Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

June 4, 2020

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

RE: **Notice of Exempt Modification for T-Mobile:**
806384 - T-Mobile Site ID: CT11037B
93 Roxbury Road, East Lyme, CT 06357
Latitude: 41° 20′ 8.35″ / Longitude: -72° 13′ 18.28″

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 103-foot mount on the existing 151-foot Self Support Tower, located at 93 Roxbury Road, East Lyme, CT. The tower is owned by Crown Castle and the property is owned by the Town of East Lyme. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700 MHz antennas. The new antennas will be installed at the 103-ft level of the tower. T-Mobile is also proposing tower mount modifications. As shown on the enclosed mount analysis.

Planned Modifications:
Tower:

Remove and Replace:
(3) LNX 6515DS-A1M Antenna **(REMOVE)** - (3) RFS-APXVAARR24_43-U-NA20 Antenna 600/700 MHz **(REPLACE)**

(3) RRUS11 B12 **(REMOVE) –** (3) Radio 4449 B71/B12 **(REPLACE)**

Install New:
(3) 1 5/8" Hybrid Fiber Line

Existing to Remain:
(6) 1 5/8" Coax
(1) Fiber line
(3) AIR21 KRC118023-1_B2A_B4P Antenna 1900 MHz
(3) AIR21 KRC118023-1_B2P_B4A Antenna 2100 MHz
(3) TMA

Ground:

Upgrade to existing ground cabinet. (Internally)

The facility was approved by the Connecticut Siting Council on January 3, 1990 in Petition No. 116. Said approval given without conditions.

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 Mark C. Nickerson, First Selectman for the Town of East Lyme, as both the property owner and municipality, Gary Goeschel, Director of Planning, and Crown Castle is the tower owner.

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

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

3. The proposed modification 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 Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Anne Marie Zsamba.

Sincerely,

Anne Marie Zsamba
Site Acquisition Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
(201) 236-9224
AnneMarie.Zsamba@crowncastle.com

Attachments
cc:

Mark C. Nickerson, First Selectman *(via email only to mnickerson@eltownhall.com)*
Town of East Lyme
Town Hall – Selectman's Office
108 Pennsylvania Avenue
Niantic, CT 06357
860-691-4110

Gary A. Goeschel, II, Director of Planning *(via email only to ggoeschel@eltownhall.com)*
Town of East Lyme
Town Hall – Planning Department
108 Pennsylvania Avenue
Niantic, CT 06357
860-739-6931

Crown Castle, Tower Owner

From: Zsamba, Anne Marie
To: ggoeschel@eltownhall.com
Subject: Notice of Exempt Modification Application - T-Mobile - 93 Roxbury Road
Date: Thursday, June 4, 2020 12:46:00 PM
Attachments: EM-T-MOBILE_93 ROXBURY RD EAST LYME_806384_CT11037B_notice.pdf

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Dear Mr. Goeschel:

Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council, today June 4, 2020.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie Zsamba

ANNE MARIE ZSAMBA
Site Acquisition Specialist
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

From: Zsamba, Anne Marie
To: mnickerson@eltownhall.com
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CROWN CASTLE
3 Corporate Park Drive, Suite 101
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Exhibit A

Original Facility Approval

ORIGINAL

An application of Metro Mobile CTS of New London Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, operation, and maintenance of cellular telephone tower and associated equipment in the Town of East Lyme, Connecticut.	:	Docket No. 116 Connecticut Siting Council January 3, 1990

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council finds that the effects associated with the construction, operation, and maintenance of a cellular telephone facility at the proposed East Lyme site, 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 significant either alone or cumulatively with other effects, 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 Section 16-50k of the General Statutes of Connecticut (CGS), be issued to Metro Mobile CTS of New London, Inc., for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed East Lyme site in East Lyme, 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 self-supporting, lattice tower including antennas and associated equipment shall not exceed a height of 343 feet AMSL.
2. The facility shall be constructed in accordance with the State of Connecticut Basic Building Code.

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 State Agencies. The D&M plan shall include detailed plans of the site preparation with compacted fill and adjustment for tower height in relation to the new site elevation.

4. The Certificate Holder shall comply with any future radio frequency (RF) standard, promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in this Decision and Order shall be brought into compliance with such standards.

5. The Certificate Holder or its successor shall provide the Council a recalculated report of power density if and when additional channels over the proposed 60 channels, higher wattage over the proposed 100 watts per channel, or if other circumstances in operation cause a change in power density above the levels originally calculated in the application.

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

7. If this facility does not initially provide, or permanently ceases to provide cellular service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years after the completion of any appeal to this Decision and Order.

Pursuant to Section 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. A notice of issuance shall be published in the New London Day.

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 State Agencies.

The parties or intervenors to this proceeding are:

Metro Mobile CTS of New London, Inc. (Applicant)
100 Corporate Drive
Windsor, CT 06095

ATTN: Gary Schulman
General Manager

Robinson and Cole (Its Representative)
One Commercial Plaza
Hartford, CT 06103-3597
Attn: Earl W. Phillips, Jr., Esq.

SNET Cellular, Inc. (Intervenor)
227 Church Street
New Haven, CT 06506

Peter J. Tyrrell (Its Representative)
SNET Cellular, Inc.
Room 1021
227 Church Street
New Haven, CT 06506

3782E-9-11

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket No. 116 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 3rd day of January, 1990.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner Peter Boucher Designee: Robert A. Pulito	Yes
Commissioner Leslie Carothers Designee: Brian Emerick	Absent
Harry E. Covey	Yes
Mortimer A. Gelston	Yes
Daniel P. Lynch, Jr.	Yes
Paulann H. Sheets	Yes
William H. Smith	Yes
Colin C. Tait	Yes

Exhibit B

Property Card

93 ROXBURY RD

Location	93 ROXBURY RD	**Mblu**	15.0/ 3/ / /
Acct#	008267	**Owner**	METRO MOBILE CTS OF N L INC
Assessment	$811,230	**Appraisal**	$1,158,900
PID	4698	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$33,900	$1,125,000	$1,158,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$23,730	$787,500	$811,230

Owner of Record

Owner	METRO MOBILE CTS OF N L INC	**Sale Price**	$0
Co-Owner	C/O CROWN ATLANTIC CO	**Certificate**	
Address	PMB 353 4017 WASHINGTON RD MCMURRAY, PA 15317	**Book & Page**	297/ 552
		Sale Date	03/05/1990

Ownership History

Ownership History
No Data for Ownership History

Building Information

Building 1 : Section 1

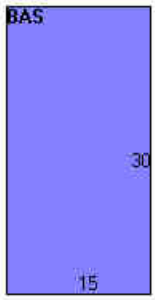
Year Built:	1990
Living Area:	450
Replacement Cost:	$36,171
Building Percent Good:	85
Replacement Cost Less Depreciation:	$30,700

Building Attributes	
Field	**Description**
STYLE	Commercial
MODEL	Commercial
Grade	Average
Stories:	1
Occupancy	1
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Tar & Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	NA
Heating Type	None
AC Type	None
Bldg Use	TEL X STA MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	430C
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	NONE
Ceiling/Wall	NONE
Rooms/Prtns	LIGHT
Wall Height	10
% Comn Wall	0

Building Photo

(http://images.vgsi.com/photos2/EastLymeCTPhotos//\01\00\33/53.jpg)

Building Layout



(http://images.vgsi.com/photos2/EastLymeCTPhotos//Sketches/4698_4764

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	450	450
		450	450

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	430C
Description	TEL X STA MDL-94

Land Line Valuation

Size (Acres)	0.09
Frontage	0

Zone	R40	**Depth**	0
Neighborhood		**Assessed Value**	$787,500
Alt Land Appr	No	**Appraised Value**	$1,125,000
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN4	FENCE-8' CHAIN			250 L.F.	$3,200	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$33,900	$1,125,000	$1,158,900
2018	$33,900	$1,125,000	$1,158,900
2017	$33,900	$1,125,000	$1,158,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$23,730	$787,500	$811,230
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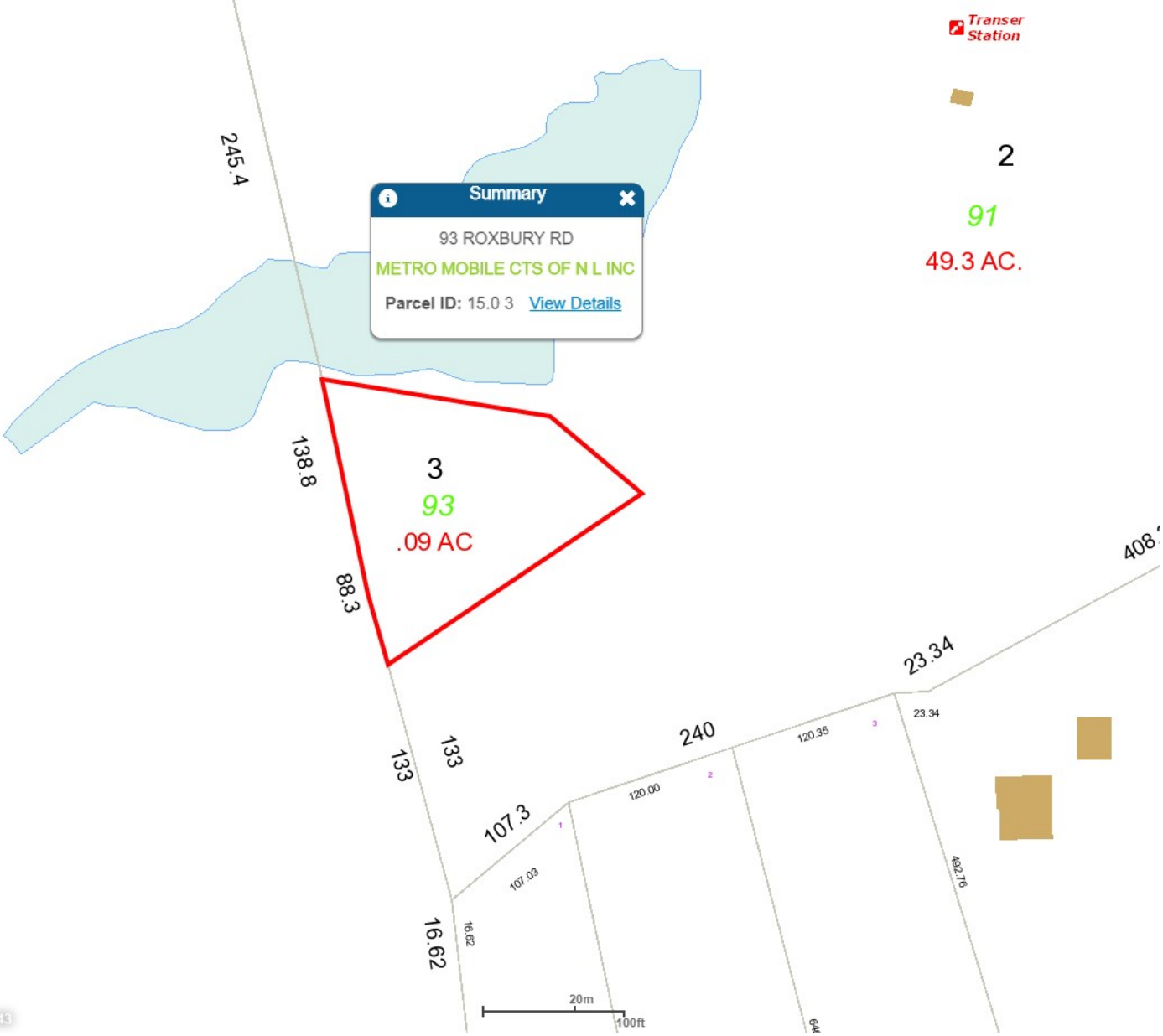

Transer Station
2
91
49.3 AC.
Summary
93 ROXBURY RD
METRO MOBILE CTS OF N L INC
Parcel ID: 15.0 3 View Details
245.4
138.8
3
93
.09 AC
88.3
133
133
107.3
240
120.00
120.35
23.34
23.34
16.62
16.62
107.03
492.76
20m
100ft

Exhibit C

Construction Drawings

T-MOBILE SITE NAME:

NIANTIC/ I-95/ RT 156_1

T-MOBILE SITE NUMBER:

CT11037B

CROWN BU: 806384 / APP#: 479797

67D02C CONFIGURATION

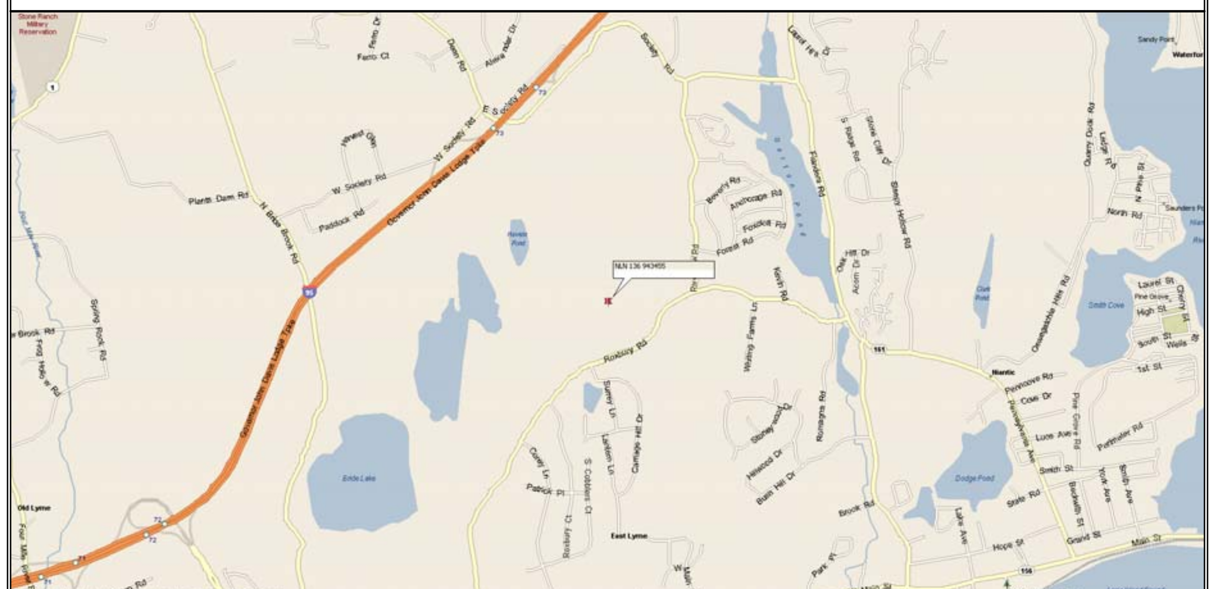
93 ROXBURY ROAD
EAST LYME, CT 06357

EXISTING 151'-4" SELF-SUPPORT TOWER

PROJECT SUMMARY

SITE TYPE:	EXISTING EQUIPMENT UPGRADE
SITE ADDRESS:	93 ROXBURY ROAD EAST LYME, CT 06357
JURISDICTION:	NEW LONDON COUNTY
NAD83	
LATITUDE: LONGITUDE:	41.335833° N 72.221944° W
TOWER OWNER:	CROWN CASTLE 3200 HORIZON DRIVE, SUITE 150 KING OF PRUSSIA, PA 19406 JASON SMITH (610) 635-3225
CUSTOMER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054 (973) 397-4800
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

LOCATION MAP



NO SCALE

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	1
A-1	OVERALL SITE PLAN	1
A-2	ANTENNA/CABLE SCHEDULE AND AZIMUTH PLANS	1
A-3	TOWER ELEVATION	1
A-4	ANTENNA AND RRU DETAILS	1
A-5	MOUNT MODIFICATION	0
E-1	PANEL SCEHDULE AND ONE-LINE DIAGRAM	1

CONTACT INFORMATION

A&E FIRM: B+T GROUP
1717 S. BOULDER, STE. 300
TULSA, OK 74119
CONTACT: MIKE OAKES
PHONE: (918) 587-4630

ELECTRIC PROVIDER: CONNECTICUT LIGHT & POWER
(860) 947-2000

TELCO PROVIDER: PIONEER TELEPHONE
(800) 808-9000

DRIVING DIRECTIONS

DEPART BRADLEY INTERNATIONAL AIRPORT ON TERMINAL RD. ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. ROAD NAME CHANGES TO CT-20. TAKE RAMP ONTO I-91. AT EXIT 22S, TAKE RAMP ONTO CT-9. KEEP STRAIGHT ONTO CT-17. AT EXIT 13, ROAD NAME CHANGES TO CT-9. TAKE RAMP ONTO I-95. AT EXIT 72, TURN RIGHT ONTO RAMP. ROAD NAME CHANGES TO ROCKY NECK CONNECTOR. TURN LEFT ONTO CT-156. TURN LEFT ONTO ROXBURY RD. TURN LEFT ONTO LOCAL ACCESS ROAD. ARRIVE NLN 136 943455.

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
T-MOBILE PROP:		
T-MOBILE R.F. MGR.:		
T-MOBILE NetOps:		
T-MOBILE CONST. MGR.:		
INTERCONNECT:		
T-MOBILE SITE DEV. MGR.:		
PROPERTY OWNER:		
PLANNING:		

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING/DWELLING	2016 NY UNIFORM CODE
STRUCTURAL	2016 NY UNIFORM CODE
MECHANICAL	2016 NY UNIFORM CODE
ELECTRICAL	NEC 2014

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES:

- REMOVE (3) EXISTING ANTENNAS AT 103'-0".
- REMOVE (3) EXISTING RRUS AT 103'-0".
- REMOVE (1) EXISTING DUS41.
- REMOVE (1) EXISTING XMU.
- RELOCATE (3) EXISTING ANTENNAS AT 103'-0".
- RELOCATE (3) EXISTING TMAS AT 103'-0".
- INSTALL (3) NEW ANTENNAS AT 103'-0".
- INSTALL (3) NEW RRUS AT 103'-0".
- INSTALL (3) NEW 6x12 HCS CABLES.
- INSTALL (2) NEW BB6630.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL CONNECTICUT ONE CALL
(800) 922-4455
CALL 3 WORKING DAYS
BEFORE YOU DIG!

B+T GRP

CROWN CASTLE

T-Mobile

CT11037B
BU #: 806384
NIANTIC/ I-95/ RT 156_1
93 ROXBURY ROAD
EAST LYME, CT 06357
EXISTING 151'-4" SELF-SUPPORT TOWER

PROJECT NO:	137085.002.01
CHECKED BY:	RMC

ISSUED FOR:

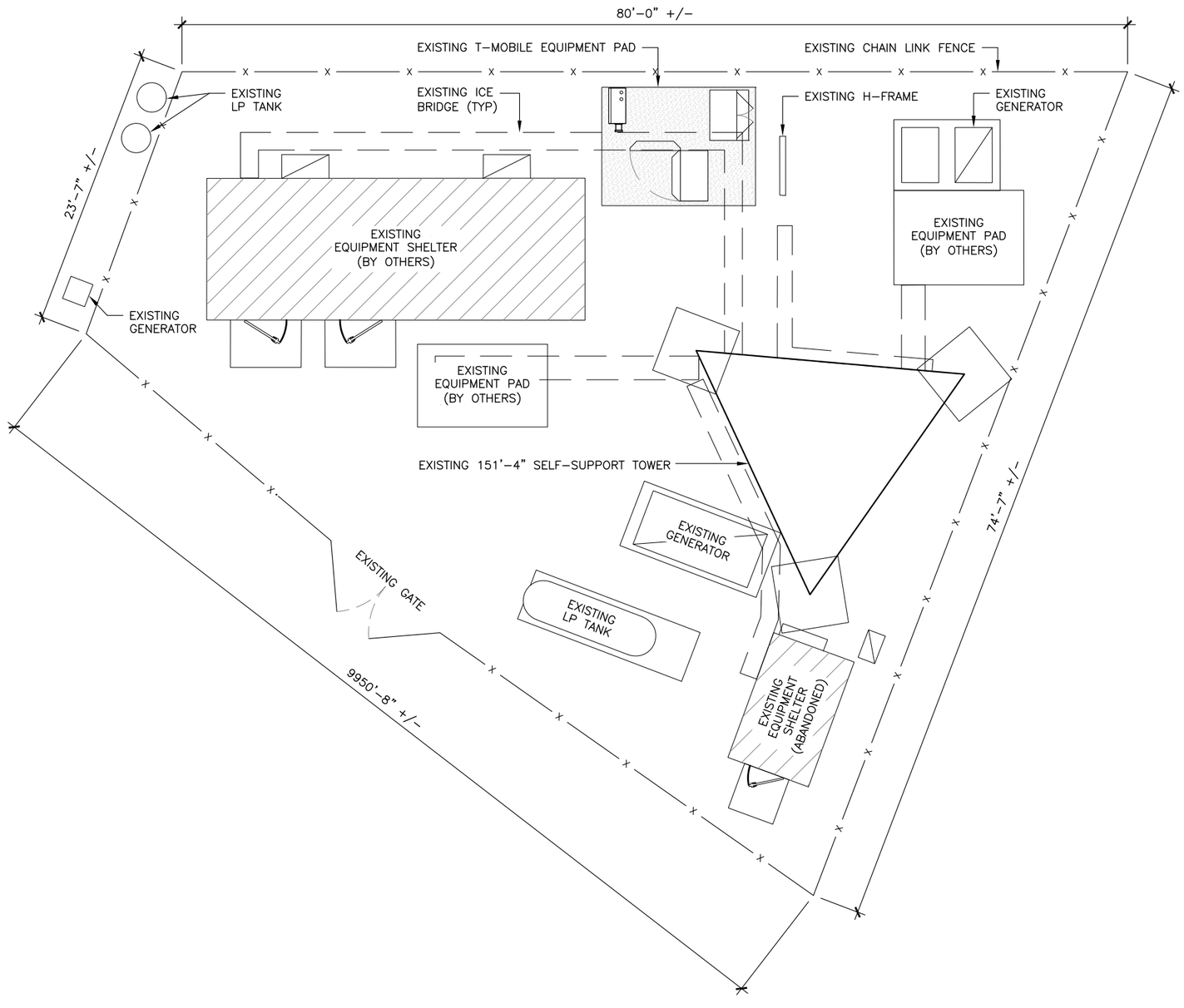
REV	DATE	DRWN	DESCRIPTION
0	7/29/19	JDP	CONSTRUCTION
1	9/25/19	JJD	CONSTRUCTION

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

STATE OF CONNECTICUT
31627
LICENSED PROFESSIONAL ENGINEER
9/25/19

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	1



1 OVERALL SITE PLAN

SCALE: 0' 4' 8' 16' 32'

N

GENERAL NOTES:

1. SUBJECT PROPERTY IS SITUATED AT 93 ROXBURY ROAD, EAST LYME, CT 06357.

2. APPLICANT: T-MOBILE
A DELAWARE LIMITED LIABILITY COMPANY
4 SYLVAN WAY
PARSIPPANY, NEW JERSEY 07054
(973) 397-4800

   TOWER OWNER: CROWN CASTLE INTERNATIONAL

- THE APPLICANT IS TO UPDATE THEIR NETWORK BY INSTALLING THREE (3) NEW PANEL ANTENNAS, THREE (3) RRUS, AND THREE (3) ADDITIONAL CABLES MOUNTED ON AN EXISTING SELF-SUPPORT TOWER.

3. THIS FACILITY SHALL BE VISITED ON THE AVERAGE OF ONCE A MONTH FOR MAINTENANCE AND SHALL BE MONITORED FROM A REMOTE FACILITY.

4. THE EXISTING SITE IS LOCATED AT LATITUDE OF 41.335833° N± AND LONGITUDE OF 72.221944° W±. THE HORIZONTAL DATUM ARE IN TERMS OF NORTH AMERICAN DATUM OF 1983 (NAD 83).

5. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATED "ISSUED FOR CONSTRUCTION"

6. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:

   6.A. CURRENT PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
   6.B. CURRENT PREVAILING UTILITY COMPANY AUTHORITY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.

7. THE CONTRACTOR SHALL NOTIFY B+T GROUP, P.A. IMMEDIATELY IF ANY FIELD-CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON, AND/OR IF SUCH CONDITIONS WOULD OR COULD RENDER THE DESIGNS SHOWN HEREON INAPPROPRIATE AND/OR INEFFECTIVE.

8. THE CONTRACTOR IS RESPONSIBLE TO PROTECT, REPAIR AND/OR REPLACE ANY DAMAGED STRUCTURES, UTILITIES OR LANDSCAPED AREA WHICH MAY BE DISTURBED DURING THE CONSTRUCTION OF THIS FACILITY.

9. THE CONSTRUCTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL CONSTRUCTION MEANS AND METHODS. THE CONSTRUCTION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.

10. SITE INFORMATION SHOWN TAKEN FROM CROWN CASTLE SITE PLANS AND FROM CROWN CASTLE INSPECTION PHOTOS.

11. NO GUARANTEE IS MADE NOR SHOULD BE ASSUMED AS TO THE COMPLETENESS OR ACCURACY OF THE HORIZONTAL OR VERTICAL LOCATIONS. ALL PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN PRIOR TO CONSTRUCTION ACTIVITIES.

12. ALL IMPROVEMENTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE TOWNSHIP ENGINEER WHO WILL BE GIVEN PROPER NOTIFICATION PRIOR TO THE START OF ANY CONSTRUCTION.

B+T GRP

CROWN CASTLE

T···Mobile·

CT11037B
BU #: 806384
NIANTIC/ I-95/ RT 156_1
93 ROXBURY ROAD
EAST LYME, CT 06357
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STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
9/25/19

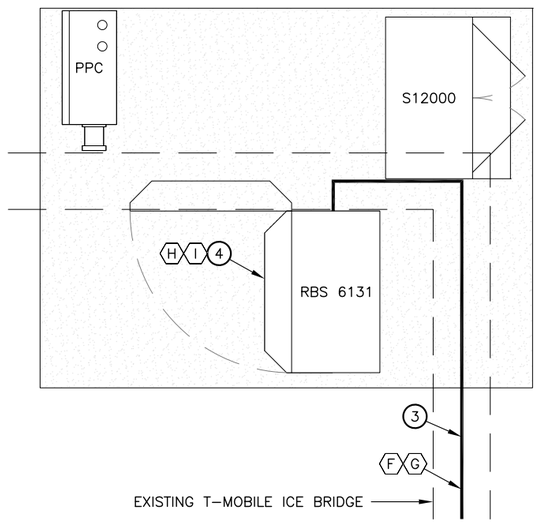
SHEET NUMBER:	REVISION:
A-1	1

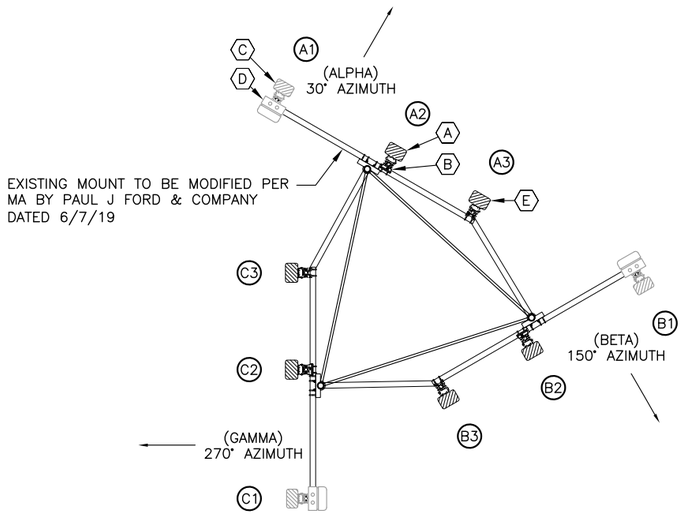
LEGEND

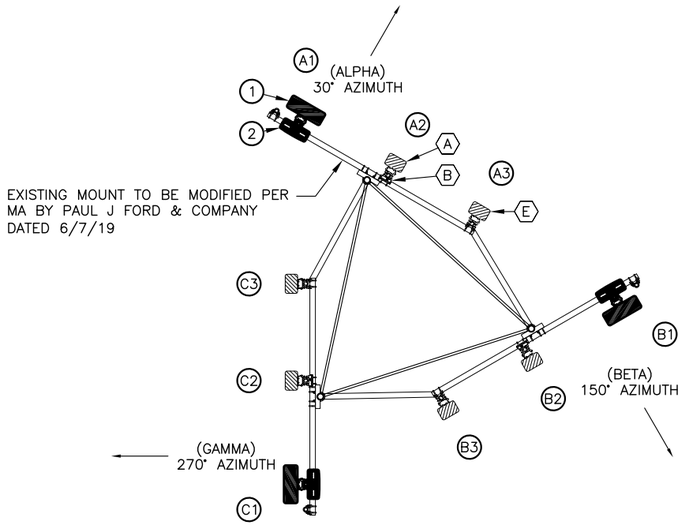
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES	
A	EXISTING ERICSSON AIR21 KRC118023-1_B2A_B4P ANTENNA TO REMAIN (TOTAL OF 3)	1	INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. PROVIDE NEW 2 7/8" OD SCH.40 PIPE MAST (LENGTH TO BE V.I.F) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING TMA TO REMAIN (TOTAL OF 3)	2	INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	EXISTING ANDREW LNX-6515DS-A1M ANTENNA TO BE REMOVED (TOTAL OF 3)	3	INSTALL (3) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
D	EXISTING RRUS11 B12 RADIO TO BE REMOVED (TOTAL OF 3)	4	INSTALL (2) NEW BB6630 IN EXISTING 6131 CABINET
E	EXISTING ERICSSON AIR21 KRC118023-1_B2P_B4A ANTENNA TO REMAIN (TOTAL OF 3)		
F	EXISTING 9X18 HCS FIBER TO REMAIN (TOTAL OF 1)		
G	EXISTING 1 5/8" COAX TO REMAIN (TOTAL OF 6)		
H	REMOVE (1) EXISTING DUS41 FROM EXISTING 6131 CABINET		
I	REMOVE (1) EXISTING XMU FROM EXISTING 6131 CABINET		

ANTENNA AND CABLE SCHEDULE

SECTOR	POSITION	EXISTING ANTENNAS	PROPOSED ANTENNA CONFIGURATION		E-TILT	M-TILT	ANTENNA CENTERLINE	TMA/RRU	CABLES	JUMPER TYPE	CABLE LENGTH
30° – ALPHA	**A1**	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71 B12**	**2°/2°**	**0°**	103'-0"	**0/1**	**(1) 6x12 HCS FIBER**	**DC/FIBER & 1/2" COAX**	**153'-0"**
	A2	ERICSSON AIR21 KRC118023-1_B2A_B4P	UMTS GSM	RU22	2°/2°	0°		1/0	(1) 9x18 HCS FIBER (1) 6X12 HCS FIBER	DC/FIBER	153'-0"
	A3	ERICSSON AIR21 KRC118023-1_B2P_B4A	LTE	B2 B4	2°	0°		0/0	(2) 1 5/8" COAX (1) 6x12 HCS FIBER	DC/FIBER	153'-0"
150° – BETA	**B1**	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71 B12**	**2°/2°**	**0°**	103'-0"	**0/1**	**SHARED FIBER**	**DC/FIBER & 1/2" COAX**	**153'-0"**
	B2	ERICSSON AIR21 KRC118023-1_B2A_B4P	UMTS GSM	RU22	4°/4°	0°		1/0	SHARED FIBER	DC/FIBER	153'-0"
	B3	ERICSSON AIR21 KRC118023-1_B2P_B4A	LTE	B2 B4	2°	0°		0/0	(2) 1 5/8" COAX SHARED FIBER	DC/FIBER	153'-0"
270° – GAMMA	**C1**	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71 B12**	**2°/2°**	**0°**	103'-0"	**0/1**	**SHARED FIBER**	**DC/FIBER & 1/2" COAX**	**153'-0"**
	C1	ERICSSON AIR21 KRC118023-1_B2A_B4P	UMTS GSM	RU22	2°/2°	0°		1/0	SHARED FIBER	DC/FIBER	153'-0"
	C2	ERICSSON AIR21 KRC118023-1_B2P_B4A	LTE	B2 B4	2°	0°		0/0	(2) 1 5/8" COAX SHARED FIBER	DC/FIBER	153'-0"







1 ENLARGED AREA PLAN
SCALE: 0' 1' 2' 4' 10'

2 EXISTING ANTENNA ORIENTATION
SCALE: 0' 1' 4' 8' 20'

N

3 PROPOSED ANTENNA ORIENTATION
SCALE: 0' 1' 4' 8' 20'

N

B+T GRP

CROWN CASTLE

T-Mobile

CT11037B
BU #: 806384
NIANTIC/ I-95/ RT 156_1
93 ROXBURY ROAD
EAST LYME, CT 06357
EXISTING 151'-4" SELF-SUPPORT TOWER

PROJECT NO:	137085.002.01
CHECKED BY:	RMC

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	7/29/19	JDP	CONSTRUCTION
1	9/25/19	JJD	CONSTRUCTION

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PEC.0001564
Expires 2/10/20

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31627
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PROFESSIONAL ENGINEER
9/25/19

SHEET NUMBER:	REVISION:
A-2	1

LEGEND			
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES	
A	EXISTING ERICSSON AIR21 KRC118023-1_B2A_B4P ANTENNA TO REMAIN (TOTAL OF 3)	1	INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. PROVIDE NEW 2 7/8" OD SCH.40 PIPE MAST (LENGTH TO BE V.I.F) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING TMA TO REMAIN (TOTAL OF 3)	2	INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	EXISTING ANDREW LNX-6515DS-A1M ANTENNA TO BE REMOVED (TOTAL OF 3)	3	INSTALL (3) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
D	EXISTING RRUS11 B12 RADIO TO BE REMOVED (TOTAL OF 3)		
E	EXISTING ERICSSON AIR21 KRC118023-1_B2P_B4A ANTENNA TO REMAIN (TOTAL OF 3)		
F	EXISTING 9X18 HCS FIBER TO REMAIN (TOTAL OF 1)		
G	EXISTING 1 5/8" COAX TO REMAIN (TOTAL OF 6)		

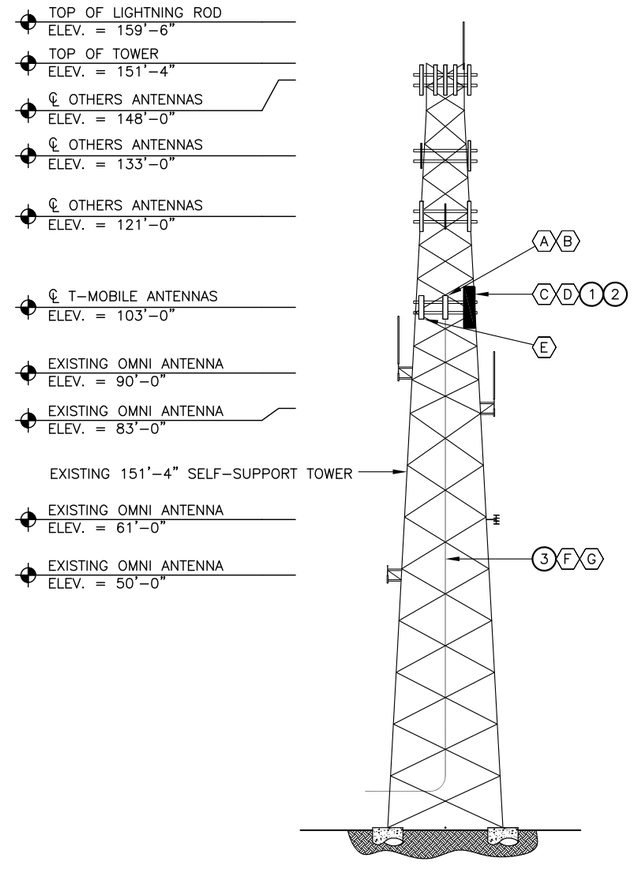
EXISTING MOUNT TO BE MODIFIED PER MOUNT ANALYSIS BY PAUL J. FORD & COMPANY DATED 6/7/19.

