1393.0
70.00		1.00	1.18	7.170	7.89	0.00	1.200	2.161	5.00	18.618	22.34	176.2	559.1	1357.6
75.00		1.00	1.20	7.273	8.00	0.00	1.200	2.175	5.00	18.132	21.76	174.1	547.0	1321.8
76.87	Bot - Section 3	1.00	1.20	7.310	8.04	0.00	1.200	2.181	1.87	6.667	8.00	64.3	203.2	487.4
80.00		1.00	1.21	7.371	8.11	0.00	1.200	2.189	3.13	11.109	13.33	108.1	338.6	1184.5
82.12	Top - Section 2	1.00	1.22	7.411	8.15	0.00	1.200	2.195	2.12	7.435	8.92	72.7	227.6	792.6
85.00		1.00	1.23	7.464	8.21	0.00	1.200	2.202	2.88	9.933	11.92	97.9	304.1	641.7
90.00		1.00	1.24	7.552	8.31	0.00	1.200	2.215	5.00	16.884	20.26	168.3	515.4	1087.2
95.00		1.00	1.26	7.637	8.40	0.00	1.200	2.227	5.00	16.396	19.68	165.3	501.9	1054.6
100.00		1.00	1.27	7.719	8.49	0.00	1.200	2.238	5.00	15.908	19.09	162.1	488.1	1021.8
105.00		1.00	1.28	7.798	8.58	0.00	1.200	2.249	5.00	15.419	18.50	158.7	474.1	988.7
110.00		1.00	1.29	7.873	8.66	0.00	1.200	2.259	5.00	14.930	17.92	155.2	459.7	955.3
115.00		1.00	1.31	7.946	8.74	0.00	1.200	2.269	5.00	14.441	17.33	151.5	445.2	921.7
120.00		1.00	1.32	8.017	8.82	0.00	1.200	2.278	5.00	13.952	16.74	147.6	430.4	887.8
122.04	Bot - Section 4	1.00	1.32	8.045	8.85	0.00	1.200	2.282	2.04	5.542	6.65	58.8	172.8	353.7
125.00		1.00	1.33	8.085	8.89	0.00	1.200	2.288	2.96	8.012	9.61	85.5	249.4	703.2
125.95	Top - Section 3	1.00	1.33	8.098	8.91	0.00	1.200	2.289	0.95	2.541	3.05	27.2	79.7	223.2
127.00	Appurtenance(s)	1.00	1.33	8.112	8.92	0.00	1.200	2.291	1.05	2.769	3.32	29.7	86.8	154.4
128.00	Appurtenance(s)	1.00	1.34	8.125	8.94	0.00	1.200	2.293	1.00	2.625	3.15	28.2	82.3	146.3
128.80	Appurtenance(s)	1.00	1.34	8.136	8.95	0.00	1.200	2.294	0.80	2.086	2.50	22.4	65.5	116.2
130.00		1.00	1.34	8.152	8.97	0.00	1.200	2.297	1.20	3.106	3.73	33.4	97.3	172.8
135.00		1.00	1.35	8.216	9.04	0.00	1.200	2.305	5.00	12.640	15.17	137.1	390.3	695.8
137.00	Appurtenance(s)	1.00	1.36	8.241	9.07	0.00	1.200	2.308	2.00	4.918	5.90	53.5	153.6	271.8
140.00		1.00	1.36	8.278	9.11	0.00	1.200	2.313	3.00	7.230	8.68	79.0	224.8	397.9
145.00		1.00	1.37	8.339	9.17	0.00	1.200	2.321	5.00	11.658	13.99	128.3	359.0	636.0
150.00	Appurtenance(s)	1.00	1.38	8.398	9.24	0.00	1.200	2.329	5.00	11.167	13.40	123.8	343.2	605.9
Totals:									150.00			4,880.6		40,531.9

Discrete Appurtenance Forces

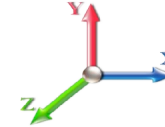
Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	150.00	Lightning Rod 1"x10'	1	8.467	9.314	1.00	1.00	8.05	140.25	0.000	6.000	74.98	0.00	449.86
2	137.00	Kathrein 782 11056 Bias	3	8.241	9.065	0.54	0.80	1.30	0.61	0.000	0.000	11.82	0.00	0.00
3	137.00	RR90-19-XXDPQ	3	8.241	9.065	0.55	0.80	16.37	845.78	0.000	0.000	148.39	0.00	0.00
4	137.00	KRY 112 144/1	3	8.241	9.065	0.54	0.80	1.67	73.08	0.000	0.000	15.14	0.00	0.00
5	137.00	Low Profile Mount	1	8.241	9.065	1.00	1.00	98.94	4200.37	0.000	0.000	896.91	0.00	0.00
6	137.00	Ericsson 4449 B71+B12	3	8.241	9.065	0.54	0.80	3.79	556.30	0.000	0.000	34.38	0.00	0.00
7	137.00	Ericsson KRY 112 489/2	3	8.241	9.065	0.54	0.80	2.47	117.01	0.000	0.000	22.38	0.00	0.00
8	137.00	APXVAARR24 43-U-NA2	3	8.241	9.065	0.56	0.80	38.28	2238.22	0.000	0.000	346.99	0.00	0.00
9	137.00	APX16DWV-16DWVS-E-A	3	8.241	9.065	0.58	0.80	16.40	510.53	0.000	0.000	148.67	0.00	0.00
10	128.80	Low Profile Platform	1	8.136	8.949	1.00	1.00	45.22	2986.09	0.000	0.000	404.69	0.00	0.00
11	128.00	LPA-80080-6CF	6	8.125	8.938	0.70	0.80	25.92	1189.16	0.000	0.000	231.70	0.00	0.00
12	128.00	SBNHH-1D65B	6	8.125	8.938	0.67	0.80	39.45	2047.50	0.000	0.000	352.64	0.00	0.00
13	127.00	RFS FD9R6004/2C-3L	6	8.112	8.923	0.40	0.80	2.26	68.39	0.000	0.000	20.17	0.00	0.00
14	127.00	DB-T1-6Z-8AB-OZ	2	8.112	8.923	0.68	0.90	8.06	504.42	0.000	0.000	71.93	0.00	0.00
15	127.00	RRH2X60-700	3	8.112	8.923	0.54	0.80	7.29	499.49	0.000	0.000	65.09	0.00	0.00
16	127.00	RRH2X60-PCS	3	8.112	8.923	0.54	0.80	4.92	555.96	0.000	0.000	43.90	0.00	0.00
17	127.00	RRH4x45-AWS	3	8.112	8.923	0.54	0.80	6.63	524.21	0.000	0.000	59.19	0.00	0.00

Totals: 17,057.39

2,948.97

Total Applied Force Summary

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

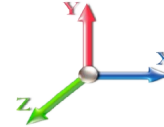
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		166.71	1904.37	0.00	0.00
10.00		163.88	2000.81	0.00	0.00
15.00		163.91	2138.72	0.00	0.00
20.00		169.95	2115.85	0.00	0.00
25.00		174.04	2088.65	0.00	0.00
30.00		176.75	2058.51	0.00	0.00
35.00		178.43	2026.21	0.00	0.00
40.00		179.31	1992.25	0.00	0.00
42.91		104.07	1145.45	0.00	0.00
45.00		75.35	1196.69	0.00	0.00
49.08		147.86	2308.42	0.00	0.00
50.00		33.07	323.29	0.00	0.00
55.00		180.76	1734.30	0.00	0.00
60.00		179.59	1701.07	0.00	0.00
65.00		178.06	1667.17	0.00	0.00
70.00		176.21	1632.67	0.00	0.00
75.00		174.08	1597.64	0.00	0.00
76.87		64.33	590.83	0.00	0.00
80.00		108.08	1357.50	0.00	0.00
82.12		72.73	910.17	0.00	0.00
85.00		97.86	801.30	0.00	0.00
90.00		168.32	1365.30	0.00	0.00
95.00		165.30	1333.44	0.00	0.00
100.00		162.09	1301.25	0.00	0.00
105.00		158.71	1268.76	0.00	0.00
110.00		155.17	1235.99	0.00	0.00
115.00		151.48	1202.97	0.00	0.00
120.00		147.64	1169.70	0.00	0.00
122.04		58.85	468.61	0.00	0.00
125.00		85.51	870.57	0.00	0.00
125.95		27.16	277.05	0.00	0.00
127.00	(17) attachments	289.93	2366.02	0.00	0.00
128.00	(12) attachments	612.50	3436.87	0.00	0.00
128.80	(1) attachments	427.10	3133.50	0.00	0.00
130.00		33.42	219.57	0.00	0.00
135.00		137.08	891.17	0.00	0.00
137.00	(22) attachments	1678.17	8891.98	0.00	0.00
140.00		79.00	447.36	0.00	0.00
145.00		128.33	718.97	0.00	0.00
150.00	(1) attachments	198.77	829.56	0.00	449.86
Totals:		7,829.59	64,720.50	0.00	449.86

Linear Appurtenance Segment Forces (Factored)

