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

VIA ELECTRONIC MAIL

June 8, 2018

Mike Gentile
Site Acquisition
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

RE: **EM-CING-097-180410** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 3 Edmond Road, Newtown, Connecticut.

Dear Mr. Gentile:

The Connecticut Siting Council (Council) is in receipt of your email correspondence of June 7, 2018 submitted in response to the Council's April 16, 2018 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/CMW/jmb

From: Michael Gentile [mailto:mgentile@clinellc.com]
Sent: Thursday, June 07, 2018 3:14 PM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: CSC Response to Rqst. for Extension - EM-CING-097-180410 - Edmond Rd. // CT2313

Good Afternoon,

Please see the attached updated structural analysis and accompanying mount analysis. Our engineering company was unable to get this to us until today.

Please let us know any issues here.

Thank you,
Mike Gentile
(508) 844-9813

December 7, 2017

CENTERLINE COMMUNICATIONS at&t

Centerline Communications, LLC
97 Ryan Drive Suite 1
Raynham, MA 02767

RE:		
	Site Number:	CT2313 (LTE 2C/3C)
	FA Number:	10091755
	PACE Number:	MRCTB022570
	PTN Number:	2051A0ACWD
	Site Name:	Newtown Edmond Road
	Site Address:	3 Edmond Road Newtown, CT 06470

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline to perform a mount analysis on the existing AT&T antenna mounts to determine their capability of supporting the following equipment loading:

- (3) Powerwave 7770 Antennas (55.0"x11.0"x5.0" – Wt. = 35 lbs/each)
- (3) RRU-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs/each) (tower mount)
- (6) LGP21401 TMA's (14.4"x9"x2.7" – Wt. = 19 lbs/each)
- (1) DC6-48-60-18-8C Surge Arrestor (31.25"x9.7"ø – Wt. = 33 lbs/each) (tower mount)
- **(3) HPA-65R-BUU-H6 Antennas (72"x14.8"x9" – Wt. = 51 lbs/each)**
- **(3) QS66512-2 Antennas (72"x12"x9.6" – Wt. = 111 lbs/each)**
- **(3) RRU-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs/each)**
- **(3) RRU-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs/each)**
- **(1) DC6-48-60-18-8C Surge Arrestor (31.25"x9.7"ø – Wt. = 33 lbs/each) (tower mount)**
- **(3) DBC0061F1V51-2 Combiners (8"x6.5"x6.2" – Wt. = 25 lbs/each)**

**Proposed Loading Shown in Bold.*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on June 19, 2017.

Based on our analysis, we have determined that the existing antenna mounts **ARE CAPABLE** of supporting the proposed antenna installation with the following modifications:

- **Install new handrail kit, SitePro1 P/N HRK12 (or approved equal).**
- **Install new reinforcement kit, SitePro1 P/N PRK-1245L (or approved equal).**

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	1	LC2	851%	**FAIL**
Reinforced Mount Rating	3	LC1	95%	**PASS**

This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the International Building Code 2012 with 2005 Connecticut Supplement with 2016 Amendments. (See the attached analysis).

Reference Documents:

- Mount Mapping Report prepared by ProVertic LLC dated June 19, 2017.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

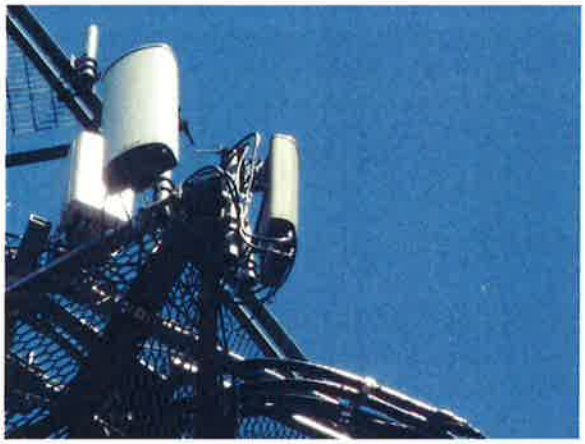
Respectfully Submitted,
Hudson Design Group LLC

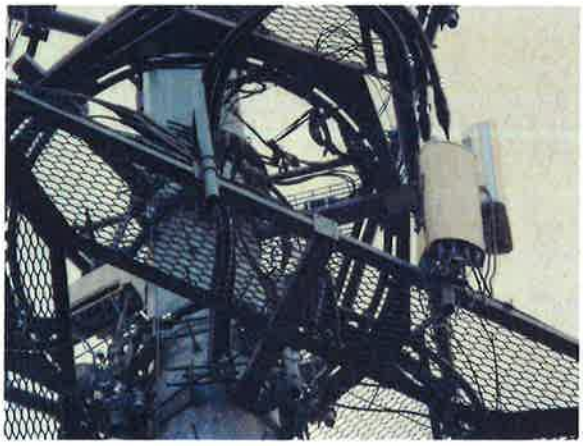
Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

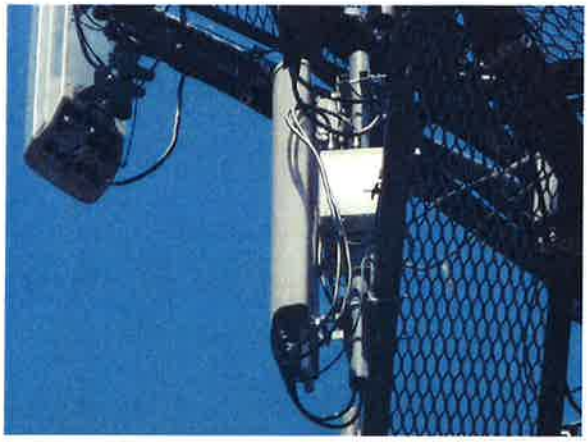
FIELD PHOTOS:





p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Dr., N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027



p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Dr., N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 11/30/2017
Project Name: Newtown Edmond Road
Project Number: CT2313
Designed By: AK **Checked By**: MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01 (z/z_g)^{2/\alpha}$

z=	120 (ft)
z_g=	1200 (ft)
α=	7.0

K_z= 1.041

$K_{zmin} \leq K_z \leq 2.01$

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_e K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

K_h=	#DIV/0!
K_e=	0 (from Table 2-4)
K_t=	0 (from Table 2-5)
f=	0 (from Table 2-5)
z=	120
H=	0 (Ht. of the crest above surrounding terrain)
K_{zt}=	1.00

(If Category 1 then K_{zt} =1.0)

Category= **1**

Date: 11/30/2017
Project Name: Newtown Edmond Road
Project Number: CT2313
Designed By: AK Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	140	Gh=	0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh=	1.35	Gh=	1.10

2.6.9.2 Design Wind Force on Appurtenances

$F = q_z * Gh * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_d * V_{max}^2 * I$

q_z=	30.64	K_z=	1.041
$q_{z\,(ice)}$=	6.33	K_{zt}=	1.0
		K_d=	0.95
		V_{max}=	110
		$V_{max\,(ice)}$=	50
		I=	1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Date: 11/30/2017
Project Name: Newtown Edmond Road
Project Number: CT2313
Designed By: AK Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance, and the section length considered to have uniform wind load).