STRUCTURAL ANALYSIS NOTE:

REFER TO STRUCTURAL ANALYSIS OR STRUCTURAL LETTER FOR APPROVAL OF ADDITIONAL NEW APPURTENANCES.

LEGEND:

- **NEW**
- EXISTING
- FUTURE



1 TOWER ELEVATION

SCALE: 0' 15' 30' 45' 60' 1"=30'

B+T GRP

CROWN CASTLE

T···Mobile

CT11037B
BU #: 806384
NIANTIC/ I-95/ RT 156_1
93 ROXBURY ROAD
EAST LYME, CT 06357
EXISTING 151'-4" SELF-SUPPORT TOWER

PROJECT NO: 137085.002.01

CHECKED BY: RMC

ISSUED FOR:

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1	9/25/19	JJD	CONSTRUCTION

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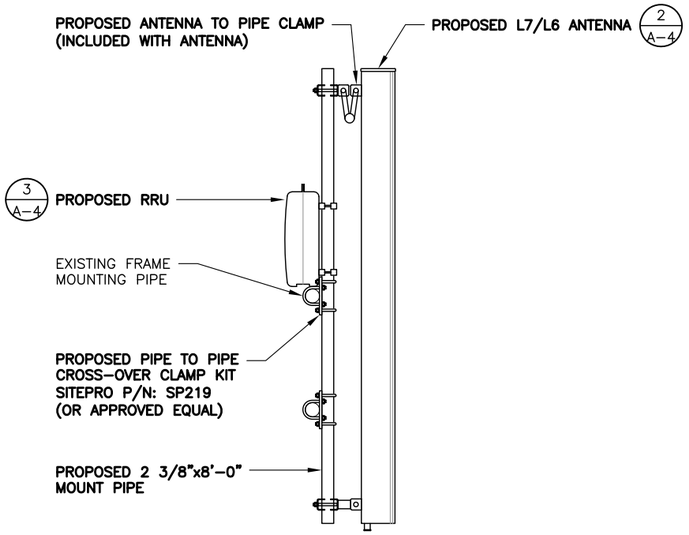
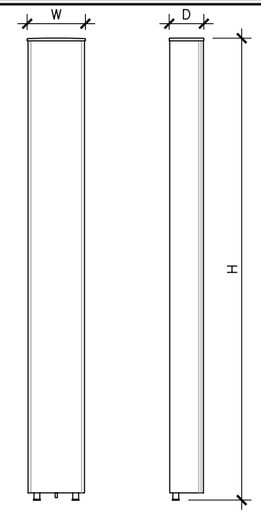
SHEET NUMBER: A-3

REVISION: 1



1 PROPOSED L7/L6 ANTENNA & RRU MOUNTING DETAIL

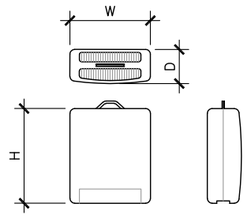
SCALE: 3/8" = 1'-0"



ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAARR24_43-U-NA20
WIDTH	24.0"
DEPTH	8.7"
HEIGHT	95.9"
WEIGHT	128.0 LBS

2 L7/L6 ANTENNA DETAIL

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

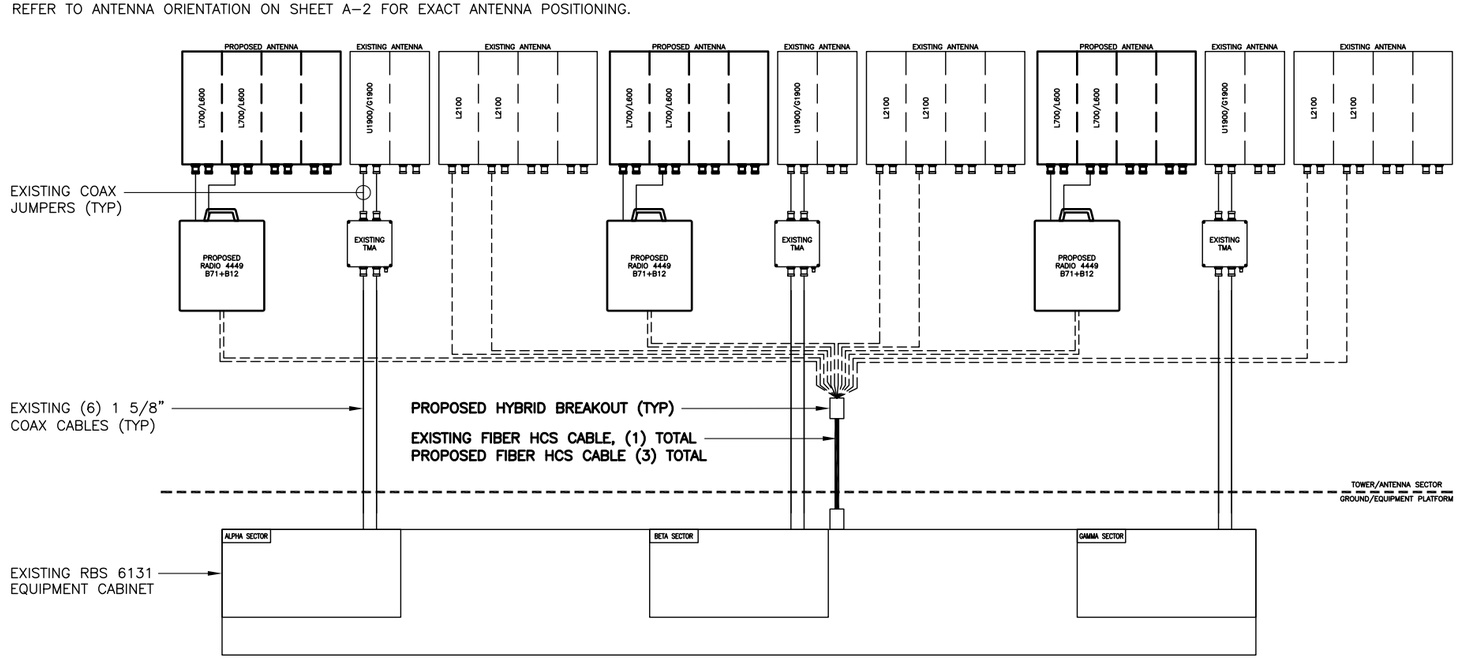


RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4449
WIDTH	13.2"
DEPTH	10.4"
HEIGHT	14.9"
WEIGHT	74 LBS

3 REMOTE RADIO UNIT (RRU)

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

NOTES:
1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS.
2. SEE RF SCHEDULE FOR CABLE AND JUMPER LENGTHS.
3. REFER TO ANTENNA ORIENTATION ON SHEET A-2 FOR EXACT ANTENNA POSITIONING.



4 ANTENNA & CABLING SCHEMATIC

SCALE: N.T.S.

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CROWN CASTLE

T-Mobile

CT11037B
BU #: 806384
NIANTIC/ I-95/ RT 156_1
93 ROXBURY ROAD
EAST LYME, CT 06357
EXISTING 151'-4" SELF-SUPPORT TOWER

PROJECT NO:	137085.002.01
CHECKED BY:	RMC

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	7/29/19	JDP	CONSTRUCTION
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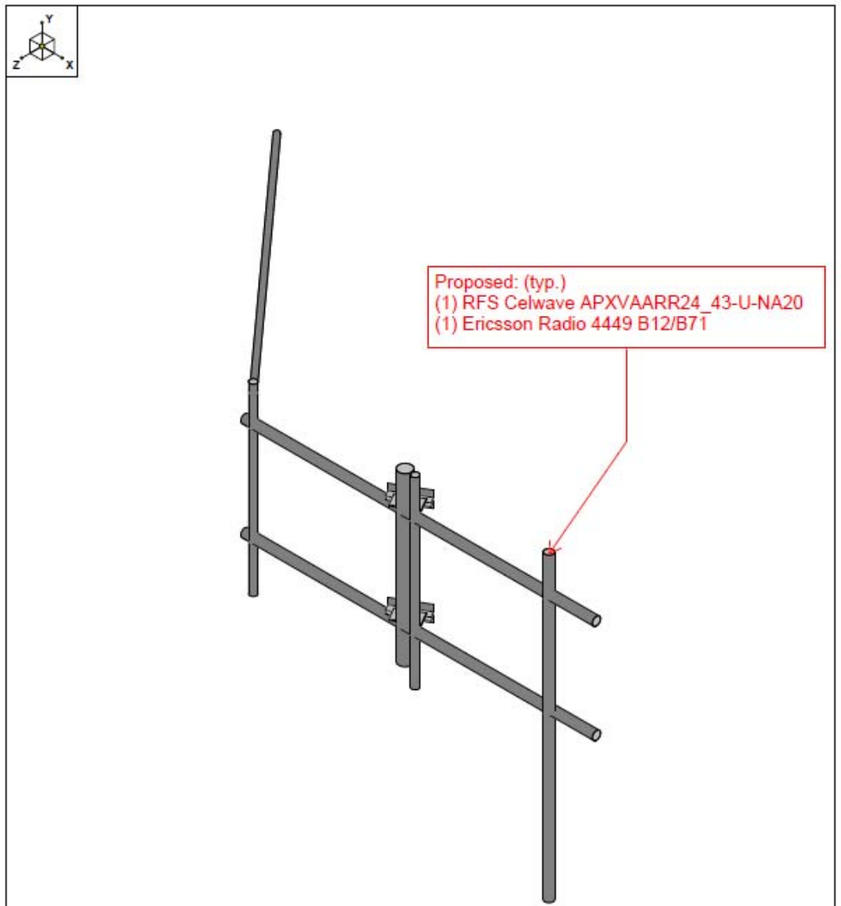
SHEET NUMBER: A-4

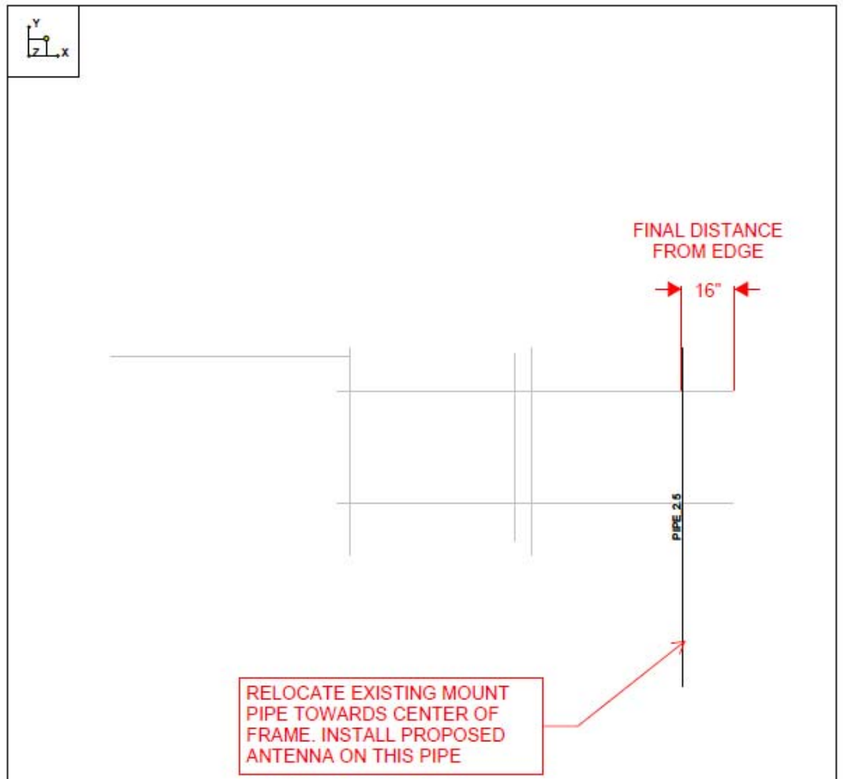
REVISION: 1



Envelope Only Solution

Paul J. Ford and Company	806384 - NLN 136 943455	SK - 2
BMH		June 5, 2019 at 1:27 PM
37519-1559.003.8191		37519-1559_Wind Load.r3d

1 MOUNT MODIFICATION
SCALE: N.T.S.



Envelope Only Solution

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B+T GRP

CROWN CASTLE

T-Mobile

CT11037B
BU #: 806384

NIANTIC/ I-95/ RT 156_1

93 ROXBURY ROAD
EAST LYME, CT 06357

EXISTING 151'-4" SELF-SUPPORT TOWER

PROJECT NO:	137085.002.01
CHECKED BY:	RMC

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	7/29/19	JDP	CONSTRUCTION
1	9/25/19	JJD	CONSTRUCTION

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9/25/19

SHEET NUMBER: A-5

REVISION: 1

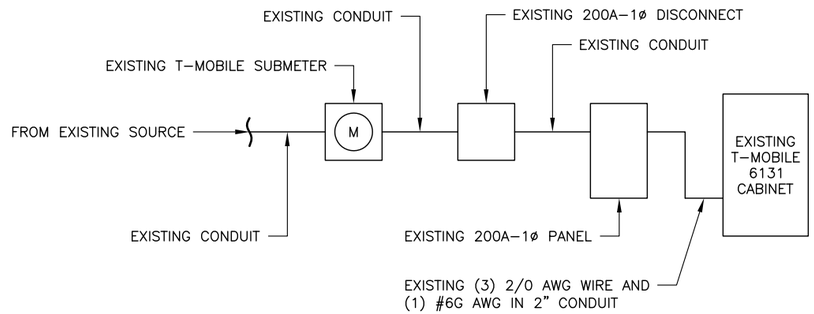
FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
GFCI	1	20A	1	7	60A	2	SURGE
RBS 6131	2	100A	2	8			
			3	9	50A	2	BTS
			4	10			

RATED VOLTAGE: ■120/240 ☐ _____. 1 PHASE, 3 WIRE	BRANCH POLES: ■12 ☐24 ☐30 ☐42	APPROVED MF'RS	
RATED AMPS: ☐100 ■200 ☐400 ☐_____.	CABINET: ■SURFACE ☐FLUSH	NEMA ☐1 ■3R ☐4X	
☐MAIN LUGS ONLY MAIN 200 AMPS ■BREAKER ☐FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH	
☐FUSED ■CIRCUIT BREAKER BRANCH DEVICES	☐_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS	GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL			

FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

1 FINAL T-MOBILE PANEL DETAIL

SCALE: N.T.S.



2 ONE-LINE DIAGRAM

SCALE: N.T.S.

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CROWN CASTLE

T···Mobile

CT11037B
BU #: 806384
NIANTIC/ I-95/ RT 156_1
93 ROXBURY ROAD
EAST LYME, CT 06357
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B&T ENGINEERING, INC.
PEC.0001564
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9/25/19

SHEET NUMBER:	REVISION:
E-1	1

Exhibit D

Structural Analysis Report

Date: **June 14, 2019**

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Heather Simeone
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Tectonic Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
(845) 567-6656

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11037B
	Carrier Site Name:	Niantic/ I-95/ Rt 156_1
Crown Castle Designation:	**Crown Castle BU Number:**	806384
	Crown Castle Site Name:	NLN 136 943455
	Crown Castle JDE Job Number:	559178
	Crown Castle Work Order Number:	1729152
	Crown Castle Order Number:	479797 Rev. 1
Engineering Firm Designation:	**Tectonic Project Number:**	9800.806384, Phase 2
Site Data:	**93 Roxbury Road, East Lyme, New London County, CT** **Latitude *41° 20' 8.35"*, Longitude *-72° 13' 18.28"*** **151.292 Foot - Self Support Tower**	

Dear Heather Simeone,

Tectonic Engineering & Surveying Consultants P.C. (Tectonic) is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity - 81.0%**

This analysis utilizes an ultimate 3-second gust wind speed of 145 mph as required by the 2018 Connecticut State Building Code (2015 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Neha Lomate / IM

Respectfully submitted by:

Tectonic

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED PROFESSIONAL ENGINEER

6/14/19.

Antonio A. Gualtieri, P.E.
Executive Vice President

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 151 [illegible] ft Self [illegible] Support tower designed [illegible] Rohn [illegible]

The tower has been modified multiple times to accommodate additional loading [illegible]

2) ANALYSIS CRITERIA

TIA-222 Revision:	TI [illegible] H
Risk Category:	III
Wind Speed:	145 mph
Exposure Category:	[illegible]
Topographic Factor:	1
Ice Thickness:	1 [illegible] 5 in
Wind Speed with Ice:	5 [illegible] mph
Service Wind Speed:	[illegible] mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
1 [illegible]	1 [illegible]	1	crown mounts	SM [illegible] 1 [illegible]	[illegible] 1	1 [illegible] 5 [illegible] 1 [illegible] 4
		[illegible]	ericsson	[illegible] RICSSO [illegible] [illegible] IR [illegible] 1 [illegible] [illegible] [illegible] 4P		
		[illegible]	ericsson	[illegible] RICSSO [illegible] [illegible] IR [illegible] 1 [illegible] 4 [illegible] [illegible] P		
		[illegible]	ericsson	[illegible] R [illegible] 11 [illegible] 144 [illegible] 1		
		[illegible]	ericsson	R [illegible] DIO 444 [illegible] [illegible] 1 [illegible] [illegible] [illegible] 1		
		[illegible]	r s ce wa e	[illegible] P [illegible] V [illegible] [illegible] RR [illegible] 4 [illegible] 4 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
15 [illegible]	15 [illegible]	1	te ewa e	[illegible] [illegible] T15 [illegible] [illegible] [illegible]	1	[illegible]
	155 [illegible]	1	motoro a	W [illegible] [illegible] [illegible] [illegible] [illegible]		
	15 [illegible]	1	tower mounts	[illegible] 5 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] " Pipe Mount		
14 [illegible]	14 [illegible]	[illegible]	ampheno [illegible]	Q [illegible] [illegible] D [illegible] 5 [illegible] C [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] w [illegible] Mount Pipe	[illegible]	1 [illegible] 5 [illegible]
		1	commscope	C [illegible] C1 [illegible] [illegible] [illegible] T [illegible] DS [illegible] 4 [illegible]		
		4	commscope	H [illegible] [illegible] [illegible] [illegible] [illegible] 51 [illegible] DS [illegible] [illegible] [illegible] M w [illegible] Mount Pipe		
		[illegible]	commscope	J [illegible] HH [illegible] [illegible] 5 [illegible] [illegible] R [illegible] [illegible] w [illegible] Mount Pipe		
		[illegible]	commscope	[illegible] [illegible] [illegible] [illegible] [illegible] 514DS [illegible] [illegible] IM w [illegible] Mount Pipe		
		[illegible]	no ia	[illegible] [illegible] 5 RRH4 [illegible] [illegible] [illegible] [illegible] H [illegible] [illegible] [illegible]		
		[illegible]	no ia	[illegible] [illegible] [illegible] [illegible] RRH4 [illegible] 45 [illegible] [illegible] HI [illegible] [illegible]		
		[illegible]	r s ce wa e	D [illegible] [illegible] [illegible] 1 [illegible] [illegible] C [illegible] 1 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]		
		[illegible]	samsun te ecommunications	R [illegible] V [illegible] 1 [illegible] [illegible] D1 [illegible]		
	14 [illegible]	1	crown mounts	SM 51 [illegible] [illegible]		
14 [illegible]	14 [illegible]	1	panasonic	WV [illegible] CW [illegible] [illegible] 4	[illegible]	[illegible]
1 [illegible]	1 [illegible] 4 [illegible]	[illegible]	[illegible] athrein	[illegible] [illegible] [illegible] 1 [illegible] 5 [illegible] 4 w [illegible] Mount Pipe	[illegible]	1 [illegible] 5 [illegible]
	1 [illegible]	1	crown mounts	SM 1 [illegible] 4 [illegible]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
1□□□□	1□□□□	1	motoro□a	SC□14	1	□□□
		1	motoro□a	W□□□□□		
		1	te□ewa□e	□□T15□□□		
	1□□□□	1	crown mounts	SO □□5□1		
1□1□□	1□□□□	□	a□cate□□ucent	1□□□MH□RRH □□5MH□□	4	1□1□4
		□	a□cate□□ucent	□□□MH□ □□5□W RRH W□□I□T□R		
		□	a□cate□□ucent	TD□RRH□□□□□□5		
		1	r□s ce□wa□e	□P□V□□RR1□□C□□ □□ w□Mount Pipe		
		□	r□s ce□wa□e	□P□VSPP1□□C□□ □□ w□Mount Pipe		
		□	r□s ce□wa□e	□P□VTM14□C□1 □□ w□Mount Pipe		
	1□1□□	1	crown mounts	SM 5□5□□		
□□□□	□□□□	1	r□s ce□wa□e	□□R□□□ □□1	□	□
	□□□□	1	crown mounts	SO □□□□1		
□□□□	□5□□	1	motoro□a	W□□□□□	□	1□4
	□□□□	1	te□ewa□e	□□T15□D□		
	□□□□	1	crown mounts	SO □□5□1		
□1□□	□1□□	1	ma□rad	□M□T□□□5	1	1□4
5□□□	5□□□	1	□ucent	□S□4□1□□□11□□	1	1□□
	5□□□	1	crown mounts	SO □□5□1		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4□□ □OT□CH□IC□□ R□PORTS	Dr□C□arence We□ti P□□□P□C.	□58373	CCISIT□S
4□POST□MODI□IC□TIO□ I□SP□CTIO□	Pau□J. □ord & Compan□	2457484	CCISIT□S
4□POST□MODI□IC□TIO□ I□SP□CTIO□	Pau□J. □ord & Compan□	3□46703	CCISIT□S
4-TOW□R □O□□D□TIO□ DR□WI□□S□D□SI□□ SP□CS	Rohn	958525	CCISIT□S
4-TOW□R M□□□□□CT□R□R DR□WI□□S	Rohn	258359	CCISIT□S
4-TOW□R R□I□□ORC□M□□T D□SI□□□DR□WI□□S□D□T□	Vertica□Structures, Inc.	2215 93 □	CCISIT□S
4-TOW□R R□I□□ORC□M□□T D□SI□□□DR□WI□□S□D□T□	Pau□J. □ord & Compan□	2457486	CCISIT□S
4-TOW□R R□I□□ORC□M□□T D□SI□□□DR□WI□□S□D□T□	Pau□J. □ord & Compan□	288393 1	CCISIT□S
4-TOW□R R□I□□ORC□M□□T D□SI□□□DR□WI□□S□D□T□	All Points Techno□o□□ Corp. P□C.	80 1526	CCISIT□S
4-TOW□R STR□CT□R□□ ANALY SIS R□PORTS	Pau□J. □ord & Compan□	6922296	CCISIT□S
4□MO□□T R□I□□ORC□M□□T D□SI□□□DR□WI□□S□D□T□	Pau□J. □ord & Compan□	8458750	CCISIT□S

3.1) Analysis Method

tn□Tower (□ersion 8□0□5.0□, a commercia□□a□ai□a□□e ana□□sis so□tware pac□a□e, was used to create a three□dimensiona□mode□o□the tower and ca□cu□ate mem□er stresses □or □arious □oadin□ cases. Se□ected output □rom the ana□□sis is inc□uded in □ppendi□ A.

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's speci□ications.
2) The con□i□uration o□antennas, transmission ca□□es, mounts and other appurtenances are as speci□ied in Ta□□es 1 and 2 and the re□erenced drawin□s.
3) Tectonic did not ana□□e the antenna supportin□ mounts as a part o□this ana□□sis report and assumed the□ are structura□□ su□□icient. It is the carrier's responsi□i□it□ to ensure structura□ comp□iance o□their e□istin□ and□or proposed antenna supportin□ mounts.
4) □□ecti□e projected area (E PA) o□the pane□antennas ha□e □een computed by the tower owner usin□ Computationa□□□uid D□namics. Veri□ication o□its accurac□ is outside the scope o□this structura□ana□□sis. Tectonic does not assume an□responsi□i□it□ □or its accurac□.
5) Certain soi□parameters and aspect o□tower □eometr□are □ased on the pre□ious ana□□sis report by Pau□J. □ord & Compan□, re□erenced a□o□e.
6) The tower □oundation is su□□icient without the □oundation modi□ications, there□ore the□ ha□e not □een considered.
7) The e□istin□ □ase p□ate □rout was considered in this ana□□sis. □rout must □e maintained and inspected periodica□□ and must □e rep□aced i□dama□ed or crac□ed. Re□er to Crown Cast□ document □□□ STD-1 0323, □ase P□ate □rout.

This ana□□sis ma□ □e a□ected i□an□ assumptions are not □a□id or ha□e □een made in error. Tectonic shou□d □e noti□ied to determine the e□□ect on the structura□inte□rit□ o□the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	151 □□□□ □ 14□□□□□	□e□	ROH□ □□5 STD	□	□5□□□	□□□51	1□□□	Pass
T□	14□□□□□ □ 141□1 □□□	□e□	ROH□ □□5 STD	15	□□□□□	□□□51	1□□□	Pass
T□	141□1 □□□ □ 1□1 □□4□	□e□	ROH□ □□5 □H	□4	□□□□□□	□1□44	4□□1	Pass
T4	1□1 □□4□ □ 114 □□1□	□e□	ROH□ □□5 □H □□R□	4□	□□□□□□	□□□□□	5□□□	Pass
T5	114 □□1□ □ 1□□□□4□	□e□	ROH□ □□5 □H □□R□	5□	□5□□□□	□□□□□	□4□5	Pass
T□	1□□□□4□ □ 1□□□□1□	□e□	ROH□ □□5 □H □□R□	□□	□□□□□□	1□5□□□	5□□□	Pass
T□	1□□□□1□ □ □4□□□14	□e□	ROH□ □ □H □□R□	□□	□□□□□□	11□□□□	□□□□	Pass
T□	□4□□□14 □ □□□4□□1	□e□	ROH□ □ □H □□R□	□□	□□4□15	15□4□	55□□	Pass
T□	□□□4□□1 □ □□□□□□□	□e□	ROH□ □ □H □□R□	□□	□□□□□□	15□□□1	□□□□	Pass
T1□	□□□□□□□ □ □□□□□□5	□e□	ROH□ 4 □H □□R□	111	□111□□1	14□□□□	□4□□	Pass
T11	□□□□□□5 □ □□□□□41	□e□	ROH□ 4 □H □□R□	1□□	□1□□5□	□□□□□4	5□□□ □1□□ □□□	Pass
T1□	□□□□□41 □ 5□51□4	□e□	ROH□ 4 □H □□R□	1□□	□14□□□□	□□□□□5	□□□□	Pass
T1□	5□51□4 □ 4□41□□	□e□	ROH□ 4 □H □□R□	144	□1□□5□	□□□□□□	□4□4	Pass
T14	4□41□□ □ □□□□1□5	□e□	ROH□ 5 □H □□R□	15□	□1□5□□1	□5□□□□	□1□□	Pass
T15	□□□□1□5 □ □□□□□□□	□e□	ROH□ 5 □H □□R□	1□5	□□□□□1□	□□□□□□	□□□4 □□□□□ □□□□	Pass
T1□	□□□□□□□ □ 1□□1□41	□e□	ROH□ 5 □H □□R□	1□□	□□□□□5□	□□□□□□	□□□1	Pass
T1□	1□□1□41 □□	□e□	ROH□ 5 □H □□R□	1□□	□□□□□□	□□□□□□	□1□□	Pass
T1	151 □□□□ □ 14□□□□□	Dia□ona□	□1□5 □1□5 □□□1□	□	□1□□4	4□□4	□□□5	Pass
T□	14□□□□□ □ 141□1 □□□	Dia□ona□	□ □ □ □ □ □□1□	1□	□□□□□□	11□4□	□□□□ 4□□4 □□□□	Pass
T□	141□1 □□□ □ 1□1□□4□	Dia□ona□	□□ 1□□□□ 1□□□□1□	□□	□4□4□	1□□41	□□□4 □□□5 □□□□	Pass
T4	1□1 □□4□ □ 114 □□1□	Dia□ona□	□□ 1□□□□ 1□□□□1□	51	□5□□1	1□□□1	4□□□	Pass
T5	114 □□1□ □ 1□□□□4□	Dia□ona□	□□ 1□□□□ 1□□□□1□	□□	□5□□□	1□□□□	4□□□	Pass
T□	1□□□□4□ □ 1□□□□1□	Dia□ona□	□□ □5 □ □5 □ □□1□ □□□1□□	□□	□□□1□	41□4□	1□□1 5□□□ □□□	Pass
T□	1□□□□1□ □ □4□□□14	Dia□ona□	□□□□□□□1□	□1	□□□5□	1□□□□	41□□ 51□□ □□□	Pass
T□	□4□□□14 □ □□□4□□1	Dia□ona□	□□□□□□□1□	□□	□□□□1	1□□□□	4□□□ 5□□□ □□□	Pass
T□	□□□4□□1 □ □□□□□□□	Dia□ona□	□□ □ □ □ □ □□1□ □1□4□	1□□	□□□5□	5□□□5	1□□□ □□□□ □□□	Pass
T1□	□□□□□□□ □ □□□□□□5	Dia□ona□	□□□□□□□1□□1□4	114	□□□5□	4□□44	□□□□ □□□□ □□□	Pass
T11	□□□□□□5 □ □□□□□41	Dia□ona□	□□□□□□□1□□1□4	1□□	□1□□□□	□□□□□□	□□□1 □□□4 □□□	Pass
T1□	□□□□□41 □ 5□51□4	Dia□ona□	□□□□□□1□4□1□4	1□5	□1□□□□	4□□55	□1□4 □□□5 □□□	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1□	5□51□4 □ 4□41□□	Dia□ona□	□□□□□□1□4□1□4	14□	□11□15	45□□4	□4□□ 4□□□ □□□□	Pass
T14	4□41□□ □ □□□□1□5	Dia□ona□	□□□□ 1□□□□ 1□□□1□4□1□4	15□	□11□15	□□□□□□	1□□5 45□□ □□□□	Pass
T15	□□□□1□5 □ □□□□□□□□	Dia□ona□	□□□□ 1□□□□ 1□□□1□4□1□4	1□□	□1□55	□□□□□□	□□□□ 4□□1 □□□□	Pass
T1□	□□□□□□□□ □ 1□□1□41	Dia□ona□	□□ 4 □4 □1□4 □1□4□	1□□	□1□□1□	□1□□□□	14□□ 4□□□ □□□□	Pass
T1□	1□□1□41 □□	Dia□ona□	□□ 4 □4 □1□4 □1□4□	1□□	□1□□□□	□5□4□	1□□□ 4□□□ □□□□	Pass
T□	1□□□□4□ □ 1□□□□1□	Secondar□ Hori□onta□	□ □ □ □ □ □□1□	□4	□□□□□	□□□□	1□□1	Pass
T□	□4□□□14 □ □□□4□□1	Secondar□ Hori□onta□	□ □ □ □ □ □□1□	□5	□□□□5	5□□□	□□□	Pass
T□	□□4□□1 □ □□□□□□□□	Secondar□ Hori□onta□	□ □ □ □ □ □□1□	1□□	□□□□□	4□□□	□5	Pass
T11	□□□□□□5 □ □□□□□41	Secondar□ Hori□onta□	□□ 1□□□□ 1□□□□1□	1□□	□□5□	□□□1	□□□ □□□□ □□□□	Pass
T1□	□□□□41 □ 5□51□4	Secondar□ Hori□onta□	□□□□□1□4	141	□□□□□	15□41	4□4 □□□□ □□□□	Pass
T1□	5□51□4 □ 4□41□□	Secondar□ Hori□onta□	□□□□□1□4	15□	□□45	1□□□5	□□□ 5□□ □□□□	Pass
T15	□□□□1□5 □ □□□□□□□□	Secondar□ Hori□onta□	□ □ □ □ □ □□1□	1□□	□□□□□	□4□	□□□ 1□4 □□□□	Pass
T1□	□□□□□□□□ □ 1□□1□41	Secondar□ Hori□onta□	□□□□□□□1□	1□□	□□□□5	□□□4	□□□ 1□5 □□□□	Pass
T1□	1□□1□41 □□	Secondar□ Hori□onta□	□ □5 □ □5 □1□4	1□□	□□□□□	14□□□	□□1 1□□1 □□□□	Pass
T1	151□□□□ □ 14□□□□□	Top □irt	□□ 1□□□□ 1□□□□1□	5	□□□1□	□□□1	□5	Pass
T□	141□1□□ □ 1□1□□4□	Top □irt	□□ 1□□□□ 1□□□□1□	□□	□□□□□	□□□□	1□□□ 14□□ □□□□	Pass
							Summar□	
						□e□ □T1□□	□4□□	Pass
						Dia□ona□ □T1□□	□□□5	Pass
						Secondar□ Hori□onta□ □T□□	1□□1	Pass
						Top □irt □T□□	14□□	Pass
						□o□ Chec□s	□□5	Pass
						Ratin□□□	□4□□	Pass

□Ratin□ per TI□□□□□□H Section 15□5

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	81.0	Pass
1	Base Foundation	0	4.5	Pass
1	Base Foundation Soil Interaction	0	11.0	Pass

Structure Rating (max from all components) =	81%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H Section 15.5

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically and must be replaced if damaged or cracked. Refer to Crown Castle document 200639 STD 11 for Base Plate Grout.