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

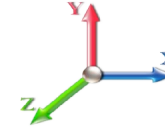
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	12.23
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	9.64
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.266	0.00	32.21
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.266	0.00	25.69
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.568	0.00	33.49
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.568	0.00	26.92
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.818	0.00	34.54
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.818	0.00	27.94
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.034	0.00	35.45
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.034	0.00	28.81
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.224	0.00	36.25
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.224	0.00	29.58
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.394	0.00	36.96
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.394	0.00	30.26
42.91	Safety Cable	Yes	2.91	0.000	0.00	0.00	0.00	0.000	0.000	6.486	0.00	21.76
42.91	Safety Cable	Yes	2.91	0.000	0.00	0.00	0.00	0.000	0.000	6.486	0.00	17.85
45.00	Safety Cable	Yes	2.09	0.000	0.00	0.00	0.00	0.000	0.000	6.549	0.00	15.69
45.00	Safety Cable	Yes	2.09	0.000	0.00	0.00	0.00	0.000	0.000	6.549	0.00	12.89
49.08	Safety Cable	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	6.666	0.00	31.08
49.08	Safety Cable	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	6.666	0.00	25.58
50.00	Safety Cable	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	6.692	0.00	7.03
50.00	Safety Cable	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	6.692	0.00	5.79
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.823	0.00	38.74
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.823	0.00	31.98
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.946	0.00	39.25
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.946	0.00	32.48
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.062	0.00	39.73
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.062	0.00	32.94
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.170	0.00	40.18
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.170	0.00	33.37
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.273	0.00	40.60
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.273	0.00	33.78
76.87	Safety Cable	Yes	1.87	0.000	0.00	0.00	0.00	0.000	0.000	7.310	0.00	15.27
76.87	Safety Cable	Yes	1.87	0.000	0.00	0.00	0.00	0.000	0.000	7.310	0.00	12.71
80.00	Safety Cable	Yes	3.13	0.000	0.00	0.00	0.00	0.000	0.000	7.371	0.00	25.64
80.00	Safety Cable	Yes	3.13	0.000	0.00	0.00	0.00	0.000	0.000	7.371	0.00	21.37
82.12	Safety Cable	Yes	2.12	0.000	0.00	0.00	0.00	0.000	0.000	7.411	0.00	17.48
82.12	Safety Cable	Yes	2.12	0.000	0.00	0.00	0.00	0.000	0.000	7.411	0.00	14.58
85.00	Safety Cable	Yes	2.88	0.000	0.00	0.00	0.00	0.000	0.000	7.464	0.00	23.81
85.00	Safety Cable	Yes	2.88	0.000	0.00	0.00	0.00	0.000	0.000	7.464	0.00	19.87
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.552	0.00	41.75
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.552	0.00	34.89
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.637	0.00	42.10
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.637	0.00	35.23
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.719	0.00	42.43
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.719	0.00	35.55
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.798	0.00	42.76

Linear Appurtenance Segment Forces (Factored)

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

Page: 24

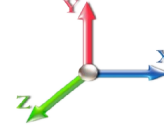


Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 24

Dead Load Factor 1.20

Wind Load Factor 1.00



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)
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.798	0.00	35.86
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.873	0.00	43.06
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.873	0.00	36.16
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.946	0.00	43.36
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.946	0.00	36.45
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.017	0.00	43.65
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.017	0.00	36.73
122.04	Safety Cable	Yes	2.04	0.000	0.00	0.00	0.00	0.000	0.000	8.045	0.00	17.83
122.04	Safety Cable	Yes	2.04	0.000	0.00	0.00	0.00	0.000	0.000	8.045	0.00	15.01
125.00	Safety Cable	Yes	2.96	0.000	0.00	0.00	0.00	0.000	0.000	8.085	0.00	26.04
125.00	Safety Cable	Yes	2.96	0.000	0.00	0.00	0.00	0.000	0.000	8.085	0.00	21.93
125.95	Safety Cable	Yes	0.95	0.000	0.00	0.00	0.00	0.000	0.000	8.098	0.00	8.39
125.95	Safety Cable	Yes	0.95	0.000	0.00	0.00	0.00	0.000	0.000	8.098	0.00	7.06
127.00	Safety Cable	Yes	1.05	0.000	0.00	0.00	0.00	0.000	0.000	8.112	0.00	9.22
127.00	Safety Cable	Yes	1.05	0.000	0.00	0.00	0.00	0.000	0.000	8.112	0.00	7.77
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.125	0.00	8.82
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.125	0.00	7.43
128.80	Safety Cable	Yes	0.80	0.000	0.00	0.00	0.00	0.000	0.000	8.136	0.00	7.06
128.80	Safety Cable	Yes	0.80	0.000	0.00	0.00	0.00	0.000	0.000	8.136	0.00	5.95
130.00	Safety Cable	Yes	1.20	0.000	0.00	0.00	0.00	0.000	0.000	8.152	0.00	10.61
130.00	Safety Cable	Yes	1.20	0.000	0.00	0.00	0.00	0.000	0.000	8.152	0.00	8.94
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.216	0.00	44.46
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.216	0.00	37.52
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.241	0.00	17.83
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.241	0.00	15.05
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.278	0.00	26.83
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.278	0.00	22.66
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.339	0.00	44.97
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.339	0.00	38.00
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.398	0.00	45.21
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.398	0.00	38.24
Totals:											0.0	2,094.2

Calculated Forces

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

Page: 25

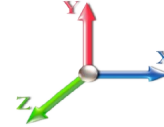


Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 24

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	-64.72	-7.86	0.00	-805.93	0.00	805.93	4250.57	2125.28	9550.04	4782.12	0.00	0.000	0.000	0.184
5.00	-62.81	-7.74	0.00	-766.65	0.00	766.65	4196.29	2098.14	9223.72	4618.72	0.02	-0.046	0.000	0.181
10.00	-60.80	-7.62	0.00	-727.96	0.00	727.96	4140.37	2070.19	8899.17	4456.20	0.10	-0.092	0.000	0.178
15.00	-58.66	-7.50	0.00	-689.85	0.00	689.85	4082.82	2041.41	8576.63	4294.69	0.22	-0.139	0.000	0.175
20.00	-56.53	-7.37	0.00	-652.35	0.00	652.35	4023.63	2011.81	8256.33	4134.30	0.39	-0.186	0.000	0.172
25.00	-54.44	-7.24	0.00	-615.48	0.00	615.48	3962.80	1981.40	7938.51	3975.15	0.61	-0.235	0.000	0.169
30.00	-52.38	-7.10	0.00	-579.30	0.00	579.30	3900.33	1950.16	7623.41	3817.37	0.88	-0.283	0.000	0.165
35.00	-50.34	-6.95	0.00	-543.82	0.00	543.82	3836.22	1918.11	7311.28	3661.07	1.21	-0.333	0.000	0.162
40.00	-48.35	-6.79	0.00	-509.06	0.00	509.06	3770.47	1885.24	7002.35	3506.38	1.58	-0.383	0.000	0.158
42.91	-47.20	-6.70	0.00	-489.28	0.00	489.28	3731.41	1865.70	6823.91	3417.03	1.83	-0.412	0.000	0.156
45.00	-46.00	-6.64	0.00	-475.29	0.00	475.29	3703.09	1851.54	6696.86	3353.41	2.01	-0.434	0.000	0.154
49.08	-43.69	-6.50	0.00	-448.19	0.00	448.19	2883.58	1441.79	5189.66	2598.69	2.40	-0.476	0.000	0.188
50.00	-43.36	-6.49	0.00	-442.22	0.00	442.22	2874.90	1437.45	5148.29	2577.97	2.49	-0.485	0.000	0.187
55.00	-41.63	-6.33	0.00	-409.79	0.00	409.79	2826.79	1413.40	4924.46	2465.89	3.03	-0.544	0.000	0.181
60.00	-39.92	-6.18	0.00	-378.12	0.00	378.12	2777.04	1388.52	4702.55	2354.77	3.63	-0.603	0.000	0.175
65.00	-38.25	-6.02	0.00	-347.24	0.00	347.24	2725.66	1362.83	4482.79	2244.72	4.30	-0.662	0.000	0.169
70.00	-36.61	-5.86	0.00	-317.14	0.00	317.14	2672.63	1336.31	4265.41	2135.88	5.02	-0.720	0.000	0.162
75.00	-35.01	-5.69	0.00	-287.84	0.00	287.84	2617.96	1308.98	4050.67	2028.35	5.81	-0.779	0.000	0.155
76.87	-34.42	-5.64	0.00	-277.18	0.00	277.18	2597.06	1298.53	3970.94	1988.42	6.12	-0.801	0.000	0.153
80.00	-33.06	-5.53	0.00	-259.55	0.00	259.55	2561.66	1280.83	3838.80	1922.25	6.66	-0.838	0.000	0.148
82.12	-32.15	-5.46	0.00	-247.82	0.00	247.82	1893.43	946.71	2847.18	1425.71	7.03	-0.864	0.000	0.191
85.00	-31.35	-5.37	0.00	-232.12	0.00	232.12	1872.76	936.38	2763.64	1383.87	7.56	-0.897	0.000	0.185
90.00	-29.98	-5.22	0.00	-205.25	0.00	205.25	1835.56	917.78	2619.34	1311.62	8.54	-0.964	0.000	0.173
95.00	-28.64	-5.06	0.00	-179.15	0.00	179.15	1796.72	898.36	2476.41	1240.05	9.59	-1.030	0.000	0.160
100.00	-27.34	-4.91	0.00	-153.84	0.00	153.84	1756.24	878.12	2335.09	1169.28	10.70	-1.092	0.000	0.147
105.00	-26.07	-4.75	0.00	-129.32	0.00	129.32	1714.12	857.06	2195.60	1099.43	11.88	-1.152	0.000	0.133
110.00	-24.83	-4.59	0.00	-105.58	0.00	105.58	1670.37	835.18	2058.21	1030.63	13.11	-1.207	0.000	0.117
115.00	-23.63	-4.43	0.00	-82.63	0.00	82.63	1624.97	812.48	1923.13	963.00	14.40	-1.256	0.000	0.100
120.00	-22.46	-4.27	0.00	-60.47	0.00	60.47	1577.93	788.97	1790.62	896.64	15.74	-1.298	0.000	0.082
122.04	-21.99	-4.21	0.00	-51.78	0.00	51.78	1558.31	779.15	1737.43	870.01	16.30	-1.314	0.000	0.074
125.00	-21.12	-4.10	0.00	-39.31	0.00	39.31	1529.26	764.63	1660.91	831.69	17.12	-1.333	0.000	0.061
125.95	-20.85	-4.07	0.00	-35.40	0.00	35.40	1048.18	524.09	1150.34	576.03	17.39	-1.338	0.000	0.081
127.00	-18.49	-3.73	0.00	-31.14	0.00	31.14	1042.37	521.19	1133.34	567.51	17.68	-1.344	0.000	0.073
128.00	-15.06	-3.04	0.00	-27.41	0.00	27.41	1036.75	518.37	1117.13	559.39	17.96	-1.350	0.000	0.064
128.80	-11.94	-2.54	0.00	-24.98	0.00	24.98	1032.20	516.10	1104.19	552.91	18.19	-1.354	0.000	0.057
130.00	-11.72	-2.50	0.00	-21.93	0.00	21.93	1025.31	512.65	1084.83	543.22	18.53	-1.360	0.000	0.052
135.00	-10.83	-2.35	0.00	-9.42	0.00	9.42	995.56	497.78	1004.87	503.18	19.97	-1.378	0.000	0.030
137.00	-1.99	-0.45	0.00	-4.73	0.00	4.73	983.21	491.60	973.24	487.34	20.55	-1.381	0.000	0.012
140.00	-1.54	-0.36	0.00	-3.37	0.00	3.37	964.18	482.09	926.23	463.80	21.41	-1.384	0.000	0.009
145.00	-0.82	-0.22	0.00	-1.54	0.00	1.54	931.15	465.58	849.16	425.21	22.87	-1.388	0.000	0.005
150.00	0.00	-0.20	0.00	-0.45	0.00	0.45	896.49	448.25	773.89	387.52	24.32	-1.390	0.000	0.001