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **0.75 in**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (1" Ice)
Powerwave 7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	**186**	**45**
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.86	1.31	**325**	**76**
QS66512-2 Antenna	72.0	12.0	9.6	6.00	6.00	1.36	**274**	**65**
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**92**	**23**
RRUS-32 RRH (shielded)	27.2	1.1	7.0	0.21	24.73	1.99	**14**	**7**

Date: 11/30/2017
Project Name: Newtown Edmond Road
Project Number: CT2313
Designed By: AK **Checked By**: MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice (in): 0.75
* Density of ice used = 56 PCF

Powerwave 7770 Antenna

Weight of ice based on total radial SF area:		
Depth (in):	5.0	
height (in):	55.0	
Width (in):	11.0	
Total weight of ice on object:		45 lbs
Weight of object:	35 lbs	
Combined weight of ice and object:		80 lbs

HPA-65R-BUU-H6 Antenna

Weight of ice based on total radial SF area:		
Depth (in):	9.0	
height (in):	72.0	
Width (in):	14.8	
Total weight of ice on object:		90 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		141 lbs

QS66512-2 Antenna

Weight of ice based on total radial SF area:		
Depth (in):	9.6	
height (in):	72.0	
Width (in):	12.0	
Total weight of ice on objec.		81 lbs
Weight of object:	111 lbs	
Combined weight of ice and object:		192 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:		
Depth (in):	2.7	
height (in):	14.4	
Width (in):	9.0	
Total weight of ice on object:		9 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		28 lbs

RRUS-32 RRH

Weight of ice based on total radial SF area:		
Depth (in):	7.0	
height (in):	27.2	
Width (in):	12.1	
Total weight of ice on object:		29 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		89 lbs

DBC0061F1V51-2 Combiner

Weight of ice based on total radial SF area:		
Depth (in):	6.2	
height (in):	8.0	
Width (in):	6.5	
Total weight of ice on object:		7 lbs
Weight of object:	25 lbs	
Combined weight of ice and object:		32 lbs

L 3x3x1/4

Weight of ice based on total radial SF area:		
Depth (in):	3	
height (in):	12	
Width (in):	3	
Per foot weight of ice on object:		4 lbs/ft

2" pipe

Per foot weight of ice:		
diameter (in):	2.375	
Per foot weight of ice on object:		2 lbs/ft

HSS 4x4x3/8

Weight of ice based on total radial SF area:		
Depth (in):	4	
height (in):	12	
Width (in):	4	
Per foot weight of ice on object:		5 lbs/ft

HSS 4-1/2x4-1/2x3/8

Weight of ice based on total radial SF area:		
Depth (in):	4.5	
height (in):	12	
Width (in):	4.5	
Per foot weight of ice on object:		5 lbs/ft

HUDSON
Design Group LLC

Mount Calculations
(Unmodified Mount)

Bentley

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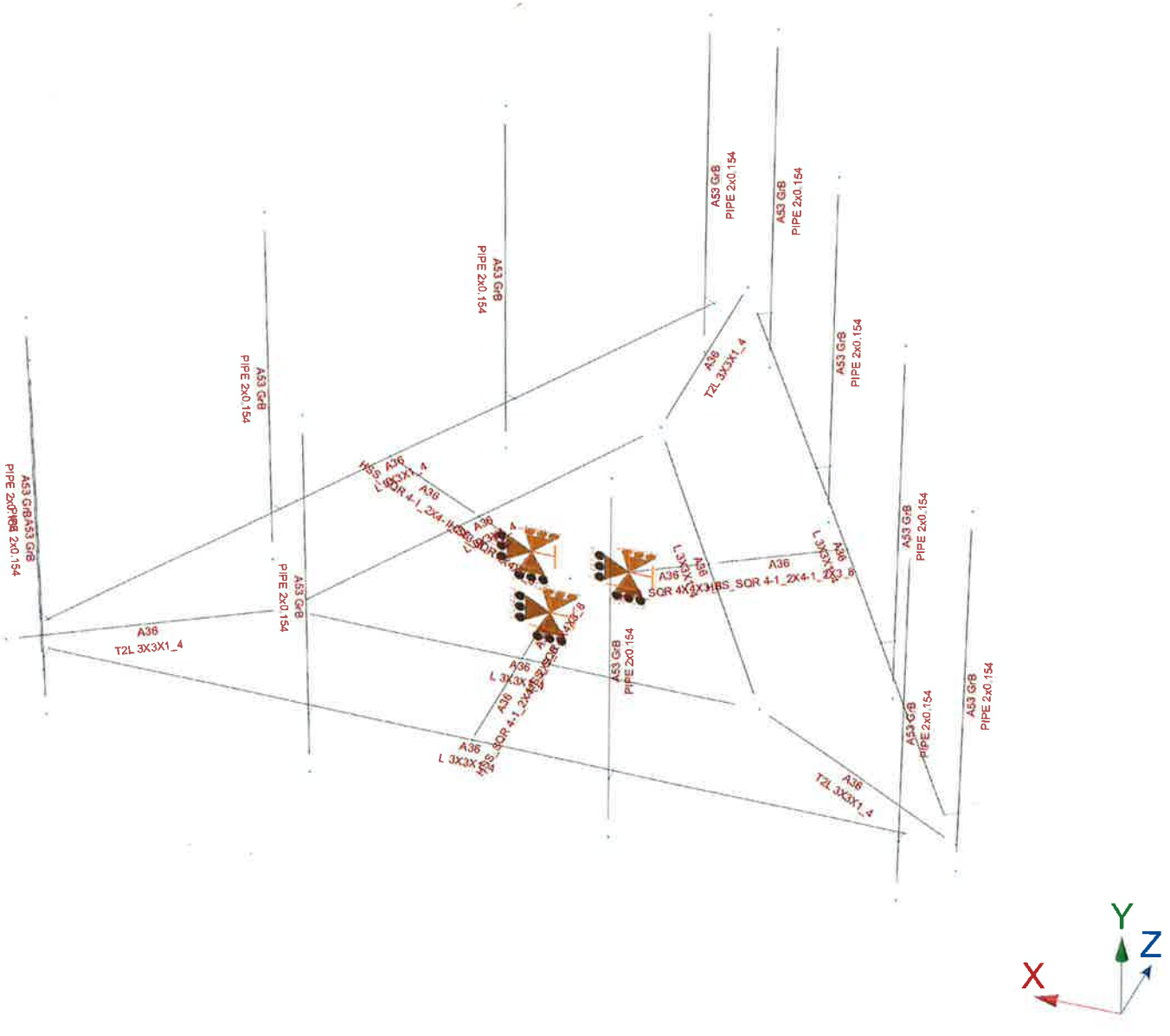