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20
Se□s			ROH□ □5 STD																	
Se□ □rade																				
Dia□ona□s			ROH□ □5 □H																	
Dia□ona□□rade																				
Top □irts																				
Sec□Hori□onta□s			ROH□ □5 □H □□R□		ROH□ □5 □H □□R□															
□ace Width □□																				
□Pane□s □ □□			ROH□ □ □H □□R□																	
Wei□ht □□																				

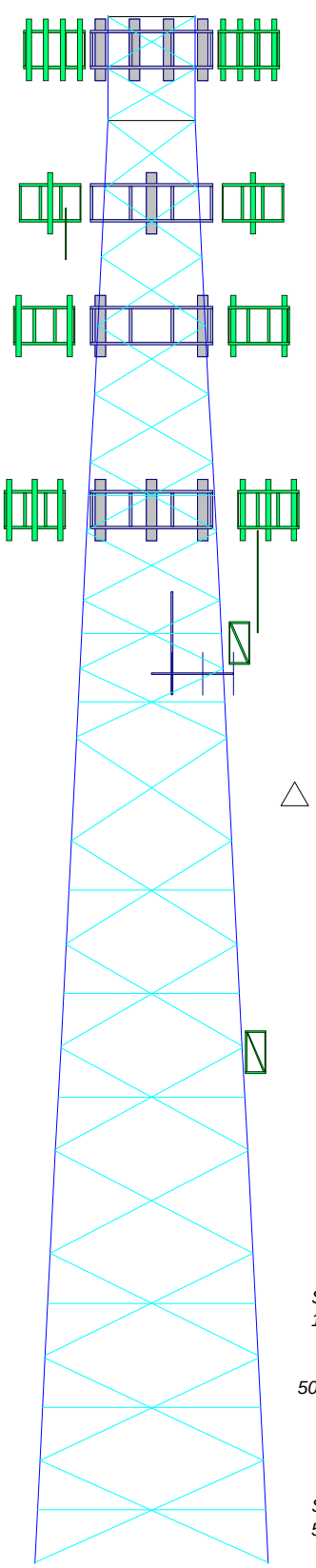
Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20
Se□s			ROH□ 4 □H □□R□																	
Se□ □rade																				
Dia□ona□s			□□4 □4 □14 □14 □																	
Dia□ona□□rade																				
Top □irts																				
Sec□Hori□onta□s			□5 □□5 □14																	
□ace Width □□			□1□□1□																	
□Pane□s □ □□			1 □																	
Wei□ht □□																				

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20
Se□s			ROH□ 5 □H □□R□																	
Se□ □rade																				
Dia□ona□s			□□□ 1 □□□14 14																	
Dia□ona□□rade			□5 □□5 □																	
Top □irts																				
Sec□Hori□onta□s			□□□□□14 14																	
□ace Width □□			□□□□□14 14																	
□Pane□s □ □□			□ □ □																	
Wei□ht □□																				

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20
Se□s																				
Se□ □rade																				
Dia□ona□s																				
Dia□ona□□rade																				
Top □irts																				
Sec□Hori□onta□s																				
□ace Width □□																				
□Pane□s □ □□																				
Wei□ht □□																				

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20
Se□s																				
Se□ □rade																				
Dia□ona□s																				
Dia□ona□□rade																				
Top □irts																				
Sec□Hori□onta□s																				
□ace Width □□																				
□Pane□s □ □□																				
Wei□ht □□																				

151□□ □t
14□□□ □t
141□□ □t
1□1□□ □t
114□□ □t
1□□□□ □t
1□□□□ □t
□4□□ □t
□□5 □t
□□□□ □t
□□□□ □t
□□□□ □t
5□5 □t
4□4 □t
□□□□ □t
□□□□ □t
1□□1 □t
□□□ □t



SYMBOL LIST

MARK	SIZE	MARK	SIZE
□	□1□5 □1□5 □ □1□	D	□□ □ □ □ □ □1□ □1□4□
□	□ □ □ □ □ □1□	□	□□ 1□□□□ 1□□□□1□
C	□□ □5 □ □5 □ □1□ □□1 □□		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
□5□□5□	5□ □si	□5 □si	□□□	□□ □si	5□ □si

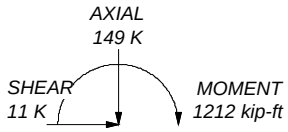
TOWER DESIGN NOTES

1□ Tower is □ocated in □ew □ondon Count□□Connecticut□
□□ Tower desi□ned □or □□posure □ to the TI□□□□□□H Standard□
□□ Tower desi□ned □or a 145 mph □asic wind in accordance with the TI□□□□□□H Standard□
4□ Tower is a□so desi□ned □or a 5□ mph □asic wind with 1□5□ in ice□Ice is considered to increase in thic□ness with hei□ht□
5□ De□ections are □ased upon a □□ mph wind□
□□ Tower Ris□ Cate□or□ III□
□□ Topo□raphic Cate□or□ 1 with Crest Hei□ht o□□□□□ □t
□□ □routed pipe □c is □ □si
□□ TI□□□□□□H □nne□S
1□□ TOW□R R□TI□□ □□4□□□

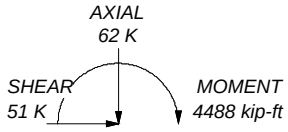
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 248 K
SHEAR: 31 K

UPLIFT: -200 K
SHEAR: 26 K



TORQUE 20 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 66 kip-ft
REACTIONS - 145 mph WIND

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Tectonic
1□□□ Route □□□
□ew□ur□h□□ □ 1□55□
Phone□□□45□5□□□□□5□
□□□□□□45□5□□□□□□□

Jo□□	***9800.806384, Phase 2***	
Project□	***BU 806384 - NLN 136 943455***	
C□ient□ Crown Cast□e	Drawn □□□ □eha □omate	□pp'd□
Code□ TI□□□□□□H	Date□ □□□14□1□	Sca□e□ □TS
Path□ I□Projects□□□□□□□□□4□1□□□15□Structura□□□□□□□□□4 Structura□□na□sis□Phase □ri		Dw□ □o□ □□1

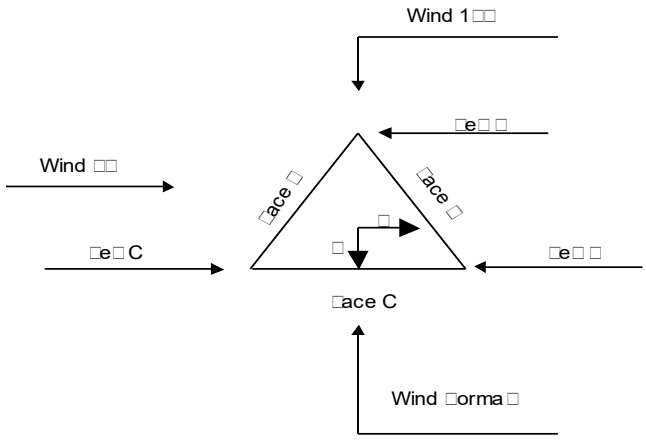
Tower Input Data

The main tower is a □□ □ree standin□ tower with an o□era□ hei□ht o□151 □□□ □t a□o□e the □round □ine□
The □ase o□the tower is set at an e□e□ation o□□□□□ □t a□o□e the □round □ine□
The □ace width o□the tower is □□5□ □t at the top and □□□□□□ □t at the □ase□
This tower is desi□ned usin□ the TI□□□□□□H standard□
The □o□owin□ desi□n criteria app□□□

1□ Tower is □ocated in □ew □ondon Count□□Connecticut□
□□ Tower □ase e□e□ation a□o□e sea □e□e□ 1□□□□□ □t□
□□ □asic wind speed o□145 mph□
4□ Ris□ Cate□or□III□
5□ □□posure Cate□or□ □□
□□ Simp□□□ied Topo□raphic □actor Procedure □or wind speed□up ca□cu□ations is used□
□□ Topo□raphic Cate□or□□1□
□□ Crest Hei□ht□□□□□ □t□
□□ □omina□ice thic□ness o□1□5□□□ in□
1□□ Ice thic□ness is considered to increase with hei□ht□
11□ Ice densit□ o□5□ pc□
1□□ □ wind speed o□5□ mph is used in com□ination with ice□
1□□ De□ections ca□cu□ated usin□ a wind speed o□□□ mph□
14□ TI□□□□□□H □nne□ S□
15□ □routed pipe □□ is □ □si□
1□□ Pressures are ca□cu□ated at each section□
1□□ Tower ana□□sis □ased on tar□et re□a□i□ities in accordance with □nne□ S□
1□□ □oad Modi□ication □actors used□□es□□w□□ 1□□□□es□i□□ 1□□□
1□□ Stress ratio used in tower mem□er desi□n is 1□□5□
□□□ □oca□□endin□ stresses due to c□m□in□ □oads□□eed □ine supports□and appurtenance mounts are not considered□

Options

Consider Moments □□e□s	Distri□ute □e□ □oads □s □ni□orm	□se □SC□ 1□ □□□race □□Ru□es
Consider Moments □Hori□onta□s	□ssume □e□s Pinned	Ca□cu□ate Redundant □racin□ □orces
Consider Moments □Dia□ona□s	√ □ssume Ri□id Inde□ P□ate	I□nore Redundant Mem□ers in □□□
□se Moment Ma□ni□ication	√ □se C□ear Spans □or Wind □rea	SR □e□ □o□ts Resist Compression
□se Code Stress Ratios	√ □se C□ear Spans □or □□r	□□□e□ Pane□s Ha□e Same □□owa□e
□se Code Sa□et□ □actors □□u□s	Retension □u□s To Initia□Tension	O□set □irt □t □oundation
□sca□ate Ice	√ □□pass Mast Sta□i□t□ Chec□s	√ Consider □eed □ine Torque
□wa□s □se Ma□ □□	√ □se □□imuth Dish Coe□□icients	√ Inc□ude □n□□e □□oc□Shear Chec□
□se Specia□Wind Pro□i□e	√ Project Wind □rea o□□ppurt□	□se TI□□□□□□H □racin□ Resist□ □□emption
√ Inc□ude □o□ts In Mem□er Capacit□	□utoca□c Torque □rm □reas	□se TI□□□□□□H Tension Sp□ice □□emption
□e□ □o□ts □re □t Top O□Section	□dd I□C □□D□W Com□ination	Po□es
√ Secondar□Hori□onta□□races □e□	√ Sort Capacit□Reports □□Component	Inc□ude Shear□Torsion Interaction
□se Diamond Inner □racin□ 4 Sided□	Trian□u□ate Diamond Inner □racin□	□wa□s □se Su□□Critica□□ow
SR Mem□ers Ha□e Cut □nds	Treat □eed □ine □und□es □s C□inder	□se Top Mounted Soc□ets
SR Mem□ers □re Concentric	I□nore □□r□□or □□ De□□□n□□e □e□s	Po□e Without □inear □ttachments
		Po□e With Shroud Or □o □ppurtenances
		Outside and Inside Corner Radii □re □nown



Triangular Tower

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	151□□□14□□□			□5□	1	5□□
T□	14□□□141□1□			□5□	1	5□□
T□	141□1□□1□1□4			□5□	1	□□1□
T4	1□1□4□114□1			1□5□	1	□□□
T5	114□1□1□□5			11□4	1	□□□
T□	1□□□5□1□□□			11□□	1	□□□
T□	1□□□□4□□			1□□□	1	□□□
T□	□4□□□4□			1□□□	1	□□□
T□	□□4□□□□			14□□	1	□□□
T1□	□□□□□□□			14□□	1	1□□□
T11	□□□□□□□			15□□	1	1□□□
T1□	□□□□5□51			1□□□	1	1□□□
T1□	5□51□4□4□			1□□□	1	1□□□
T14	4□4□□□1			1□□□	1	1□1□
T15	□□1□□□1			1□□□	1	1□1□
T1□	□□1□1□1□			□□□	1	1□1□
T1□	1□1□□□			□1□□	1	1□1□

Tower Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
T1	151□□□14□□□	4□□4	□ □race	□o	□o	□□5□□	□□5□□
T□	14□□□141□1□	4□□4	□ □race	□o	□o	□□5□□	□□5□□
T□	141□1□□1□1□4	□□□	□ □race	□o	□o	□□5□□	□□5□□
T4	1□1□4□114□1	□□□	□ □race	□o	□o	□□5□□	□□□□□
T5	114□1□1□□5	□□□	□ □race	□o	□o	□□□□□	□□□□□
T□	1□□□5□1□□□	□□□	□ □race	□o	□es	□□□□□	□□5□□
T□	1□□□□4□□	□□5	□ □race	□o	□o	□□5□□	□□□□□
T□	□4□□□4□	□□□	□ □race	□o	□es	□□□□□	□□□□□

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T□	□□□4□□□□□□□□	□□□□	□ □race	□o	□es	□□□□□□□	1□□□□□□
T1□	□□□□□□□□□□□□	1□□□□	□ □race	□o	□o	1□□□□□□	□□□□□□□
T11	□□□□□□□□□□□□	1□□□□	□ □race	□o	□es	□□□□□□□	□□□□□□□
T1□	□□□□□□5□□51	□□□1	□ □race	□o	□es	1□□□□□□	1□□5□□
T1□	5□□51□4□□4□	□□□1	□ □race	□o	□es	1□□□□□□	1□□5□□
T14	4□□4□□□□□□1	1□□□□	□ □race	□o	□o	1□□5□□	□□□□□□□
T15	□□□□1□□□□□1	1□□□□	□ □race	□o	□es	□□□□□□□	1□□5□□
T1□	□□□□1□1□□1□	1□□□□	□ □race	□o	□es	1□□5□□	□□□□□□□
T1□	1□□1□□□□□□□	1□□□□	□ □race	□o	□es	□□□□□□□	1□□5□□

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 151□□□□ 14□□□□	Pipe	ROH□ □5 STD	□5□□□5□ □5□ □si□	Sin□e □n□e	□1□5 □1□5 □ □□1□	□□□ □□□ □si□
T□ 14□□□□ 141□1□	Pipe	ROH□ □5 STD	□5□□□5□ □5□ □si□	Sin□e □n□e	□ □ □ □ □ □□1□	□□□ □□□ □si□
T□ 141□1□□ 1□1□□4	Pipe	ROH□ □5 □H	□5□□□5□ □5□ □si□	Sin□e □n□e	□□ 1□□□□ 1□□□□□1□	□□□ □□□ □si□
T4 1□1□□4□ 114□□1	□routed Pipe	ROH□ □5 □H	□5□□□5□ □5□ □si□	Sin□e □n□e	□□ 1□□□□ 1□□□□□1□	□□□ □□□ □si□
T5 114□□1□ 1□□□□5	□routed Pipe	ROH□ □5 □H	□5□□□5□ □5□ □si□	Sin□e □n□e	□□ 1□□□□ 1□□□□□1□	□□□ □□□ □si□
T□ 1□□□□5□ 1□□□□□	□routed Pipe	ROH□ □5 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□ □5 □ □5 □ □□1□ □□□1□□	□□□ □□□ □si□
T□ 1□□□□□□ □4□□□	□routed Pipe	ROH□ □ □H	□5□□□5□ □5□ □si□	Sin□e □n□e	□□□□□□□□1□	□□□ □□□ □si□
T□ □4□□□□□□□4□	□routed Pipe	ROH□ □ □H	□5□□□5□ □5□ □si□	Sin□e □n□e	□□□□□□□□1□	□□□ □□□ □si□
T□ □□□4□□□□□□□	□routed Pipe	ROH□ □ □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□ □ □ □ □ □□1□ □ 1□4□	□□□ □□□ □si□
T1□ □□□□□□□ □□□□□□	□routed Pipe	ROH□ 4 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□□□□□□□□1□□1□4	□□□ □□□ □si□
T11 □□□□□□□ □□□□□□	□routed Pipe	ROH□ 4 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□□□□□□□□1□□1□4	□□□ □□□ □si□
T1□ □□□□□□□ 5□□51	□routed Pipe	ROH□ 4 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□□□□□□1□4□1□4	□5□□□5□ □5□ □si□
T1□5□□51□ 4□□4□	□routed Pipe	ROH□ 4 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□□□□□□1□4□1□4	□5□□□5□ □5□ □si□
T14 4□□4□□ □□□□□1	□routed Pipe	ROH□ 5 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□□□1□□□□1□□□1□4□1□4	□5□□□5□ □5□ □si□
T15 □□□□1□ □□□□1	□routed Pipe	ROH□ 5 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□□□1□□□□1□□□1□4□1□4	□5□□□5□ □5□ □si□
T1□ □□□□1□ 1□□1□	□routed Pipe	ROH□ 5 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□□4 □4 □1□4 □1□4□	□5□□□5□ □5□ □si□
T1□1□□1□□□□□□	□routed Pipe	ROH□ 5 □H	□5□□□5□ □5□ □si□	Dou□e □n□e	□□□4 □4 □1□4 □1□4□	□5□□□5□ □5□ □si□

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 151□□□□ 14□□□□	Sin□e □n□e	□□ 1□□□□ 1□□□□□1□	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T□ 141□1□□ 1□1□□4	Sin□e □n□e	□□ 1□□□□ 1□□□□□1□	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T□ 1□□□□5□ 1□□□□□	Sin□e □n□e	□ □ □ □ □ □1□	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T□ □4□□□□□□4□	Sin□e □n□e	□ □ □ □ □ □1□	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T□ □□□4□□□□□□	Sin□e □n□e	□ □ □ □ □ □1□	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T11 □□□□□□ □□□□□□	Sin□e □n□e	□□ 1□□□□ 1□□□□□1□	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T1□ □□□□□□ 5□51	Sin□e □n□e	□□□□□1□4	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T1□ 5□51□ 4□4□	Sin□e □n□e	□□□□□1□4	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T15 □□□□1□ □□□□1	Sin□e □n□e	□ □ □ □ □ □1□	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T1□ □□□□1□ 1□1□	Sin□e □n□e	□□□□□□□1□	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□
T1□ 1□1□1□□□□	Sin□e □n□e	□ □5 □ □5 □1□4	□□□ □□□ □si□	Sin□e □n□e		□□□ □□□ □si□

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 151□□□□ 14□□□□	□□□	□1□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T□ 14□□□□ 141□1□	□□□	□1□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T□ 141□1□□ 1□1□□4	□□□	□1□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T4 1□1□□4□ 114□□1	□□□	□4□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T5 114□□1□ 1□□□□5	□□□	□4□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T□ 1□□□□5□ 1□□□□□	1□□5	□4□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T□ 1□□□□□□ □4□□□	□□□	□4□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T□ □4□□□□ □□4□	□4□	□4□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T□ □□□4□□ □□□□□□	□4□	□4□□5	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T1□ □□□□□□ □□□□□□	□45	□□□5□□	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T11 □□□□□□ □□□□□□	□45	□□□5□□	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T1□ □□□□□□ 5□51	□45	□□□5□□	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T1□ 5□51□ 4□4□	□45	□5□□□	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T14 4□4□□ □□□□1	□45	□5□□□	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T15 □□□□1□ □□□□1	□45	□5□□□	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T1□ □□□□1□ 1□1□	1□5□	□5□□□	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□
T1□ 1□1□1□□ □□□□□	1□5□	□5□□□	□□□ □□□ □si□	1□□	1	1□□5	Mid□Pt	□□□□□□	□□□□□□

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 151□□□□ 14□□□□	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T□ 14□□□□ 141□1 □	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T□ 141□1 □□ 1□1 □□4	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 1□1 □□4□ 114 □□1	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 114 □□1 □ 1 □□□□5	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T□ 1 □□□□5□ 1 □□□□□	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1
T□ 1 □□□□□□ □4 □□□	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T□ □4 □□□□ □□□4 □	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1
T□ □□□4 □□ □□□□□	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1
T1□ □□□□□□ □□□□□	□o	□o	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 □□□□□□ □□□□□	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1
T1□ □□□□□□ 5□51	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1
T1□ 5□51□ 4□4□	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1
T14 4□4□□ □□□□1	□o	□o	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T15 □□□□1□ □□□□1	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1
T1□ □□□□1□ 1□1□	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1
T1□ 1□□1□□ □□□□	□es	□o	1	1 1	1 1	1 1	1 1	1 1	1 □5	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 151□□□□ 14□□□□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T□ 14□□□□ 141□1 □	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T□ 141□1 □□ 1□1 □□4	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T4 1□1 □□4□ 114 □□1	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T5 114 □□1 □ 1 □□□□5	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T□ 1 □□□□5□ 1 □□□□□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T□ 1 □□□□□□ □4 □□□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T□ □4□□□□ □□4□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T□ □□□4□□ □□□□□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T1□ □□□□□□ □□□□□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T11 □□□□□□ □□□□□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T1□ □□□□□□ 5□51	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T1□ 5□51□ 4□4□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T14 4□4□□ □□□□1	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T15 □□□□1□ □□□□1	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T1□ □□□□1□ 1□1□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5
T1□ 1□□1□□ □□□□	□□□□□□□	1	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5	□□□□□□□	□□□5

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 151□□□□ 14□□□□	□5□□□	□□□□□□□	□5□□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T□ 14□□□□□ 141□1□	□5□□□	□□□□□□□	□5□□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T□ 141□1□□ 1□1□□4	□5□□□	□□□□□□□	□5□□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
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T□ 1□□□□□ □4□□□	□5□□□	□□□4□□	□5□□□	□□□4□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T□ □4□□□□ □□□4□	□5□□□	□□□4□□	□5□□□	□□□4□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T□ □□□4□□ □□□□□	□5□□□	□□□4□□	□5□□□	□□□4□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T1□ □□□□□□ □□□□□	□5□□□	4□□4□□	□5□□□	4□□4□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T11 □□□□□□ □□□□□	□5□□□	4□□4□□	□5□□□	4□□4□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T1□ □□□□□□ 5□51	□5□□□	4□□4□□	□5□□□	4□□4□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T1□ 5□51□ 4□4□	□5□□□	4□□4□□	□5□□□	4□□4□□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T14 4□4□□ □□□□1	□5□□□	4□□□5□	□5□□□	4□□□5□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T15 □□□□1□ □□□□1	□5□□□	4□□□5□	□5□□□	4□□□5□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□
T1□ □□□□1□ 1□□1□	□5□□□	4□□□5□	□5□□□	4□□□5□	□□□□□□□	□□□□□□□	□□□□□□□	□□□□□□□

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1□ 1□□1□□ □□□□	□5□□□	4□□□5□	□5□□□	4□□□5□	□□□□□□	□□□□□□	□□□□□□	□□□□□□

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 151□□□□ 14□□□□	□ān□e	□□□□5□ □□□5□	□	□5□□□ □□□5□	1	□5□□□ □□□5□	1	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T□ 14□□□□□ 141□1□	□ān□e	□□□□5□ □□□5□	4	□5□□□ □□□5□	1	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T□ 141□1□□ 1□1□□4	□ān□e	□□□□5□ □□□5□	4	□5□□□ □□□5□	1	□5□□□ □□□5□	1	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T4 1□1□□4□ 114□□1	□ān□e	□□□5□□ □□□5□	□	□5□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T5 114□□1□ 1□□□□5	□ān□e	□□□5□□ □□□5□	□	□5□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T□ 1□□□□5□ 1□□□□□	□ān□e	□□□5□□ □□□5□	4	□5□□□ □□□5□	1	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T□ 1□□□□□□ □4□□□	□ān□e	□□□□5□ □□□5□	□	□5□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T□ □4□□□□ □□□4□	□ān□e	□□□□5□ □□□5□	□	□5□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T□ □□□4□□ □□□□□□	□ān□e	□□□□5□ □□□5□	4	□5□□□ □□□5□	1	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T1□ □□□□□□□ □□□□□□	□ān□e	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T11 □□□□□□□ □□□□□□	□ān□e	□□□□5□ □□□5□	4	□□□□5□ □□□5□	1	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T1□ □□□□□□□ 5□□51	□ān□e	1□□□□□□ □□□5□	□	□□□□5□ □□□5□	1	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□5□□□ □□□5□	1
T1□ 5□□51□ 4□□4□	□ān□e	1□□□□□□ □□□5□	4	□□□□5□ □□□5□	1	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□5□□□ □□□5□	1
T14 4□4□□ □□□□1	□ān□e	1□□□□□□ □□□5□	□	□□□□5□ □□□5□	1	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T15 □□□□1□ □□□□1	□ān□e	1□□□□5 □□□5□	4	□□□□5□ □□□5□	1	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T1□ □□□□1□ 1□□1□	□ān□e	1□□□□□□ □□□5□	□	□□□□5□ □□□5□	1	□□□□5□ □□□5□	□	□□□□□□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1
T1□ 1□□1□□ □□□□□	□ān□e	□□□□□□□ □□54□□C	□	□□□□5□ □□□5□	1	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	□	□□□□5□ □□□5□	1

Grouted Pipe Properties

Size	F_y ksi	A_s in²	A_c in²	Wt plf	E_c ksi	E_m ksi	F_{ym} ksi
ROH□ □5 □H □□R□	5□	□□□5□5	4□□□□□	1□4□□	4□□□	□□1□5	□1
ROH□ □ □H □□R□	5□	□□□15□	□□□□5□	□4□□□□	4□□□	□□□5□	□□
ROH□ 4 □H □□R□	5□	4□4□□4	11□4□□□	□□□□4□	4□□□	□□□5□	□□
ROH□ 5 □H □□R□	5□	□□11□□	1□□1□□□	5□□□□1	4□□□	4□□5□	□□

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
□eed□ine □adder □□□	□	□o	□o	□□□Ca□a□	1□□□□□ □ □□□□	□□□□□□	□4	1	1	□□□□□□	□□□□□□		□4□
H□114□1 □ □□1□□4□ M5J□1 1□4□□	□	□o	□o	□r □Ca□a□	1□□□□□ □ □□□□	□□□□□□	□41	1	1	□5□□□ □□□5□□	1□54□□		1□□□
□D□□□5□□ □1□5□□ □O□M□	□	□o	□o	□r □Ca□a□	1□□□□□ □ □□□□	□□□□□□	□4	□	□	□5□□□ □□□5□□	1□□□□□		□□□□
□D□4P□5□□ □1□□ □O□M□ □□□	□	□o	□o	□r □Ca□a□	5□□□□ □ □□□□	□ 1□□□□□	□4□	1	1	□5□□□ □□□□□□	□□□□□□		□□15
H□15□□1□ □□□□ □□S□J1□□ 1□5□□□□	□	□o	□o	□r □Ca□a□	14□□□□ □ □□□□	□ 1□□□□□	□□45	□	□	□5□□□ □□□5□□	1□□□□□		1□□□
□D□□□ 5□□□□□□□	□	□o	□o	□r □Ca□a□	14□□□□ □ □□□□	□ 1□□□□□	□□4□	□	□	□5□□□ □□44□□	□44□□		□□□□
H□114□1 □ □□□4□M5J□1 1□4□□	□	□o	□o	□r □Ca□a□	1□1□□□ □ □□□□	□ 1□□□□□	□□4	4	4	□5□□□ □□□5□□	1□54□□		1□□□
□eed□ine □adder □□□	□	□o	□o	□□□Ca□a□	14□□□□ □ □□□□	□□□□□□	□□4	1	1	□□□□□□	□□□□□□		□4□
□eed□ine □adder □□□ □□□	□	□o	□o	□□□Ca□a□	14□□□□ □ □□□□	□ 1□□□□□	□□4□	1	1	□□□□□□	□□□□□□		□4□
□D□5□5□□ □□□□ □O□M□	□	□o	□o	□r □Ca□a□	1□□□□□ □ □□□□	□□□□□□	□□45	□	□	□5□□□ □□□5□□	1□□□□□		□□□□
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□eed□ine □adder □□□ □□□	□	□o	□o	□□□Ca□a□	14□□□□ □ □□□□	□□□□□□	□□4	1	1	□□□□□□	□□□□□□		□4□
Step □o□ts	□	□o	□o	□r □Ca□a□	□□□□□ □ □□□□	□□□□□□	□□5	1	1	□□□□5□	□□□□5□		□□□□
Step □o□ts	C	□o	□o	□r □Ca□a□	□□□□□ □ □□□□	□□□□□□	□□5	1	1	□□□□5□	□□□□5□		□□□□
Step □o□ts	□	□o	□o	□r □Ca□a□	151□□□ □ □□□□	□□□□□□	□□5	1	1	□□□□5□	□□□□5□		□□□□
Sa□et□ □ine □□□□ □□□	□	□o	□o	□r □Ca□a□	151□□□ □ □□□□	□□□□□□	□□5	1	1	□□□□5□	□□□□5□		□□□□

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft²/ft	Weight plf
□□□								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	151 14				1		1
					4		
		C					
T	14 141 1				1		1
					4		1
		C					
T	141 1 1 1 4				14		1
					5		
		C					
T4	1 1 4 114 1				1		
					14 1		1
		C					
T5	114 1 1 5				1		
					14		1
		C					
T	1 5 1				1		
					1		
		C					
T	1 4				1		
					4 1		
		C					
T	4 4				1		
					4		
		C					
T	4				1 5		15
					4		
		C					
T1					1		4
					4		4
		C			4		
T11							4
					4 11		4
		C					
T1	5 51						1 1
					4 1 4		4
		C					
T1	5 51 4 4						1 1
					4		4
		C					
T14	4 4 1				5		1 1
					4 4		4
		C					
T15	1 1				5		1 1
					4 4		4
		C					
T1	1 1 1				5		1 1
					4 4		4
		C					
T1	1 1				4 1		5
					5		
		C					

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	151 14		5			4		1
						5 4		11
		C						
T	14 141 1		1					11
						1 4		
		C						

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T□	141□1□□1□1□□4	□	1□□□□	□□□□□	□□□□□	□□□1□□	□□□□□	1□□□
		□		□□□□□	□□□□□	□□□□□	□□□□□	1□4□
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T4	1□1□□4□114□□1	□	1□□5□	□□□□□	□□□□□	□4□□1□	□□□□□	□□5□
		□		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T5	114□□1□1□□□□5	□	1□□4□	□□□□□	□□□□□	□4□4□5	□□□□□	□□5□
		□		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T□	1□□□□5□1□□□□□	□	1□□□5	□□□□□	□□□□□	□4□□1□	□□□□□	□□5□
		□		□□□□□	□□□□□	4□□□□□	□□□□□	□□□□
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T□	1□□□□□□□4□□□	□	1□□□□	□□□□□	□□□□□	□4□5□5	□□□□□	□□5□
		□		□□□□□	□□□□□	5□□□□□	□□□□□	1□11
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T□	□4□□□□□□4□	□	1□□□□	□□□□□	□□□□□	□4□41□	□□□□□	□□5□
		□		□□□□□	□□□□□	5□□1□□	□□□□□	1□1□
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T□	□□□4□□□□□□□	□	1□□□4	□□□□□	□□□□□	□5□1□4	□□□□□	□□□□
		□		□□□□□	□□□□□	5□□□□□	□□□□□	1□1□
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T1□	□□□□□□□□□□□□	□	1□□□4	□□□□□	□□□□□	55□□□□	□□□□□	1□1□
		□		□□□□□	□□□□□	□1□□55	□□□□□	1□□□
		C		□□□□□	□□□□□	□□□4□	□□□□□	□□□□
T11	□□□□□□□□□□□□	□	1□□4□	□□□□□	□□□□□	55□□□□	□□□□□	1□1□
		□		□□□□□	□□□□□	□1□□□4	□□□□□	1□□□
		C		□□□□□	□□□□□	4□1□5	□□□□□	□□□□
T1□	□□□□□□5□□51	□	1□□□1□	□□□□□	□□□□□	5□□□□□	□□□□□	1□□5
		□		□□□□□	□□□□□	□□□□□	□□□□□	1□□□
		C		□□□□□	□□□□□	4□□4□	□□□□□	□□□□
T1□	5□□51□4□□4□	□	1□□□□1	□□□□□	□□□□□	5□□□□4	□□□□□	1□□4
		□		□□□□□	□□□□□	□4□14□	□□□□□	1□□□
		C		□□□□□	□□□□□	□□□□4	□□□□□	□□□□
T14	4□□4□□□□□□□1	□	1□□□□	□□□□□	□□□□□	5□□11□	□□□□□	1□□□
		□		□□□□□	□□□□□	□□□□□	□□□□□	1□□4
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T15	□□□□1□□□□□1	□	1□□□□	□□□□□	□□□□□	5□□1□4	□□□□□	1□□□
		□		□□□□□	□□□□□	□1□□□□	□□□□□	1□□□
		C		□□□□□	□□□□□	□□□□□	□□□□□	□□□□
T1□	□□□□1□1□□1□	□	1□5□□	□□□□□	□□□□□	54□□1□	□□□□□	1□□5
		□		□□□□□	□□□□□	□□□□1□	□□□□□	1□5□
		C		□□□□□	□□□□□	□□□□4	□□□□□	□□□□
T1□	1□□1□□□□□□□	□	1□4□□	□□□□□	□□□□□	1□□4□□	□□□□□	□□□□
		□		□□□□□	□□□□□	1□□□□1	□□□□□	□□□□
		C		□□□□□	□□□□□	□□□□1	□□□□□	□□□1