Seismic Segment Forces (Factored)

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

Page: 26



Load Case: 1.2D + 1.0E

Iterations 22

Gust Response Factor 1.10

Sds 0.18

Ss 0.17

Dead Load Factor 1.20 **Seismic Load Factor** 1.00

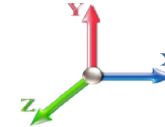
Sd1 0.10

S1 0.06

Wind Load Factor 0.00 **Structure Frequency (f1)** 0.42

SA 0.04

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	0.01	0.01	0.00	
5.00		1094.2	0.00	0.04	0.02	19.36	
10.00		1070.4	0.01	0.06	0.03	25.40	
15.00		1046.6	0.02	0.07	0.04	28.13	
20.00		1022.8	0.04	0.07	0.04	29.25	
25.00		998.99	0.06	0.07	0.04	29.64	
30.00		975.17	0.08	0.07	0.04	29.75	
35.00		951.36	0.11	0.07	0.04	29.78	
40.00		927.54	0.14	0.07	0.03	29.69	
42.91	Bot - Section 2	529.47	0.16	0.07	0.03	17.11	
45.00		690.99	0.18	0.07	0.03	22.43	
49.08	Top - Section 1	1329.0	0.21	0.06	0.02	43.07	
50.00		135.56	0.22	0.06	0.02	4.38	
55.00		725.02	0.26	0.05	0.02	22.59	
60.00		705.17	0.31	0.04	0.01	20.06	
65.00		685.32	0.36	0.03	0.01	16.27	
70.00		665.48	0.42	0.01	0.01	11.16	
75.00		645.63	0.48	-0.01	0.01	5.00	
76.87	Bot - Section 3	236.79	0.51	-0.02	0.01	0.94	
80.00		704.95	0.55	-0.03	0.01	-1.76	
82.12	Top - Section 2	470.77	0.58	-0.04	0.01	-3.23	
85.00		281.32	0.62	-0.06	0.02	-3.52	
90.00		476.47	0.69	-0.08	0.03	-9.83	
95.00		460.59	0.77	-0.10	0.04	-11.76	
100.00		444.71	0.85	-0.12	0.07	-11.68	
105.00		428.84	0.93	-0.12	0.10	-9.62	
110.00		412.96	1.02	-0.10	0.14	-5.70	
115.00		397.08	1.12	-0.06	0.20	-0.15	
120.00		381.21	1.22	0.02	0.27	6.81	
122.04	Bot - Section 4	150.73	1.26	0.06	0.30	4.02	
125.00		378.18	1.32	0.15	0.35	15.49	
125.95	Top - Section 3	119.59	1.34	0.18	0.37	5.49	
127.00	Appurtenance(s)	693.30	1.36	0.21	0.39	35.75	
128.00	Appurtenance(s)	483.56	1.38	0.25	0.41	27.64	
128.80	Appurtenance(s)	1442.3	1.40	0.28	0.43	89.11	
130.00		62.88	1.42	0.33	0.46	4.34	
135.00		254.61	1.53	0.59	0.58	25.95	
137.00	Appurtenance(s)	3127.2	1.58	0.72	0.64	364.33	
140.00		144.19	1.65	0.94	0.74	20.17	
145.00		230.80	1.77	1.39	0.92	42.25	
150.00	Appurtenance(s)	280.89	1.89	1.98	1.14	65.01	
Totals:		26,262.8				1,033.1	
						Total Wind:	27,547.0

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

Calculated Forces

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

Page: 27



Load Case: 1.2D + 1.0E

Iterations 22

Gust Response Factor 1.10

Sds 0.18

Ss 0.17

Dead Load Factor 1.20

Seismic Load Factor 1.00

Sd1 0.10

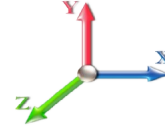
S1 0.06

Wind Load Factor 0.00

Structure Frequency (f1) 0.42

SA 0.04

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	-36.78	-1.09	0.00	-113.80	0.00	113.80	4250.57	2125.28	9550.04	4782.12	0.00	0.00	0.00	0.032
5.00	-35.46	-1.08	0.00	-108.34	0.00	108.34	4196.29	2098.14	9223.72	4618.72	0.00	-0.01	0.032	
10.00	-34.09	-1.05	0.00	-102.96	0.00	102.96	4140.37	2070.19	8899.17	4456.20	0.01	-0.01	0.031	
15.00	-32.63	-1.03	0.00	-97.68	0.00	97.68	4082.82	2041.41	8576.63	4294.69	0.03	-0.02	0.031	
20.00	-31.19	-1.00	0.00	-92.53	0.00	92.53	4023.63	2011.81	8256.33	4134.30	0.06	-0.03	0.030	
25.00	-29.78	-0.98	0.00	-87.51	0.00	87.51	3962.80	1981.40	7938.51	3975.15	0.09	-0.03	0.030	
30.00	-28.40	-0.95	0.00	-82.63	0.00	82.63	3900.33	1950.16	7623.41	3817.37	0.12	-0.04	0.029	
35.00	-27.05	-0.92	0.00	-77.88	0.00	77.88	3836.22	1918.11	7311.28	3661.07	0.17	-0.05	0.028	
40.00	-25.73	-0.89	0.00	-73.27	0.00	73.27	3770.47	1885.24	7002.35	3506.38	0.22	-0.05	0.028	
42.91	-24.97	-0.88	0.00	-70.66	0.00	70.66	3731.41	1865.70	6823.91	3417.03	0.26	-0.06	0.027	
45.00	-24.06	-0.86	0.00	-68.83	0.00	68.83	3703.09	1851.54	6696.86	3353.41	0.29	-0.06	0.027	
49.08	-22.29	-0.81	0.00	-65.33	0.00	65.33	2883.58	1441.79	5189.66	2598.69	0.34	-0.07	0.033	
50.00	-22.09	-0.81	0.00	-64.59	0.00	64.59	2874.90	1437.45	5148.29	2577.97	0.35	-0.07	0.033	
55.00	-21.01	-0.79	0.00	-60.54	0.00	60.54	2826.79	1413.40	4924.46	2465.89	0.43	-0.08	0.032	
60.00	-19.95	-0.77	0.00	-56.59	0.00	56.59	2777.04	1388.52	4702.55	2354.77	0.52	-0.09	0.031	
65.00	-18.92	-0.76	0.00	-52.73	0.00	52.73	2725.66	1362.83	4482.79	2244.72	0.61	-0.10	0.030	
70.00	-17.91	-0.75	0.00	-48.95	0.00	48.95	2672.63	1336.31	4265.41	2135.88	0.72	-0.10	0.030	
75.00	-16.93	-0.74	0.00	-45.22	0.00	45.22	2617.96	1308.98	4050.67	2028.35	0.83	-0.11	0.029	
76.87	-16.57	-0.74	0.00	-43.84	0.00	43.84	2597.06	1298.53	3970.94	1988.42	0.88	-0.12	0.028	
80.00	-15.59	-0.74	0.00	-41.52	0.00	41.52	2561.66	1280.83	3838.80	1922.25	0.96	-0.12	0.028	
82.12	-14.94	-0.74	0.00	-39.95	0.00	39.95	1893.43	946.71	2847.18	1425.71	1.01	-0.13	0.036	
85.00	-14.48	-0.74	0.00	-37.82	0.00	37.82	1872.76	936.38	2763.64	1383.87	1.09	-0.13	0.035	
90.00	-13.70	-0.74	0.00	-34.12	0.00	34.12	1835.56	917.78	2619.34	1311.62	1.23	-0.14	0.033	
95.00	-12.94	-0.74	0.00	-30.41	0.00	30.41	1796.72	898.36	2476.41	1240.05	1.39	-0.15	0.032	
100.00	-12.19	-0.74	0.00	-26.70	0.00	26.70	1756.24	878.12	2335.09	1169.28	1.56	-0.17	0.030	
105.00	-11.47	-0.74	0.00	-22.99	0.00	22.99	1714.12	857.06	2195.60	1099.43	1.74	-0.18	0.028	
110.00	-10.76	-0.74	0.00	-19.28	0.00	19.28	1670.37	835.18	2058.21	1030.63	1.93	-0.19	0.025	
115.00	-10.08	-0.74	0.00	-15.57	0.00	15.57	1624.97	812.48	1923.13	963.00	2.13	-0.19	0.022	
120.00	-9.41	-0.73	0.00	-11.87	0.00	11.87	1577.93	788.97	1790.62	896.64	2.33	-0.20	0.019	
122.04	-9.14	-0.73	0.00	-10.37	0.00	10.37	1558.31	779.15	1737.43	870.01	2.42	-0.21	0.018	
125.00	-8.57	-0.71	0.00	-8.21	0.00	8.21	1529.26	764.63	1660.91	831.69	2.55	-0.21	0.015	
125.95	-8.38	-0.71	0.00	-7.54	0.00	7.54	1048.18	524.09	1150.34	576.03	2.59	-0.21	0.021	
127.00	-7.51	-0.67	0.00	-6.80	0.00	6.80	1042.37	521.19	1133.34	567.51	2.64	-0.21	0.019	
128.00	-6.89	-0.64	0.00	-6.13	0.00	6.13	1036.75	518.37	1117.13	559.39	2.68	-0.21	0.018	
128.80	-5.14	-0.54	0.00	-5.62	0.00	5.62	1032.20	516.10	1104.19	552.91	2.72	-0.21	0.015	
130.00	-5.03	-0.54	0.00	-4.97	0.00	4.97	1025.31	512.65	1084.83	543.22	2.77	-0.22	0.014	
135.00	-4.61	-0.51	0.00	-2.29	0.00	2.29	995.56	497.78	1004.87	503.18	3.00	-0.22	0.009	
137.00	-0.81	-0.13	0.00	-1.27	0.00	1.27	983.21	491.60	973.24	487.34	3.09	-0.22	0.003	
140.00	-0.63	-0.11	0.00	-0.88	0.00	0.88	964.18	482.09	926.23	463.80	3.23	-0.22	0.003	
145.00	-0.34	-0.07	0.00	-0.33	0.00	0.33	931.15	465.58	849.16	425.21	3.47	-0.22	0.001	
150.00	0.00	-0.06	0.00	0.00	0.00	0.00	896.49	448.25	773.89	387.52	3.70	-0.22	0.000	