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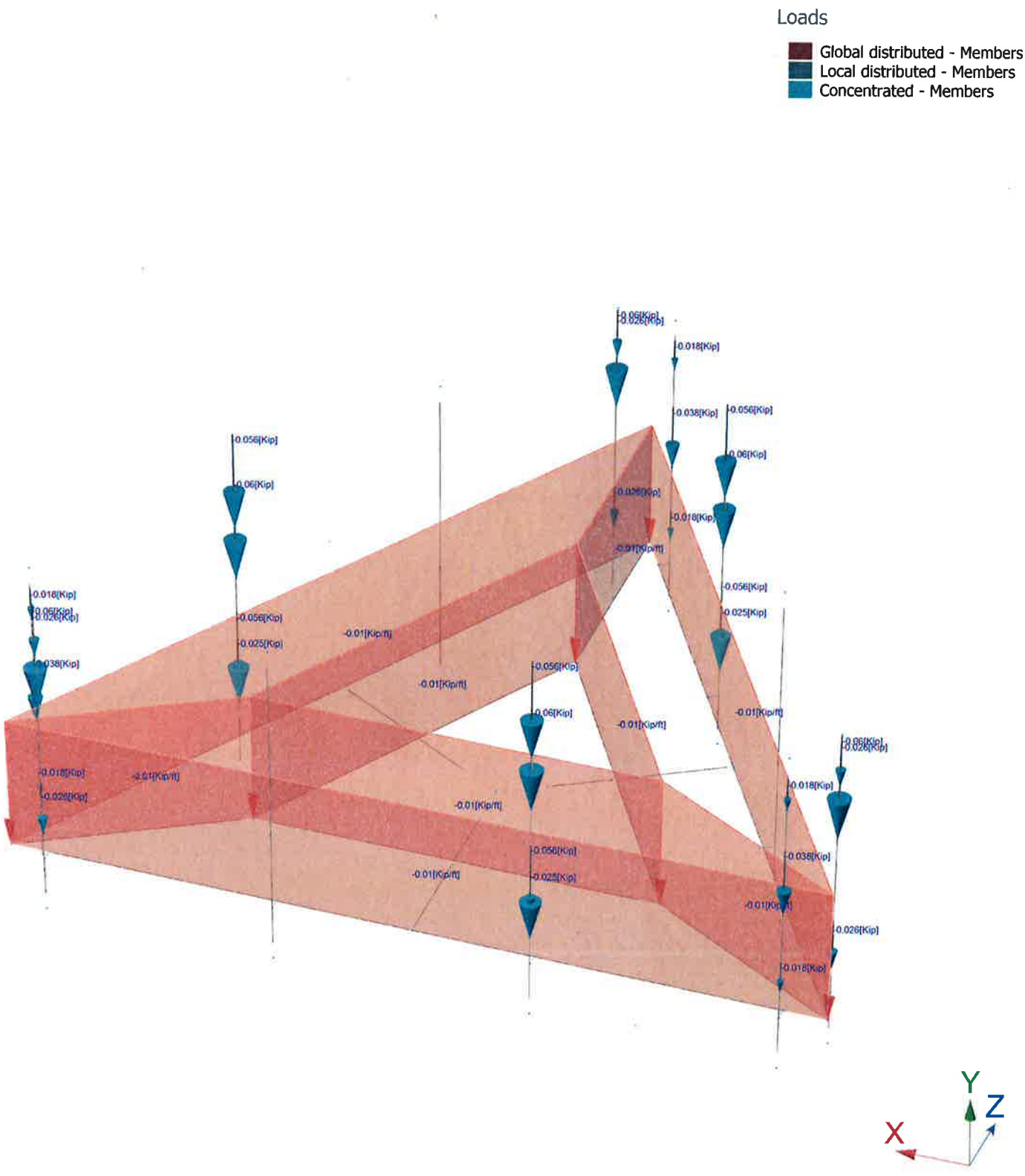
Load condition: DL=Dead Load



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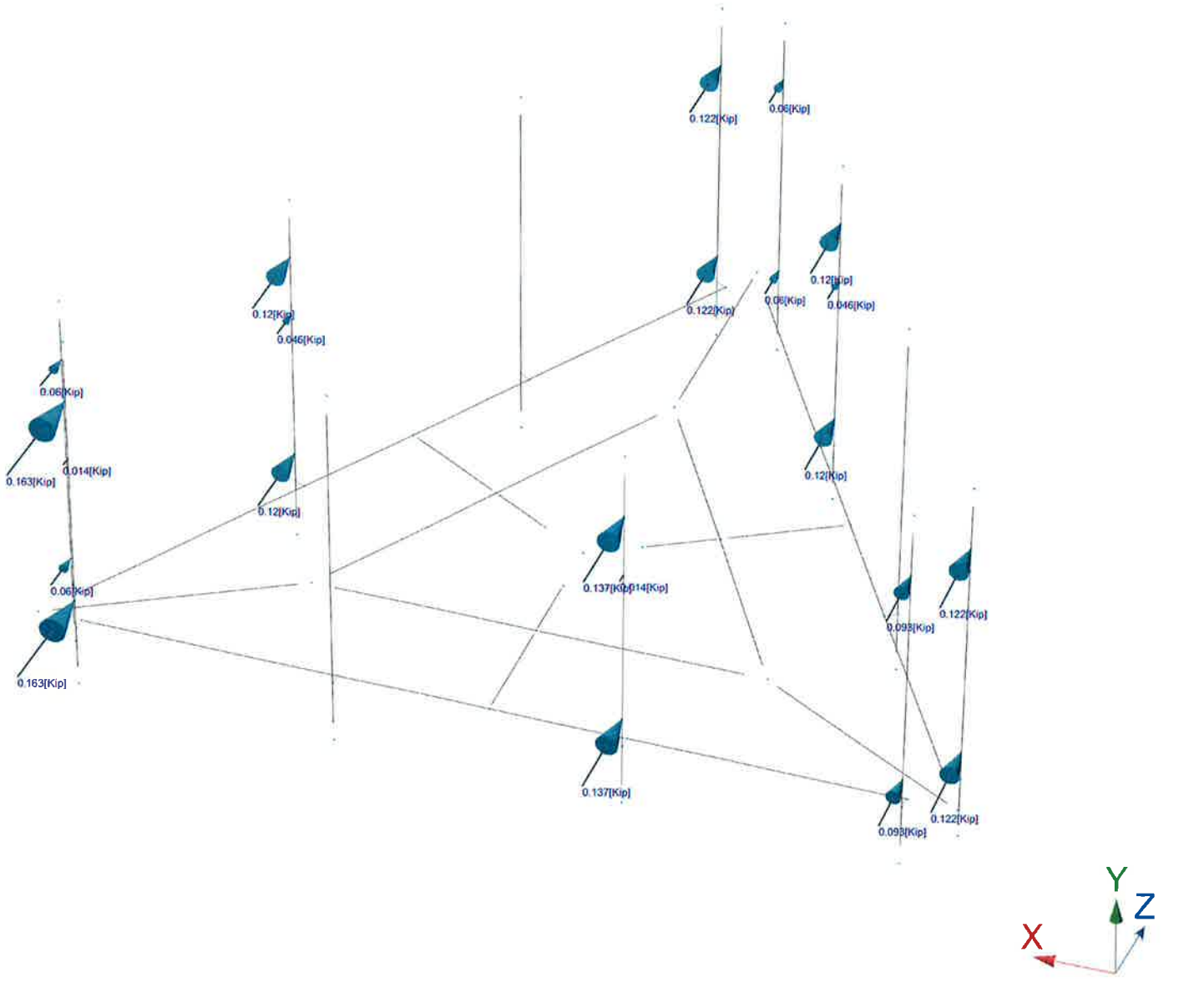
Load condition: Wo=Wind Load (No Ice)