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	151□□□□14□□□□	□□14□□	□5□□□□□	□□1145	□1□□□51□
T□	14□□□□□141□1□	□□4□□□	□1□□□□□4	□□5□□5	□□1□1□□□
T□	141□1□□1□1□□4	□□□□□□1	□□□□□□5□	□□□□□□	□□□□4□□□
T4	1□1□□4□114□□1	□□□□5□□	□□□□□4□4	□□□□□□	□□5□□5□□
T5	114□□1□1□□□□5	□□□□4□1	□□□□□□4□	□□□□4□□	□□□□4□□5
T□	1□□□□5□1□□□□□	□□□□45	□□4□1□□□	□□□□51	□□1□□4□4
T□	1□□□□□□□4□□□	□□□□□1	□□1□□□□5	□□□□□5	□□□□□444
T□	□4□□□□□□□4□	□□4□5□	□□□□4□□5	□□1□□□	□□□□□□□□
T□	□□□4□□□□□□□	□□□□□□	□□1□1□15	□□□□□□	□□□□□145
T1□	□□□□□□□□□□□□	11□1515	□□□□□5□□	1□□□□5□	□□□□5□□□
T11	□□□□□□□□□□□□	1□□□41□	□□4□4□□□	1□□□□□□	□□1□□1□□
T1□	□□□□□□5□□51	1□□□□□□	□□5□□□54	1□54□4	□□□□□□□□
T1□	5□□51□4□□4□	1□□□□□□	□□5□□□54	1□441□	□□□□4□□4
T14	4□□4□□□□□□1	1□□□□□□	□□□□□□□□	1□□□□5	□□5□□11□
T15	□□□□1□□□□□1	1□□□□45	□□5□□□□□	1□□□□□	□□□□□□□□

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1					
T1					

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	H 15 1 S J1 1 5 "	14 14		5
T1	14	eed ine adder	14 14		5
T1	15	eed ine adder	14 14		5
T1	1	D 5 5 O M	14 15		5
T1		Step ots	14 151		5
T1		Sa et ine	14 151		5
T	1	H 15 1 S J1 1 5 "	141 1 14		
T	11	D 5 "	141 1 14		
T	14	eed ine adder	141 1 14		
T	15	eed ine adder	141 1 14		
T	1	D 5 5 O M	141 1 14		
T		Step ots	141 1 14		
T		Sa et ine	141 1 14		
T	1	H 15 1 S J1 1 5 "	1 1 4 141 1		
T	11	D 5 "	1 1 4 141 1		
T	14	eed ine adder	1 1 4 141 1		
T	15	eed ine adder	1 1 4 141 1		
T	1	D 5 5 O M	1 1 4 1		
T	1	D 5 5 O M	1 141 1		
T	1	1 P 1 5 "	1 1 4 1		
T		eed ine adder	1 1 4 14		
T		Step ots	1 1 4 141 1		
T		Sa et ine	1 1 4 141 1		
T4	1	H 114 1 4 M5J 1 1 4 "	114 1 1 1 4		
T4	11	D 5 "	114 1 1 1 4		
T4	1	H 114 1 4 M5J 1 1 4 "	114 1 1 1		
T4	14	eed ine adder	114 1 1 1 4		
T4	15	eed ine adder	114 1 1 1 4		
T4	1	D 5 5 O M	114 1 1 1 4		

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	K_a *No Ice*	K_a *Ice*
T4	□1	□□□ 1 □□□ P□ 1 5□□" □	114□□1 □ 1□1□□4	□□□□□□	□□□□□□
T4	□□	□eed□ine □adder □□ □□	114□□1 □ 1□1□□4	□□□□□□	□□□□□□
T4	□□	Step □o□ts	114□□1 □ 1□1□□4	□□□□□□	□□□□□□
T4	□□	Sa□et□ □ine □□□	114□□1 □ 1□1□□4	□□□□□□	□□□□□□
T5	1□	H□15□□1 □□□□ □□S□J1□□1□ 5□□" □	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	11	□D□□□5□□□□□" □	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	1□	H□114□1 □□□□4□M5J□1 1□4" □	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	14	□eed□ine □adder □□ □□	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	15	□eed□ine □adder □□ □□	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	1□	□D□5□5□□ □□□□ □O□M□	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	□1	□□□ 1 □□□ P□ 1 5□□" □	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	□□	□eed□ine □adder □□ □□	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	□□	Step □o□ts	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T5	□□	Sa□et□ □ine □□□	1□□□□5 □ 114□□1	□□□□□□	□□□□□□
T□	1	□eed□ine □adder □□ □□	1□□□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	□	H□114□1 □□□□1 □□4□M5J□1 1□4" □	1□□□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	□	□D□□□5□□ □1□5□□ □O□M□	1□□□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	1□	H□15□□1 □□□□ □□S□J1□□1□ 5□□" □	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	11	□D□□□5□□□□□" □	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	1□	H□114□1 □□□□4□M5J□1 1□4" □	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	14	□eed□ine □adder □□ □□	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	15	□eed□ine □adder □□ □□	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	1□	□D□5□5□□ □□□□ □O□M□	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	□1	□□□ 1 □□□ P□ 1 5□□" □	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	□□	□eed□ine □adder □□ □□	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	□□	Step □o□ts	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	□□	Sa□et□ □ine □□□	1□□□□□ □ 1□□□□5	□□□□□□	□□□□□□
T□	1	□eed□ine □adder □□ □□	□4□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	□	H□114□1 □□□□1 □□4□M5J□1 1□4" □	□4□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	□	□D□□□5□□ □1□5□□ □O□M□	□4□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	1□	H□15□□1 □□□□ □□S□J1□□1□ 5□□" □	□4□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	11	□D□□□5□□□□□" □	□4□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	1□	H□114□1 □□□□4□M5J□1 1□4" □	□4□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	14	□eed□ine □adder □□ □□	□4□□□ □ 1□□□□□	□□□□□□	□□□□□□
T□	15	□eed□ine □adder □□ □□	□4□□□ □ 1□□□□□	□□□□□□	□□□□□□

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T□	1□	□D□5□5□□ □□□□ □O□M□	□4□□□ □ 1□□□□	□□□□□□	□□□□□□
T□	□1	□□□ 1□□□ P□□1 5□□"□	□4□□□ □ 1□□□□	□□□□□□	□□□□□□
T□	□□	□eed□ine □adder □□ □□	□4□□□ □ 1□□□□	□□□□□□	□□□□□□
T□	□□	Step □o□ts	□4□□□ □ 1□□□□	□□□□□□	□□□□□□
T□	□□	Sa□et□ □ine □□□	□4□□□ □ 1□□□□	□□□□□□	□□□□□□
T□	1	□eed□ine □adder □□ □□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	□	H□114□1 □□□1 □□4□M5J□1 1□4"□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	□	□D□□□5□□ □1□5□□ □O□M□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	1□	H□15□□1 □□□□ □□S□J1□□1□ 5□□"□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	11	□D□□□5□□□□□"□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	1□	H□114□1 □□□□4□M5J□1 1□4"□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	14	□eed□ine □adder □□ □□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	15	□eed□ine □adder □□ □□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	1□	□D□5□5□□ □□□□ □O□M□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	□1	□□□ 1□□□ P□□1 5□□"□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	□□	□eed□ine □adder □□ □□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	□□	Step □o□ts	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	□□	Sa□et□ □ine □□□	□□□4□ □ □4□□□	□□□□□□	□□□□□□
T□	1	□eed□ine □adder □□ □□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	□	H□114□1 □□□1 □□4□M5J□1 1□4"□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	□	□D□□□5□□ □1□5□□ □O□M□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	1□	H□15□□1 □□□□ □□S□J1□□1□ 5□□"□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	11	□D□□□5□□□□□"□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	1□	H□114□1 □□□□4□M5J□1 1□4"□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	14	□eed□ine □adder □□ □□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	15	□eed□ine □adder □□ □□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	1□	□D□5□5□□ □□□□ □O□M□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	□□	□□5□□1□4"□	□□□□□□ □ □□□□□□	□□□□□□	□□□□□□
T□	□1	□□□ 1□□□ P□□1 5□□"□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	□□	□eed□ine □adder □□ □□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	□□	Step □o□ts	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T□	□□	Sa□et□ □ine □□□	□□□□□□ □ □□□4□	□□□□□□	□□□□□□
T1□	1	□eed□ine □adder □□ □□	□□□□□□ □ □□□□□□	□□□□□□	□□□□□□
T1□	□	H□114□1 □□□1 □□4□M5J□1 1□4"□	□□□□□□ □ □□□□□□	□□□□□□	□□□□□□
T1□	□	□D□□□5□□ □1□5□□ □O□M□	□□□□□□ □ □□□□□□	□□□□□□	□□□□□□

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T1□	1□	H□15□□1□□8□□□S8J18□1-5□□")	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	11	□D□□□5□(3□□")	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	1□	H□114-□□□8□4□M5J(□1□4")	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	14	□eed□ine □adder (Af)	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	15	□eed□ine □adder (Af)	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	1□	□D□5□5□□ (7□□ □O□M)	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	□□	9□58(□□4")	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	□1	□□□1□□3 P□□1 5/8")	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	□□	□eed□ine □adder (Af)	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	□4	Step □o□ts	□□.6□ - □□.□0	0□□□0□	0□□□0□
T1□	□5	Step □o□ts	□□.6□ - □□.□0	0□□□0□	0□□□0□
T1□	□□	Step □o□ts	□□.6□ - □□.□7	0□□□0□	0□□□0□
T1□	□□	Sa□et□ □ine □□□	□□.6□ - □□.□7	0□□□0□	0□□□0□
T11	1	□eed□ine □adder (Af)	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	□	H□114-□□□81□□4□M5J(1 1□4")	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	□	LDF7 □5□□ □1□5/8 □O□M)	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	1□	H□15□□1□□8□□□S8J18□1-5□□")	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	11	□D□□□5□(3□□")	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	1□	H□114-□□□8□4□M5J(□1□4")	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	14	□eed□ine □adder (Af)	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	15	□eed□ine □adder (Af)	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	1□	□D□5□5□□ (7□□ □O□M)	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	1□	9□58(□□4")	□□.6□ - □1.□0	0□□□0□	0□□□0□
T11	□□	9□58(□□4")	□1.0□ - □□.□9	0□□□0□	0□□□0□
T11	□1	□□□1□□3 P□□1 5/8")	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	□□	□eed□ine □adder (Af)	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	□4	Step □o□ts	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	□5	Step □o□ts	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	□□	Step □o□ts	□□.6□ - □□.□9	0□□□0□	0□□□0□
T11	□□	Sa□et□ □ine □□□	□□.6□ - □□.□9	0□□□0□	0□□□0□
T1□	1	□eed□ine □adder (Af)	5□□51 - □□.□0	0□□□0□	0□□□0□
T1□	□	H□114-□□□81□□4□M5J(1 1□4")	5□□51 - □□.□0	0□□□0□	0□□□0□
T1□	□	□D□7□5□□ □1□5/8 □O□M)	5□□51 - □□.□0	0□□□0□	0□□□0□
T1□	1□	H□15□□1□□8□□□S8J18□1-5□□")	5□□51 - □□.□0	0□□□0□	0□□□0□
T1□	11	□D□□□5□(3□□")	5□□51 - □□.□0	0□□□0□	0□□□0□

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	K_a *No Ice*	K_a *Ice*
T1□	1□	H□114□1□□□□4□M5J□1 1□4"□	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	14	□eed□ine □adder □□□	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	15	□eed□ine □adder □□□	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	1□	□D□5□5□□ □□□□ □O□M□	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	1□	□□5□□1□4"□	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	□1	□□□□1□□□□P□□1 5□□"□	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	□□	□eed□ine □adder □□□	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	□4	Step □o□ts	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	□5	Step □o□ts	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	□□	Step □o□ts	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	□□	Sa□et□ □ine □□□	5□□51 □ □□□□	□□□□□□	□□□□□□
T1□	1	□eed□ine □adder □□□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	□	H□114□1□□□□1□□4□M5J□1 1□4"□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	□	□D□□□5□□□ □1□5□□□ □O□M□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	5	□D□4P□5□□□ □1□□□ □O□M□	4□□4□ □ 5□□□□	□□□□□□	□□□□□□
T1□	1□	H□15□□1□□□□□□S□J1□□□1□ 5□□"□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	11	□D□□□5□□□□□□"□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	1□	H□114□1□□□□□4□M5J□1 1□4"□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	14	□eed□ine □adder □□□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	15	□eed□ine □adder □□□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	1□	□D□5□5□□ □□□□ □O□M□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	1□	□□5□□1□4"□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	□1	□□□□1□□□□P□□1 5□□"□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	□□	□eed□ine □adder □□□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	□4	Step □o□ts	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	□5	Step □o□ts	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	□□	Step □o□ts	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T1□	□□	Sa□et□ □ine □□□	4□□4□ □ 5□□51	□□□□□□	□□□□□□
T14	1	□eed□ine □adder □□□	□□□□1 □ 4□□4□	□□□□□□	□□□□□□
T14	□	H□114□1□□□□1□□4□M5J□1 1□4"□	□□□□1 □ 4□□4□	□□□□□□	□□□□□□
T14	□	□D□□□5□□□ □1□5□□□ □O□M□	□□□□1 □ 4□□4□	□□□□□□	□□□□□□
T14	5	□D□4P□5□□□ □1□□□ □O□M□	□□□□1 □ 4□□4□	□□□□□□	□□□□□□
T14	1□	H□15□□1□□□□□□S□J1□□□1□ 5□□"□	□□□□1 □ 4□□4□	□□□□□□	□□□□□□
T14	11	□D□□□5□□□□□□"□	□□□□1 □ 4□□4□	□□□□□□	□□□□□□
T14	1□	H□114□1□□□□4□M5J□1 1□4"□	□□□□1 □ 4□□4□	□□□□□□	□□□□□□

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T14	14	□eed□ine □adder □□□	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	15	□eed□ine □adder □□□	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	1□	□D□5□5□□ □□□□ □O□M□	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	1□	□□5□□1□4"□	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	□1	□□□ 1□□□ P□□1 5□□"□	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	□□	□eed□ine □adder □□□	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	□4	Step □o□ts	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	□5	Step □o□ts	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	□□	Step □o□ts	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T14	□□	Sa□et□ □ine □□□	□□□□1 □ 4□4□	□□□□□□	□□□□□□
T15	1	□eed□ine □adder □□□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	□	H□114□1□□□1□□4□M5J□1 1□4"□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	□	□D□□□5□□ □1□5□□ □O□M□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	5	□D□4P□5□□ □1□□ □O□M□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	1□	H□15□□1□□□□□□S□J1□□1□ 5□□"□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	11	□D□□□5□□□□□"□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	1□	H□114□1□□□□4□M5J□1 1□4"□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	14	□eed□ine □adder □□□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	15	□eed□ine □adder □□□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	1□	□D□5□5□□ □□□□ □O□M□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	1□	□□5□□1□4"□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	□1	□□□ 1□□□ P□□1 5□□"□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	□□	□eed□ine □adder □□□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	□4	Step □o□ts	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	□5	Step □o□ts	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	□□	Step □o□ts	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T15	□□	Sa□et□ □ine □□□	□□□□1 □ □□□□1	□□□□□□	□□□□□□
T1□	1	□eed□ine □adder □□□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	□	H□114□1□□□1□□4□M5J□1 1□4"□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	□	□D□□□5□□ □1□5□□ □O□M□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	5	□D□4P□5□□ □1□□ □O□M□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	1□	H□15□□1□□□□□□S□J1□□1□ 5□□"□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	11	□D□□□5□□□□□"□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	1□	H□114□1□□□□4□M5J□1 1□4"□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	14	□eed□ine □adder □□□	1□□1□ □ □□□□1	□□□□□□	□□□□□□

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1□	15	□eed□ine □adder □□□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	1□	□D□5□5□□ □□□□ □O□M□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	1□	□□5□□1□4"□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	□1	□□□ 1□□□ P□□1 5□□"□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	□□	□eed□ine □adder □□□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	□4	Step □o□ts	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	□5	Step □o□ts	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	□□	Step □o□ts	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	□□	Sa□et□ □ine □□□	1□□1□ □ □□□□1	□□□□□□	□□□□□□
T1□	1	□eed□ine □adder □□□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	□	H□114□1□□□1□□4□M5J□1 1□4"□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	□	□D□□□5□□ □1□5□□ □O□M□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	5	□D□4P□5□□ □1□□ □O□M□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	1□	H□15□□1□□□□□S□J1□□1□ 5□□"□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	11	□D□□□5□□□□□"□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	1□	H□114□1□□□□4□M5J□1 1□4"□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	14	□eed□ine □adder □□□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	15	□eed□ine □adder □□□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	1□	□D□5□5□□ □□□□ □O□M□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	1□	□□5□□1□4"□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	□1	□□□ 1□□□ P□□1 5□□"□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	□□	□eed□ine □adder □□□	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	□4	Step □o□ts	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	□5	Step □o□ts	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	□□	Step □o□ts	□□□□ □1□□1□	□□□□□□	□□□□□□
T1□	□□	Sa□et□ □ine □□□	□□□□ □1□□1□	□□□□□□	□□□□□□

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
W□□□□□□	□	□rom □e□	1□□□ □□□□ 5□□□	□□□□□□□	15□□□□	□o Ice 1□□□□ Ice 1□□Ice □□Ice	1□□5 1□□□ □□□□ □4□	□4□ □5□ □□□□ □□□□	□□□1 □□□□ □□□4 □□□□
□□T15□□□	□	□rom □e□	1□□□ □□□□ □□□□	□□□□□□□	15□□□□	□o Ice 1□□□□ Ice 1□□Ice □□Ice	1□□□ 1□□□ 1□□1 □5□	1□□□ 1□□□ 1□□1 □5□	□□□1 □□□□ □□□4 □□□□
□5□□ □□□□□□Pipe Mount	□	□rom □e□	□5□ □□□□ □□□□	□□□□□□□	15□□□□	□o Ice 1□□□□ Ice 1□Ice □□Ice	□4□ □□□□ □□□□ 1□15	□4□ □□□□ □□□□ 1□15	□□□□ □□□□ □□□4 □□□□
□□ □□□514DS□□IM w□ Mount Pipe	□	□rom □ace	4□□□ □□□□	□□□□□□□	14□□□□	□o Ice 1□□□□	□41 □□□□	□□□□ □□□□	□□□□ □1□

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1			Ice 1 Ice Ice	5 1 5	1 11	1 1
514DS IM w Mount Pipe		rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	41 5 1 5	 1 11	 1 1
514DS IM w Mount Pipe	C	rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	41 5 1 5	 1 11	 1 1
Q D 5 C w Mount Pipe		rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	1 4 14 1 14 15	 55 5 11	 1 51
Q D 5 C w Mount Pipe		rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	1 4 14 1 14 15	 55 5 11	 1 51
Q D 5 C w Mount Pipe	C	rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	1 4 14 1 14 15	 55 5 11	 1 51
H 51 DS M w Mount Pipe		rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	 5 11 11	5 4 	 14 4
J HH 5 R w Mount Pipe		rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	5 1 4 11 55	5 11 5	 1 5 45
H 51 DS M w Mount Pipe	C	rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	 5 11 11	5 4 	 14 4
5 RRH4 H		rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	11 5 1	1 1 45 1 1 1	5 14
5 RRH4 H		rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	11 5 1	1 1 45 1 1 1	5 14
5 RRH4 H	C	rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	11 5 1	1 1 45 1 1 1	5 14
RRH4 45 HI		rom ace	4 1		14	o Ice 1 Ice 1 Ice Ice	54 5 4	1 1 1 1 	 1 1
RRH4 45 HI		rom ace	4 1		14	o Ice 1 Ice	54 5 	1 1 1 1	 1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1 Ice Ice	4		1
RRH4 45 HI	C	rom ace	4 1		14	o Ice 1 Ice Ice 1 Ice Ice	54 5 4	1 1 1 1 1	1 1
D 1 C 1		rom ace	1		14	o Ice 1 Ice Ice 1 Ice Ice	1 4 4 4	1 1 5	5 1
D 1 C 1		rom ace	1		14	o Ice 1 Ice Ice 1 Ice Ice	1 4 4 4	1 1 5	5 1
R V 1 D1		rom ace	4 1		14	o Ice 1 Ice Ice 1 Ice Ice	1 5 54	1 5 1 1 54 1	1 1
R V 1 D1		rom ace	4 1		14	o Ice 1 Ice Ice 1 Ice Ice	1 5 54	1 5 1 1 54 1	1 1
R V 1 D1	C	rom ace	4 1		14	o Ice 1 Ice Ice 1 Ice Ice	1 5 54	1 5 1 1 54 1	1 1
C C1 T DS 4		rom ace	4 1		14	o Ice 1 Ice Ice 1 Ice Ice	4 5	1 1	1 1
ntenna Mount Pipe		rom ace	4 1		14	o Ice 1 Ice Ice 1 Ice Ice	1 1	1 1	4 1
ntenna Mount Pipe		rom ace	4 1		14	o Ice 1 Ice Ice 1 Ice Ice	1 1	1 1	4 1
ntenna Mount Pipe	C	rom ace	4 1		14	o Ice 1 Ice Ice 1 Ice Ice	1 1	1 1	4 1
SM 51		one			14	o Ice 1 Ice Ice 1 Ice Ice	4 1 5 4 5 1	4 1 5 4 5 1	4 5 1
WV CW 4		rom e	1		14	o Ice 1 Ice Ice 1 Ice Ice	1 1 1 1 1 4	1 1 1 1 1 4	1
1 5 4 w Mount Pipe		rom e	5 5		1	o Ice 1 Ice	5 4 1	1 1	4

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1			Ice 1 Ice Ice	4 4 5	4 5 5	11 1
1 5 4 w Mount Pipe		rom e	5 5 1		1	o Ice 1 Ice 1 Ice Ice	5 4 1 4 4 5	1 1 4 5 5	4 11 1
1 5 4 w Mount Pipe	C	rom e	5 5 1		1	o Ice 1 Ice 1 Ice Ice	5 4 1 4 4 5	1 1 4 5 5	4 11 1
5 Pipe Mount		rom e	5 1		1	o Ice 1 Ice 1 Ice Ice	1 1 1 5 1 1 4	1 1 1 5 1 1 4	4
5 Pipe Mount		rom e	5 1		1	o Ice 1 Ice 1 Ice Ice	1 1 1 5 1 1 4	1 1 1 5 1 1 4	4
5 Pipe Mount	C	rom e	5 1		1	o Ice 1 Ice 1 Ice Ice	1 1 1 5 1 1 4	1 1 1 5 1 1 4	4
Connection Pipe		rom e	5 		1	o Ice 1 Ice 1 Ice Ice	1 1 4 	1 1 4 	4
Connection Pipe		rom e	5 		1	o Ice 1 Ice 1 Ice Ice	1 1 4 	1 1 4 	4
Connection Pipe	C	rom e	5 		1	o Ice 1 Ice 1 Ice Ice	1 1 4 	1 1 4 	4
SM 1 4		one			1	o Ice 1 Ice 1 Ice Ice	4 4 5 4 1	4 4 5 4 1	5 1 4 1
W	C	rom e	4 		1	o Ice 1 Ice 1 Ice Ice	1 5 1 5 4	4 5 4	1 4
T15	C	rom e	4 		1	o Ice 1 Ice 1 Ice Ice	1 1 1 1 5	1 1 1 1 5	1 4
SC 14	C	rom e	4 		1	o Ice 1 Ice 1 Ice Ice	 	 	
SO 5 1	C	rom e	 		1	o Ice 1	4 1 4	1 41 1	 4

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			□□□□			Ice 1□□Ice □□Ice	□□□□ □□1□	□□□□ 4□45	□□□□ □□□□
□□□ □P□VTM14□C□1□□ w□ Mount Pipe	□	□rom □e□	4□□□ □□□□ 1□□□	□□□□□□□	1□1□□□	□o Ice 1□□□ Ice 1□□Ice □□Ice	4□□□ 4□4□ 4□□□ 5□□1	□□□□ □□□□ □□□1 4□4□	□□□□ □□1□ □□1□ □□□□
□P□VTM14□C□1□□ w□ Mount Pipe	□	□rom □e□	4□□□ □□□□ 1□□□	□□□□□□□	1□1□□□	□o Ice 1□□□ Ice 1□□Ice □□Ice	4□□□ 4□4□ 4□□□ 5□□1	□□□□ □□□□ □□□1 4□4□	□□□□ □□1□ □□1□ □□□□
□P□VTM14□C□1□□ w□ Mount Pipe	C	□rom □e□	4□□□ □□□□ 1□□□	□□□□□□□	1□1□□□	□o Ice 1□□□ Ice 1□□Ice □□Ice	4□□□ 4□4□ 4□□□ 5□□1	□□□□ □□□□ □□□1 4□4□	□□□□ □□1□ □□1□ □□□□
□P□VSPP1□□C□□□□ w□ Mount Pipe	□	□rom □e□	4□□□ □□□□ 1□□□	□□□□□□□	1□1□□□	□o Ice 1□□□ Ice 1□□Ice □□Ice	4□□□ 5□□5 5□5□ □44	4□□1 4□45 4□□□ 5□□□	□□1□ □□1□ □□□□ □□4□
□P□V□□RR1□□C□□□□ w□ Mount Pipe	□	□rom □e□	4□□□ □□□□ 1□□□	□□□□□□□	1□1□□□	□o Ice 1□□□ Ice 1□□Ice □□Ice	4□□□ 5□□5 5□5□ □44	4□□1 4□45 4□□□ 5□□□	□□1□ □□1□ □□□□ □□4□
□P□VSPP1□□C□□□□ w□ Mount Pipe	C	□rom □e□	4□□□ □□□□ 1□□□	□□□□□□□	1□1□□□	□o Ice 1□□□ Ice 1□□Ice □□Ice	4□□□ 5□□5 5□5□ □44	4□□1 4□45 4□□□ 5□□□	□□1□ □□1□ □□□□ □□4□
TD□RRH□□□□□□□5	□	□rom □e□	4□□□ □□□□ 1□□□	□□□□□□□	1□1□□□	□o Ice 1□□□ Ice 1□□Ice □□Ice	4□□5 4□□□ 4□5□ 5□1□	1□5□ 1□□1 1□□□ □□□□	□□□□ □□1□ □□1□ □□□□
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Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1			Ice 1 Ice Ice	4		11 1
MH 5W RRH W I T R		rom e	1 1		1 1	o Ice 1 Ice 1 Ice Ice	4 4 4	1 11 11 1	11 11
MH 5W RRH W I T R	C	rom e	1 1		1 1	o Ice 1 Ice 1 Ice Ice	4 4 4	1 11 11 1	11 11
5 Pipe		rom e	5 		1 1	o Ice 1 Ice 1 Ice Ice	1 4 4	1 4 4	4 5 11
5 Pipe		rom e	5 		1 1	o Ice 1 Ice 1 Ice Ice	1 4 4	1 4 4	4 5 11
5 Pipe	C	rom e	5 		1 1	o Ice 1 Ice 1 Ice Ice	1 4 4	1 4 4	4 5 11
STD Pipe		rom e	4 		1 1	o Ice 1 Ice 1 Ice Ice	1 4 1 4	1 4 1 4	5
STD Pipe		rom e	4 		1 1	o Ice 1 Ice 1 Ice Ice	1 4 1 4	1 4 1 4	5
STD Pipe	C	rom e	4 		1 1	o Ice 1 Ice 1 Ice Ice	1 4 1 4	1 4 1 4	5
SM 5 5		one			1 1	o Ice 1 Ice 1 Ice Ice	4 4 4 4 5	4 4 4 4 5	1 1 4
P V RR 4 4		rom e			1	o Ice 1 Ice 1 Ice Ice	14 15 4 1 1 1 1	5 5 1 1	15
P V RR 4 4		rom e			1	o Ice 1 Ice 1 Ice Ice	14 15 4 1 1 1 1	5 5 1 1	15
P V RR 4 4	C	rom e			1	o Ice 1 Ice 1 Ice Ice	14 15 4 1 1 1 1	5 5 1 1	15
RICSSO IR 1 4P		rom e			1	o Ice 1	4	4 5	1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			□□□□□			Ice	□□□4	5□□□	□□1□
						1□□Ice	□□□1	5□□4	□□□□
						□□Ice			
□RICSSO□ □IR □1 □□□ □4P	□	□rom □e□	□□□□ □□□□ □□□□	□□□□□□□	1□□□□□	□o Ice 1□□□□ Ice 1□□Ice □□Ice	□□□□ □□4□ □□□4 □□□1	4□□□ 4□□5 5□□□ 5□□4	□□□□ □□1□ □□1□ □□□□
□RICSSO□ □IR □1 □□□ □4P	□	□rom □e□	□□□□ □□□□ □□□□	□□□□□□□	1□□□□□	□o Ice 1□□□□ Ice 1□□Ice □□Ice	□□□□ □□4□ □□□4 □□□1	4□□□ 4□□5 5□□□ 5□□4	□□□□ □□1□ □□1□ □□□□
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Connection Pipe	□	□rom □e□	□□5□ □□□□ □□□□	□□□□□□□	1□□□□□	□o Ice 1□□□□ Ice	□□□□ □□□5 1□□5	□□□□ □□□5 1□□5	□□□□ □□□□ □□□□

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1□□Ice □□□Ice	1□4□	1□4□	□□□□
Connection Pipe	C	□rom □e□	□□5□ □□□□ □□□□	□□□□□□□	1□□□□□□	□o Ice 1□□□□ Ice 1□□Ice □□□Ice	□□□□ □□□5 1□□5 1□4□	□□□□ □□□5 1□□5 1□4□	□□□□ □□□□ □□□□ □□□□
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Load Combinations

Comb. No.	Description
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□	1□□ Dead□1□□ Wind □ de□ □□o Ice
□	□□□ Dead□1□□ Wind □ de□ □□o Ice
4	1□□ Dead□1□□ Wind □□ de□ □□o Ice
5	□□□ Dead□1□□ Wind □□ de□ □□o Ice
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11	□□□ Dead□1□□ Wind 1□□ de□ □□o Ice
1□	1□□ Dead□1□□ Wind 15□ de□ □□o Ice
1□	□□□ Dead□1□□ Wind 15□ de□ □□o Ice
14	1□□ Dead□1□□ Wind 1□□ de□ □□o Ice
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□4	1□□ Dead□1□□ Wind □1□ de□□1□□ Ice
□5	1□□ Dead□1□□ Wind □4□ de□□1□□ Ice
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□□	1□□ Dead□1□□ Wind □□□ de□□1□□ Ice
□□	1□□ Dead□1□□ Wind □□□ de□□1□□ Ice
□□	Dead□Wind □ de□ □Ser□ice
4□	Dead□Wind □□ de□ □Ser□ice
41	Dead□Wind □□ de□ □Ser□ice
4□	Dead□Wind □□ de□ □Ser□ice
4□	Dead□Wind 1□□ de□ □Ser□ice
44	Dead□Wind 15□ de□ □Ser□ice
45	Dead□Wind 1□□ de□ □Ser□ice
4□	Dead□Wind □1□ de□ □Ser□ice
4□	Dead□Wind □4□ de□ □Ser□ice
4□	Dead□Wind □□□ de□ □Ser□ice
4□	Dead□Wind □□□ de□ □Ser□ice
5□	Dead□Wind □□□ de□ □Ser□ice

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	151□□□□ □ 14□□□□□	□e□	Ma□Tension	□	□□□□	□□□□□	□□45
			Ma□□Compression	□□	□5□□□	□□□□	□□□1
			Ma□□M□	□□	□1□□□	□1□□1	□□□□
			Ma□□M□	□	□1□1□	□□□□□	□1□□□
			Ma□□V□	□□	□□□□5	□□□□	□□11
			Ma□□V□	14	□□1□	□□□□□	□1□□5
		Dia□ona□	Ma□Tension	□□	1□□□	□□□□	□□□□
			Ma□□Compression	11	□1□□4	□□□□	□□□□

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Ma□□M□	□□	□□□4	□□□□	□□□□
			Ma□□M□	□□	□□□□	□□□1	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
		Top □irt	Ma□Tension	□□	□□1□	□□□□	□□□□
			Ma□□Compression	□5	□□□1□	□□□□	□□□□
			Ma□□M□	□□	□□□15	□□□1□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
T□	14□□□□□ □ 141□1□□	□e□	Ma□Tension	□	□□□□	□□□1	□□□□
			Ma□□Compression	□	□□□□	□□□□	□□□1□
			Ma□□M□	□□	□□□5	1□□□	□□□□
			Ma□□M□	14	□□5□	□□□□	□1□5□
			Ma□□V□	1□	□□□□	□□□1□	□□□□
			Ma□□V□	□	□4□5□	□□□□	□□□1□
		Dia□ona□	Ma□Tension	□5	□□□1	□□□□	□□□□
			Ma□□Compression	1□	□□□□	□□□□	□□□□
			Ma□□M□	□4	□□□□	□□□4	□□□□
			Ma□□M□	1□	□□□□	□□□□	□□□□
			Ma□□V□	□4	□□□4	□□□4	□□□□
			Ma□□V□	1□	□□□□	□□□□	□□□□
T□	141□1□□ □ 1□1□□4□	□e□	Ma□Tension	□□	□□□□□	□□□□4	□□□□□
			Ma□□Compression	□	□□□□□1	□□□5	□□□□□
			Ma□□M□	1□	□□□□□	□□□5□	□□□□
			Ma□□M□	□	□□□5□	□□□□□	□□4□
			Ma□□V□	1□	□5□□□	□□□□	□□□□
			Ma□□V□	□	□□□□□	□□□□□	□□□□
		Dia□ona□	Ma□Tension	1□	4□□□	□□□□	□□□□
			Ma□□Compression	1□	□4□4□	□□□□	□□□□
			Ma□□M□	□□	□□□□	□□□□	□□□1
			Ma□□M□	□□	□□□□	□□□□	□□□1
			Ma□□V□	□□	□□□5	□□□□	□□□□1
			Ma□□V□	□□	□□□□	□□□□	□□□□
		Top □irt	Ma□Tension	□□	□□□□	□□□□	□□□□
			Ma□□Compression	11	□□□□	□□□□	□□□□
			Ma□□M□	□□	□□□□	□□□1□	□□□□
			Ma□□M□	□□	□□□□	□□□□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
T4	1□1□□4□ □ 114□□1□	□e□	Ma□Tension	□□	□□□□□	□□□□□	□□□11
			Ma□□Compression	□	□□□□□□	□□□44	□□□□□
			Ma□□M□	1□	□□□□□□	□□□□	□□11
			Ma□□M□	□□	□4□□□	□□□□□	□□□□□
			Ma□□V□	1□	□□□□□	□□4□	□□□□
			Ma□□V□	□	□□□1□	□□□□	□□1□
		Dia□ona□	Ma□Tension	1□	5□□5	□□□□	□□□□
			Ma□□Compression	1□	□5□□1	□□□□	□□□□
			Ma□□M□	□□	1□□5	□□□□	□□□□1
			Ma□□M□	□1	□1□44	□□□□	□□□□1
			Ma□□V□	□□	□□□□	□□□□	□□□1
			Ma□□V□	□1	□□□□	□□□□	□□□□
T5	114□□1□ □ 1□□□□4□	□e□	Ma□Tension	□□	4□□□5	□□□51	□□□1□
			Ma□□Compression	□	□5□□□□	□□□4□	□□□□□
			Ma□□M□	11	□4□4□	□□5□	□□1□
			Ma□□M□	□	□5□□□	□□□□1	□□□□
			Ma□□V□	11	□□□□	□□5□	□□1□
			Ma□□V□	□	□□1□	□□□□1	□□□□
		Dia□ona□	Ma□Tension	1□	5□□□	□□□□	□□□□
			Ma□□Compression	1□	□5□□□	□□□□	□□□□
			Ma□□M□	□□	1□1□	□□□□	□□□1
			Ma□□M□	□□	□□□□□	□□□□	□□□□1
			Ma□□V□	□□	□□□□	□□□□	□□□□1
			Ma□□V□	□□	□□□□	□□□□	□□□□
T□	1□□□□4□ □ 1□□□□1□	□e□	Ma□Tension	□□	54□□4	□□□□1	□□□□□
			Ma□□Compression	□	□□□□□1	□5□	□□□□□
			Ma□□M□	□□	4□□□□	□□□1	□□□□