Seismic Segment Forces (Factored)

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

Page: 28



Load Case: 0.9D + 1.0E

Iterations 22

Gust Response Factor 1.10

Sds 0.18

Ss 0.17

Dead Load Factor 0.90 **Seismic Load Factor** 1.00

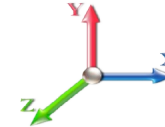
Sd1 0.10

S1 0.06

Wind Load Factor 0.00 **Structure Frequency (f1)** 0.42

SA 0.04

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	0.01	0.01	0.00	
5.00		1094.2	0.00	0.04	0.02	19.36	
10.00		1070.4	0.01	0.06	0.03	25.40	
15.00		1046.6	0.02	0.07	0.04	28.13	
20.00		1022.8	0.04	0.07	0.04	29.25	
25.00		998.99	0.06	0.07	0.04	29.64	
30.00		975.17	0.08	0.07	0.04	29.75	
35.00		951.36	0.11	0.07	0.04	29.78	
40.00		927.54	0.14	0.07	0.03	29.69	
42.91	Bot - Section 2	529.47	0.16	0.07	0.03	17.11	
45.00		690.99	0.18	0.07	0.03	22.43	
49.08	Top - Section 1	1329.0	0.21	0.06	0.02	43.07	
50.00		135.56	0.22	0.06	0.02	4.38	
55.00		725.02	0.26	0.05	0.02	22.59	
60.00		705.17	0.31	0.04	0.01	20.06	
65.00		685.32	0.36	0.03	0.01	16.27	
70.00		665.48	0.42	0.01	0.01	11.16	
75.00		645.63	0.48	-0.01	0.01	5.00	
76.87	Bot - Section 3	236.79	0.51	-0.02	0.01	0.94	
80.00		704.95	0.55	-0.03	0.01	-1.76	
82.12	Top - Section 2	470.77	0.58	-0.04	0.01	-3.23	
85.00		281.32	0.62	-0.06	0.02	-3.52	
90.00		476.47	0.69	-0.08	0.03	-9.83	
95.00		460.59	0.77	-0.10	0.04	-11.76	
100.00		444.71	0.85	-0.12	0.07	-11.68	
105.00		428.84	0.93	-0.12	0.10	-9.62	
110.00		412.96	1.02	-0.10	0.14	-5.70	
115.00		397.08	1.12	-0.06	0.20	-0.15	
120.00		381.21	1.22	0.02	0.27	6.81	
122.04	Bot - Section 4	150.73	1.26	0.06	0.30	4.02	
125.00		378.18	1.32	0.15	0.35	15.49	
125.95	Top - Section 3	119.59	1.34	0.18	0.37	5.49	
127.00	Appurtenance(s)	693.30	1.36	0.21	0.39	35.75	
128.00	Appurtenance(s)	483.56	1.38	0.25	0.41	27.64	
128.80	Appurtenance(s)	1442.3	1.40	0.28	0.43	89.11	
130.00		62.88	1.42	0.33	0.46	4.34	
135.00		254.61	1.53	0.59	0.58	25.95	
137.00	Appurtenance(s)	3127.2	1.58	0.72	0.64	364.33	
140.00		144.19	1.65	0.94	0.74	20.17	
145.00		230.80	1.77	1.39	0.92	42.25	
150.00	Appurtenance(s)	280.89	1.89	1.98	1.14	65.01	
Totals:		26,262.8				1,033.1	
						Total Wind:	27,547.0

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

Calculated Forces

Structure: CT13612-A-SBA **Code:** EIA/TIA-222-G 7/24/2019
Site Name: Ingalls **Exposure:** C
Height: 150.00 (ft) **Crest Height:** 0.00
Base Elev: 1.500 (ft) **Site Class:** D - Stiff Soil
Gh: 1.1 **Topography:** 1 **Struct Class:** II Page: 29