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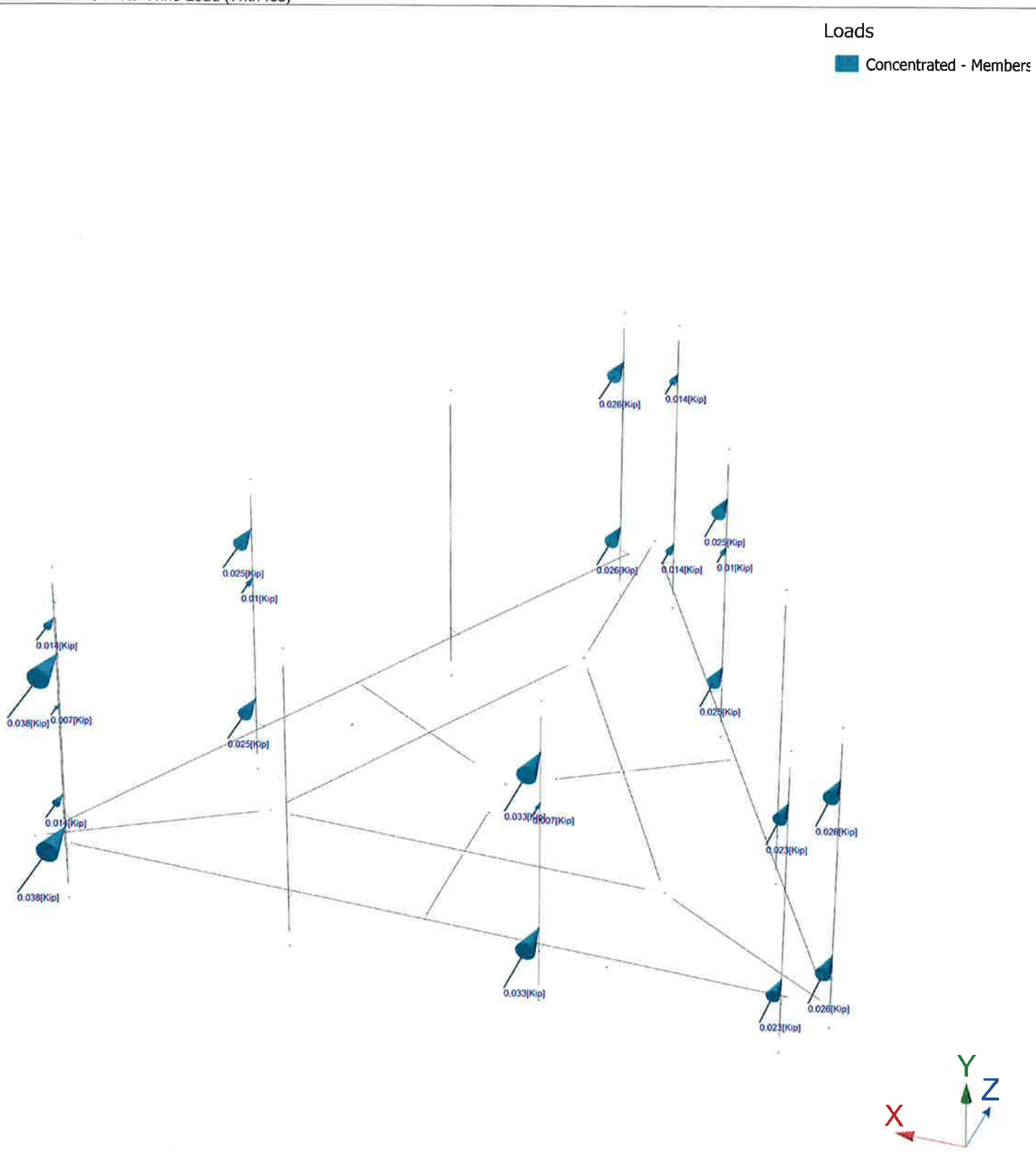

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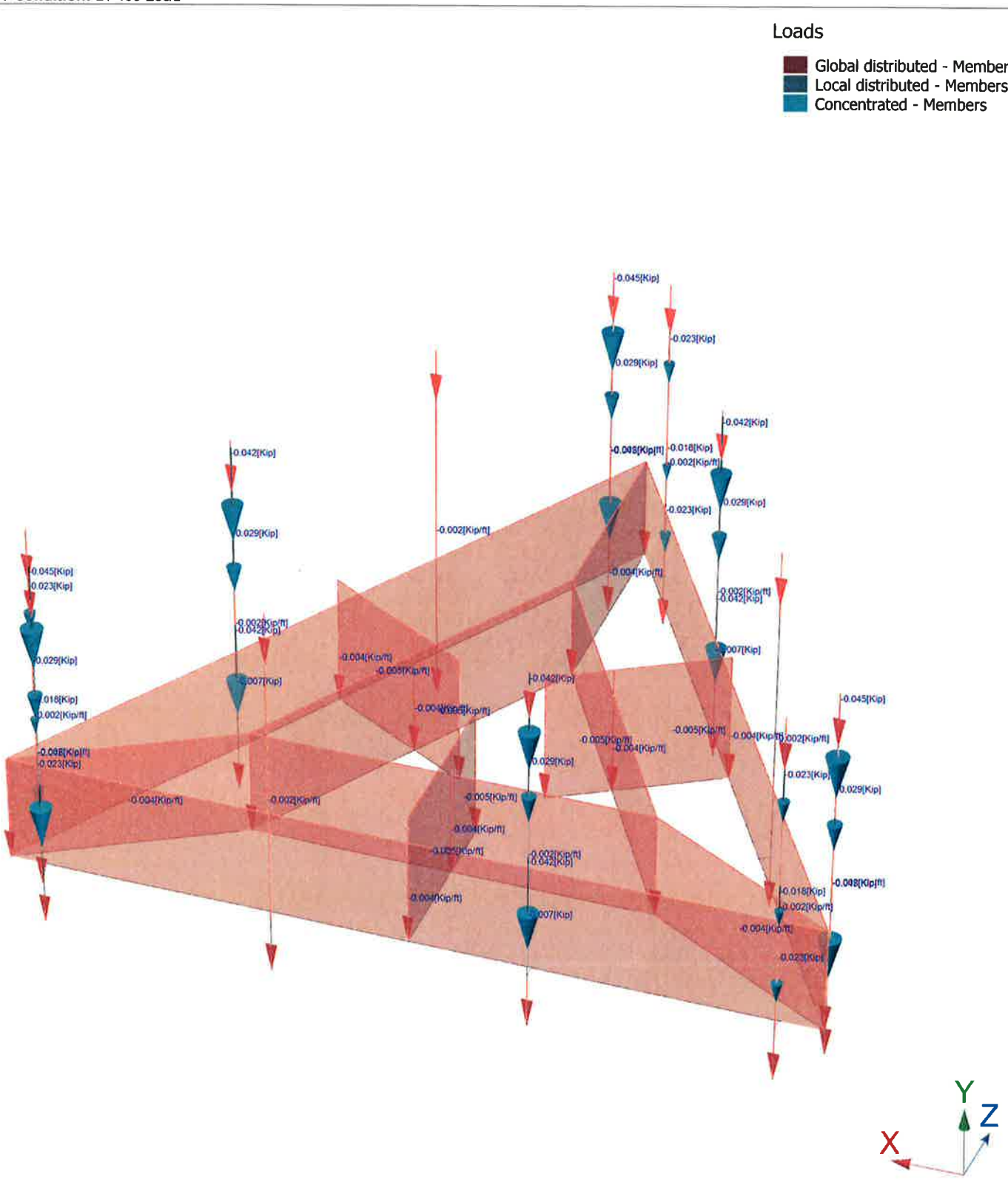
Load condition: Di=Ice Load