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Ma□□M□	□□	□5□□5	□□□□	□□□□
			Ma□□V□	1□	□□□□5	□□5□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□4□
		Dia□ona□	Ma□Tension	1□	□□□□	□□□□	□□□□
			Ma□□Compression	1□	□□□1□	□□□□	□□□□
			Ma□□M□	□□	1□□□	□□□14	□□□□
			Ma□□M□	□1	□□□1□	□□□11	□□□□
			Ma□□V□	□□	□□□□	□□□1□	□□□□
			Ma□□V□	□1	□□□1	□□□□	□□□□
		Secondar□ Hori□onta□	Ma□Tension	□□	□□□□	□□□□	□□□□
			Ma□□Compression	1□	□□□□	□□□1	□□□□
			Ma□□M□	□□	□□15	□□□□	□□□□
			Ma□□M□	□□	□□5□	□□□1	□□□□
			Ma□□V□	□□	□□□5	□□□□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
T□	1□□□□1□ □ □4□□□14	□e□	Ma□Tension	□□	5□□□1	□1□55	□□□14
			Ma□□Compression	□	□□□□□	□□□□	□□□□
			Ma□□M□	11	□□□4□	1□5□	□□14
			Ma□□M□	□□	□□□□	□□□□	□□□□1
			Ma□□V□	1□	□□□54	1□1□	□□11
			Ma□□V□	□□	□□□1	□□□□	□□□□1
		Dia□ona□	Ma□Tension	1□	□□□□	□□□□	□□□□
			Ma□□Compression	1□	□□□5□	□□□□	□□□□
			Ma□□M□	□□	1□5□	□□11	□□□□1
			Ma□□M□	□□	□□□□	□□1□	□□□□
			Ma□□V□	□□	□□□□	□□11	□□□□1
			Ma□□V□	□□	□□□□	□□□□	□□□□
T□	□4□□□14 □ □□□4□□1	□e□	Ma□Tension	□□	□□□□□	□□□1□	□□□□□
			Ma□□Compression	□	□□4□15	□□□□□	□□□□□
			Ma□□M□	1□	□□□□□	□□□□□	□□□1
			Ma□□M□	□	□□□□4	□□□□□	□□□□
			Ma□□V□	1□	□□45	□□51	□□□1
			Ma□□V□	□	□□1□	□□□□□	□□□□
		Dia□ona□	Ma□Tension	1□	□□□□	□□□4	□□□□
			Ma□□Compression	1□	□□□□1	□□□□	□□□□
			Ma□□M□	□□	1□15	□□1□	□□□□
			Ma□□M□	□□	□1□4□	□□1□	□□□□
			Ma□□V□	□□	□□□□	□□1□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
		Secondar□ Hori□onta□	Ma□Tension	□	□□41	□□□□	□□□□
			Ma□□Compression	15	□□□□5	□□□1	□□□□
			Ma□□M□	□5	□□□5	□□□□	□□□□
			Ma□□M□	□□	□□□□	□□□□	□□□1
			Ma□□V□	□5	□□□□	□□□□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
T□	□□4□□1 □ □□□□□□□□	□e□	Ma□Tension	□□	□5□4□	□□□4	□□□□□
			Ma□□Compression	□	□1□□□□□	□□□□	□□□□5
			Ma□□M□	1□	□□5□□□	□1□□□	□□□□
			Ma□□M□	□	□□□45	□□□□5	□□□□
			Ma□□V□	1□	□11□1□	□□□□	□□1□
			Ma□□V□	□□	4□□□	□□□□□	□□□5□
		Dia□ona□	Ma□Tension	1□	□□□□	□□□□□	□□□□1
			Ma□□Compression	1□	□□□5□	□□□□	□□□□
			Ma□□M□	□□	1□5□	□□□□□	□□□□
			Ma□□M□	□1	□□□4□	□□□15	□□□□□
			Ma□□V□	□□	□□□1□	□□□1□	□□□□
			Ma□□V□	□1	□□□□1	□□□□	□□□□
		Secondar□ Hori□onta□	Ma□Tension	1□	□□4□	□□□□	□□□□□
			Ma□□Compression	□1	□□□□□	□□□□	□□□□
			Ma□□M□	□5	□□□□1	□□□□	□□□□□
			Ma□□M□	□□	□□□□1	□□□□	□□□□
			Ma□□V□	□5	□□□□	□□□□	□□□□□
			Ma□□V□	□□	□□□□□	□□□□	□□□□□
T1□	□□□□□□□□ □	□e□	Ma□Tension	□□	□□□□□	□1□15	□□□□1

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	□□□□□□5						
			Ma□□Compression	□	□111□□1	□□□□□□	□□□□□□
			Ma□□M□	1□	□1 □□□□4	1□5□	□□□5
			Ma□□M□	□□	□□□□□□	□□□□□□	□□□□5
			Ma□□V□	1□	□11□□□	1□5□	□□□5
			Ma□□V□	□□	4□□□	□□□□□□	□□□□5
		Dia□ona□	Ma□Tension	1□	□□□5	□□□□□	□□□□□
			Ma□□Compression	1□	□□□5□	□□□□□	□□□□□
			Ma□□M□	□□	1□□□	□□□□□□	□□□□□
			Ma□□M□	□□	□1 □□5	□□□□□1	□□□□4
			Ma□□V□	□□	□□□1 □	□□□□□□	□□□□□□
			Ma□□V□	□□	□□□□1	□□□□□	□□□□□
T11	□□□□□□5 □ □□□□□41	□e□	Ma□Tension	□□	1 □□□□□□	□□□□1	□□□□□□
			Ma□□Compression	□	□1 □□□5□	□□□□□□	□□□□□1
			Ma□□M□	1□	□1 □□□□5	1□□4	□□□□□
			Ma□□M□	□	□11□□□	□□□□□□	□□4□
			Ma□□V□	1□	□□4□	1□□4	□□□□□
			Ma□□V□	□	□□□1 □	□□□□□□	□□4□
		Dia□ona□	Ma□Tension	1□	□□□□5	□□□□11	□□□□1
			Ma□□Compression	1□	□1 □□□□□	□□□□□	□□□□□
			Ma□□M□	□□	1□55	□□□□□□	□□□□□4
			Ma□□M□	□□	1□5□	□□□□□□	□□□□□5
			Ma□□V□	□□	□□□14	□□□□□□	□□□□4
			Ma□□V□	□□	□□□□1	□□□□□	□□□□□
		Secondar□ Hori□onta□	Ma□Tension	1□	□□□□□	□□□□□	□□□□□□
			Ma□□Compression	□□	□□□5□	□□□□□	□□□□□
			Ma□□M□	□□	□□□□□	□□1 □	□□□□□
			Ma□□M□	□□	□□□□□□	□□□□□	□□□□1
			Ma□□V□	□□	□□□□□□	□□1 □	□□□□□
			Ma□□V□	□□	□□□□□	□□□□□	□□□□□
T1□	□□□□□41 □ 5□51□4	□e□	Ma□Tension	□□	1□1□1 □	□□5□	□□□□□□
			Ma□□Compression	□	□15□□1 □	□□□□□□	□□□□□□
			Ma□□M□	1□	□15□□1 □	□□□1 □	□□□1 □
			Ma□□M□	□	□14□5□	□□□1 □	□□□□□
			Ma□□V□	1□	□1 □□□□	□□□□□□	□□□4
			Ma□□V□	□□	5□□□	□□□1 □	□□□□□□
		Dia□ona□	Ma□Tension	1□	1□□1 □	□□□15	□□□□□□
			Ma□□Compression	1□	□1 □□□□	□□□□□	□□□□□
			Ma□□M□	□□	1□□□	□□□□□1	□□□5
			Ma□□M□	□□	□□□□4	□□□□□□	□□□□□
			Ma□□V□	□□	□□□1 □	□□□□□1	□□□□4
			Ma□□V□	□□	□□□□1	□□□□□	□□□□□
		Secondar□ Hori□onta□	Ma□Tension	□	□□□□□	□□□□5	□□□□□1
			Ma□□Compression	□	□□□□□□	□□□5	□□□□1
			Ma□□M□	□□	□□□□1	□□1 □	□□□□1
			Ma□□M□	□□	□□□44	□□□□□	□□□□□
			Ma□□V□	□□	□□11	□□1 □	□□□□1
			Ma□□V□	□□	□□□□□	□□□□□	□□□□□
T1□	5□51□4 □ 4□41□□	□e□	Ma□Tension	□□	145□4□	□□□□□□	□□□1 □
			Ma□□Compression	□	□1 □□□4□	□□□□□	□□□□5
			Ma□□M□	1□	□1 □4□□□	□1 □1 □	□□□□5
			Ma□□M□	□	□14□□□	□□□1 □	1□5□
			Ma□□V□	1□	□1 □□□5	□□41	□□1 □
			Ma□□V□	□□	5□□□	□□□1 □	□1□44
		Dia□ona□	Ma□Tension	1□	1□□4□	□□□□□	□□□□□
			Ma□□Compression	1□	□11□15	□□□□□	□□□□□
			Ma□□M□	□□	1□□□	□□□□□□	□□□□□□
			Ma□□M□	□□	1□□□	□□□□□5	□□□□□□
			Ma□□V□	□□	□□□1 □	□□□□□5	□□□5
			Ma□□V□	□□	□□□□1	□□□□□	□□□□□
		Secondar□ Hori□onta□	Ma□Tension	□	□□5□	□□□□□	□□□□□1
			Ma□□Compression	□	□□□45	□□□4	□□□□1
			Ma□□M□	□□	□□1 □	□□□□1	□□□□1
			Ma□□M□	□□	□□□□5	□□□□□	□□□□□

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Ma□□V□	□□	□□□11	□□□1	□□□1
			Ma□□V□	□□	□□□□□	□□□□□	□□□□□
T14	4□□41□□ □ □□□□1□5	□e□	Ma□Tension	□□	151□□□	□1□□□	□□□□□
			Ma□□Compression	□	□1□5□□1	□□□□□	□□□□□
			Ma□□M□	1□	□1□4□□□	1□□□	□□□□
			Ma□□M□	□□	□1□□□□	□□□□□	□1□11
			Ma□□V□	1□	□14□1□	1□□□	□□□□
			Ma□□V□	□□	5□5□	□□□□□	□1□11
		Dia□ona□	Ma□Tension	1□	11□□1	□□□□	□□□□
			Ma□□Compression	1□	□11□15	□□□□	□□□□
			Ma□□M□	□□	□□□□	□□□4□	□□□5
			Ma□□M□	□□	□1□□5	□□□□□	□□□□
			Ma□□V□	□□	□□□□□	□□□4□	□□□□5
			Ma□□V□	□□	□□□□1	□□□□	□□□□
T15	□□□□1□5 □ □□□□□□□□	□e□	Ma□Tension	□□	1□□□□5	□□□5	□□□□
			Ma□□Compression	□	□□1□□5□	□□□□1	□□□□□
			Ma□□M□	1□	□□□□□□□	□□□5□	□□□1□
			Ma□□M□	□	□1□□□□	□□□□□	□□□□
			Ma□□V□	1□	□15□54	□□□□□	□□□□
			Ma□□V□	□□	5□□5	□□□15	□□□55
		Dia□ona□	Ma□Tension	1□	11□□□	□□□□□	□□□□
			Ma□□Compression	1□	□1□□55	□□□□	□□□□
			Ma□□M□	□□	1□□□	□□□4□	□□□□□
			Ma□□M□	□□	1□□□	□□□4□	□□□□□
			Ma□□V□	□□	□□□□1	□□□4□	□□□□
			Ma□□V□	□□	□□□1	□□□□	□□□□
		Secondar□ Hori□onta□	Ma□Tension	1□	1□□□	□□□□	□□□□□
			Ma□□Compression	□□	□□□□□	□□□□	□□□□
			Ma□□M□	□□	□□1□	□□□□	□□□□
			Ma□□M□	□□	□□□□□	□□□□	□□□1
			Ma□□V□	□□	□□□11	□□□□	□□□□
			Ma□□V□	□□	□□□□□	□□□□	□□□□
T1□	□□□□□□□□ □ 1□□1□41	□e□	Ma□Tension	□□	1□□□□□	□1□□□	□□□□□
			Ma□□Compression	□	□□□□□5□	□□□□□	□□□□
			Ma□□M□	□	□□□□□5□	□□□□□	□□□□
			Ma□□M□	□	□□4□□□	□□□□4	1□□4
			Ma□□V□	1□	□15□□1	□□□5	□□□□
			Ma□□V□	□□	5□□5	□□□11	□1□1□
		Dia□ona□	Ma□Tension	1□	11□□4	□□□□	□□□□
			Ma□□Compression	1□	□1□□1□	□□□□	□□□□
			Ma□□M□	□□	□□□□	□□□54	□□□□
			Ma□□M□	□□	□□□□□	□□□4□	□□1□
			Ma□□V□	□□	□□□□□	□□□5□	□□□□□
			Ma□□V□	□□	□□□□1	□□□□	□□□□
		Secondar□ Hori□onta□	Ma□Tension	□□	□□□□	□□□□	□□□□
			Ma□□Compression	11	□□□□5	□□□□	□□□1
			Ma□□M□	□□	□□□□1	□□□□	□□□□
			Ma□□M□	□□	□□□□	□□□□	□□□1
			Ma□□V□	□□	□□11	□□□□	□□□□
			Ma□□V□	□□	□□□□	□□□□	□□□□
T1□	1□□1□41 □□	□e□	Ma□Tension	□□	□□1□□□	1□5□	□□1□
			Ma□□Compression	□	□□4□□4□	□□□□	□□□□
			Ma□□M□	□	□□□□□□□	□□4□	□□□□1
			Ma□□M□	□	□□5□□□	□□□44	□□□□
			Ma□□V□	1□	□1□□□□	□□□□	□□□□□
			Ma□□V□	□□	5□□□	□□□□	□□□□□
		Dia□ona□	Ma□Tension	1□	11□□□	□□□□□	□□□5
			Ma□□Compression	1□	□1□□□□	□□□□	□□□□
			Ma□□M□	□□	□□4□	□□□□1	□□□□□
			Ma□□M□	□	□□□□□	□□□□□	□□□1□
			Ma□□V□	□□	□□□□□	□□□5□	□□□□□
			Ma□□V□	□□	□□□□1	□□□□	□□□□
		Secondar□ Hori□onta□	Ma□Tension	1□	1□1□	□□1□	□□□□1
			Ma□□Compression	□	□□□□□□	□□□□	□□□1

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Ma□□M□	□□	□□4□	□□□□	□□□1
			Ma□□M□	□	□□□□□	□□1□	□□□1
			Ma□□V□	□□	□□□1□	□□□□	□□□1
			Ma□□V□	□□	□□□□	□□□□	□□□□

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
□e□ C	Ma□□Vert	1□	□41□4□	□□□5□	□1□□5□
	Ma□□H□	1□	□41□4□	□□□5□	□1□□5□
	Ma□□H□	□	□1□□□□1	□□1□□□	1□□5□
	Min□Vert	□	□1□□□□1	□□1□□□	1□□5□
	Min□H□	□	□1□□□□1	□□1□□□	1□□5□
	Min□H□	1□	□41□4□	□□□5□	□1□□5□
□e□ □	Ma□□Vert	1□	□45□5□	□□□□□□	□1□□□4
	Ma□□H□	□□	□□□□□□5	□1□□□	14□□□
	Ma□□H□	□□	□□□□□□5	□1□□□	14□□□
	Min□Vert	□□	□□□□□□5	□1□□□	14□□□
	Min□H□	1□	□45□5□	□□□□□□	□1□□□4
	Min□H□	1□	□45□5□	□□□□□□	□1□□□4
□e□ □	Ma□□Vert	□	□4□□1□	□□5□	□1□□□
	Ma□□H□	□□	□□□□□□	5□□□	□□1□
	Ma□□H□	□	□4□□1□	□□5□	□1□□□
	Min□Vert	15	□1□□□□4	□□□5□	□□5□1□
	Min□H□	□	1□□□4	□5□□4	1□□□
	Min□H□	15	□1□□□□4	□□□5□	□□5□1□

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead On□□	51□5□	□□□□	□□□□	□□□4□	□1□□□□	□□□□
1□□ Dead□1□□ Wind □de□ □ □o Ice	□1□□□	□□□4	□4□□5□	□44□□□□	□15□5□	□□□□□
□□□ Dead□1□□ Wind □de□ □ □o Ice	4□□41	□□□4	□4□□5□	□44□□□55	□1□□4□	□□□□□
1□□ Dead□1□□ Wind □□de□ □ □o Ice	□1□□□	□□□1□	□4□□□□	□□□□□□□□	□□□□4□□□	□□□□□
□□□ Dead□1□□ Wind □□de□ □ □o Ice	4□□41	□□□1□	□4□□□□	□□□□5□□□	□□□□1□5□	□□□□□
1□□ Dead□1□□ Wind □□de□ □ □o Ice	□1□□□	4□□□□	□□□□□□	□□1□5□□□	□□□1□□□5	□□□□□□
□□□ Dead□1□□ Wind □□de□ □ □o Ice	4□□41	4□□□□	□□□□□□	□□1□□□54	□□□□□□□□	□□□□□□
1□□ Dead□1□□ Wind □□de□ □ □o Ice	□1□□□	4□□□□	□□□□4	□114□□□	□4□4□□□1	□□□□4□
□□□ Dead□1□□ Wind □□de□ □ □o Ice	4□□41	4□□□□	□□□□4	□□□□□□	□4□45□5□	□□□□4□
1□□ Dead□1□□ Wind 1□□de□ □□o Ice	□1□□□	44□□□	□5□4□	□1□1□□1	□□□□□□□□	□□□□□□
□□□ Dead□1□□ Wind 1□□de□ □□o Ice	4□□41	44□□□	□5□4□	□15□□□4	□□□□□□□□	□□□□□□
1□□ Dead□1□□ Wind 15□de□ □□o Ice	□1□□□	□□□□□	41□□4	□55□□4□	□□1□5□□1	□45□□□
□□□ Dead□1□□ Wind 15□de□ □□o Ice	4□□41	□□□□□	41□□4	□5□□□□□	□□1□□□□□	□45□□□
1□□ Dead□1□□ Wind 1□□de□	□1□□□	□□□□4	45□□□	4□□□□11	□□□□5	□□□□□

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
□□o Ice						
□□□ Dead□1□□ Wind 1□□ de□	4□□41	□□□□4	45□□□	4□□□□□4	□□□□4	□□□□□□□
□□o Ice						
1□□ Dead□1□□ Wind □1□ de□	□1□□□	□□□□1□	4□□□□	□4□1□□□	□□5□□□4	□□□□□
□□o Ice						
□□□ Dead□1□□ Wind □1□ de□	4□□41	□□□□1□	4□□□□	□5□□□□□	□□□□□□□□	□□□□□
□□o Ice						
1□□ Dead□1□□ Wind □4□ de□	□1□□□	□4□□□□	□5□11	□1□5□14	□□15□□□	□□□□□□
□□o Ice						
□□□ Dead□1□□ Wind □4□ de□	4□□41	□4□□□□	□5□11	□1□□□□□	□□1□□1□	□□□□□□
□□o Ice						
1□□ Dead□1□□ Wind □□□□ de□	□1□□□	□4□□□□	□□□4	□1□□□□□	4□□□□□□	□□□4□
□□o Ice						
□□□ Dead□1□□ Wind □□□□ de□	4□□41	□4□□□□	□□□4	□□□□□□□	4□□□□□□	□□□4□
□□o Ice						
1□□ Dead□1□□ Wind □□□□ de□	□1□□□	□4□□□□	□□□□55	□□□□□1□□5	□□4□□□□	□□□□□□
□□o Ice						
□□□ Dead□1□□ Wind □□□□ de□	4□□41	□4□□□□	□□□□55	□□1□4□□□	□□4□□1□	□□□□□□
□□o Ice						
1□□ Dead□1□□ Wind □□□□ de□	□1□□□	□□□□□□□	□41□□4	□□□□□□□□1	□1□□□□□	45□□□
□□o Ice						
□□□ Dead□1□□ Wind □□□□ de□	4□□41	□□□□□□□	□41□□4	□□□5□□5□	□1□□□5□	45□□□
□□o Ice						
1□□ Dead□1□□ Ice	14□□□4	□□□□□□	□□□□□	□□□□□□□5	□5□□4□	□□□□□
1□□ Dead□1□□ Wind □ de□□1□□ Ice	14□□□4	□□□□□	□1□□□□	□1□11□□1	□5□□□□□	5□5□
1□□ Dead□1□□ Wind □□ de□□1□□ Ice	14□□□4	5□□□□	□□□□□□	□1□□4□□1	□5□□□□□	□□□4□
1□□ Dead□1□□ Wind □□ de□□1□□ Ice	14□□□4	□□□□□	□5□□□	□□14□□□	□□□□□44	□1□□□5
1□□ Dead□1□□ Wind □□ de□□1□□ Ice	14□□□4	1□□□□□	□□□□□□	□□□□□□□□	□1□51□4□	□1□□□□
1□□ Dead□1□□ Wind 1□□ de□□1□□ Ice	14□□□4	□□□□□	5□□□□	□□4□□□□	□□□1□□1	□1□□□□
1□□ Dead□1□□ Wind 15□ de□□1□□ Ice	14□□□4	5□□□□	□□□□□	□□□□□□1	□54□□□5	□1□□4□
1□□ Dead□1□□ Wind 1□□ de□□1□□ Ice	14□□□4	□□□□□□	1□□4□	□□□□□□□	□5□□□1	□5□5□
1□□ Dead□1□□ Wind □1□ de□□1□□ Ice	14□□□4	□5□□□□	□□□□□	□□1□□□□	4□□□4□	□□4□
1□□ Dead□1□□ Wind □4□ de□□1□□ Ice	14□□□4	□□□□□1	5□5□	□□□□□5	□15□54	1□□□5
1□□ Dead□1□□ Wind □□□□ de□□1□□ Ice	14□□□4	□1□□□□	□□□□□	□□□□□□□□	□44□5□	1□□□□□
1□□ Dead□1□□ Wind □□□□ de□□1□□ Ice	14□□□4	□□□4□	□5□44	□□□1□□□□	□□□□□□□□	1□□□□□
1□□ Dead□1□□ Wind □□□□ de□□1□□ Ice	14□□□4	□5□□□□	□□□□□□	□1□□4□□1	4□5□□□	1□□4□
Dead□Wind □ de□ □Ser□ice	51□5□	□□□□1	□□□4□	□□41□□4	□1□□□□	□□□□□
Dead□Wind □□ de□ □Ser□ice	51□5□	□□□□5	□□□□□5	□□□□□□□□	□□□5□□□	□□□5□
Dead□Wind □□ de□ □Ser□ice	51□5□	□□□□□	□□□□□□	□44□□□□	□□□□□□□□	□□□□□□
Dead□Wind □□ de□ □Ser□ice	51□5□	□□□□4	□□□□□1	□□□□□□5	□□5□□□4	□11□□□
Dead□Wind 1□□ de□ □ Ser□ice	51□5□	□□55	4□□□□	□□□1□55	□□□□4□□□	□1□□□□
Dead□Wind 15□ de□ □ Ser□ice	51□5□	4□□□5	□□□□□	5□□5□□□	□□□□□□1□	□□□□□5
Dead□Wind 1□□ de□ □ Ser□ice	51□5□	□□□□□1	□□□□□	□1□□□□□	□□□□□□□	□□□□□□
Dead□Wind □1□ de□ □ Ser□ice	51□5□	□□□□□5	□□□□5	5□□□□□5	□44□4□	□□5□
Dead□Wind □4□ de□ □ Ser□ice	51□5□	□□□4□	4□□□□	□□□□□□□	□45□14	□□□□□
Dead□Wind □□□□ de□ □ Ser□ice	51□5□	□□□□□4	□□□□1	□□1□□□□	□□□□□□□□	11□□□□
Dead□Wind □□□□ de□ □ Ser□ice	51□5□	□□□□□□	□4□□□	□45□□□5	□15□□□	1□□□□□
Dead□Wind □□□□ de□ □ Ser□ice	51□5□	□4□□5	□□□□□□	□□□□□□□1	□51□□□	□□□5

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	□□□□	□51□5□	□□□□	□□□□	51□5□	□□□□	□□□□
□	□□□4	□□1□□□	□4□5□	□□□4	□1□□	4□5□	□□□□
□	□□□4	□4□41	□4□5□	□□□4	4□41	4□5□	□□□□
4	□□□1□	□□1□□□	□4□□□	□□□1□	□1□□	4□□□	□□□□
5	□□□1□	□4□41	□4□□□	□□□1□	4□41	4□□□	□□□□
□	4□□□	□□1□□□	□□□□	□4□□	□1□□	□□□	□□□□
□	4□□□	□4□41	□□□□	□4□□	4□41	□□□	□□□□
□	4□□□	□□1□□□	□□□4	□4□□	□1□□	□□4	□□□□
□	4□□□	□4□41	□□□4	□4□□	4□41	□□4	□□□□
1□	44□□	□□1□□□	□5□4□	□44□□	□1□□	□□5□4□	□□□□
11	44□□	□4□41	□5□4□	□44□□	4□41	□□5□4□	□□□□
1□	□□□□	□□1□□□	41□□4	□□□□	□1□□	□41□□4	□□□□
1□	□□□□	□4□41	41□□4	□□□□	4□41	□41□□4	□□□□
14	□□□□4	□□1□□□	45□□□	□□□4	□1□□	□45□□□	□□□□
15	□□□□4	□4□41	45□□□	□□□4	4□41	□45□□□	□□□□
1□	□□□□1□	□□1□□□	4□□□□	□□□1□	□1□□	□4□□□	□□□□
1□	□□□□1□	□4□41	4□□□□	□□□1□	4□41	□4□□□	□□□□
1□	□4□□□	□□1□□□	□5□11	4□□□□	□1□□	□□5□11	□□□□
1□	□4□□□	□4□41	□5□11	4□□□□	4□41	□□5□11	□□□□
□□	□4□□□	□□1□□□	□□□4	4□□□□	□1□□	□□□□4	□□□□
□1	□4□□□	□4□41	□□□4	4□□□□	4□41	□□□□4	□□□□
□□	□4□□□	□□1□□□	□□□55	4□□□□	□1□□	□□□55	□□□□
□□	□4□□□	□4□41	□□□55	4□□□□	4□41	□□□55	□□□□
□4	□□□□□	□□1□□□	□41□□4	□□□□	□1□□	41□□4	□□□□
□5	□□□□□	□4□41	□41□□4	□□□□	4□41	41□□4	□□□□
□□	□□□□	□14□□□4	□□□□	□□□□	14□□□4	□□□□	□□□□
□□	□□□□	□14□□□4	□1□□□□	□□□□	14□□□4	1□□□□	□□□□
□□	5□□□	□14□□□4	□□□□	□5□□	14□□□4	□□□	□□□□
□□	□□□□	□14□□□4	□5□□□	□□□□	14□□□4	5□□□	□□□□
□□	1□□□□	□14□□□4	□□□□	□1□□□	14□□□4	□□□	□□□□
□1	□□□□	□14□□□4	5□□□	□□□□	14□□□4	□5□□□	□□□□
□□	5□□□	□14□□□4	□□□□	□5□□	14□□□4	□□□□	□□□□
□□	□□□□□	□14□□□4	1□□4□	□□□□	14□□□4	□1□□4□	□□□□
□4	□5□□□	□14□□□4	□□□□	5□□□	14□□□4	□□□□	□□□□
□5	□□□□1	□14□□□4	5□5□	□□□1	14□□□4	□5□5□	□□□□
□□	□1□□□□	□14□□□4	□□□□	1□□□□	14□□□4	□□□□	□□□□
□□	□□□4□	□14□□□4	□5□44	□□4□	14□□□4	5□44	□□□□
□□	□5□□□	□14□□□4	□□□□	5□□□	14□□□4	□□□	□□□□
□□	□□□□1	□51□5□	□□□4□	□□□□1	51□5□	□□4□	□□□□
4□	□□□□5	□51□5□	□□□□5	□□□□5	51□5□	□□□□5	□□□□
41	□□□□	□51□5□	□□□□	□□□□	51□5□	□□□□	□□□□
4□	□□□4	□51□5□	□□□□1	□□□□4	51□5□	□□□1	□□□□
4□	□□55	□51□5□	4□□□	□□□55	51□5□	□4□□□	□□□□
44	4□□5	□51□5□	□□□□	□4□□5	51□5□	□□□□	□□□□
45	□□□□1	□51□5□	□□□□	□□□□1	51□5□	□□□□	□□□□
4□	□□□□5	□51□5□	□□□□5	□□□□5	51□5□	□□□□5	□□□□
4□	□□□4□	□51□5□	4□□□	□□4□	51□5□	□4□□□	□□□□
4□	□□□□4	□51□5□	□□□□1	□□□□4	51□5□	□□□□1	□□□□
4□	□□□□□	□51□5□	□4□□□	□□□□	51□5□	4□□□	□□□□
5□	□4□□5	□51□5□	□□□□□	4□□5	51□5□	□□□□	□□□□

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	151□□□□ □ 14□□□□□	□□1□□	□□	□□11□□	□□□1□□
T□	14□□□□□ □ 141□1□□	□□□4□	□□	□□11□□	□□□1□□
T□	141□1□□ □ 1□1□□4□	1□□□□	□□	□□11□□	□□□15□
T4	1□1□□4□ □	1□41□	□□	□□1□□□	□□□1□5

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
	114□□1□				
T5	114□□1□ □ 1□□□4□	1□□□	□□	□1□□	□□1□4
T□	1□□□4□ □ 1□□□1□	1□11□	□□	□□□5	□□111
T□	1□□□1□ □ □4□□14	□□□	□□	□□□	□□1□□
T□	□4□□14 □ □□4□□1	□□5□	□□	□□□4	□□□
T□	□□4□□1 □ □□□□□	□□□	□□	□□□	□□□
T1□	□□□□ □ □□□5	□□4	□□	□□□	□□□
T11	□□□□5 □ □□□41	□4□□	□□	□□1□	□□5□
T1□	□□□41 □ 5□51□4	□□5□	□□	□5□□	□□4□
T1□	5□51□4 □ 4□41□□	□□45	□□	□4□□	□□□
T14	4□41□□ □ □□1□5	□1□1	□□	□□□	□□□
T15	□□1□5 □ □□□□	□□4	□□	□5□	□□1
T1□	□□□ □ 1□1□41	□45	□□	1□1	□14
T1□	1□1□41 □□	□1□	□□	□□□	□□□

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
15□□□	W□□□□	□□	□1□5	□11□□	□1□1	□□□
14□□□	□□ □□514DS□IM w□Mount Pipe	□□	□□5	□11□□	□1□1	□□□
14□□□	WV□CW□□4	□□	□□4	□11□□	□1□□	□54□□
1□□□	□□□ 1□5□4 w□Mount Pipe	□□	1□□4	□114□	□14□	□□4
1□□□	W□□□□	□□	1□5□□	□11□1	□144	1□□4□□
1□1□□	□P□VTM14□C□1□□ w□Mount Pipe	□□	1□41□	□1□□□	□1□5	1□□□4□
1□□□	□P□V□□RR□4□4□□□ □ □□□	□□	1□□□	□□□14	□1□□	□□□1
□□□	□□R□□□1	□□	□□□	□□□5	□□□1	44□54
□□□	W□□□□	□□	□□5□	□□□	□□□1	544□1
□1□□	□M□T□□5	□□	□□5□	□□5□□	□□4□	□□□
5□□□	□S□4□1□□11□□	□□	□□4□	□□4□□	□□□	4□141

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	151□□□ □ 14□□□□	11□□□	□	□□45□	□□44
T□	14□□□ □ 141□1□□	11□□□	□	□□451	□□□
T□	141□1□□ □ 1□1□4□	1□□□	□	□□□5	□□14
T4	1□1□4□ □ 114□□1□	□□□	□	□5□5□	□□□
T5	114□□1□ □ 1□□□4□	□□4□	□	□55□1	□□□5
T□	1□□□4□ □ 1□□□1□	□□54	□	□5□4□	□□5□

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T□	1□□□1□ □ □4□□14	5□1□	□	□4□4□	□□□□□
T□	□4□□14 □ □□4□1	4□11	□	□45□4	□□5□4
T□	□□4□1 □ □□□□□	□□5□	□	□41□4	□□444
T1□	□□□□ □ □□□□5	□□□□	□	□□□□	□□4□□
T11	□□□□5 □ □□□41	□5□□	□	□□□15	□□□□
T1□	□□□41 □ 5□51□4	1□□	□	□□□□	□□□4
T1□	5□51□4 □ 4□41□□	1□4	□	□□□5	□□□□
T14	4□41□□ □ □□1□5	□□□	□	□1□51	□□1□□
T15	□□1□5 □ □□□□	□51□	□	□1□□	□□1□5
T1□	□□□ □ 1□1□41	□5□	11	□□□	□□□
T1□	1□1□41 □□	□□	11	□45□	□□4□