Load Case: 0.9D + 1.0E

Iterations 22

Gust Response Factor 1.10

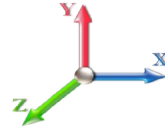
Sds 0.18

Ss 0.17

Dead Load Factor 0.90 **Seismic Load Factor** 1.00 **Sd1** 0.10

S1 0.06

Wind Load Factor 0.00 **Structure Frequency (f1)** 0.42 **SA** 0.04 **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	-27.58	-1.09	0.00	-112.86	0.00	112.86	4250.57	2125.28	9550.04	4782.12	0.00	0.00	0.00	0.030
5.00	-26.60	-1.07	0.00	-107.40	0.00	107.40	4196.29	2098.14	9223.72	4618.72	0.00	-0.01	0.030	
10.00	-25.57	-1.05	0.00	-102.03	0.00	102.03	4140.37	2070.19	8899.17	4456.20	0.01	-0.01	0.029	
15.00	-24.47	-1.03	0.00	-96.76	0.00	96.76	4082.82	2041.41	8576.63	4294.69	0.03	-0.02	0.029	
20.00	-23.39	-1.00	0.00	-91.63	0.00	91.63	4023.63	2011.81	8256.33	4134.30	0.05	-0.03	0.028	
25.00	-22.34	-0.97	0.00	-86.63	0.00	86.63	3962.80	1981.40	7938.51	3975.15	0.09	-0.03	0.027	
30.00	-21.30	-0.94	0.00	-81.77	0.00	81.77	3900.33	1950.16	7623.41	3817.37	0.12	-0.04	0.027	
35.00	-20.29	-0.92	0.00	-77.05	0.00	77.05	3836.22	1918.11	7311.28	3661.07	0.17	-0.05	0.026	
40.00	-19.30	-0.89	0.00	-72.47	0.00	72.47	3770.47	1885.24	7002.35	3506.38	0.22	-0.05	0.026	
42.91	-18.73	-0.87	0.00	-69.88	0.00	69.88	3731.41	1865.70	6823.91	3417.03	0.26	-0.06	0.025	
45.00	-18.04	-0.85	0.00	-68.06	0.00	68.06	3703.09	1851.54	6696.86	3353.41	0.28	-0.06	0.025	
49.08	-16.72	-0.81	0.00	-64.60	0.00	64.60	2883.58	1441.79	5189.66	2598.69	0.34	-0.07	0.031	
50.00	-16.57	-0.80	0.00	-63.86	0.00	63.86	2874.90	1437.45	5148.29	2577.97	0.35	-0.07	0.031	
55.00	-15.76	-0.78	0.00	-59.84	0.00	59.84	2826.79	1413.40	4924.46	2465.89	0.43	-0.08	0.030	
60.00	-14.97	-0.76	0.00	-55.93	0.00	55.93	2777.04	1388.52	4702.55	2354.77	0.51	-0.09	0.029	
65.00	-14.19	-0.75	0.00	-52.12	0.00	52.12	2725.66	1362.83	4482.79	2244.72	0.61	-0.09	0.028	
70.00	-13.44	-0.74	0.00	-48.38	0.00	48.38	2672.63	1336.31	4265.41	2135.88	0.71	-0.10	0.028	
75.00	-12.70	-0.73	0.00	-44.70	0.00	44.70	2617.96	1308.98	4050.67	2028.35	0.82	-0.11	0.027	
76.87	-12.43	-0.73	0.00	-43.32	0.00	43.32	2597.06	1298.53	3970.94	1988.42	0.87	-0.12	0.027	
80.00	-11.69	-0.73	0.00	-41.04	0.00	41.04	2561.66	1280.83	3838.80	1922.25	0.95	-0.12	0.026	
82.12	-11.20	-0.73	0.00	-39.48	0.00	39.48	1893.43	946.71	2847.18	1425.71	1.00	-0.13	0.034	
85.00	-10.86	-0.73	0.00	-37.38	0.00	37.38	1872.76	936.38	2763.64	1383.87	1.08	-0.13	0.033	
90.00	-10.27	-0.73	0.00	-33.72	0.00	33.72	1835.56	917.78	2619.34	1311.62	1.22	-0.14	0.031	
95.00	-9.70	-0.73	0.00	-30.06	0.00	30.06	1796.72	898.36	2476.41	1240.05	1.38	-0.15	0.030	
100.00	-9.14	-0.73	0.00	-26.40	0.00	26.40	1756.24	878.12	2335.09	1169.28	1.54	-0.16	0.028	
105.00	-8.60	-0.73	0.00	-22.73	0.00	22.73	1714.12	857.06	2195.60	1099.43	1.72	-0.17	0.026	
110.00	-8.07	-0.73	0.00	-19.07	0.00	19.07	1670.37	835.18	2058.21	1030.63	1.91	-0.18	0.023	
115.00	-7.56	-0.73	0.00	-15.41	0.00	15.41	1624.97	812.48	1923.13	963.00	2.10	-0.19	0.021	
120.00	-7.06	-0.72	0.00	-11.75	0.00	11.75	1577.93	788.97	1790.62	896.64	2.31	-0.20	0.018	
122.04	-6.86	-0.72	0.00	-10.27	0.00	10.27	1558.31	779.15	1737.43	870.01	2.40	-0.20	0.016	
125.00	-6.42	-0.70	0.00	-8.14	0.00	8.14	1529.26	764.63	1660.91	831.69	2.52	-0.21	0.014	
125.95	-6.29	-0.70	0.00	-7.47	0.00	7.47	1048.18	524.09	1150.34	576.03	2.57	-0.21	0.019	
127.00	-5.63	-0.66	0.00	-6.74	0.00	6.74	1042.37	521.19	1133.34	567.51	2.61	-0.21	0.017	
128.00	-5.17	-0.63	0.00	-6.08	0.00	6.08	1036.75	518.37	1117.13	559.39	2.66	-0.21	0.016	
128.80	-3.85	-0.54	0.00	-5.58	0.00	5.58	1032.20	516.10	1104.19	552.91	2.69	-0.21	0.014	
130.00	-3.77	-0.53	0.00	-4.93	0.00	4.93	1025.31	512.65	1084.83	543.22	2.74	-0.21	0.013	
135.00	-3.45	-0.50	0.00	-2.27	0.00	2.27	995.56	497.78	1004.87	503.18	2.97	-0.22	0.008	
137.00	-0.61	-0.13	0.00	-1.26	0.00	1.26	983.21	491.60	973.24	487.34	3.06	-0.22	0.003	
140.00	-0.47	-0.11	0.00	-0.87	0.00	0.87	964.18	482.09	926.23	463.80	3.20	-0.22	0.002	
145.00	-0.26	-0.07	0.00	-0.33	0.00	0.33	931.15	465.58	849.16	425.21	3.43	-0.22	0.001	
150.00	0.00	-0.06	0.00	0.00	0.00	0.00	896.49	448.25	773.89	387.52	3.66	-0.22	0.000	

Wind Loading - Shaft

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

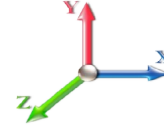
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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	257.45	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	251.94	0.650	0.000	5.00	23.021	14.96	122.5	0.0	1094.3
10.00		1.00	0.85	7.442	8.19	246.44	0.650	0.000	5.00	22.524	14.64	119.8	0.0	1070.4
15.00		1.00	0.87	7.583	8.34	243.20	0.650	0.000	5.00	22.026	14.32	119.4	0.0	1046.6
20.00		1.00	0.92	8.017	8.82	244.36	0.650	0.000	5.00	21.529	13.99	123.4	0.0	1022.8
25.00		1.00	0.96	8.378	9.22	243.96	0.650	0.000	5.00	21.031	13.67	126.0	0.0	999.0
30.00		1.00	0.99	8.689	9.56	242.49	0.650	0.000	5.00	20.533	13.35	127.6	0.0	975.2
35.00		1.00	1.02	8.962	9.86	240.24	0.650	0.000	5.00	20.036	13.02	128.4	0.0	951.4
40.00		1.00	1.05	9.208	10.13	237.38	0.650	0.000	5.00	19.538	12.70	128.6	0.0	927.5
42.91	Bot - Section 2	1.00	1.07	9.340	10.27	235.49	0.650	0.000	2.91	11.155	7.25	74.5	0.0	529.5
45.00		1.00	1.08	9.431	10.37	234.04	0.650	0.000	2.09	7.996	5.20	53.9	0.0	691.0
49.08	Top - Section 1	1.00	1.10	9.600	10.56	231.02	0.650	0.000	4.08	15.384	10.00	105.6	0.0	1329.1
50.00		1.00	1.10	9.636	10.60	233.64	0.650	0.000	0.92	3.423	2.23	23.6	0.0	135.6
55.00		1.00	1.12	9.826	10.81	229.60	0.650	0.000	5.00	18.310	11.90	128.6	0.0	725.0
60.00		1.00	1.14	10.003	11.00	225.28	0.650	0.000	5.00	17.812	11.58	127.4	0.0	705.2
65.00		1.00	1.16	10.169	11.19	220.71	0.650	0.000	5.00	17.315	11.25	125.9	0.0	685.3
70.00		1.00	1.18	10.325	11.36	215.91	0.650	0.000	5.00	16.817	10.93	124.2	0.0	665.5
75.00		1.00	1.20	10.473	11.52	210.92	0.650	0.000	5.00	16.320	10.61	122.2	0.0	645.6
76.87	Bot - Section 3	1.00	1.20	10.527	11.58	209.01	0.650	0.000	1.87	5.986	3.89	45.1	0.0	236.8
80.00		1.00	1.21	10.614	11.68	205.76	0.650	0.000	3.13	9.968	6.48	75.6	0.0	704.9
82.12	Top - Section 2	1.00	1.22	10.671	11.74	203.52	0.650	0.000	2.12	6.658	4.33	50.8	0.0	470.8
85.00		1.00	1.23	10.748	11.82	203.25	0.650	0.000	2.88	8.878	5.77	68.2	0.0	281.3
90.00		1.00	1.24	10.875	11.96	197.80	0.650	0.000	5.00	15.038	9.77	116.9	0.0	476.5
95.00		1.00	1.26	10.998	12.10	192.22	0.650	0.000	5.00	14.541	9.45	114.3	0.0	460.6
100.00		1.00	1.27	11.116	12.23	186.52	0.650	0.000	5.00	14.043	9.13	111.6	0.0	444.7
105.00		1.00	1.28	11.229	12.35	180.70	0.650	0.000	5.00	13.546	8.80	108.8	0.0	428.8
110.00		1.00	1.29	11.338	12.47	174.78	0.650	0.000	5.00	13.048	8.48	105.8	0.0	413.0
115.00		1.00	1.31	11.443	12.59	168.76	0.650	0.000	5.00	12.550	8.16	102.7	0.0	397.1
120.00		1.00	1.32	11.544	12.70	162.66	0.650	0.000	5.00	12.053	7.83	99.5	0.0	381.2
122.04	Bot - Section 4	1.00	1.32	11.585	12.74	160.14	0.650	0.000	2.04	4.767	3.10	39.5	0.0	150.7
125.00		1.00	1.33	11.643	12.81	156.46	0.650	0.000	2.96	6.882	4.47	57.3	0.0	378.2
125.95	Top - Section 3	1.00	1.33	11.661	12.83	155.27	0.650	0.000	0.95	2.177	1.42	18.2	0.0	119.6
127.00	Appurtenance(s)	1.00	1.33	11.681	12.85	156.16	0.650	0.000	1.05	2.369	1.54	19.8	0.0	56.3
128.00	Appurtenance(s)	1.00	1.34	11.701	12.87	154.91	0.650	0.000	1.00	2.243	1.46	18.8	0.0	53.3
128.80	Appurtenance(s)	1.00	1.34	11.716	12.89	153.90	0.650	0.000	0.80	1.780	1.16	14.9	0.0	42.3
130.00		1.00	1.34	11.738	12.91	152.39	0.650	0.000	1.20	2.647	1.72	22.2	0.0	62.9
135.00		1.00	1.35	11.831	13.01	146.05	0.650	0.000	5.00	10.719	6.97	90.7	0.0	254.6
137.00	Appurtenance(s)	1.00	1.36	11.867	13.05	143.49	0.650	0.000	2.00	4.148	2.70	35.2	0.0	98.5
140.00		1.00	1.36	11.921	13.11	139.64	0.650	0.000	3.00	6.073	3.95	51.8	0.0	144.2
145.00		1.00	1.37	12.008	13.21	133.16	0.650	0.000	5.00	9.724	6.32	83.5	0.0	230.8
150.00	Appurtenance(s)	1.00	1.38	12.093	13.30	126.61	0.650	0.000	5.00	9.226	6.00	79.8	0.0	218.9
Totals:									150.00			3,412.4		20,704.9