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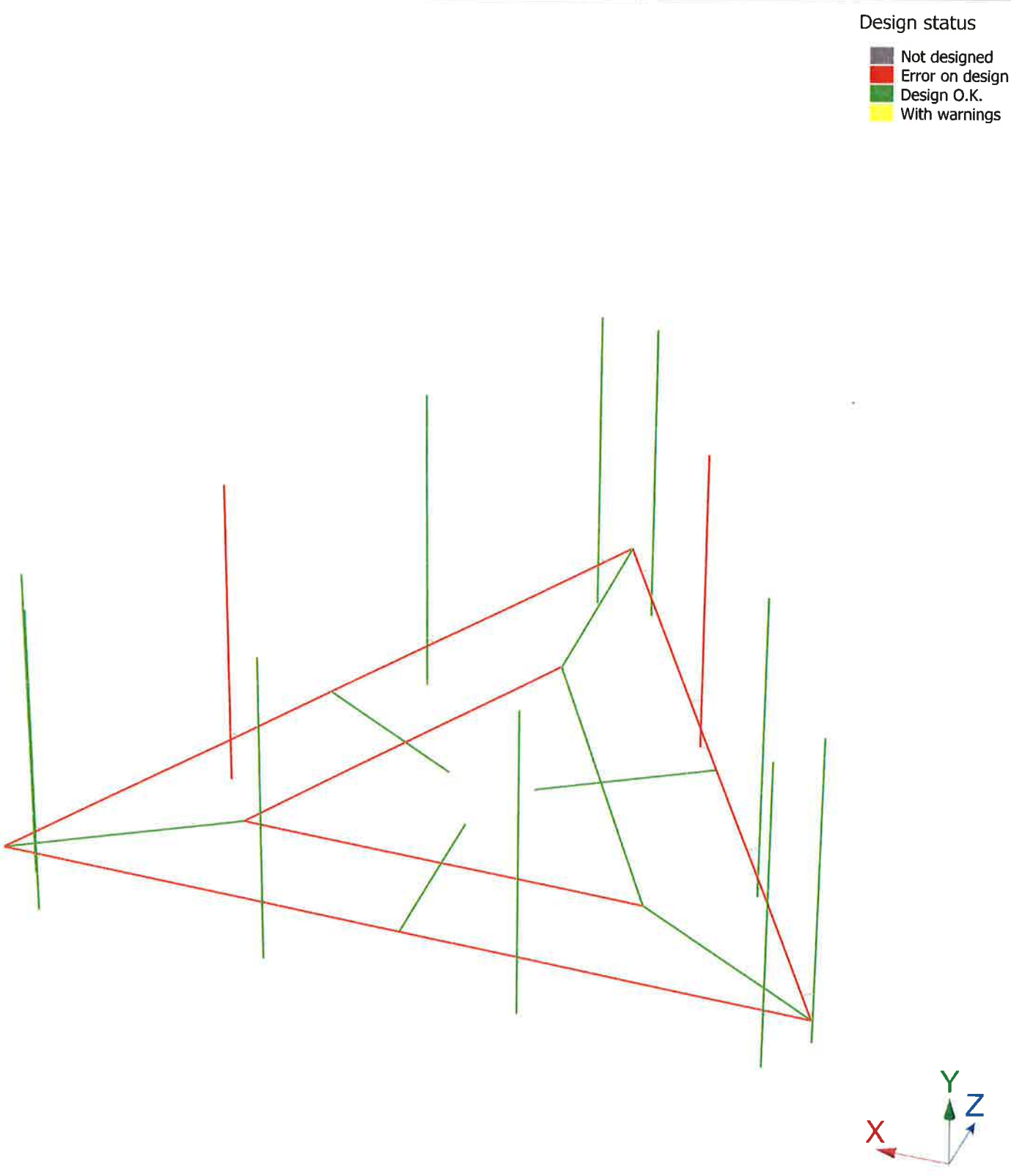