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
15□□□	W□□□□	□	11□□	□4□□	□4□	1□□□
14□□□	□□ □514DS□IM w□Mount Pipe	□	11□□	□45□	□41	1□□□
14□□□	WV□CW□□4	□	11□5□	□45□	□□□	11□4□
1□□□	□□□ 1□5□4 w□Mount Pipe	□	□□55	□□□	□□□	1□□5
1□□□	W□□□□	□	□5□□	□□□5	□□□	□451□
1□1□□	□P□VTM14□C□1□□ w□Mount Pipe	□	□□□5	□5□5□	□□□	□□4□5
1□□□	□P□V□□RR□4□4□□□ □□ □ □□	□	5□541	□4□□	□□1□	1514□
□□□	□□R□□□1	□	4□1□□	□4□□	□4□□	□□□
□□□	W□□□□	□	□55□	□□□	□41□	□□5□
□1□□	□M□T□□5	□	1□□	□□5□	□□□	1□□5□
5□□□	□S□4□1□□11□□	□	1□□	□□□	□□□	□□□4

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	151□□□	Dia□ona□	□□□5□	□5□□□	1	1□□□	5□□□	□□□	1□□5	Mem□er □□c□ Shear
		Top □irt	□□□5□	□5□□□	1	□□1□	□□□4	□□□	1□□5	□o□ Shear
T□	14□□□□	□e□	□□□5□	□□□□5□	4	1□51	□□□□4	□□□□4	1□□5	□o□ Tension
		Dia□ona□	□□□5□	□5□□□	1	□□□1	□□□5	□45□	1□□5	Mem□er □□c□ Shear
T□	141□1□□	□e□	□□□5□	□□□□5□	4	□□□4	□□□□4	□□□□1	1□□5	□o□ Tension
		Dia□ona□	□□□5□	□5□□□	1	4□□□	□□□□	□□□	1□□5	Mem□er □earin□
		Top □irt	□□□5□	□5□□□	1	□□□□	□□□□	□15□	1□□5	Mem□er □earin□
T4	1□1□□4□	Dia□ona□	□□□5□	□5□□□	□	□□□□	□5□	□441	1□□5	Mem□er □□c□ Shear
T5	114□□1□	Dia□ona□	□□□5□	□5□□□	□	□□□4	□5□	□451	1□□5	Mem□er □□c□ Shear
T□	1□□□□4□	□e□	□□□5□	□□□5□□	4	1□51	□□□1□	□44□	1□□5	□o□ Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Dia□ona□	□□□5□	□5□□□	1	□□□□	1□□4□	□54□	1□□5	Mem□er □earin□
		Secondar□ Hori□onta□	□□□5□	□□□□5□	1	□□□□	□□□□	□1□□	1□□5	Mem□er □□oc□ Shear
T□	1□□□□1□	Dia□ona□	□□□5□	□5□□□	□	□□□1	□□□□	□54□	1□□5	Mem□er □□oc□ Shear
T□	□4□□□14	Dia□ona□	□□□5□	□5□□□	□	□□□□	□□□□	□55□	1□□5	Mem□er □□oc□ Shear
		Secondar□ Hori□onta□	□□□5□	□□□□5□	1	□41	□□□□	□□□□□	1□□5	Mem□er □□oc□ Shear
T□	□□4□□1	□e□	□□□5□	□□□□5□	4	□1□□□	41□5□	□514	1□□5	□ot□Tension
		Dia□ona□	□□□5□	□5□□□	1	□□□□	1□□4□	□□□□4	1□□5	Mem□er □earin□
		Secondar□ Hori□onta□	□□□5□	□□□□5□	1	□4□	□□□□	□□□□1	1□□5	Mem□er □□oc□ Shear
T1□	□□□□□□□□	Dia□ona□	□□□5□	□□□□5□	1	□□□5	1□□□□	□□□□4	1□□5	□usset □earin□
T11	□□□□□□□5	□e□	□□□5□	□□□□5□	4	□□□□4	41□5□	□□□4□	1□□5	□ot□Tension
		Dia□ona□	□□□5□	□□□□5□	1	□□□5	1□□□□	□□□□□	1□□5	□usset □earin□
		Secondar□ Hori□onta□	□□□5□	□□□□5□	1	□□□□	□□□□	□□□□□	1□□5	Mem□er □earin□
T1□	□□□□□41	Dia□ona□	□□□5□	□□□□5□	1	1□□1□	1□□□□	□□□□□	1□□5	□usset □earin□
		Secondar□ Hori□onta□	□□□5□	□5□□□	1	□□□□	□□□4	□□□□□	1□□5	□ot□Shear
T1□	5□□51□4	□e□	□□□5□	1□□□□□	4	□□□□□	54□5□	□□□□□	1□□5	□ot□Tension
		Dia□ona□	□□□5□	□□□□5□	1	1□□4□	□□□4□	□□44□	1□□5	Mem□er □earin□
		Secondar□ Hori□onta□	□□□5□	□5□□□	1	□5□	□□□4	□□□□□	1□□5	□ot□Shear
T14	4□□41□□	Dia□ona□	□□□5□	□□□□5□	1	11□□1	□□□4□	□□4□□	1□□5	Mem□er □earin□
T15	□□□□1□5	□e□	□□□5□	1□□□□5	4	4□□44	□□□□□	□□□□1	1□□5	□ot□Tension
		Dia□ona□	□□□5□	□□□□5□	1	11□□□	□□□4□	□4□4	1□□5	Mem□er □earin□
		Secondar□ Hori□onta□	□□□5□	□□□□5□	1	1□□□	□□□□	□□1□□	1□□5	Mem□er □earin□
T1□	□□□□□□□□	Dia□ona□	□□□5□	□□□□5□	1	11□□4	□□□4□	□51□	1□□5	Mem□er □earin□
		Secondar□ Hori□onta□	□□□5□	□□□□5□	1	□□□□	□□□□	□11□	1□□5	Mem□er □earin□
T1□	1□□1□41	Dia□ona□	□□□5□	□□□□5□	1	11□□□	□□□4□	□51□	1□□5	Mem□er □earin□
		Secondar□ Hori□onta□	□□□5□	□□□□5□	1	1□1□	1□□44	□□1□□	1□□5	Mem□er □earin□

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	151□□□□ □ 14□□□□□	ROH□ □□5 STD	5□□□	4□□4	□□□5 □□1□□□	1□□□4□	□5□41	5□□□1	□□□□4 [1]
T□	14□□□□□ □ 141□1□□	ROH□ □□5 STD	5□□□	□□□□	□□□ □□1□□□	1□□□4□	□□□□□	□□□□□	□□1□□ [1]
T□	141□1□□ □ 1□1□□4□	ROH□ □□5 □H	□□□1□	□□□□	□□□□ □□1□□□	□□□5□5	□□□□□	5□□5□	□□4□5 [1]
T4	1□1□□4□ □ 114□□1□	ROH□ □□5 □H □□R□	□□□4	□□□□	□□□□ □□1□□□	□□□5□5	□□□□□	□4□4□	□□□15 [1]
T5	114□□1□ □ 1□□□□4□	ROH□ □□5 □H □□R□	□□□□	□□□□	□□□□ □□1□□□	□□□5□5	□5□□□	□4□4□	□□□□□ [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T□	1□□□□4□ □ 1□□□□1□	ROH□ □5 □H □□R□	□□□4	□4□	44□□ □□1□□□	□□□5□5	□□□□□□	1□□□□□	□□□□□ [1]
T□	1□□□□1□ □ □4□□□14	ROH□ □ □H □□R□	□□□□	□□□□	□□□4 □□1□□□	□□□15□	□□□□□□	1□□□41	□□□□1 [1]
T□	□4□□□14 □ □□□4□□1	ROH□ □ □H □□R□	□□□□	□□45	□□□4 □□1□□□	□□□15□	□□4□15	145□□□	□□5□□ [1]
T□	□□□4□□1 □ □□□□□□□	ROH□ □ □H □□R□	□□□□	□□4□	□5□□ □□1□□□	□□□15□	□□□□□□	145□□□	□□□□1 [1]
T1□	□□□□□□□ □ □□□□□□5	ROH□ 4 □H □□R□	1□□1□	1□□□□	□1□4 □□1□□□	4□4□□4	□111□□1	14□□□□	□□□□4 [1]
T11	□□□□□□5 □ □□□□□41	ROH□ 4 □H □□R□	1□□1□	5□□1	4□□□ □□1□□□	4□4□□4	□1□□5□	□1□□4	□□□11 [1]
T1□	□□□□□41 □ 5□51□4	ROH□ 4 □H □□R□	1□□11	5□11	41□5 □□1□□□	4□4□□4	□14□□□□	□1□□1□	□□□□□ [1]
T1□	5□51□4 □ 4□41□□	ROH□ 4 □H □□R□	1□□11	5□1□	41□4 □□1□□□	4□4□□4	□1□□5□	□1□□□□	□□□□1 [1]
T14	4□41□□ □ □□□□1□5	ROH□ 5 □H □□R□	1□□1□	1□□□□	□5□4 □□1□□□	□□11□□	□1□5□□1	□4□□□□	□□□5□ [1]
T15	□□□□1□5 □ □□□□□□□	ROH□ 5 □H □□R□	1□□1□	5□1□	□□□5 □□1□□□	□□11□□	□□□□□1□	□□□□5□	□□□□4 [1]
T1□	□□□□□□□ □ 1□□1□41	ROH□ 5 □H □□R□	1□□1□	5□1□	□□□4 □□1□□□	□□11□□	□□□□□5□	□□□□□□	□□□□4 [1]
T1□	1□□1□41 □□	ROH□ 5 □H □□R□	1□□1□	5□1□	□□□4 □□1□□□	□□11□□	□□□□□□	□□□□□□	□□□45 [1]

□D□ contro□s
[1] P_u □ ϕP_n contro□s

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	151□□□□ □ 14□□□□□□	□1□5 □1□5 □ □□1□	□□□4	4□5□	1□4□□ □□1□□□	□□5□□□	□1□□4	4□4□	□□□□□ [1]
T□	14□□□□□ □ 141□1□□	□ □ □ □ □ □1□	□□□4	4□51	1□□□□ □□1□□□	□□□15□	□□□□□	1□□□□	□□□11 [1]
T□	141□1□□ □ 1□1□□4□	□□ 1□□□□ 1□□□□□1□	11□5□	5□□□	14□□□ □□1□□□	□□□□□□	□4□4□	1□□□□	□□□5□ [1]
T4	1□1□□4□ □ 114□□1□	□□ 1□□□□ 1□□□□□1□	1□□14	□□□□	141□1 □□□□□□	□□□□□□	□5□□1	1□□□□	□44□ [1]
T5	114□□1□ □ 1□□□□4□	□□ 1□□□□ 1□□□□□1□	1□□□□	□□□□	14□□5 □□□□□5	□□□□□□	□5□□□	1□□□□	□4□□ [1]
T□	1□□□□4□ □ 1□□□□1□	□□ □5 □ □5 □ □□1□ □□□1□□ a□□ □□□5□5□ in □□□	1□□□□	□□□4	1□□□□ □□1□□□	1□□□4□	□□□1□	□□□4□	□□1□□ [1]
T□	1□□□□1□ □ □4□□□14	□□□□□□□□1□	1□□□1	□□□□	1□4□□ □□□□□□	1□□□□□	□□□5□	1□□1□	□□4□□ [1]
T□	□4□□□14 □ □□□4□□1	□□□□□□□□1□	14□4□	□□□5	1□□□□ □□□□□□	1□□□□□	□□□□1	15□□□	□□5□1 [1]
T□	□□□4□□1 □ □□□□□□□	□□ □ □ □ □ □□1□ □1□4□ 15□□5 a□□ 4□4□□□ in □1□□	15□□5	□□□□	1□□□□ □□1□□□	□□1□□□	□□□5□	4□□□□	□□1□1 [1]
T1□	□□□□□□□ □ □□□□□□5	□□□□□□□□1□□1□4 □□ a□□ 51□□□□1 in □114	1□□□□	□□□□	1□1□1 □□1□□□	□□1□□□	□□□5□	4□41	□□□□□ [1]
T11	□□□□□□5 □ □□□□□41	□□□□□□□□1□□1□4 □□ a□□ 5□□□51□ in □1□□	1□□□5	□□□□	1□5□4 □□1□□□	□□1□□□	□1□□□□	□□□□□	□□□□4 [1]
T1□	□□□□□41 □ 5□51□4	□□□□□□□1□4□1□4 □□ a□□ 55□44□1 in □1□5	1□□□□	□□□□	1□□□□ □□1□□□	□□□□5□	□1□□□□	4□□1□	□□□□5 [1]
T1□	5□51□4 □ 4□41□□	□□□□□□□1□4□1□4 □□ a□□ 5□□□1□□ in □14□	1□□□□	1□□1□	1□□□□ □□1□□□	□□□□5□	□11□15	4□□1□	□□□5□ [1]

tn□Tower Report □□ersion □□□□5□□

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	4□41□□ □ □□□□1□5	□□□ 1□□□□ 1□□□1□4□1□4 □□ a□□ □1□□4□□ in □15□	□□□□1	1□□□□	1□4□1 □□1□□□	□□□□5□	□11□15	□□□□4	□1□4 [1]
T15	□□□□1□5 □ □□□□□□□	□□□ 1□□□□ 1□□□1□4□1□4 □□ a□□ □□□□□□□ in □1□□	□1□□□	1□□□□	1□□□□ □□1□□□	□□□□5□	□1□55	5□□□□	□□□1□ [1]
T1□	□□□□□□□ □ 1□□1□41	□□ 4 □4 □1□4 □1□4□ □ a□□ □5□□□□ in □1□□	□□□□1	11□45	11□□□ □□1□□□	□□□□5□	□1□□1□	□□□□□	□15□ [1]
T1□	1□□1□41 □□	□□ 4 □4 □1□4 □1□4□ □ a□□ □□□□□□5 in □1□□	□□□51	11□□□	1□1□4 □□1□□□	□□□□5□	□1□□□	□1□□4	□1□□ [1]

[1] P_u □ ϕP_n contro□s

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T□	1□□□□4□ □ 1□□□□1□	□ □ □ □ □ □1□	1□□□5	5□□□	1□□□□ □□1□□□	□□□15□	□□□□□	□□□□	□1□□ [1]
T□	□4□□□14 □ □□4□□1	□ □ □ □ □ □1□	1□□□4	□5□	1□□□ □□1□□□	□□□15□	□□□□5	5□1□	□□□□□ [1]
T□	□□□4□□1 □ □□□□□□□	□ □ □ □ □ □1□	14□□4	□□□□	□1□□ □□1□□□	□□□15□	□□□□□	4□□□	□□□□□ [1]
T11	□□□□□□5 □ □□□□□41	□□ 1□□□□ 1□□□□1□	1□□1□	□□□□	1□□□ □□1□□□	□□□□□□	□□□5□	□□□5	□□□□4 [1]
T1□	□□□□□41 □ 5□51□4	□□□□□1□4	1□□□□	□□□□	1□□□ □□1□□□	1□44□□	□□□□□	14□□□	□□□4□ [1]
T1□	5□51□4 □ 4□41□□	□□□□□1□4	1□□□4	□□□□	1□□□1 □□1□□□	1□44□□	□□□45	1□□□□	□□□□5 [1]
T15	□□□□1□5 □ □□□□□□□	□ □ □ □ □ □1□	□□□□□	□□□□	1□□□ □□1□□□	1□□□□□	□□□□□	□□□5	□1□□ [1]
T1□	□□□□□□□ □ 1□□1□41	□□□□□□□1□	□1□□□	1□□□□	□□□□1 □□1□□□	1□□□□□	□□□□5	□□□□	□1□□ [1]
T1□	1□□1□41 □□	□ □5 □ □5 □1□4	□□□□□	1□□□□	1□□□4 □□1□□□	1□□□□□	□□□□□	1□□□□	□□□□4 [1]

[1] P_u □ ϕP_n contro□s

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	151□□□□ □ 14□□□□□	□□ 1□□□□ 1□□□□1□	□5□	□□11	1□□□ □□1□□□	□□□□□□	□□□1□	□□□□	□□□□□ [1]
T□	141□1□□ □ 1□1□□4□	□□ 1□□□□ 1□□□□1□	□5□	□□1□	1□□□ □□1□□□	□□□□□□	□□□□	□□□□	□1□□ [1]

[1] P_u □ ϕP_n contro□s

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	151 □□□□ □ 14 □□□□□□	ROH□ □□5 STD	5□□□	□□□□	□□□	1□□□4□	□□□□	□□□□□	□□□□□ [1]
T□	14 □□□□□ □ 141□1 □□	ROH□ □□5 STD	5□□□	□□□□	□□□	1□□□4□	□□□□	□□□□□	□□□□□ [1]
T□	141□1 □□ □ 1□1□□4□	ROH□ □□5 □H	□□□1□	□□□□	□□□	□□□5□5	□□□□□	1□1□41	□□□□□ [1]
T4	1□1□□4□ □ 114□□1□	ROH□ □□5 □H □□R□	□□□4	□□□□	□□□□	□□□5□5	□□□□□	1□1□41	□□□□□ [1]
T5	114□□1□ □ 1□□□□4□	ROH□ □□5 □H □□R□	□□□□	□□□□	□□□□	□□□5□5	4□□□5	1□1□41	□□□□□ [1]
T□	1□□□□4□ □ 1□□□□1□	ROH□ □□5 □H □□R□	□□□4	□□□□	□□□	□□□5□5	54□□4	1□1□41	□□5□□ [1]
T□	1□□□□1□ □ □4□□□14	ROH□ □ □H □□R□	□□□□	□□□□	□□□4	□□□15□	5□□□1	1□5□□□	□4□□ [1]
T□	□4□□□14 □ □□□4□□1	ROH□ □ □H □□R□	□□□□	□□□□	□4□□	□□□15□	□□□□□	1□5□□□	□51□ [1]
T□	□□□4□□1 □ □□□□□□□	ROH□ □ □H □□R□	□□□□	□□□□	□□□	□□□15□	□5□4□	1□5□□□	□□□□□ [1]
T1□	□□□□□□□ □ □□□□□□5	ROH□ 4 □H □□R□	1□□1□	1□□□□	□1□4	4□4□□4	□□□□□	1□□□□4	□4□□ [1]
T11	□□□□□□5 □ □□□□□41	ROH□ 4 □H □□R□	1□□1□	4□□□	□□□□	4□4□□4	1□□□□□	1□□□4	□544 [1]
T1□	□□□□□41 □ 5□□51□4	ROH□ 4 □H □□R□	1□□11	□□1□	□□□	4□4□□4	1□1□1□	1□□□4	□□□□1 [1]
T1□	5□□51□4 □ 4□□41□□	ROH□ 4 □H □□R□	1□□11	□□1□	□□□	4□4□□4	145□4□	1□□□4	□□□□□ [1]
T14	4□□41□□ □ □□□□1□5	ROH□ 5 □H □□R□	1□□1□	1□□□□	□5□4	□□11□□	151□□□	□□5□□4	□55□ [1]
T15	□□□□1□5 □ □□□□□□□	ROH□ 5 □H □□R□	1□□1□	□□1□	□□□	□□11□□	1□□□□5	□□5□□4	□□□□□ [1]
T1□	□□□□□□□ □ 1□□1□41	ROH□ 5 □H □□R□	1□□1□	4□□□	□1□□	□□11□□	1□□□□□	□□5□□4	□□□54 [1]
T1□	1□□1□41 □□	ROH□ 5 □H □□R□	1□□1□	□□1□	□□□	□□11□□	□□1□□□	□□5□□4	□□□□□ [1]

[1] P_u □ ϕP_n contro□s

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	151 □□□□ □ 14 □□□□□□	□1□5 □1□5 □ □□1□	□□□4	4□5□	1□1□4	□□□□□□□	1□□□	1□□□□	□□□□1 [1]
T□	14 □□□□□ □ 141□1 □□	□ □ □ □ □ □□1□	□□□4	4□51	□□□□	□□44□4	□□□1	1□□5□	□□1□□ [1]
T□	141□1 □□ □ 1□1□□4□	□□ 1□□□□ 1□□□□1□	11□5□	5□□□	□□□1	□□5□□□	4□□□	□5□□□	□□1□□ [1]
T4	1□1□□4□ □ 114□□1□	□□ 1□□□□ 1□□□□1□	1□□14	□□□□	□□□5	□□5□□□	5□□5	□5□□□	□□□□5 [1]
T5	114□□1□ □ 1□□□□4□	□□ 1□□□□ 1□□□□1□	1□□□□	□□□□	1□1□□	□□5□□□	5□□□	□5□□□	□□□□□ [1]
T□	1□□□□4□ □ 1□□□□1□	□□ □□5 □ □□5 □ □□1□ □□□1□□	1□□□□	□□□4	1□5□5	1□1□□□	□□□□	51□□□	□□1□□ [1]
T□	1□□□□1□ □ □4□□□14	□□ a□□ □□□5□5□ in □□□ □□□□□□□1□	1□□□1	□□□□	□□□□	□□□□□□	□□□□	□1□□4	□□□4□ [1]
T□	□4□□□14 □ □□□4□□1	□□□□□□□1□	14□4□	□□□5	□4□□	□□□□□□	□□□□	□1□□4	□□□44 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T□	□□4□□1 □ □□□□□□□□	□□ □ □ □ □ □□1□ □14□	15□□5	□□□□□	□□□4	1□45□□	□□□□□	□□□4□	□1□□ [1]
T1□	□□□□□□□□ □ □□□□□□5	□□ a□□ 4□□4□□□ in □1□□ □□□□□□□□□1□□1□4	1□□□□	□□□□	114□5	1□4□□□	□□□5	□1□□4	□15□ [1]
T11	□□□□□□□5 □ □□□□□41	□□ a□□ 51□□□□1 in □115 □□□□□□□□□1□□1□4	1□□□5	□□□□	1□□□□	1□4□□□	□□□5	□1□□4	□15□ [1]
T1□	□□□□□41 □ 5□51□4	□□ a□□ 5□□□51□ in □1□4 □□□□□□□1□4□1□4	1□□□□	□□□□	1□□□□	1□□□5□	1□1□	□1□41	□111 [1]
T1□	5□51□4 □ 4□41□□	□□ a□□ 55□44□1 in □1□□ □□□□□□□1□4□1□4	1□□□□	1□□1□	1□□□1	1□□□5□	1□4□	□1□41	□115 [1]
T14	4□41□□ □ □□□□1□5	□□ a□□ 5□□□1□□ in □14□ □□□□ 1□□□□ 1□□□1□4□1□4	□□□□1	1□□□□	11□□□	□□□5□□	11□□1	1□□□□□	□1□□ [1]
T15	□□□□1□5 □ □□□□□□□	□□ a□□ □1□4□□ in □1□□ □□□□ 1□□□□ 1□□□1□4□1□4	□1□□□	1□□□□	1□□□□	□□□5□□	11□□□	1□□□□□	□1□□ [1]
T1□	□□□□□□□□ □ 1□□1□41	□□ a□□ □□□□□□□ in □1□□ □□4 □4 □1□4 □1□4□	□□□□1	11□45	11□□□	□□□□5□	11□□4	1□□□□□	□□□□□ [1]
T1□	1□□1□41 □□	□□ a□□ □5□□□□ in □1□1 □□4 □4 □1□4 □1□4□ □□ a□□ □□□□□□5 in □1□□	□□51	11□□□	115□1	□□□□5□	11□□□	1□□□□□	□□□□4 [1]

[1] P_u □ ϕP_n contro□s

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T□	1□□□□4□ □ 1□□□□1□	□ □ □ □ □ □□1□	1□□□5	5□□□	□□□□□	□4□□□	□□□□	1□□□4	□□4□ [1]
T□	□4□□□14 □ □□4□□1	□ □ □ □ □ □□1□	1□□□4	□5□	□5□□□	□4□□□	□□41	1□□□4	□□□□□ [1]
T□	□□4□□1 □ □□□□□□□	□ □ □ □ □ □□1□	14□□4	□□□□	□□□□□	□4□□□	□□4□	1□□□4	□□□□□ [1]
T11	□□□□□□□5 □ □□□□□41	□□ 1□□□□□ 1□□□□□1□	1□□1□	□□□□	□4□□□	□5□1□	□□□□	□4□□4	□□□□5 [1]
T1□	□□□□□41 □ 5□51□4	□□□□□□1□4	1□□□□	□□□□	□1□□1	□□□□□□	□□□□	41□□□	□□□1□ [1]
T1□	5□51□4 □ 4□41□□	□□□□□1□4	1□□□4	□□□□	□□□□5	□□□□□□	□5□	41□□□	□□□1□ [1]
T15	□□□□1□5 □ □□□□□□□	□ □ □ □ □ □□1□	□□□□□	□□□□	□5□□□	□□□11□	1□□□	□□□□□	□□□□□ [1]
T1□	□□□□□□□□ □ 1□□1□41	□□□□□□□1□	□1□□□	1□□□□	□□□□□	□□□1□□	□□□□	□□□□□	□□□□□ [1]
T1□	1□□1□41 □□	□ □5 □ □□5 □ 1□4	□□□□□	1□□□□	□□□□□	1□1□□□	1□1□	4□□□□	□□□□□ [1]

[1] P_u □ ϕP_n contro□s

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	151□□□□ □ 14□□□□□	□□ 1□□□□□ 1□□□□□1□	□5□	□□11	1□□□4	□5□□□□	□□1□	□5□□□	□□□□4 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T□	141□1 □□ □ 1□1 □□4□	□□ 1 □□□□ 1 □□□□□1□	□5□	□□1□	1□□5	□5□□□	□□□□	□5□□□	□□□□□ [1]

[1] P_u □ ϕP_n contro□s

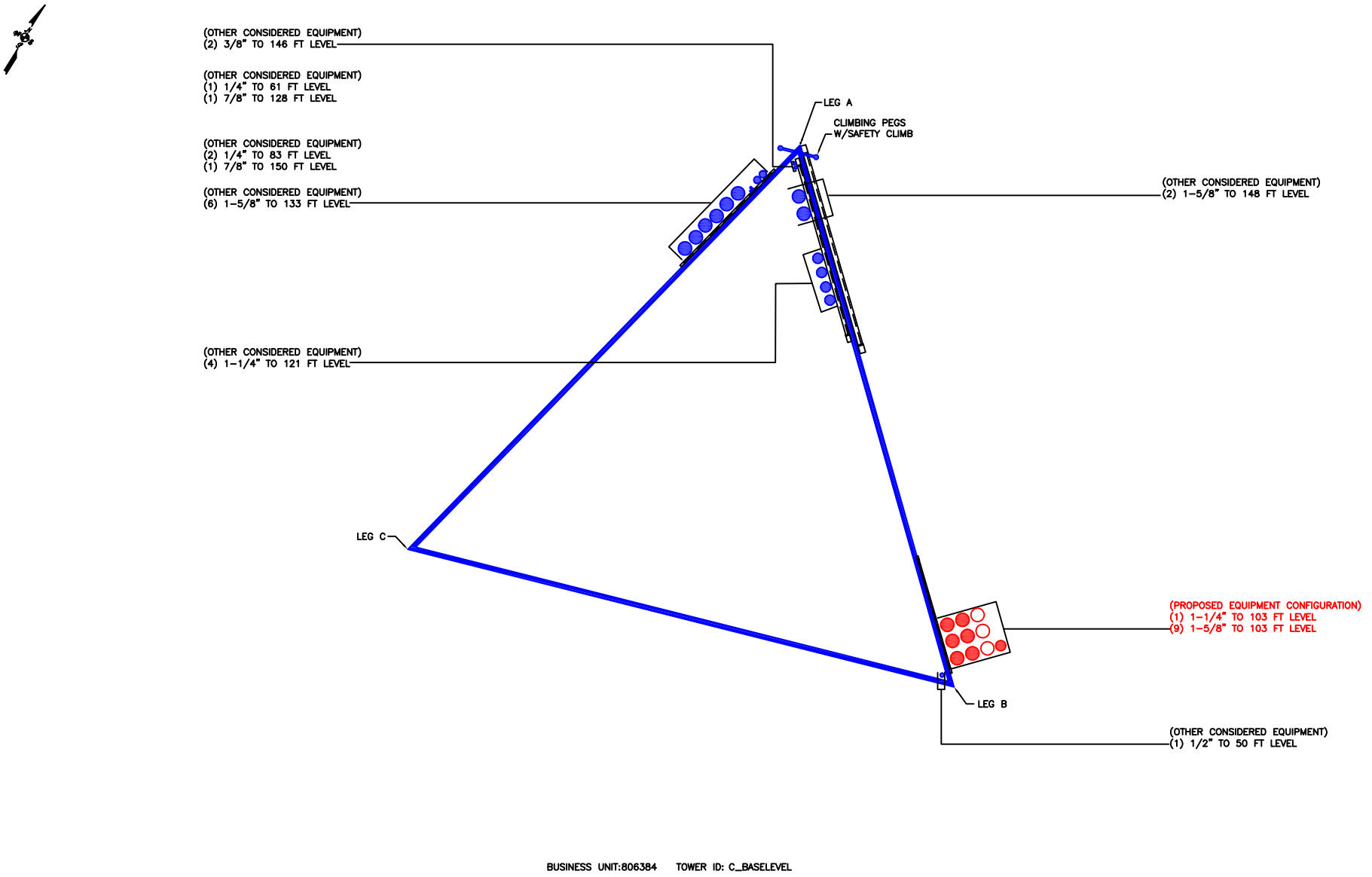
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	151□□□□ □ 14□□□□□	□e□	ROH□ □□5 STD	□	□5□□□	□□□51	1□□□	Pass
T□	14□□□□□ □ 141□1 □□	□e□	ROH□ □□5 STD	15	□□□□□	□□□51	1□□□	Pass
T□	141□1 □□ □ 1□1 □□4□	□e□	ROH□ □□5 □H	□4	□□□□□□	□1□44	4□□1	Pass
T4	1□1 □□4□ □ 114□□1□	□e□	ROH□ □□5 □H □□R□	4□	□□□□□□	□□□□□	5□□□	Pass
T5	114□□1 □ □ 1□□□□4□	□e□	ROH□ □□5 □H □□R□	5□	□5□□□□	□□□□□	□4□5	Pass
T□	1□□□□4□ □ 1□□□□1□	□e□	ROH□ □□5 □H □□R□	□□	□□□□□□	1□5□□□	5□□□	Pass
T□	1□□□□1□ □ □4□□□14	□e□	ROH□ □ □H □□R□	□□	□□□□□□	11□□□□	□□□□	Pass
T□	□4□□□14 □ □□□4□□□1	□e□	ROH□ □ □H □□R□	□□	□□4□15	15□□4□	55□□	Pass
T□	□□□4□□□1 □ □□□□□□□□	□e□	ROH□ □ □H □□R□	□□	□□□□□□	15□□□1	□□□□	Pass
T1□	□□□□□□□ □ □□□□□□5	□e□	ROH□ 4 □H □□R□	111	□111□□1	14□□□□	□4□□	Pass
T11	□□□□□□5 □ □□□□□41	□e□	ROH□ 4 □H □□R□	1□□	□1□□□5□	□□□□□4	5□□□ □1□□ □□□	Pass
T1□	□□□□□41 □ 5□□51□4	□e□	ROH□ 4 □H □□R□	1□□	□14□□□□	□□□□□5	□□□□	Pass
T1□	5□□51□4 □ 4□□41□□	□e□	ROH□ 4 □H □□R□	144	□1□□5□	□□□□□□	□4□4	Pass
T14	4□□41□□ □ □□□□1□5	□e□	ROH□ 5 □H □□R□	15□	□1□5□□1	□5□□□□	□1□□	Pass
T15	□□□□1□5 □ □□□□□□□□	□e□	ROH□ 5 □H □□R□	1□5	□□□□□1□	□□□□□□	□□□4 □□□□ □□□	Pass
T1□	□□□□□□□ □ 1□□1□41	□e□	ROH□ 5 □H □□R□	1□□	□□□□□5□	□□□□□□	□□□1	Pass
T1□	1□□1□41 □□	□e□	ROH□ 5 □H □□R□	1□□	□□□□□□□	□□□□□□	□1□□	Pass
T1	151□□□□ □ 14□□□□□	Dia□ona□	□1□5 □1□5 □ □□1□	□	□1□□4	4□□4	□□□5	Pass
T□	14□□□□□ □ 141□1 □□	Dia□ona□	□ □ □ □ □ □1□	1□	□□□□□□	11□4□	□□□□ 4□□4 □□□□	Pass
T□	141□1 □□ □ 1□1 □□4□	Dia□ona□	□□ 1 □□□□ 1 □□□□□1□	□□	□4□4□	1□□41	□□□4 □□□5 □□□□	Pass
T4	1□1 □□4□ □ 114□□1□	Dia□ona□	□□ 1 □□□□ 1 □□□□□1□	51	□5□□1	1□□□1	4□□□	Pass
T5	114□□1 □ □ 1□□□□4□	Dia□ona□	□□ 1 □□□□ 1 □□□□□1□	□□	□5□□□	1□□□□	4□□□	Pass
T□	1□□□□4□ □ 1□□□□1□	Dia□ona□	□□ □5 □ □5 □ □□1□ □□□1□□	□□	□□□1□	41□4□	1□□1 5□□□ □□□	Pass
T□	1□□□□1□ □ □4□□□14	Dia□ona□	□□□□□□□1□	□1	□□□5□	1□□□□	41□□ 51□□ □□□	Pass
T□	□4□□□14 □ □□□4□□□1	Dia□ona□	□□□□□□□1□	□□	□□□□1	1□□□□	4□□□ 5□□□ □□□	Pass
T□	□□□4□□□1 □ □□□□□□□□	Dia□ona□	□□ □ □ □ □□1□ □1□4□	1□□	□□□5□	5□□□5	1□□□ □□□□ □□□	Pass
T1□	□□□□□□□ □ □□□□□□5	Dia□ona□	□□□□□□□□1□□1□4	114	□□□5□	4□□44	□□□□ □□□□ □□□	Pass
T11	□□□□□□5 □ □□□□□41	Dia□ona□	□□□□□□□□1□□1□4	1□□	□1□□□□	□□□□□	□□□1 □□□4 □□□	Pass
T1□	□□□□□41 □	Dia□ona□	□□□□□□1□4□1□4	1□5	□1□□□□	4□55	□1□4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	øP$_{allow}$ K	% Capacity	Pass Fail
T1	5 51 4 5 51 4 4 41	Diagonal	1 4 1 4	14	11 15	45 4	4 4	Pass
T14	4 41 1 5	Diagonal	1 1 4 1 4	15	11 15	1 5	45	Pass
T15	1 5	Diagonal	1 1 4 1 4	1	1 55		4 1	Pass
T1	1 1 41	Diagonal	4 4 1 4 1 4	1	1 1	1	14 4	Pass
T1	1 1 41	Diagonal	4 4 1 4 1 4	1	1	5 4	1 4	Pass
T	1 4 1 1	Secondary Horizontal	1	4			1 1	Pass
T	4 14 4 1	Secondary Horizontal	1	5	5	5		Pass
T	4 1	Secondary Horizontal	1	1		4	5	Pass
T11	5 41	Secondary Horizontal	1 1 1	1	5	1	4	Pass
T1	41 5 51 4	Secondary Horizontal	1 4	141		15 41	4 4	Pass
T1	5 51 4 4 41	Secondary Horizontal	1 4	15	45	1 5	5	Pass
T15	1 5	Secondary Horizontal	1	1		4	1 4	Pass
T1	1 1 41	Secondary Horizontal	1	1	5	4	1 5	Pass
T1	1 1 41	Secondary Horizontal	5 5 1 4	1		14	1 1	Pass
T1	151 14	Top irt	1 1 1	5	1	1	5	Pass
T	141 1 1 4	Top irt	1 1 1				1 14	Pass
						e T1	4	Pass
						Diagonal T1	5	Pass
						Secondary Horizontal T	1 1	Pass
						Top irt T	14	Pass
						oint Checks	5	Pass
						RATING =	**74.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT:806384 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