Discrete Appurtenance Forces

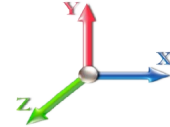
Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 31



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	150.00	Lightning Rod 1"x10'	1	12.193	13.412	1.00	1.00	2.32	62.00	0.000	6.000	31.12	0.00	186.70
2	137.00	Kathrein 782 11056 Bias	3	11.867	13.054	0.54	0.80	0.45	5.40	0.000	0.000	5.88	0.00	0.00
3	137.00	RR90-19-XXDPQ	3	11.867	13.054	0.54	0.80	9.60	96.00	0.000	0.000	125.27	0.00	0.00
4	137.00	KRY 112 144/1	3	11.867	13.054	0.54	0.80	0.66	33.00	0.000	0.000	8.61	0.00	0.00
5	137.00	Low Profile Mount	1	11.867	13.054	1.00	1.00	50.00	2120.00	0.000	0.000	652.70	0.00	0.00
6	137.00	Ericsson 4449 B71+B12	3	11.867	13.054	0.54	0.80	2.65	222.00	0.000	0.000	34.63	0.00	0.00
7	137.00	Ericsson KRY 112 489/2	3	11.867	13.054	0.54	0.80	1.14	46.20	0.000	0.000	14.90	0.00	0.00
8	137.00	APXVAARR24 43-U-NA2	3	11.867	13.054	0.56	0.80	34.00	384.00	0.000	0.000	443.87	0.00	0.00
9	137.00	APX16DWV-16DWVS-E-A	3	11.867	13.054	0.58	0.80	11.42	122.10	0.000	0.000	149.10	0.00	0.00
10	128.80	Low Profile Platform	1	11.716	12.887	1.00	1.00	22.00	1400.00	0.000	0.000	283.52	0.00	0.00
11	128.00	LPA-80080-6CF	6	11.701	12.871	0.70	0.80	18.29	126.00	0.000	0.000	235.40	0.00	0.00
12	128.00	SBNHH-1D65B	6	11.701	12.871	0.66	0.80	32.19	304.26	0.000	0.000	414.31	0.00	0.00
13	127.00	RFS FD9R6004/2C-3L	6	11.681	12.850	0.40	0.80	0.86	18.00	0.000	0.000	11.10	0.00	0.00
14	127.00	DB-T1-6Z-8AB-OZ	2	11.681	12.850	0.68	0.90	6.48	88.00	0.000	0.000	83.27	0.00	0.00
15	127.00	RRH2X60-700	3	11.681	12.850	0.54	0.80	5.63	180.00	0.000	0.000	72.32	0.00	0.00
16	127.00	RRH2X60-PCS	3	11.681	12.850	0.54	0.80	3.54	165.00	0.000	0.000	45.46	0.00	0.00
17	127.00	RRH4x45-AWS	3	11.681	12.850	0.54	0.80	4.05	186.00	0.000	0.000	52.07	0.00	0.00

Totals: 5,557.96

2,663.52

Total Applied Force Summary

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

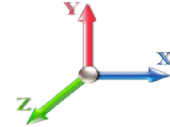


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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		122.50	1094.25	0.00	0.00
10.00		119.85	1140.22	0.00	0.00
15.00		119.42	1221.09	0.00	0.00
20.00		123.41	1197.27	0.00	0.00
25.00		125.98	1173.45	0.00	0.00
30.00		127.56	1149.64	0.00	0.00
35.00		128.39	1125.82	0.00	0.00
40.00		128.63	1102.01	0.00	0.00
42.91		74.50	631.12	0.00	0.00
45.00		53.92	763.80	0.00	0.00
49.08		105.59	1471.46	0.00	0.00
50.00		23.59	167.67	0.00	0.00
55.00		128.64	899.48	0.00	0.00
60.00		127.39	879.63	0.00	0.00
65.00		125.89	859.79	0.00	0.00
70.00		124.15	839.94	0.00	0.00
75.00		122.21	820.10	0.00	0.00
76.87		45.06	302.15	0.00	0.00
80.00		75.65	814.05	0.00	0.00
82.12		50.80	544.86	0.00	0.00
85.00		68.22	381.70	0.00	0.00
90.00		116.94	650.93	0.00	0.00
95.00		114.34	635.06	0.00	0.00
100.00		111.61	619.18	0.00	0.00
105.00		108.75	603.30	0.00	0.00
110.00		105.77	587.43	0.00	0.00
115.00		102.68	571.55	0.00	0.00
120.00		99.49	555.67	0.00	0.00
122.04		39.49	221.79	0.00	0.00
125.00		57.29	481.58	0.00	0.00
125.95		18.15	152.85	0.00	0.00
127.00	(17) attachments	284.00	729.82	0.00	0.00
128.00	(12) attachments	668.48	516.26	0.00	0.00
128.80	(1) attachments	298.43	1458.47	0.00	0.00
130.00		22.21	87.13	0.00	0.00
135.00		90.67	355.68	0.00	0.00
137.00	(22) attachments	1470.16	3167.64	0.00	0.00
140.00		51.76	148.13	0.00	0.00
145.00		83.49	237.36	0.00	0.00
150.00	(1) attachments	110.89	287.45	0.00	186.70
Totals:		6,075.95	30,646.78	0.00	186.70

Linear Appurtenance Segment Forces (Factored)

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

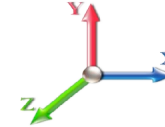
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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	2.08
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	0.55
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.583	0.00	5.20
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.583	0.00	1.37
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.017	0.00	5.20
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.017	0.00	1.37
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.378	0.00	5.20
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.378	0.00	1.37
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.689	0.00	5.20
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.689	0.00	1.37
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.962	0.00	5.20
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.962	0.00	1.37
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.208	0.00	5.20
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.208	0.00	1.37
42.91	Safety Cable	Yes	2.91	0.000	0.00	0.00	0.00	0.000	0.000	9.340	0.00	3.03
42.91	Safety Cable	Yes	2.91	0.000	0.00	0.00	0.00	0.000	0.000	9.340	0.00	0.80
45.00	Safety Cable	Yes	2.09	0.000	0.00	0.00	0.00	0.000	0.000	9.431	0.00	2.17
45.00	Safety Cable	Yes	2.09	0.000	0.00	0.00	0.00	0.000	0.000	9.431	0.00	0.57
49.08	Safety Cable	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	9.600	0.00	4.24
49.08	Safety Cable	Yes	4.08	0.000	0.00	0.00	0.00	0.000	0.000	9.600	0.00	1.11
50.00	Safety Cable	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	9.636	0.00	0.96
50.00	Safety Cable	Yes	0.92	0.000	0.00	0.00	0.00	0.000	0.000	9.636	0.00	0.25
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.826	0.00	5.20
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.826	0.00	1.37
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.003	0.00	5.20
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.003	0.00	1.37
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.169	0.00	5.20
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.169	0.00	1.37
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.325	0.00	5.20
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.325	0.00	1.37
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.473	0.00	5.20
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.473	0.00	1.37
76.87	Safety Cable	Yes	1.87	0.000	0.00	0.00	0.00	0.000	0.000	10.527	0.00	1.95
76.87	Safety Cable	Yes	1.87	0.000	0.00	0.00	0.00	0.000	0.000	10.527	0.00	0.51
80.00	Safety Cable	Yes	3.13	0.000	0.00	0.00	0.00	0.000	0.000	10.614	0.00	3.25
80.00	Safety Cable	Yes	3.13	0.000	0.00	0.00	0.00	0.000	0.000	10.614	0.00	0.85
82.12	Safety Cable	Yes	2.12	0.000	0.00	0.00	0.00	0.000	0.000	10.671	0.00	2.21
82.12	Safety Cable	Yes	2.12	0.000	0.00	0.00	0.00	0.000	0.000	10.671	0.00	0.58
85.00	Safety Cable	Yes	2.88	0.000	0.00	0.00	0.00	0.000	0.000	10.748	0.00	2.99
85.00	Safety Cable	Yes	2.88	0.000	0.00	0.00	0.00	0.000	0.000	10.748	0.00	0.79
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.875	0.00	5.20
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.875	0.00	1.37
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.998	0.00	5.20
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.998	0.00	1.37
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.116	0.00	5.20
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.116	0.00	1.37
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.229	0.00	5.20

Linear Appurtenance Segment Forces (Factored)