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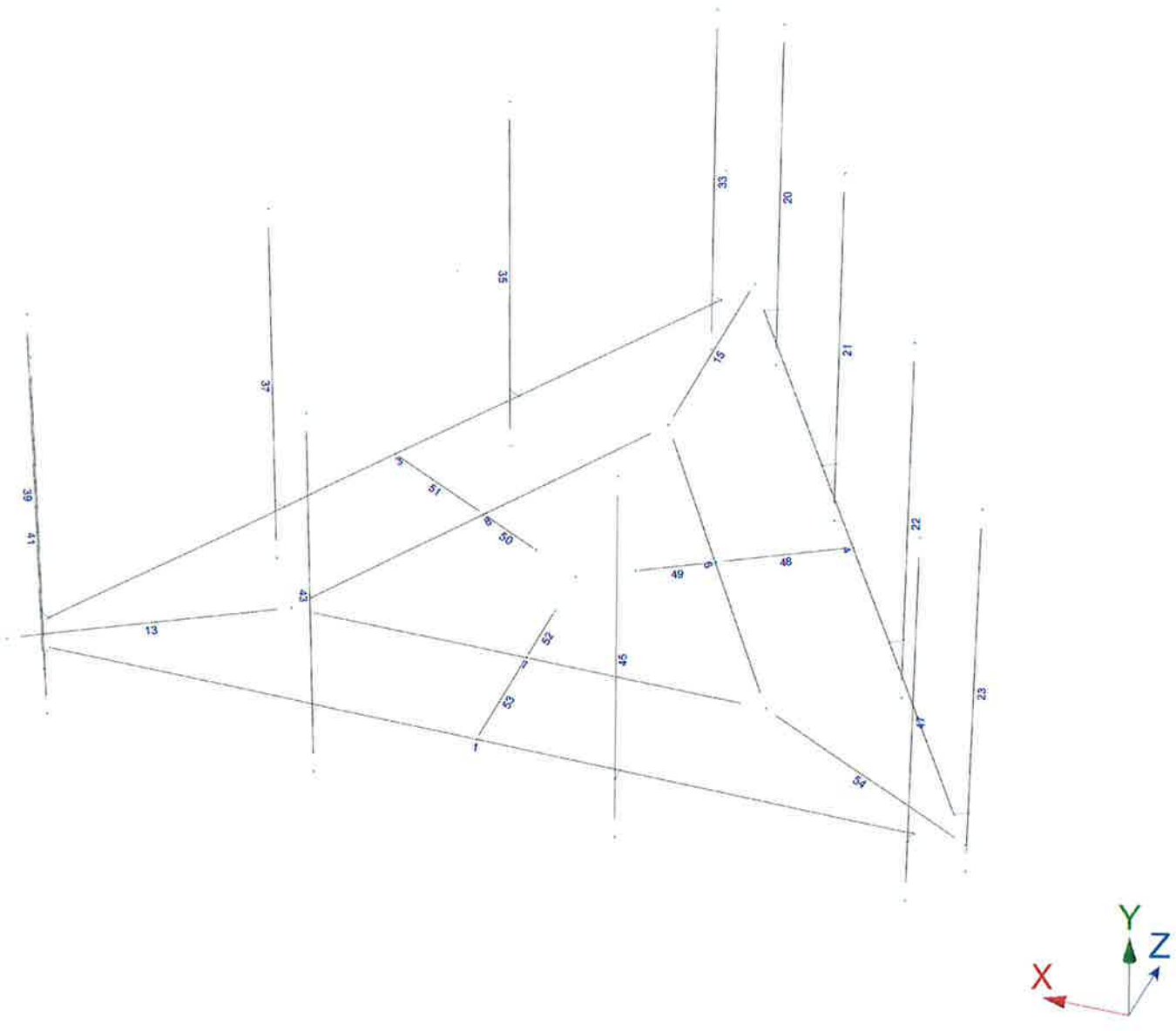

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Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4-1_2X4-1_2X3_8	48	LC1 at 0.00%	**0.42**	**OK**	Eq. H1-1b
			LC2 at 0.00%	0.38	OK	Eq. H1-1b
			LC3 at 0.00%	0.26	OK	Eq. H1-1b
			LC4 at 0.00%	0.15	OK	Eq. H1-1b
			LC5 at 0.00%	0.11	OK	Eq. H1-1b
		51	LC1 at 100.00%	**0.46**	**OK**	Eq. H1-1b
			LC2 at 100.00%	0.43	OK	Eq. H1-1b
			LC3 at 100.00%	0.27	OK	Eq. H1-1b
			LC4 at 100.00%	0.15	OK	Eq. H1-1b
			LC5 at 100.00%	0.12	OK	Eq. H1-1b
		53	LC1 at 0.00%	0.09	OK	Eq. H1-1b
			LC2 at 0.00%	0.09	OK	Eq. H1-1b
			LC3 at 100.00%	**0.14**	**OK**	Eq. H1-1b
			LC4 at 100.00%	0.11	OK	Eq. H1-1b
			LC5 at 100.00%	0.08	OK	Eq. H1-1b
	HSS_SQR 4X4X3_8	49	LC1 at 100.00%	**0.86**	**OK**	Eq. H1-1b
			LC2 at 100.00%	0.78	OK	Eq. H1-1b
			LC3 at 100.00%	0.52	OK	Eq. H1-1b
			LC4 at 100.00%	0.31	OK	Eq. H1-1b
			LC5 at 100.00%	0.23	OK	Eq. H1-1b
		50	LC1 at 0.00%	**0.92**	**OK**	Eq. H1-1b
			LC2 at 0.00%	0.84	OK	Eq. H1-1b
			LC3 at 0.00%	0.54	OK	Eq. H1-1b
			LC4 at 0.00%	0.31	OK	Eq. H1-1b
			LC5 at 0.00%	0.23	OK	Eq. H1-1b
		52	LC1 at 100.00%	0.06	OK	Eq. H1-1b
			LC2 at 100.00%	0.10	OK	Eq. H1-1b
			LC3 at 0.00%	**0.36**	**OK**	Eq. H1-1b
			LC4 at 0.00%	0.28	OK	Eq. H1-1b
			LC5 at 0.00%	0.21	OK	Eq. H1-1b
	L 3X3X1_4	1	LC1 at 100.00%	8.43	N.G.	Eq. H3-8
			LC2 at 100.00%	**8.51**	**N.G.**	Eq. H3-8
			LC3 at 48.96%	1.59	N.G.	Eq. H2-1
			LC4 at 48.96%	1.16	N.G.	Eq. H2-1
			LC5 at 48.96%	0.87	OK	Eq. H2-1
		3	LC1 at 4.17%	**3.34**	**N.G.**	Eq. H3-8
			LC2 at 4.17%	3.26	N.G.	Eq. H3-8