ANCHOR BOLT REINFORCEMENT CHECK

Base Reactions:	0	ft

	Comp	Uplift
Axial (kips)	248	200
Shear (kips)	31	26

Existing Bolts		
Quantity	4	
Diameter	1	in
Material	A193 Gr B7	
Fy	105	ksi
Fu	125	ksi
Bolt Group Area	3.14	in^4

Reactions Taken by Bolt Group

Axial (kips)	165.33	133.33
Shear (kips)	20.67	17.33

New Bolts		
Quantity	2	
Diameter	1	in
Material	A193 Gr B7	
Fy	105	ksi
Fu	125	ksi
Bolt Group Area	1.57	in^4

Reactions Taken by Bolt Group

Axial (kips)	82.67	66.67
Shear (kips)	10.33	8.67

CCIplate

Project Information

BU #	80638 4
Site ame	NLN 1369 43455
Order #	479797 Re 1

Tower Information

Tower T pe	Se Support
TI -222 Re	H

☑ Apply TIA-222-H Section 15.5

Applied Loads

	Comp.	pli t
Ax al (k)	165.33	133.33
Shear (k)	20.67	17.33

Anchor Rod Data

Quantit	4
Diameter in)	1
Material Grade:	A193 r. B7 Fy= 1 5 si u=1 5 si
rout Considered	es
l_{ar} in)	2
ta actor, η:	55
Thread T pe	Inc uded
Con i uration	S mmetrica

Anchor Rod Results

Ax al, Pu_c (ips	41.33
Shear, Vu (ips	5. 7
Moment, Mu (ip in	-
Axial Cap., φPn_c (kips)	63.63
Shear Cap., ϕVn (ips	19 9
Moment Cap ϕMn (ip in	-
Stress Ratin	68 %

Pass

CCIplate

Project Information

BU #	80638 4
Site Name	NLN 136 9 43455
Order #	479797 Rev 1

Tower Information

Tower Type	Self Support
TIA-222 Rev	H

☑ Apply TIA-222-H Section 15.5

Applied Loads

	Comp.	Uplift
Axial (k)	82.67	66.67
Shear (k)	10.33	8.67

Anchor Rod Data

Quantity:	2	
Diameter (in):	1	
Material Grade:	A193 Gr. B7	Fy= 1□5 ksi Fu=1□5 ksi
Grout Considered:	No	Not Considered, lar <= 1□d)
l_{ar} (in):	1	
Eta Factor, η:	□5	
Thread Type:	□□Included	
Configuration:	Symmetrical	

Anchor Rod Results

Axial, Pu_c (kips):	41.34	
Shear, Vu (kips):	5. 7	
Moment, Mu (kip-in):	-	
Axial Cap., φPn_c (kips)	63.63	
Shear Cap., ϕVn (kips):	19□□9	
Moment Cap., ϕMn (kip-in):	-	
Stress Rating:	68 □□%	**Pass**

Analysis Date: 6/17/2019

Pier and Pad Foundation

BU # :	80638 4
Site Name:	NLN 1369 43455
App. Number:	479797 Re 1

TI -222 Re ision	H
Tower T pe	Se Support

Top ot. Pad Rein. Di erent	☐
oc oundation	☐

Superstructure Analysis Reactions

Compression, P_{comp}	4	ips
Compression Shear Vu_ comp	1	ips
p it, P_{uplift}		ips
p it Shear, V_{u_uplift}		ips
Tower Hei ht, H	151	t
ase ace Width, BW	1	t
P Dist. o e dn bp_{dist}		in

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Uplift (kips)	5 09		**81.0%**	**Pass**
Lateral (Sliding) (kips)	22		**26.9%**	**Pass**
Bearing Pressure (ksf)	00	5 54	**58.7%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	5 26	5 5	**36.5%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	5 5 18		**49.5%**	**Pass**
Pier Compression (kip)	1 . 9	1	**14.6%**	**Pass**
*Pad Flexure (kip*ft)*	4 81	1 4	**21.5%**	**Pass**
Pad Shear - 1-way (kips)	1 13		**17.8%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	1 64	5	**32.7%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	5 63	1 5	**20.1%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	1 64		**43.9%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	5 63	1	**16.9%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soi Ratin *	**81.0%**
Structura Ratin *	**49.5%**

Pier Properties

Pier Shape	Circu ar	
Pier Diameter dpier		t
t. o e rade E	5	t
Pier Re ar Si e Sc		
Pier Re ar Quantit , mc	1	
Pier Tie Spira Si e St	4	
Pier Tie Spira Quantit , mt	14	
Pier Rein orcement T pe	Tie	
Pier C ear Co er cc_{pier}		in

Pad Properties

Depth, D	1	t
Pad Width W	5	t
Pad Thic ness T		t
Pad Re ar Si e ottom Sp		
Pad Re ar Quantit ottom mp		
Pad C ear Co er cc_{pad}		in

Material Properties

Re ar rade, Fy		si
Concrete Compressi e Stren th, F'c		si
Dr Concrete Densit , δc	15	pc

Soil Properties

Tota Soi nit Wei ht γ	1 5	pc
timate ross earin Qu t	1	s
Cohesion, Cu		s
riction n e, φ	1	de rees
SPT ow Count, N_{blows}		
ase riction μ		
e ected Depth, N		t
oundation earin on Roc ?	o	
roundwater Depth gw		t

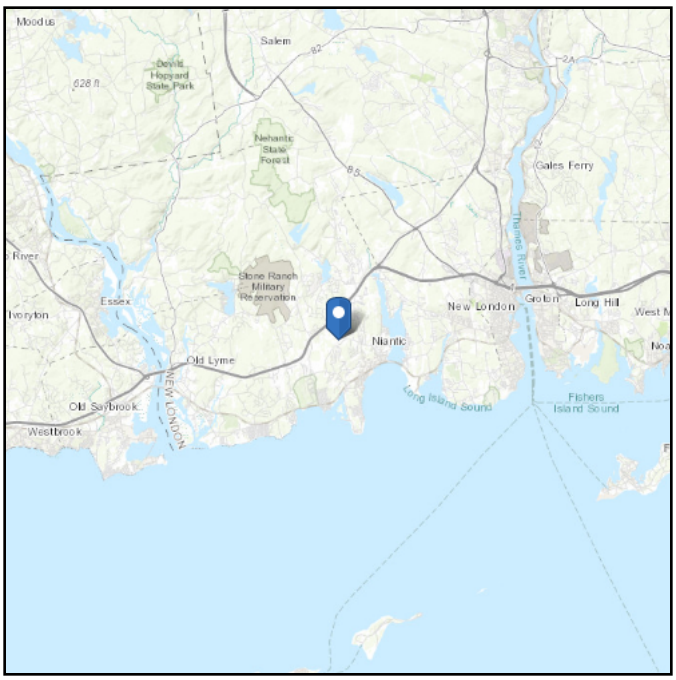
- o e etween ross and et

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: III
Soil Class: D - Stiff Soil

Elevation: 0 ft (NAVD 88)
Latitude: 41.335653
Longitude: -72.221744



Wind

Results:

Wind Speed:	144 Vmph
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	98 Vmph
100-year MRI	108 Vmph

145 Vmph as per Jurisdictions Requirment

Data Source: ASCE/SEI 7-10, Fig. 26.5-1B and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Jun 11 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings in health-care facilities shall be protected against wind-borne debris as specified in Section 26.10.3.

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

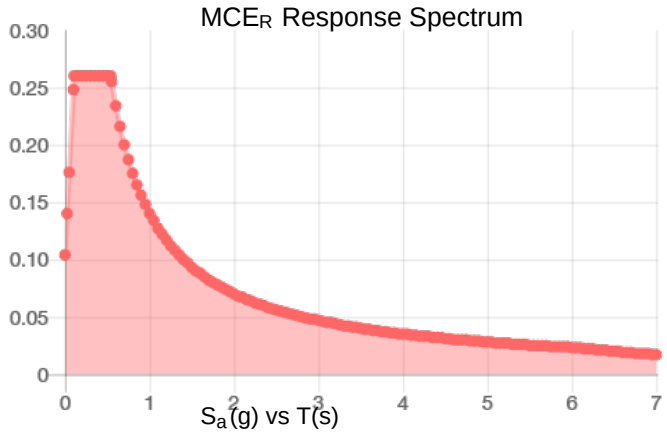
Seismic

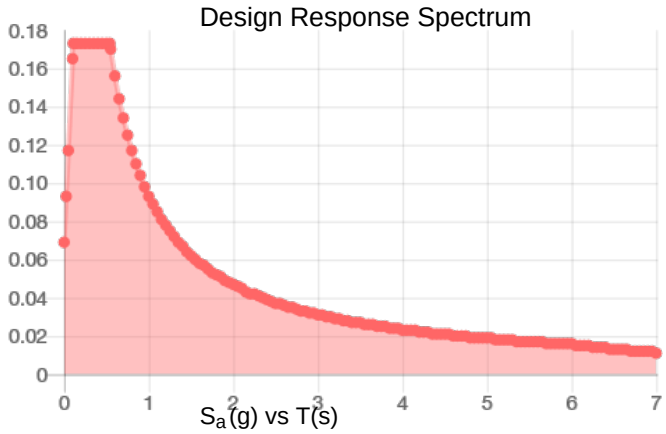
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.162	S_{DS} :	0.173
S_1 :	0.058	S_{D1} :	0.093
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.081
S_{MS} :	0.26	PGA_M :	0.13
S_{M1} :	0.14	F_{PGA} :	1.6
		I_e :	1.25

Seismic Design Category B





Data Accessed: Tue Jun 11 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Jun 11 2019

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Exhibit E

Mount Analysis

PAUL J. FORD & COMPANY

Date: June 7, 2019

Kevin Morrow
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679

Subject:	**Mount Analysis Report**	
Carrier Designation:	***T-Mobile* Equipment Change-out**	
	Carrier Site Number:	CT11037B
	Carrier Site Name:	Niantic/ I-95/ Rt 156_1
Crown Castle Designation:	**Crown Castle BU Number:**	806384
	Crown Castle Site Name:	NLN 136 943455
	Crown Castle JDE Job Number:	559178
	Crown Castle Purchase Order Number:	1370352
	Crown Castle Order Number:	479797 Rev. 1
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	A37519-1559.003.8190
Site Data:	**93 Roxbury Rd, East Lyme, New London County, CT** **Latitude 41.335653°, Longitude -72.221744°**	
Structure Information:	**Tower Height & Type:**	**151 Foot Self Support**
	Mount Elevation:	**103 Foot**
	Mount Type:	**(3) 10.5 Foot Sector Frames**

Dear Kevin Morrow,

Paul J Ford and Company is pleased to submit this "Mount Analysis Report" to determine the structural integrity of the T-Mobile antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point is not part of this document.

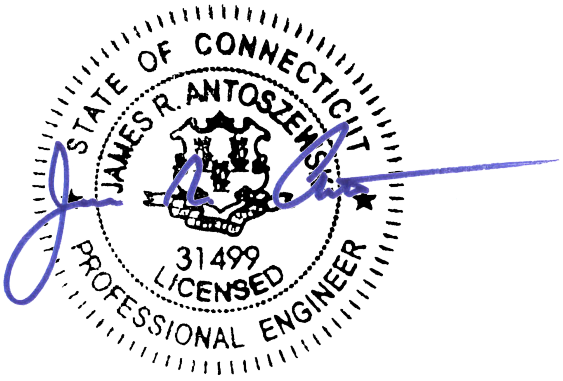
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

10.5' Sector Frame (typical) **SUFFICIENT***

***The mount has sufficient capacity once the conditions, as described in Section 4.1 Recommendations of this report, are completed.**

This analysis utilizes an ultimate 3-second gust wind speed of 145 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:



Brady Hildebrand, E.I.
Structural Designer
bhildebrand@pauljford.com

D.S.

06/07/2019

TABLE OF CONTENTS

1) INTRODUCTION

The existing mounts under consideration are (3) 10.5' Sector Frame mounts mapped by RKS on 04/09/2019.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	III
Ultimate Wind Speed:	145 mph
Exposure Category:	B
Topographic Factor at Base:	1.000
Topographic Factor at Mount:	1.000
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
103	103	3	Ericsson	Ericsson AIR 21 B2A B4P	(3) 10.5' Sector Frame
		3	Ericsson	Ericsson AIR 21 B4A B2P	
		3	RFS Celwave	APXVARR24_43-U-NA20	
		3	Ericsson	KRY 112 144/1	
		3	Ericsson	RADIO 4449 B12/B71	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Mount Mapping	File #: 806384 Dated: 04/10/2019	8352893	CCISites
Order	ID: 479797 Rev. 1 Dated: 04/16/2019	-	CCISites
Equipment/mount pipe relocation approval	Email correspondence with Charles, dated 6/6/19	-	Crown Castle

3.1) Analysis Method

RISA-3D (version 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C).

3.2) Assumptions

1) *The analysis of the existing tower or the effect of the mount attachment to the tower is not within the current scope of work.*
2) *The antenna mounting system was properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications and all bolts are tightened as specified by the manufacturer and AISC requirements.*
3) *The configuration of antennas, mounts, and other appurtenances are as specified in Table 1.*
4) *All member connections have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report. All U-Bolt connections have been properly tightened. This analysis will be required to be revised if the existing conditions in the field differ from those shown in the above referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.*
5) *Steel grades are as follows, unless noted otherwise:*
   - *a) Channel, Solid Round, Angle, Plate, Unistrut* — *ASTM A36 (GR 36)*
   - *b) Pipe* — *ASTM A53 (GR 35)*
   - *c) HSS (Rectangular)* — *ASTM 500 (GR B-46)*
   - *d) HSS (Round)* — *ASTM 500 (GR B-42)*
   - *e) Threaded Rods* — *ASTM F1554 (GR 36)*
   - *f) Connection Bolts* — *ASTM A325*
   - *g) U-Bolts* — *SAE J429 (GR 2)*
6) *Proposed equipment is to be installed in the locations specified in Appendix A. Any changes to the proposed equipment locations will render this report invalid.*
7) *Any pipe-to-pipe connections or non-carrier equipment on the mount are assumed to be removed prior to the installation of the proposed equipment.*

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the mount.

4) ANALYSIS RESULTS

Table 3 - Mount Component Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1, 2	Face Horizontals	103	95.1	Pass
1, 2	Standoff Members		68.8	Pass
1, 2	Tie Backs		14.4	Pass
1, 2	Mount Pipes		30.8	Pass
1, 2	Mount to Tower Connection		13.3	Pass
Mount Rating (max from all components) =				**95.1%**

Notes:
1) See additional documentation in "Appendix C – Software Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical.

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)[2]	Notes
N40A	Existing	1431	Leg	ROHN 2.5 EG (GR)	5035	1

Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

The mount will have sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, modification listed below must be completed.

- The proposed equipment must be installed in the positions indicated in Appendix A/D of this report for the results of this analysis to be valid.

No structural modifications are required at this time, provided that the above-listed changes are implemented.

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING MOUNTS BY PAUL J. FORD AND COMPANY

1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company is accurate and complete. Paul J. Ford and Company will rely on the accuracy and completeness of such information in performing or furnishing services under this project.

2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.

3) The mount has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.

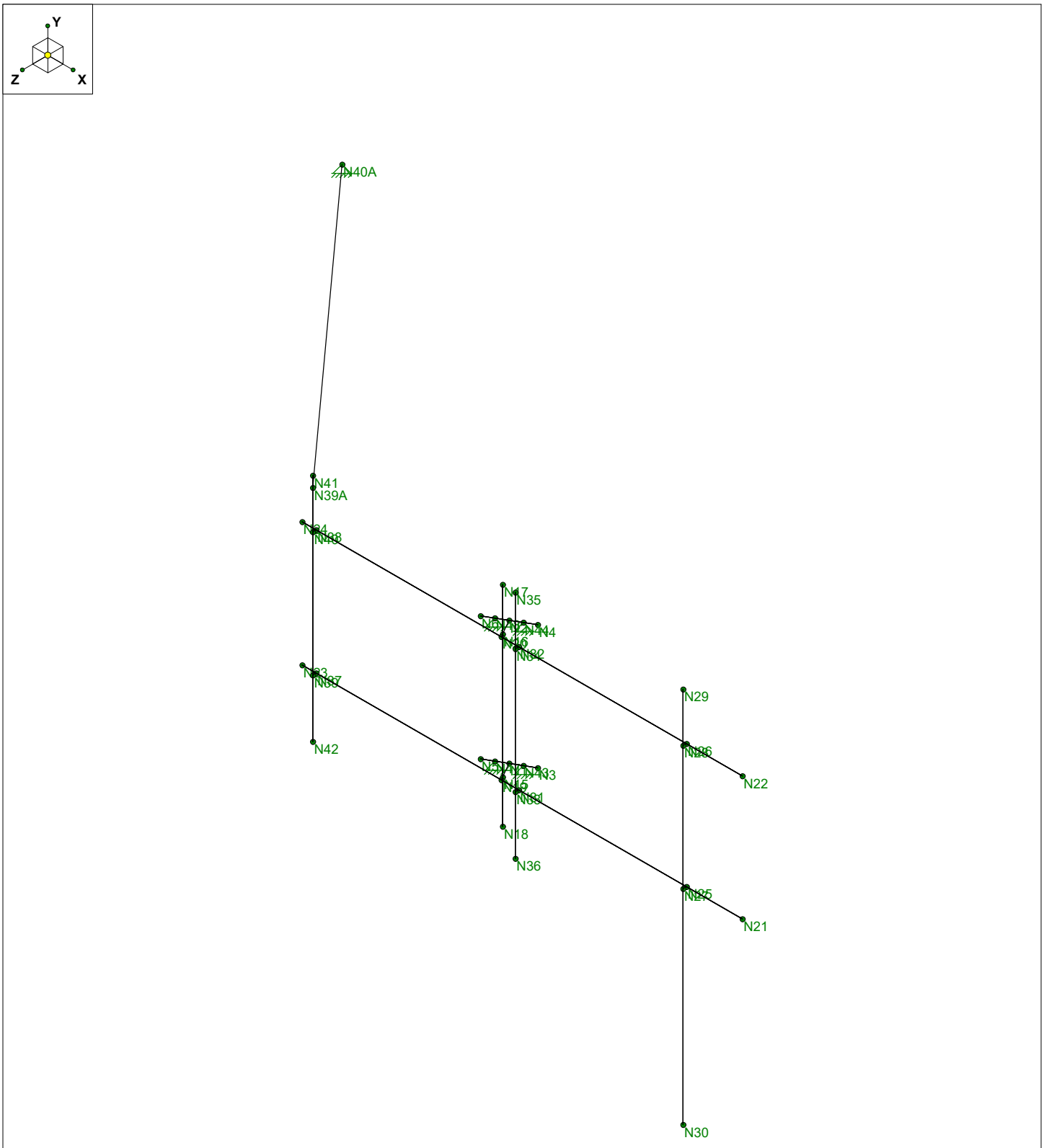
4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.

5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

****

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

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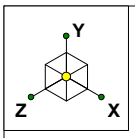
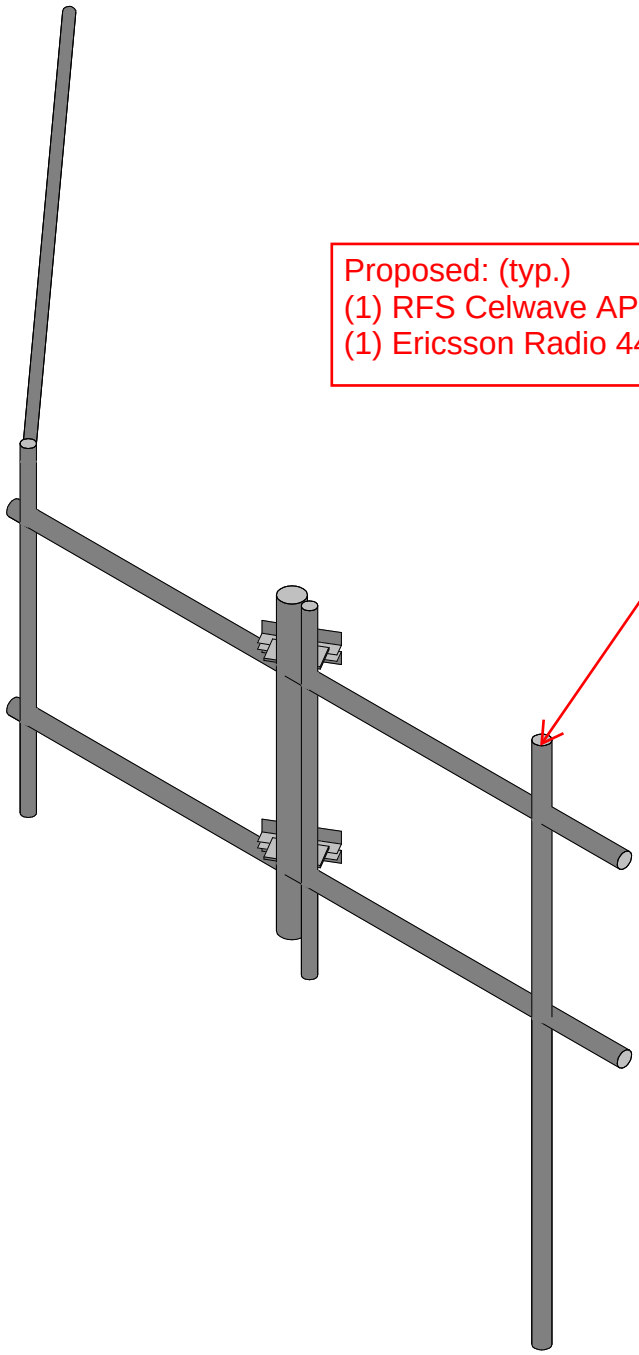




Proposed: (typ.)
(1) RFS Celwave APXVAARR24_43-U-NA20
(1) Ericsson Radio 4449 B12/B71

Envelope Only Solution

Paul J. Ford and Company	806384 - NLN 136 943455	SK - 2
BMH		June 5, 2019 at 1:27 PM
37519-1559.003.8191		37519-1559_Wind Load.r3d

APPENDIX B

SOFTWARE INPUT CALCULATION

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

Project # 37519-1559.003.8191
By BMH

Analysis 30 degrees

Date: 06/04/19

v1.2, Effective 4/18/19

Mount Loading per TIA-222-H

Structure Information

Mount Type =	1 Sector	
Mount Elev, z =	103	ft
Ground Elev, z_s =	173	ft
Wind Speed =	145	mph
Ice Wind Speed =	50	mph
Ice Thickness =	1.5	in
Exposure Cat =	B	
Structure Class =	III	
Topographic Cat =	1	
Crest Height =	0	ft

Velocity Pressure Coefficients

z_g =	1200	ft	
a =	7.00		
K_{zmin} =	0.70		
K_z =	1.00		Calculated Value
Ke =	0.99		Ground Elevation Factor
K_z =	1.00		Velocity Press Coef (Section 2.6.5.2)
K_{zt} =	1.00		Topographic Factor (Section 2.6.6.4)
Gh =	1.00		Gust Effect Factor (Section 2.6.7)
K_d =	0.95		Wind Dir Probability Factor (Table 2-2)
K_a =	0.90		Shielding factor (Section 16.6)
q_z=	45.58	psf	Velocity Pressure (Section 2.6.9.6)

Ice Loading

Ii =	1.25		Ice Importance Factor (Table 2-3)
Iwi =	1.00		Wind Ice Importance Factor (Table 2-3)
q_z=	6.06	psf	Ice Velocity Pressure (Section 2.6.9.6)
K_{iz} =	1.12		Ice Escalation Factor (Section 2.6.8)
T_{iz} =	2.10	in	Factored Ice Thickness (Section 2.6.8)
h =		in	Bar Grating Height
W_i =	9.80	psf	Grating Ice Weight

Wind Pressures

Pressure =	45.577	psf
Ice Pressure =	6.059	psf

Antenna Attachment Labels & Elevations (inches with Respect to Bottom of Member)

Face	Label	Top Elev (in)	Bot Elev (in)	Length, in	Face	Label	Top Elev (in)	Bot Elev (in)	Length, in	Face	Label	Top Elev (in)	Bot Elev (in)	Length, in	Face	Label	Top Elev (in)	Bot Elev (in)
A					B					C	C1	105.0	35	108.0	D			
A					B					C	C2	56.0	12	66.0	D			
A					B					C	C3	56.0	12	66.0	D			
A					B					C					D			
A					B					C (2)	C1	70	70	108.0	D			
A					B					C (2)	C2	34	34	66.0	D			
A					B					C					D			
A					B					C					D			
A					B					C					D			
A					B					C					D			

Antennas

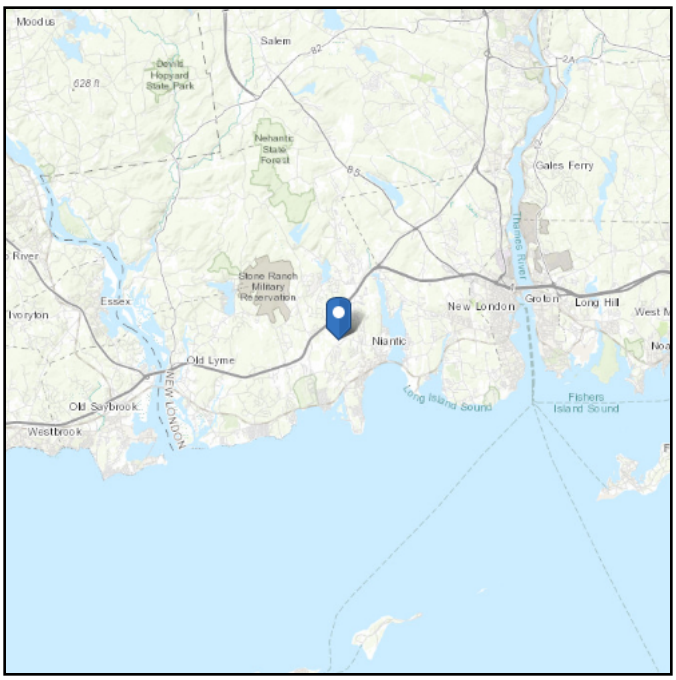
								Antenna Attachment Locations					
Item	Manufacturer	Antenna	Height (in)	Width (in)	Depth (in)	Flat or Round	Weight (lbs)	Label	Label	Label	Label	Label	Label
1	ERICSSON	ERICSSON AIR 21 B2A B4P	56	12.1	7.87	Flat	91.5	C2					
2	ERICSSON	ERICSSON AIR 21 B4A B2P	56	12.1	7.87	Flat	91.5	C3					
3	RFS CELWAVE	APXVAARR24_43-U-NA20	95.9	24	8.7	Flat	128	C1					
4	ERICSSON	KRY 112 144/1	7	6	3	Flat	11	C2(2)					
5	ERICSSON	RADIO 4449 B12/B71	15	13.2	9.3	Flat	74	C1(2)					
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: III
Soil Class: D - Stiff Soil

Elevation: 173.19 ft (NAVD 88)
Latitude: 41.335653
Longitude: -72.221744



Wind

Results:

Wind Speed:	~~144 Vmph~~ 145mph per jurisdiction
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	98 Vmph
100-year MRI	108 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1B and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Mon Apr 29 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings in health-care facilities shall be protected against wind-borne debris as specified in Section 26.10.3.

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

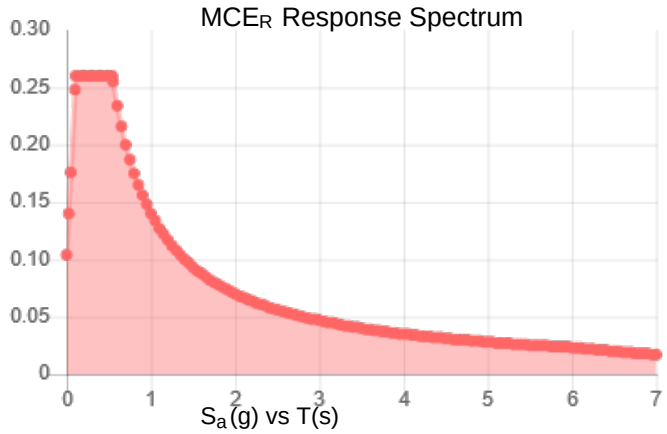
Seismic

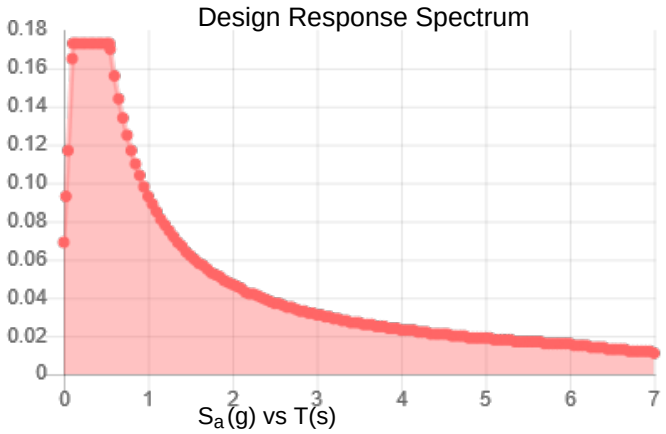
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.162	S_{DS} :	0.173
S_1 :	0.058	S_{D1} :	0.093
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.081
S_{MS} :	0.26	PGA_M :	0.13
S_{M1} :	0.14	F_{PGA} :	1.6
		I_e :	1.25

Seismic Design Category B





Data Accessed: Mon Apr 29 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

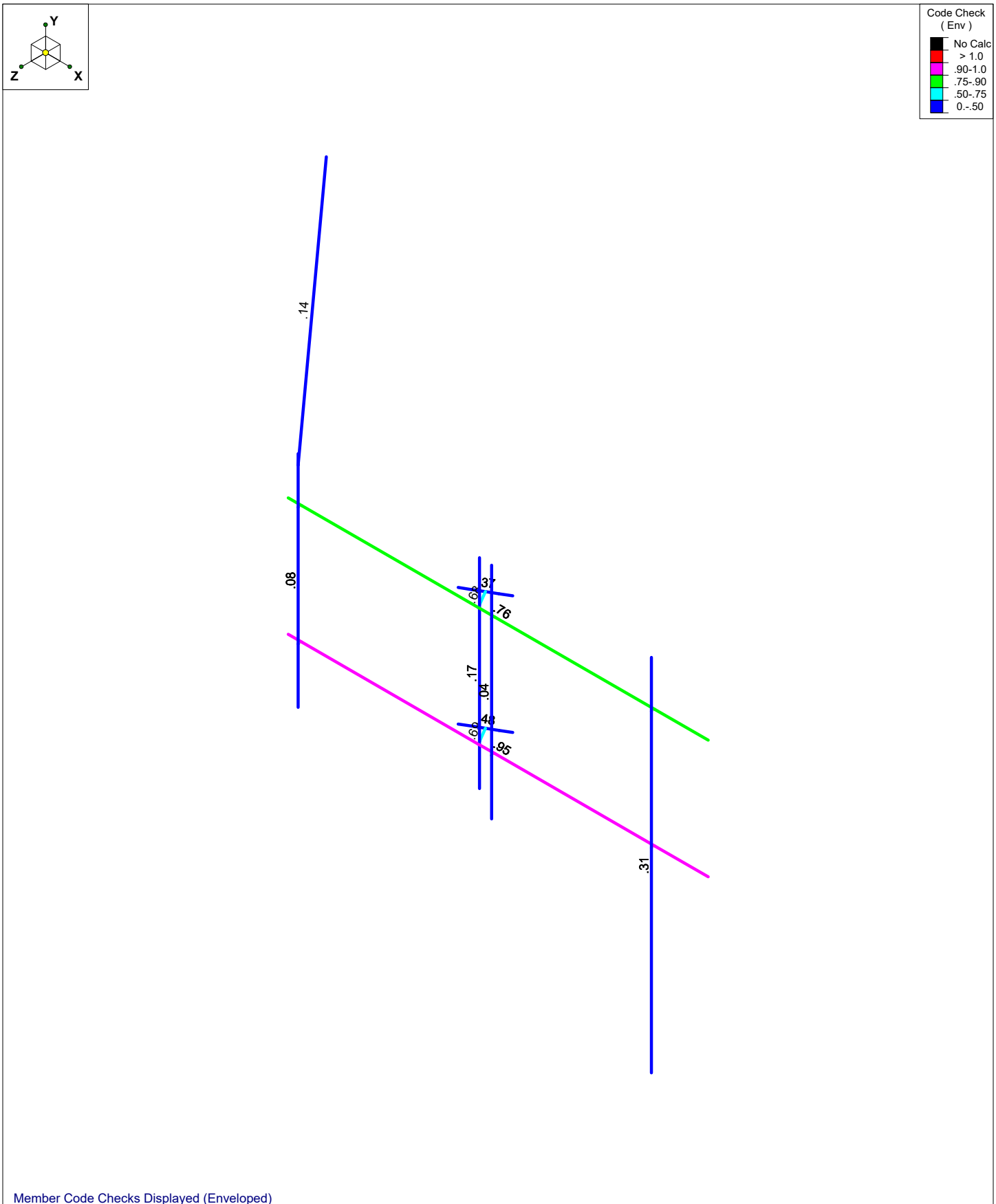
Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Apr 29 2019