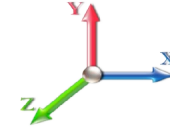
Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.229	0.00	1.37
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.338	0.00	5.20
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.338	0.00	1.37
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.443	0.00	5.20
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.443	0.00	1.37
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.544	0.00	5.20
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.544	0.00	1.37
122.04	Safety Cable	Yes	2.04	0.000	0.00	0.00	0.00	0.000	0.000	11.585	0.00	2.12
122.04	Safety Cable	Yes	2.04	0.000	0.00	0.00	0.00	0.000	0.000	11.585	0.00	0.56
125.00	Safety Cable	Yes	2.96	0.000	0.00	0.00	0.00	0.000	0.000	11.643	0.00	3.08
125.00	Safety Cable	Yes	2.96	0.000	0.00	0.00	0.00	0.000	0.000	11.643	0.00	0.81
125.95	Safety Cable	Yes	0.95	0.000	0.00	0.00	0.00	0.000	0.000	11.661	0.00	0.99
125.95	Safety Cable	Yes	0.95	0.000	0.00	0.00	0.00	0.000	0.000	11.661	0.00	0.26
127.00	Safety Cable	Yes	1.05	0.000	0.00	0.00	0.00	0.000	0.000	11.681	0.00	1.09
127.00	Safety Cable	Yes	1.05	0.000	0.00	0.00	0.00	0.000	0.000	11.681	0.00	0.29
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	11.701	0.00	1.04
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	11.701	0.00	0.27
128.80	Safety Cable	Yes	0.80	0.000	0.00	0.00	0.00	0.000	0.000	11.716	0.00	0.83
128.80	Safety Cable	Yes	0.80	0.000	0.00	0.00	0.00	0.000	0.000	11.716	0.00	0.22
130.00	Safety Cable	Yes	1.20	0.000	0.00	0.00	0.00	0.000	0.000	11.738	0.00	1.25
130.00	Safety Cable	Yes	1.20	0.000	0.00	0.00	0.00	0.000	0.000	11.738	0.00	0.33
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.831	0.00	5.20
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.831	0.00	1.37
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.867	0.00	2.08
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.867	0.00	0.55
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.921	0.00	3.12
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.921	0.00	0.82
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.008	0.00	5.20
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.008	0.00	1.37
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.093	0.00	5.20
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.093	0.00	1.37
Totals:											0.0	186.4

Calculated Forces

Structure: CT13612-A-SBA

Code: EIA/TIA-222-G

7/24/2019

Site Name: Ingalls

Exposure: C

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 1.500 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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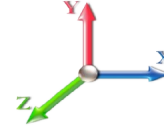


Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 23

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	-30.64	-6.08	0.00	-616.93	0.00	616.93	4250.57	2125.28	9550.04	4782.12	0.00	0.000	0.000	0.136
5.00	-29.55	-5.98	0.00	-586.50	0.00	586.50	4196.29	2098.14	9223.72	4618.72	0.02	-0.035	0.000	0.134
10.00	-28.40	-5.88	0.00	-556.61	0.00	556.61	4140.37	2070.19	8899.17	4456.20	0.07	-0.070	0.000	0.132
15.00	-27.18	-5.77	0.00	-527.22	0.00	527.22	4082.82	2041.41	8576.63	4294.69	0.17	-0.106	0.000	0.129
20.00	-25.98	-5.66	0.00	-498.36	0.00	498.36	4023.63	2011.81	8256.33	4134.30	0.30	-0.143	0.000	0.127
25.00	-24.80	-5.55	0.00	-470.05	0.00	470.05	3962.80	1981.40	7938.51	3975.15	0.47	-0.179	0.000	0.125
30.00	-23.65	-5.43	0.00	-442.30	0.00	442.30	3900.33	1950.16	7623.41	3817.37	0.68	-0.217	0.000	0.122
35.00	-22.52	-5.32	0.00	-415.13	0.00	415.13	3836.22	1918.11	7311.28	3661.07	0.92	-0.254	0.000	0.119
40.00	-21.42	-5.19	0.00	-388.55	0.00	388.55	3770.47	1885.24	7002.35	3506.38	1.21	-0.292	0.000	0.116
42.91	-20.78	-5.12	0.00	-373.42	0.00	373.42	3731.41	1865.70	6823.91	3417.03	1.40	-0.315	0.000	0.115
45.00	-20.02	-5.07	0.00	-362.73	0.00	362.73	3703.09	1851.54	6696.86	3353.41	1.54	-0.332	0.000	0.114
49.08	-18.55	-4.96	0.00	-342.04	0.00	342.04	2883.58	1441.79	5189.66	2598.69	1.83	-0.363	0.000	0.138
50.00	-18.38	-4.95	0.00	-337.47	0.00	337.47	2874.90	1437.45	5148.29	2577.97	1.90	-0.371	0.000	0.137
55.00	-17.47	-4.83	0.00	-312.73	0.00	312.73	2826.79	1413.40	4924.46	2465.89	2.32	-0.415	0.000	0.133
60.00	-16.59	-4.71	0.00	-288.59	0.00	288.59	2777.04	1388.52	4702.55	2354.77	2.78	-0.460	0.000	0.129
65.00	-15.73	-4.59	0.00	-265.07	0.00	265.07	2725.66	1362.83	4482.79	2244.72	3.28	-0.505	0.000	0.124
70.00	-14.89	-4.46	0.00	-242.14	0.00	242.14	2672.63	1336.31	4265.41	2135.88	3.84	-0.550	0.000	0.119
75.00	-14.07	-4.34	0.00	-219.82	0.00	219.82	2617.96	1308.98	4050.67	2028.35	4.44	-0.595	0.000	0.114
76.87	-13.76	-4.30	0.00	-211.68	0.00	211.68	2597.06	1298.53	3970.94	1988.42	4.67	-0.612	0.000	0.112
80.00	-12.95	-4.22	0.00	-198.24	0.00	198.24	2561.66	1280.83	3838.80	1922.25	5.08	-0.640	0.000	0.108
82.12	-12.40	-4.17	0.00	-189.28	0.00	189.28	1893.43	946.71	2847.18	1425.71	5.37	-0.659	0.000	0.139
85.00	-12.02	-4.10	0.00	-177.29	0.00	177.29	1872.76	936.38	2763.64	1383.87	5.78	-0.685	0.000	0.135
90.00	-11.36	-3.99	0.00	-156.77	0.00	156.77	1835.56	917.78	2619.34	1311.62	6.52	-0.736	0.000	0.126
95.00	-10.73	-3.87	0.00	-136.83	0.00	136.83	1796.72	898.36	2476.41	1240.05	7.32	-0.786	0.000	0.116
100.00	-10.11	-3.76	0.00	-117.46	0.00	117.46	1756.24	878.12	2335.09	1169.28	8.17	-0.834	0.000	0.106
105.00	-9.50	-3.65	0.00	-98.64	0.00	98.64	1714.12	857.06	2195.60	1099.43	9.07	-0.879	0.000	0.095
110.00	-8.91	-3.54	0.00	-80.38	0.00	80.38	1670.37	835.18	2058.21	1030.63	10.02	-0.921	0.000	0.083
115.00	-8.34	-3.44	0.00	-62.67	0.00	62.67	1624.97	812.48	1923.13	963.00	11.00	-0.959	0.000	0.070
120.00	-7.79	-3.33	0.00	-45.48	0.00	45.48	1577.93	788.97	1790.62	896.64	12.02	-0.991	0.000	0.056
122.04	-7.57	-3.29	0.00	-38.70	0.00	38.70	1558.31	779.15	1737.43	870.01	12.45	-1.002	0.000	0.049
125.00	-7.08	-3.22	0.00	-28.95	0.00	28.95	1529.26	764.63	1660.91	831.69	13.08	-1.017	0.000	0.039
125.95	-6.93	-3.20	0.00	-25.88	0.00	25.88	1048.18	524.09	1150.34	576.03	13.28	-1.021	0.000	0.052
127.00	-6.21	-2.91	0.00	-22.53	0.00	22.53	1042.37	521.19	1133.34	567.51	13.50	-1.025	0.000	0.046
128.00	-5.70	-2.23	0.00	-19.62	0.00	19.62	1036.75	518.37	1117.13	559.39	13.72	-1.029	0.000	0.041
128.80	-4.25	-1.91	0.00	-17.83	0.00	17.83	1032.20	516.10	1104.19	552.91	13.89	-1.032	0.000	0.036
130.00	-4.16	-1.88	0.00	-15.55	0.00	15.55	1025.31	512.65	1084.83	543.22	14.15	-1.036	0.000	0.033
135.00	-3.81	-1.79	0.00	-6.13	0.00	6.13	995.56	497.78	1004.87	503.18	15.24	-1.048	0.000	0.016
137.00	-0.67	-0.26	0.00	-2.56	0.00	2.56	983.21	491.60	973.24	487.34	15.68	-1.051	0.000	0.006
140.00	-0.52	-0.20	0.00	-1.79	0.00	1.79	964.18	482.09	926.23	463.80	16.35	-1.052	0.000	0.004
145.00	-0.29	-0.12	0.00	-0.77	0.00	0.77	931.15	465.58	849.16	425.21	17.45	-1.054	0.000	0.002
150.00	0.00	-0.11	0.00	-0.19	0.00	0.19	896.49	448.25	773.89	387.52	18.55	-1.055	0.000	0.000

Final Analysis Summary

Structure: CT13612-A-SBA	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
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 101 mph Wind	27.6	0.00	36.74	0.00	0.00	2809.43
0.9D + 1.6W 101 mph Wind	27.6	0.00	27.54	0.00	0.00	2787.31
1.2D + 1.0Di + 1.0Wi 50 mph Wind	7.9	0.00	64.72	0.00	0.00	805.93
1.2D + 1.0E	1.1	0.00	36.78	0.00	0.00	113.80
0.9D + 1.0E	1.1	0.00	27.58	0.00	0.00	112.86
1.0D + 1.0W 60 mph Wind	6.1	0.00	30.64	0.00	0.00	616.93