		LC3 at 50.00%	2.15	N.G.	Eq. H2-1
		LC4 at 50.00%	1.38	N.G.	Eq. H2-1
		LC5 at 50.00%	1.04	N.G.	Eq. H2-1
	4	LC1 at 95.83%	**3.51**	**N.G.**	Eq. H3-8
		LC2 at 95.83%	3.43	N.G.	Eq. H3-8
		LC3 at 48.96%	2.39	N.G.	Eq. H2-1
		LC4 at 48.96%	1.51	N.G.	Eq. H2-1
		LC5 at 48.96%	1.13	N.G.	Eq. H2-1
	6	LC1 at 3.13%	0.45	OK	Sec. F1
		LC2 at 3.13%	0.40	OK	Sec. F1
		LC3 at 100.00%	**0.47**	**OK**	Sec. F1
		LC4 at 100.00%	0.32	OK	Sec. F1
		LC5 at 100.00%	0.24	OK	Sec. F1
	7	LC1 at 46.88%	0.59	OK	Eq. H2-1
		LC2 at 50.00%	0.51	OK	Eq. H2-1
		LC3 at 50.00%	**1.34**	**N.G.**	Sec. F1
		LC4 at 50.00%	0.98	OK	Sec. F1
		LC5 at 50.00%	0.74	OK	Sec. F1
	8	LC1 at 100.00%	**3.55**	**N.G.**	Eq. H3-8
		LC2 at 100.00%	3.16	N.G.	Eq. H3-8
		LC3 at 100.00%	2.85	N.G.	Eq. H3-8
		LC4 at 100.00%	1.53	N.G.	Eq. H3-8
		LC5 at 100.00%	1.15	N.G.	Eq. H3-8
PIPE 2x0.154	20	LC1 at 18.75%	**0.45**	**OK**	Eq. H1-1b
		LC2 at 18.75%	0.45	OK	Eq. H1-1b
		LC3 at 18.75%	0.06	OK	Eq. H1-1b
		LC4 at 18.75%	0.01	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
	21	LC1 at 18.75%	**1.14**	**N.G.**	Eq. H1-1b
		LC2 at 18.75%	1.13	N.G.	Eq. H1-1b
		LC3 at 18.75%	0.16	OK	Eq. H1-1b
		LC4 at 18.75%	0.02	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
	22	LC1 at 18.75%	0.00	OK	Sec. E1
		LC2 at 18.75%	0.00	OK	Sec. E1
		LC3 at 18.75%	**0.00**	**OK**	Sec. E1
		LC4 at 18.75%	0.00	OK	Sec. E1
		LC5 at 18.75%	0.00	OK	Sec. E1
	23	LC1 at 18.75%	**0.92**	**OK**	Eq. H1-1b
		LC2 at 18.75%	0.91	OK	Eq. H1-1b
		LC3 at 18.75%	0.12	OK	Eq. H1-1b
		LC4 at 18.75%	0.01	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
	33	LC1 at 18.75%	**0.92**	**OK**	Eq. H1-1b
		LC2 at 18.75%	0.91	OK	Eq. H1-1b
		LC3 at 18.75%	0.12	OK	Eq. H1-1b
		LC4 at 18.75%	0.01	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
	35	LC1 at 18.75%	0.00	OK	Sec. E1
		LC2 at 18.75%	0.00	OK	Sec. E1
		LC3 at 18.75%	**0.00**	**OK**	Sec. E1
		LC4 at 18.75%	0.00	OK	Sec. E1
		LC5 at 18.75%	0.00	OK	Sec. E1

	37	LC1 at 18.75%	**1.14**	**N.G.**	Eq. H1-1b
		LC2 at 18.75%	1.13	N.G.	Eq. H1-1b
		LC3 at 18.75%	0.16	OK	Eq. H1-1b
		LC4 at 18.75%	0.02	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
	39	LC1 at 18.75%	**0.45**	**OK**	Eq. H1-1b
		LC2 at 18.75%	0.45	OK	Eq. H1-1b
		LC3 at 18.75%	0.06	OK	Eq. H1-1b
		LC4 at 18.75%	0.01	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
	41	LC1 at 18.75%	**0.95**	**OK**	Eq. H1-1b
		LC2 at 18.75%	0.95	OK	Eq. H1-1b
		LC3 at 18.75%	0.16	OK	Eq. H1-1b
		LC4 at 18.75%	0.01	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
	43	LC1 at 18.75%	0.00	OK	Sec. E1
		LC2 at 18.75%	0.00	OK	Sec. E1
		LC3 at 18.75%	**0.00**	**OK**	Sec. E1
		LC4 at 18.75%	0.00	OK	Sec. E1
		LC5 at 18.75%	0.00	OK	Sec. E1
	45	LC1 at 18.75%	**0.81**	**OK**	Eq. H1-1b
		LC2 at 18.75%	0.81	OK	Eq. H1-1b
		LC3 at 18.75%	0.14	OK	Eq. H1-1b
		LC4 at 18.75%	0.02	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
	47	LC1 at 18.75%	**0.51**	**OK**	Eq. H1-1b
		LC2 at 18.75%	0.51	OK	Eq. H1-1b
		LC3 at 18.75%	0.09	OK	Eq. H1-1b
		LC4 at 18.75%	0.01	OK	Sec. E1
		LC5 at 18.75%	0.01	OK	Sec. E1
T2L 3X3X1_4	13	LC1 at 100.00%	**0.36**	**OK**	Eq. H1-1b
		LC2 at 100.00%	0.33	OK	Eq. H1-1b
		LC3 at 0.00%	0.30	OK	Eq. H1-1b
		LC4 at 0.00%	0.20	OK	Eq. H1-1b
		LC5 at 0.00%	0.15	OK	Eq. H1-1b
	15	LC1 at 0.00%	**0.66**	**OK**	Eq. H1-1b
		LC2 at 0.00%	0.59	OK	Eq. H1-1b
		LC3 at 0.00%	0.43	OK	Eq. H1-1b
		LC4 at 0.00%	0.27	OK	Eq. H1-1b
		LC5 at 0.00%	0.20	OK	Eq. H1-1b
	54	LC1 at 0.00%	0.34	OK	Eq. H1-1b
		LC2 at 0.00%	**0.39**	**OK**	Eq. H1-1b
		LC3 at 100.00%	0.29	OK	Eq. H1-1b
		LC4 at 100.00%	0.19	OK	Eq. H1-1b
		LC5 at 100.00%	0.15	OK	Eq. H1-1b

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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
30	-0.7578	0.00	0.4375	0
31	-3.5005	0.00	2.021	0
32	7.00	0.00	-4.042	0
33	-0.0005	0.00	8.0832	0
34	-1.7684	0.00	1.021	0
37	0.00	0.00	0.00	0
38	3.527	0.00	-2.042	0
39	-0.0049	0.00	4.0755	0
47	0.7578	0.00	0.4375	0
48	3.5005	0.00	2.021	0
50	1.7684	0.00	1.021	0
51	0.0049	0.00	4.0755	0
52	0.00	0.00	-0.875	0
53	0.00	0.00	-4.042	0
54	-7.00	0.00	-4.042	0
55	0.00	0.00	-2.042	0
56	-3.527	0.00	-2.042	0
57	-0.3755	0.00	7.4337	0
58	-6.6655	0.00	-3.4609	0
60	-2.4571	0.00	3.8281	0
61	-4.6655	0.00	0.0032	0
62	-6.8387	0.00	-3.3609	0