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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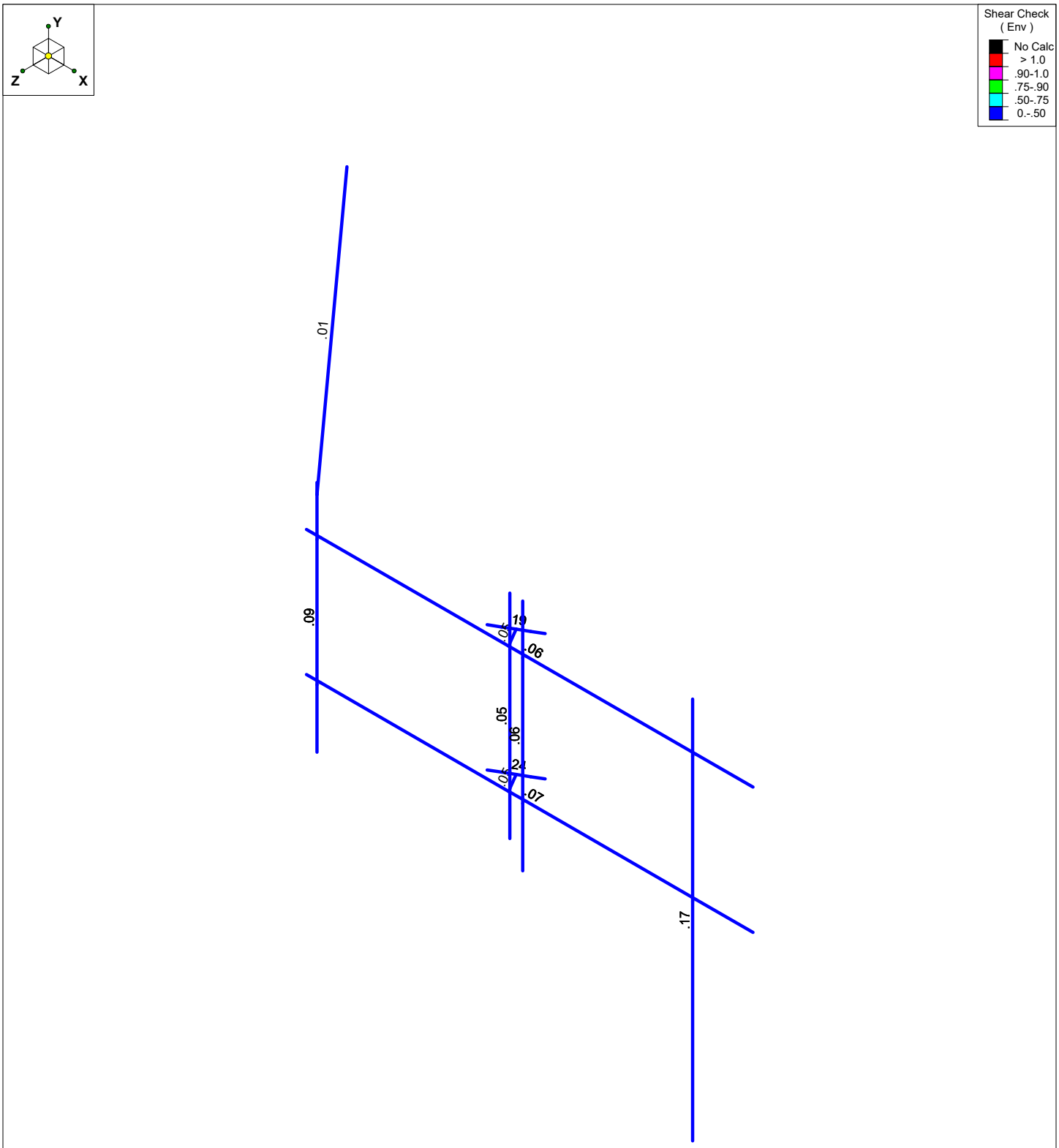

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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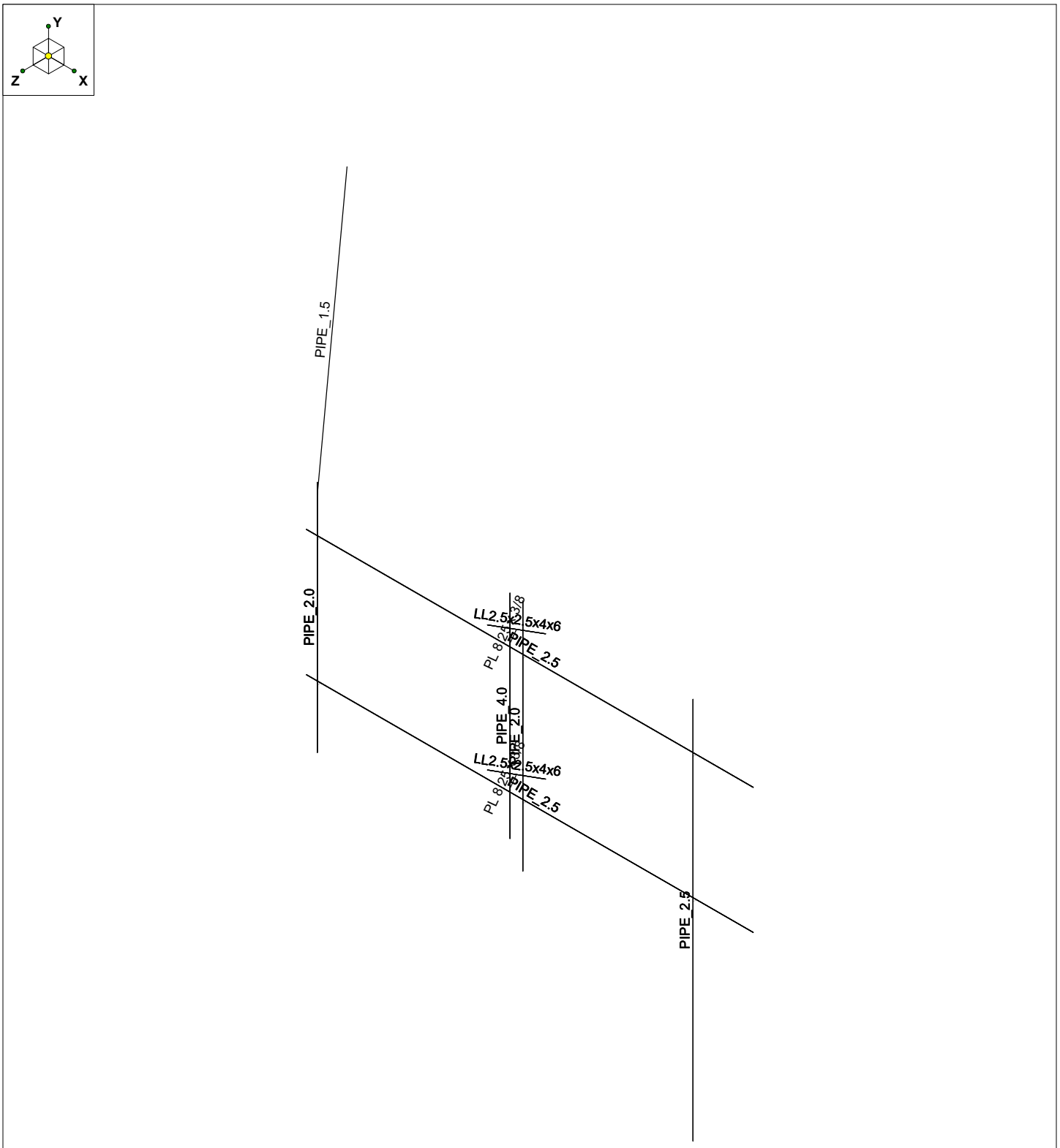

Envelope Only Solution

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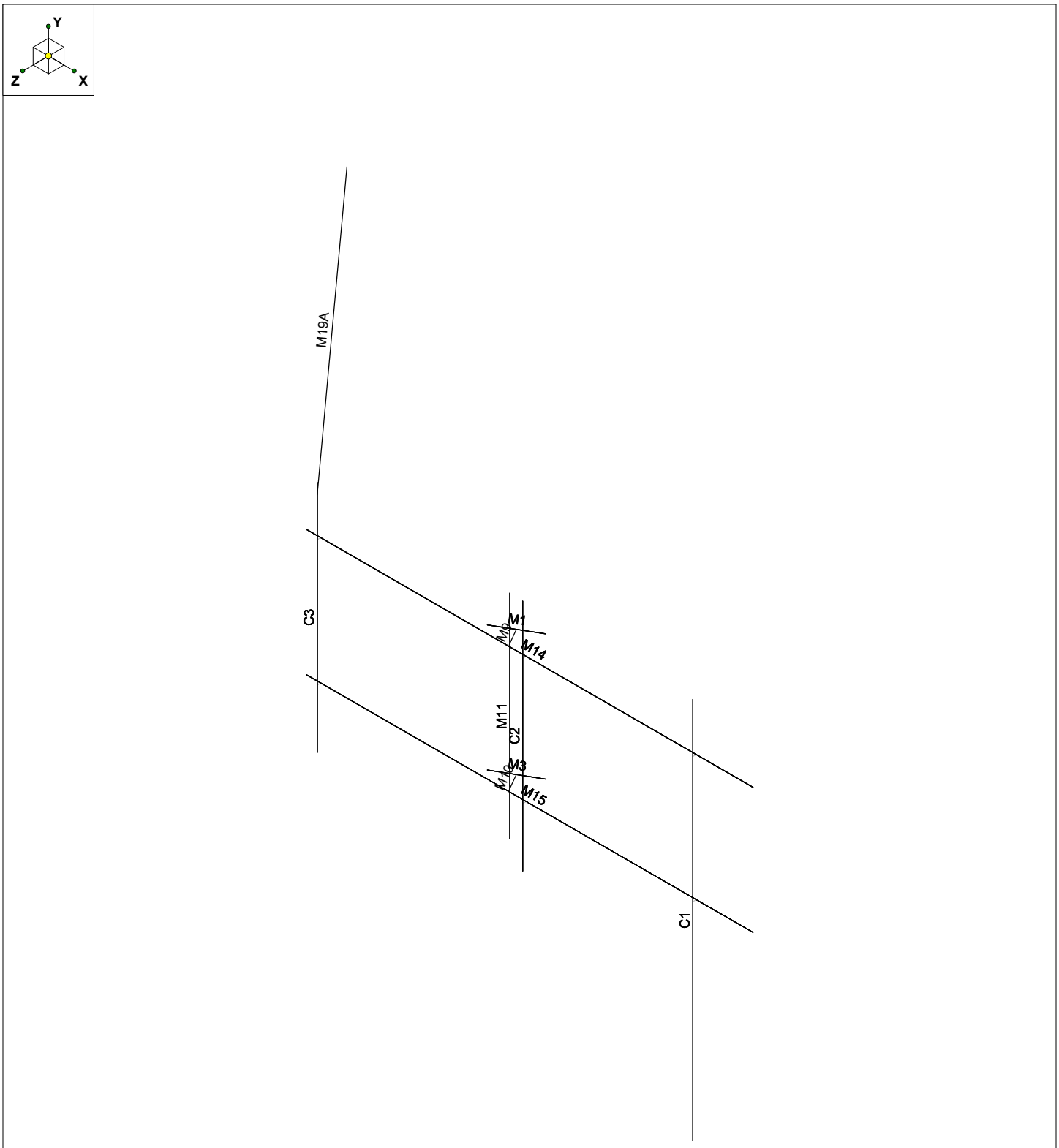

Envelope Only Solution

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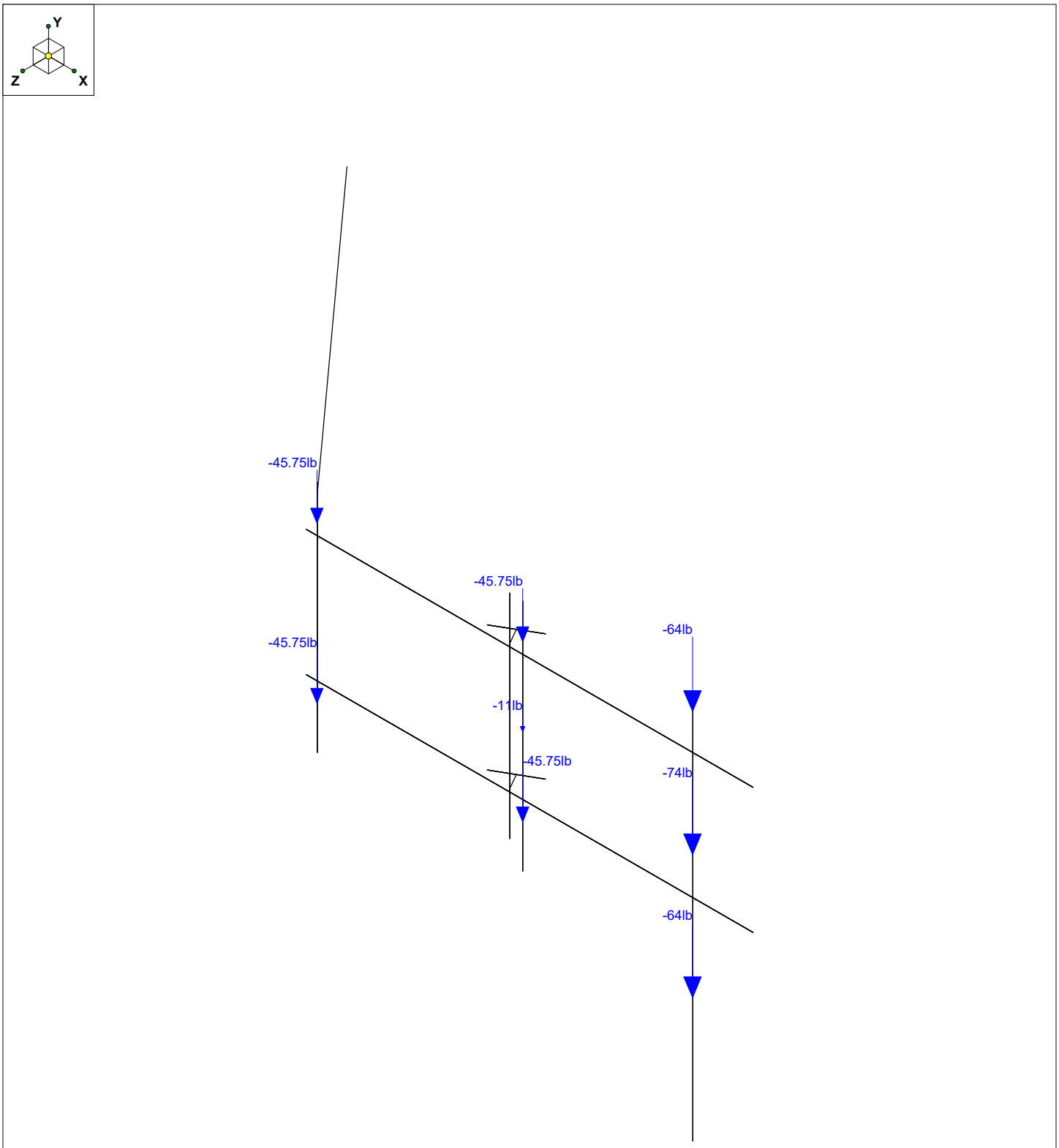

Loads: BLC 1, Dead
Envelope Only Solution

Paul J. Ford and Company	806384 - NLN 136 943455	SK - 7
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37519-1559.003.8191		37519-1559_Wind Load.r3d

(Global) Model Settings

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

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Ru...
1	M1	N6	N4		270	LL2.5x2.5x4x6	None	None	A36 Gr.36	Typical
2	M3	N5	N3		270	LL2.5x2.5x4x6	None	None	A36 Gr.36	Typical
3	M9	N2	N16		90	PL 8.25 x 3/8	None	None	A36 Gr.36	Typical
4	M10	N1	N15		90	PL 8.25 x 3/8	None	None	A36 Gr.36	Typical
5	M11	N18	N17			PIPE_4.0	None	None	A53 Gr.B	Typical
6	M12	N20	N16			RIGID	None	None	RIGID	Typical
7	M13	N19	N15			RIGID	None	None	RIGID	Typical
8	M14	N24	N22			PIPE_2.5	None	None	A53 Gr.B	Typical
9	M15	N23	N21			PIPE_2.5	None	None	A53 Gr.B	Typical
10	M16	N28	N26			RIGID	None	None	RIGID	Typical
11	M17	N27	N25			RIGID	None	None	RIGID	Typical
12	C1	N30	N29			PIPE_2.5	None	None	A53 Gr.B	Typical
13	M19	N34	N32			RIGID	None	None	RIGID	Typical
14	M20	N33	N31			RIGID	None	None	RIGID	Typical
15	C2	N36	N35			PIPE_2.0	None	None	A53 Gr.B	Typical
16	M22	N40	N38			RIGID	None	None	RIGID	Typical
17	M23	N39	N37			RIGID	None	None	RIGID	Typical
18	C3	N42	N41			PIPE_2.0	None	None	A53 Gr.B	Typical
19	M19A	N39A	N40A			PIPE_1.5	None	None	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M3						Yes	** NA **			None
3	M9						Yes	** NA **			None
4	M10						Yes	** NA **			None
5	M11						Yes	** NA **			None
6	M12						Yes	** NA **			None
7	M13						Yes	** NA **			None
8	M14						Yes	** NA **			None
9	M15						Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
10	M16		OOOXOO				Yes	** NA **			None
11	M17		OOOXOO				Yes	** NA **			None
12	C1						Yes	** NA **			None
13	M19		OOOXOO				Yes	** NA **			None
14	M20		OOOXOO				Yes	** NA **			None
15	C2						Yes	** NA **			None
16	M22		OOOXOO				Yes	** NA **			None
17	M23		OOOXOO				Yes	** NA **			None
18	C3						Yes	** NA **			None
19	M19A	BenPIN					Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	LL2.5x2.5x4...	12									Lateral
2	M3	LL2.5x2.5x4...	12									Lateral
3	M9	PL 8.25 x 3/8	5									Lateral
4	M10	PL 8.25 x 3/8	5									Lateral
5	M11	PIPE_4.0	60									Lateral
6	M14	PIPE_2.5	126									Lateral
7	M15	PIPE_2.5	126									Lateral
8	C1	PIPE_2.5	108									Lateral
9	C2	PIPE_2.0	66									Lateral
10	C3	PIPE_2.0	66									Lateral
11	M19A	PIPE_1.5	113.5									Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	None		-1.1			10			
2	Live	None								
3	Wind 0	None					20	22		
4	Wind 30	None					20	22		
5	Wind 60	None					20	22		
6	Wind 90	None					20	22		
7	Wind 120	None					20	22		
8	Wind 150	None					20	22		
9	Ice Load	None					10	11		
10	Ice 0	None					20	22		
11	Ice 30	None					20	22		
12	Ice 60	None					20	22		
13	Ice 90	None					20	22		
14	Ice 120	None					20	22		
15	Ice 150	None					20	22		
16	Lm	None					1			
17	Lv	None				1				

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 D	Yes	Y		1	1.4																		
2	1.2 D + 1.6 L	Yes	Y		1	1.2	2	1.6																
3	1.2 D + 1.0 Wo @ 0	Yes	Y		1	1.2	3	1																
4	1.2 D + 1.0 Wo @ 30	Yes	Y		1	1.2	4	1																
5	1.2 D + 1.0 Wo @ 60	Yes	Y		1	1.2	5	1																

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
6	1.2 D + 1.0 Wo @ 90	Yes	Y		1	1.2	6	1																		
7	1.2 D + 1.0 Wo @ 120	Yes	Y		1	1.2	7	1																		
8	1.2 D + 1.0 Wo @ 150	Yes	Y		1	1.2	8	1																		
9	1.2 D + 1.0 Wo @ 180	Yes	Y		1	1.2	3	-1																		
10	1.2 D + 1.0 Wo @ 210	Yes	Y		1	1.2	4	-1																		
11	1.2 D + 1.0 Wo @ 240	Yes	Y		1	1.2	5	-1																		
12	1.2 D + 1.0 Wo @ 270	Yes	Y		1	1.2	6	-1																		
13	1.2 D + 1.0 Wo @ 300	Yes	Y		1	1.2	7	-1																		
14	1.2 D + 1.0 Wo @ 330	Yes	Y		1	1.2	8	-1																		
15	1.2 D + 1.0 Di + 1.0 Wi @ 0	Yes	Y		1	1.2	9	1	10	1																
16	1.2 D + 1.0 Di + 1.0 Wi @ 30	Yes	Y		1	1.2	9	1	11	1																
17	1.2 D + 1.0 Di + 1.0 Wi @ 60	Yes	Y		1	1.2	9	1	12	1																
18	1.2 D + 1.0 Di + 1.0 Wi @ 90	Yes	Y		1	1.2	9	1	13	1																
19	1.2 D + 1.0 Di + 1.0 Wi @ 120	Yes	Y		1	1.2	9	1	14	1																
20	1.2 D + 1.0 Di + 1.0 Wi @ 150	Yes	Y		1	1.2	9	1	15	1																
21	1.2 D + 1.0 Di + 1.0 Wi @ 180	Yes	Y		1	1.2	9	1	10	-1																
22	1.2 D + 1.0 Di + 1.0 Wi @ 210	Yes	Y		1	1.2	9	1	11	-1																
23	1.2 D + 1.0 Di + 1.0 Wi @ 240	Yes	Y		1	1.2	9	1	12	-1																
24	1.2 D + 1.0 Di + 1.0 Wi @ 270	Yes	Y		1	1.2	9	1	13	-1																
25	1.2 D + 1.0 Di + 1.0 Wi @ 300	Yes	Y		1	1.2	9	1	14	-1																
26	1.2 D + 1.0 Di + 1.0 Wi @ 330	Yes	Y		1	1.2	9	1	15	-1																
27	1.2 D + 1.5 Lm + 1.0 Wm @ 0	Yes	Y		1	1.2	3	.043	16	1.5																
28	1.2 D + 1.5 Lm + 1.0 Wm @ 30	Yes	Y		1	1.2	4	.043	16	1.5																
29	1.2 D + 1.5 Lm + 1.0 Wm @ 60	Yes	Y		1	1.2	5	.043	16	1.5																
30	1.2 D + 1.5 Lm + 1.0 Wm @ 90	Yes	Y		1	1.2	6	.043	16	1.5																
31	1.2 D + 1.5 Lm + 1.0 Wm @ 120	Yes	Y		1	1.2	7	.043	16	1.5																
32	1.2 D + 1.5 Lm + 1.0 Wm @ 150	Yes	Y		1	1.2	8	.043	16	1.5																
33	1.2 D + 1.5 Lm + 1.0 Wm @ 180	Yes	Y		1	1.2	3	-.0...	16	1.5																
34	1.2 D + 1.5 Lm + 1.0 Wm @ 210	Yes	Y		1	1.2	4	-.0...	16	1.5																
35	1.2 D + 1.5 Lm + 1.0 Wm @ 240	Yes	Y		1	1.2	5	-.0...	16	1.5																
36	1.2 D + 1.5 Lm + 1.0 Wm @ 270	Yes	Y		1	1.2	6	-.0...	16	1.5																
37	1.2 D + 1.5 Lm + 1.0 Wm @ 300	Yes	Y		1	1.2	7	-.0...	16	1.5																
38	1.2 D + 1.5 Lm + 1.0 Wm @ 330	Yes	Y		1	1.2	8	-.0...	16	1.5																
39	1.2 D + 1.5 Lv	Yes	Y		1	1.2	17	1.5																		

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N44	max	1909.97	3	692.226	25	4029.979	3	0	39	0	39	0	39
2		min	-2159.022	9	223.387	5	-4002.42	9	0	1	0	1	0	1
3	N48	max	2215.417	10	621.68	16	3211.421	10	0	39	0	39	0	39
4		min	-2612.584	4	203.987	13	-3446.896	3	0	1	0	1	0	1
5	N43	max	2767.777	3	680.357	22	5230.017	3	0	39	0	39	0	39
6		min	-2541.477	9	220.558	4	-5323.648	10	0	1	0	1	0	1
7	N47	max	3260.714	10	609.762	16	4201.943	10	0	39	0	39	0	39
8		min	-2731.932	4	198.88	10	-3747.135	4	0	1	0	1	0	1
9	N40A	max	114.311	3	64.7	22	155.184	4	0	39	0	39	0	39
10		min	-120.626	9	15.688	3	-161.837	9	0	1	0	1	0	1
11	Totals:	max	1736.216	11	2665.869	19	2272.514	3						
12		min	-1736.216	5	874.134	11	-2272.513	9						

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

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M15	PIPE_2.5	.951	57.75	3	.073	57.75		9	20573.263	50715	3.596	3.596	1....	H1-1b
2	M14	PIPE_2.5	.757	57.75	22	.057	57.75		26	20573.263	50715	3.596	3.596	1....	H1-1b
3	M10	PL 8.25 x 3/8	.688	5	15	.055	0	y	22	92304.109	103275	.807	18.288	1....	H1-1b
4	M9	PL 8.25 x 3/8	.683	5	21	.052	0	y	16	92304.109	103275	.807	18.288	1....	H1-1b
5	M3	LL2.5x2.5x4x6	.482	6	3	.243	9	y	3	65303.175	77112	6.326	3.124	1....	H1-1b
6	M1	LL2.5x2.5x4x6	.373	6	9	.187	9	y	9	65303.175	77112	6.326	3.124	1....	H1-1b
7	C1	PIPE_2.5	.308	58.5	4	.167	58.5		3	26137.193	50715	3.596	3.596	1....	H1-1b
8	M11	PIPE_4.0	.175	12.5	23	.054	12.5		22	86073.938	93240	10.631	10.631	1....	H1-1b
9	M19A	PIPE_1.5	.144	56.75	16	.009	0		23	5138.256	23593.5	1.105	1.105	1....	H1-1b
10	C3	PIPE_2.0	.084	52.25	10	.087	16.5		14	22356.067	32130	1.872	1.872	1....	H1-1b
11	C2	PIPE_2.0	.040	16.5	10	.062	16.5		3	22356.067	32130	1.872	1.872	1....	H1-1b

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

Project # 37519-1559.003.8191
By BMH
Date: 06/05/19
v0.1, Effective 07/10/18

MOUNT TO TOWER CONNECTION CHECKS

REACTIONS

Px=	3.2607	Kip
Py=	0.60976	Kip
(Axial)Pz=	4.20194	Kip
Mx=	0	Kip-in
My=	0	Kip-in
(Torque)Mz=	0	Kip-in

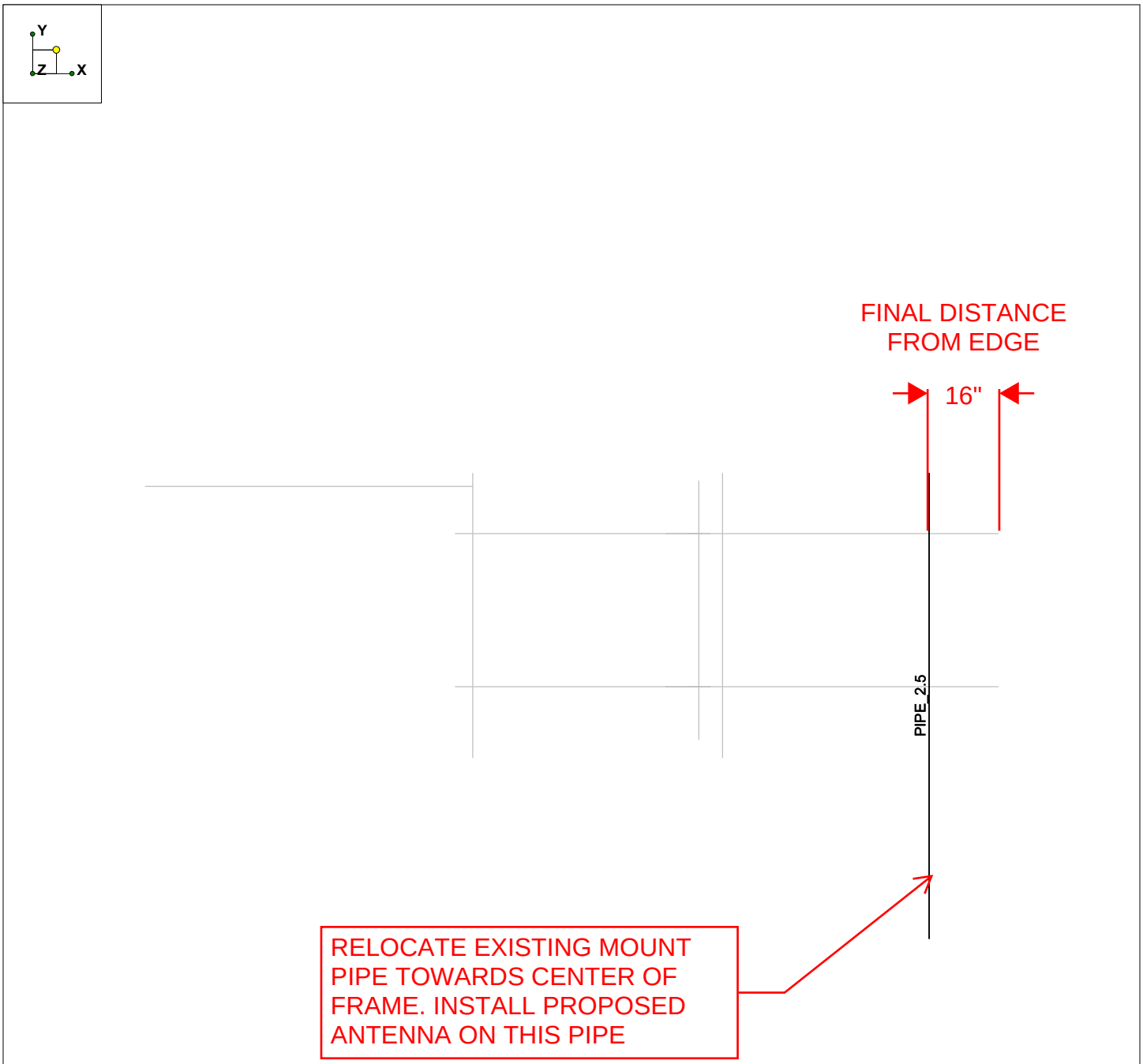
Number of Bolts = 2

BOLT CHECKS

Tension Reaction	2.10	kip
Shear Reaction	1.66	kip
Bolt Type	A325N	
Bolt Diameter	0.625	in
Tensile Strength	20.7	kips
Shear Strength	12.4	kips
Reduced Tensile Strength	-	kips
Tensile Capacity Used	10.1%	**Note: Tension reduction not required if tension or shear capacity < 30%**
Shear Capacity Used	13.3%	

APPENDIX D

SUPPLEMENTAL MODIFICATION INFORMATION



Envelope Only Solution

Paul J. Ford and Company	806384 - NLN 136 943455	SK - 8
BMH		June 5, 2019 at 1:28 PM
37519-1559.003.8191		37519-1559_Wind Load.r3d

Exhibit F

Power Density/RF Emissions Report

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11037B

Niantic/ I-95/ Rt 156_1
93 Roxbury Rd.
East Lyme, CT 06357

May 15, 2019

Transcom Engineering Project Number: 737001-0009

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**14.16 %**

May 15, 2019

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

Emissions Analysis for Site: **CT11037B – Niantic/ I-95/ Rt 156_1**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **93 Roxbury Rd., East Lyme, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 ($\mu W/cm^2$). The general population exposure limits for the 600 & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **93 Roxbury Rd., East Lyme, 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)
GSM	1900 MHz (PCS)	1	15
UMTS	1900 MHz (PCS)	1	40
LTE	2100 MHz (AWS)	2	60
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600, 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	Ericsson AIR21 B2A/B4P	103
A	2	Ericsson AIR21 B4A/B2P	103
A	3	RFS APXVAARR24_43-U-NA20	103
B	1	Ericsson AIR21 B2A/B4P	103
B	2	Ericsson AIR21 B4A/B2P	103
B	3	RFS APXVAARR24_43-U-NA20	103
C	1	Ericsson AIR21 B2A/B4P	103
C	2	Ericsson AIR21 B4A/B2P	103
C	3	RFS APXVAARR24_43-U-NA20	103

Table 2: Antenna Data

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

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	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	2	55	2,139.75	0.82
Antenna A2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.78
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	2.22
						Sector A Composite MPE%	**4.82**
Antenna B1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	2	55	2,139.75	0.82
Antenna B2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.78
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	2.22
						Sector B Composite MPE%	**4.82**
Antenna C1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	2	55	2,139.75	0.82
Antenna C2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.78
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	2.22
						Sector C Composite MPE%	**4.82**

Table 3: T-MOBILE Emissions Levels

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	**4.82 %**
Verizon Wireless	4.89 %
MetroPCS	0.48 %
Sprint	3.95 %
Town	0.02 %
Site Total MPE %:	**14.16 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	4.82 %
T-MOBILE Sector B Total:	4.82 %
T-MOBILE Sector C Total:	4.82 %
Site Total:	14.16 %

Table 5: Site MPE Summary

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 ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) GSM	1	583.57	103	2.23	1900 MHz (PCS)	1000	0.22%
T-Mobile 1900 MHz (PCS) UMTS	1	1,556.18	103	5.95	1900 MHz (PCS)	1000	0.60%
T-Mobile 2100 MHz (AWS) LTE	2	2,334.27	103	17.84	2100 MHz (AWS)	1000	1.78%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	103	6.03	600 MHz	400	1.51%
T-Mobile 700 MHz LTE	2	432.54	103	3.31	700 MHz	467	0.71%
						Total:	**4.82%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	4.82 %
Sector B:	4.82 %
Sector C:	4.82 %
T-MOBILE Maximum Total (per sector):	4.82 %
Site Total:	14.16 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **14.16 %** 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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