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 101 mph Wind	-13.94	-19.01	0.00	-863.32	0.00	-863.32	1893.43	946.71	2847.18	1425.71	82.12	0.613
0.9D + 1.6W 101 mph Wind	-10.22	-18.81	0.00	-852.77	0.00	-852.77	1893.43	946.71	2847.18	1425.71	82.12	0.604
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-32.15	-5.46	0.00	-247.82	0.00	-247.82	1893.43	946.71	2847.18	1425.71	82.12	0.191
1.2D + 1.0E	-14.94	-0.74	0.00	-39.95	0.00	-39.95	1893.43	946.71	2847.18	1425.71	82.12	0.036
0.9D + 1.0E	-11.20	-0.73	0.00	-39.48	0.00	-39.48	1893.43	946.71	2847.18	1425.71	82.12	0.034
1.0D + 1.0W 60 mph Wind	-12.40	-4.17	0.00	-189.28	0.00	-189.28	1893.43	946.71	2847.18	1425.71	82.12	0.139

Base Plate Summary

Structure: CT13612-A-SB	Code: EIA/TIA-222-G	7/24/2019
Site Name: Ingalls	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
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Reactions		Base Plate		Anchor Bolts	
Original Design		Yield (ksi):	60.00	Bolt Circle:	64.00
Moment (kip-ft):	3015.40	Width (in):	70.00	Number Bolts:	16.00
Axial (kip):	31.20	Style:	Round	Bolt Type:	2.25" 18J
Shear (kip):	28.36	Polygon Sides:	0.00	Bolt Diameter (in):	2.25
Analysis		Clip Length (in):	0.00	Yield (ksi):	75.00
Moment (kip-ft):	2809.43	Effective Len (in):	11.83	Ultimate (ksi):	100.00
Axial (kip):	64.72	Moment (kip-in):	543.63	Arrangement:	Radial
Shear (kip):	27.60	Allow Stress (ksi):	81.00	Cluster Dist (in):	0.00
		Applied Stress (ksi):	0.00	Start Angle (deg):	0.00
Moment Design %:	93.17	Stress Ratio:	0.85	Compression	
				Force (kip):	135.74
				Allowable (kip):	260.00
				Ratio:	0.54
				Tension	
				Force (kip):	127.65
				Allowable (kip):	260.00
				Ratio:	0.50

	Monopole Mat Foundation Design		Date	
			7/24/2019	
	Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-G
	Site Name:		Structure Height (Ft.):	150
	Site Number:	CT13612-A-SBA	Engineer Name:	D. Zhou
	Engr. Number:	78782	Engineer Login ID:	

Foundation Info Obtained from:

Structure Type:

Analysis or Design?

Base Reactions (Factored):

Axial Load (Kips):	36.7	Shear Force (Kips):	27.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2809.4

Allowable overstress %: 5.0%

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	7.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	3.00
Length of Pad (ft.):	24	Width of Pad (ft.):	24

Final Length of pad (ft) 24.0 Final width of pad (ft): 24.0

Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	46	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L): 48 Qty. of Rebar in Pad (W): 48

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L): 24 Qty. of Rebar in Pad (W): 24

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

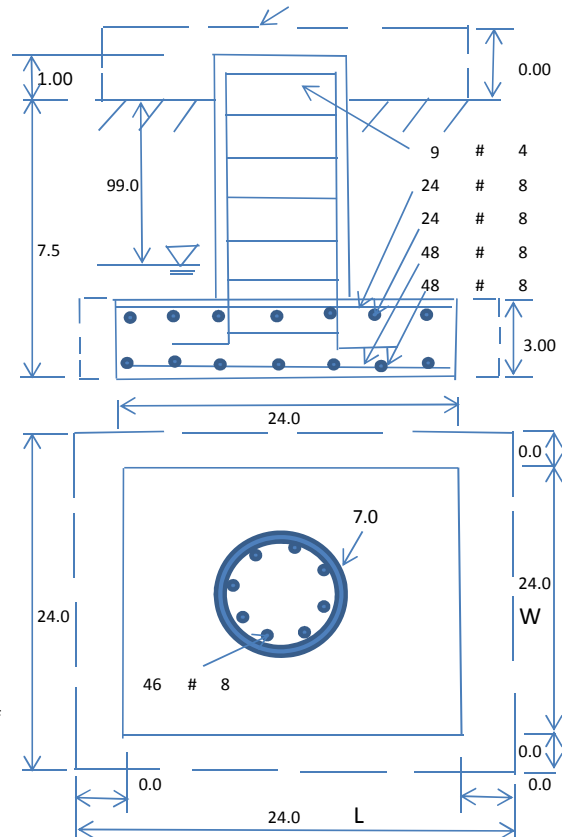
Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	50.0	Pcf	
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:
Ultimate Bearing Pressure (psf):	21000	Ultimate Skin Friction:	0	Psf	30
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Botm of Pad:
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00		25

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	2418.82	Total Dry Soil Weight (Kips):	266.07
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	266.07	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1939.66	Total Dry Concrete Weight (Kips):	290.95
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	290.95	Total Vertical Load on Base (Kips):	593.76

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	2431	<	Allowable Factored Soil Bearing (psf):	15750	0.15	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	6456.7	>	Design Factored Momont (kips-ft):	3044	0.47	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.12					OK!



Check the capacities of Reinforcing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00		
				Load/ Capacity Ratio	
<u>(1) Concrete Pier:</u>					
Vertical Steel Rebar Area (sq. in./each):	0.79	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	6072.6	> Design Factored Moment (Mu, Kips-F	2961.2	0.49	OK!
Calculated Shear Capacity (Kips):	660.1	> Design Factored Shear (Kips):	27.6	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1962.4	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9733.6	> Design Factored Axial Load (Pu Kips):	36.7	0.00	OK!
Moment & Axial Strength Combination:	0.49	OK! Check Tie Spacing (Design/Required):	1	OK!	
Pier Reinforcement Ratio:	0.007	Reinforcement Ratio is satisfied per ACI			
<u>(2).Concrete Pad:</u>					
One-Way Design Shear Capacity (L-Direction, Kips):	888.0	> One-Way Factored Shear (L-D. Kips):	200.0	0.23	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	888.0	> One-Way Factored Shear (W-D., Kips)	200.0	0.23	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	796.4	> One-Way Factored Shear (C-C, Kips):	190.0	0.24	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0041	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0041		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	5347.6	> Moment at Bottom (L-Dir. K-Ft):	1076.1	0.20	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5347.6	> Moment at Bottom (W-Dir. K-Ft):	1076.1	0.20	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	7489.7	> Moment at Bottom (C-C Dir. K-Ft):	1521.9	0.20	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0020	OK! Upper Steel Reinf. Ratio (W-Dir.):	0.0020		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2723.3	> Moment at the top (L-Dir K-Ft):	463.5	0.17	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2723.3	> Moment at the top (W-Dir K-Ft):	463.5	0.17	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3833.2	> Moment at the top (C-C Dir. K-Ft):	435.6	0.11	OK!
<u>(3).Check Punching Shear Capacity due to Moment in the Pier:</u>					
Moment transferred by punching shear:	1123.8	k-ft. Max. factored shear stress v_{u_CD} :	3.0	Psi	
Max. factored shear stress v_{u_AB} :	7.8	Psi Factored shear Strength ϕv_n :	189.7	Psi	
Max. factored shear stress v_u :	7.8	Psi Check Usage of Punching Shear Capacity:	0.04	OK!	

EXHIBIT 8

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11513D

TwrVntr -Brooklyn #2
47 Brown Road
Brooklyn, CT 06234

June 14, 2019

Transcom Engineering Project Number: 737001-0135

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	6.35 %

Transcom Engineering, Inc.

Wireless Network Design and Deployment

June 14, 2019

T-MOBILE

Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 6009

Emissions Analysis for Site: **CT11513D – TwrVntr -Brooklyn #2**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **47 Brown Road, Brooklyn, 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) 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.

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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.

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CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **47 Brown Road, Brooklyn, 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, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

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The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APX16DWV-16DWV-S-E-ACU	137
A	2	RFS APXVAARR24_43-U-NA20	137
B	1	RFS APX16DWV-16DWV-S-E-ACU	137
B	2	RFS APXVAARR24_43-U-NA20	137
C	1	RFS APX16DWV-16DWV-S-E-ACU	137
C	2	RFS APXVAARR24_43-U-NA20	137

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **1900 MHz (PCS)** radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **1.75 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **1740 feet** of **1-5/8"** coax.

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RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	4,550.28	0.95
Antenna A2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.22
Sector A Composite MPE%							2.17
Antenna B1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	4,550.28	0.95
Antenna B2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.22
Sector B Composite MPE%							2.17
Antenna C1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	4,550.28	0.95
Antenna C2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.22
Sector C Composite MPE%							2.17

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	MPE%
T-MOBILE – Max Per Sector Value	2.17 %
AT&T	0.72 %
Verizon Wireless	3.46 %
Site Total MPE %:	6.35 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	2.17 %
T-MOBILE Sector B Total:	2.17 %
T-MOBILE Sector C Total:	2.17 %
Site Total:	6.35 %

Table 5: Site MPE Summary

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FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# 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 1900 MHz (PCS) LTE	4	1,040.06	137	8.72	1900 MHz (PCS)	1000	0.87%
T-Mobile 1900 MHz (PCS) GSM	1	390.02	137	0.82	1900 MHz (PCS)	1000	0.08%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	137	3.31	600 MHz	400	0.83%
T-Mobile 700 MHz LTE	2	432.54	137	1.81	700 MHz	467	0.39%
						Total:	2.17%

Table 6: T-MOBILE Maximum Sector MPE Power Values

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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:	2.17 %
Sector B:	2.17 %
Sector C:	2.17 %
T-MOBILE Maximum Total (per sector):	2.17 %
Site Total:	6.35 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **6.35 %** 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.



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