63	-0.5487	0.00	7.5337	0
64	-2.6303	0.00	3.9281	0
65	-4.8387	0.00	0.1032	0
66	-2.6303	5.00	3.9281	0
67	-0.5487	5.00	7.5337	0
68	-4.8387	5.00	0.1032	0
69	-6.8387	5.00	-3.3609	0
70	-0.5487	-1.00	7.5337	0
71	-4.8387	-1.00	0.1032	0
72	-2.6303	-1.00	3.9281	0
73	-6.8387	-1.00	-3.3609	0
90	0.3355	0.00	7.5029	0
91	0.5087	0.00	7.6029	0
92	0.5087	5.00	7.6029	0
93	0.5087	-1.00	7.6029	0
94	2.3355	0.00	4.0388	0
95	2.5087	0.00	4.1388	0
96	2.5087	5.00	4.1388	0
97	2.5087	-1.00	4.1388	0
98	4.5438	0.00	0.2139	0
99	4.717	0.00	0.3139	0
100	4.717	5.00	0.3139	0
101	4.717	-1.00	0.3139	0
102	6.6255	0.00	-3.3917	0
103	6.7987	0.00	-3.2917	0
104	6.7987	5.00	-3.2917	0
105	6.7987	-1.00	-3.2917	0
106	6.33	0.00	-4.042	0
107	6.33	0.00	-4.242	0
108	6.33	5.00	-4.242	0
109	6.33	-1.00	-4.242	0
110	2.33	0.00	-4.042	0
111	2.33	0.00	-4.242	0
112	2.33	5.00	-4.242	0
113	2.33	-1.00	-4.242	0
114	-2.0867	0.00	-4.042	0
115	-2.0867	0.00	-4.242	0
116	-2.0867	5.00	-4.242	0
117	-2.0867	-1.00	-4.242	0
118	-6.25	0.00	-4.042	0
119	-6.25	0.00	-4.242	0
120	-6.25	5.00	-4.242	0
121	-6.25	-1.00	-4.242	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
30	1	1	1	1	1	1
47	1	1	1	1	1	1
52	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	54	32		L 3X3X1_4	A36	0.00	0.00	0.00
3	33	32		L 3X3X1_4	A36	0.00	0.00	0.00
4	33	54		L 3X3X1_4	A36	0.00	0.00	0.00
6	51	56		L 3X3X1_4	A36	0.00	0.00	0.00
7	56	38		L 3X3X1_4	A36	0.00	0.00	0.00
8	38	39		L 3X3X1_4	A36	0.00	0.00	0.00
13	38	32		T2L 3X3X1_4	A36	0.00	0.00	0.00
15	33	39		T2L 3X3X1_4	A36	0.00	0.00	0.00
20	70	67		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
21	72	66		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
22	71	68		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
23	73	69		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
33	93	92		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
35	97	96		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
37	101	100		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
39	105	104		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
41	109	108		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	113	112		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
45	117	116		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	121	120		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	34	31		HSS_SQR 4-1_2X4-1_2...	A36	0.00	0.00	0.00
49	34	30		HSS_SQR 4X4X3_8	A36	0.00	0.00	0.00
50	47	50		HSS_SQR 4X4X3_8	A36	0.00	0.00	0.00
51	48	50		HSS_SQR 4-1_2X4-1_2...	A36	0.00	0.00	0.00
52	52	55		HSS_SQR 4X4X3_8	A36	0.00	0.00	0.00
53	53	55		HSS_SQR 4-1_2X4-1_2...	A36	0.00	0.00	0.00
54	54	56		T2L 3X3X1_4	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
3	270.00	0	0.00	0.00	0.00
6	270.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
8	270.00	0	0.00	0.00	0.00
13	180.00	0	0.00	0.00	0.00
15	180.00	0	0.00	0.00	0.00
20	0.00	2	0.50	0.00	0.866
21	0.00	2	0.50	0.00	0.866
22	0.00	2	0.50	0.00	0.866
23	0.00	2	0.50	0.00	0.866
33	0.00	2	0.50	0.00	-0.866
35	0.00	2	0.50	0.00	-0.866
37	0.00	2	0.50	0.00	-0.866
39	0.00	2	0.50	0.00	-0.866
54	180.00	0	0.00	0.00	0.00

HUDSON
Design Group LLC

Mount Calculations
(Modified Mount)

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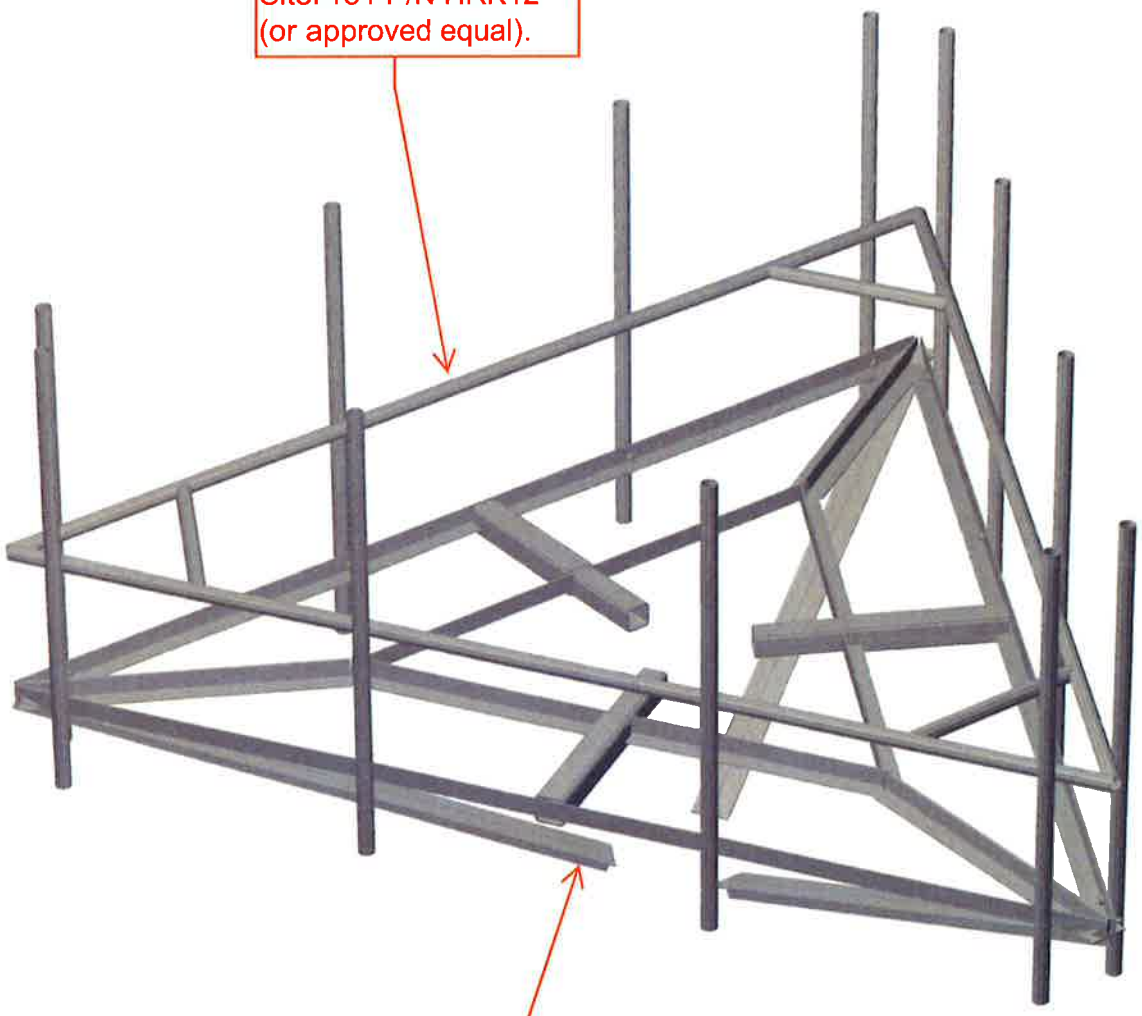

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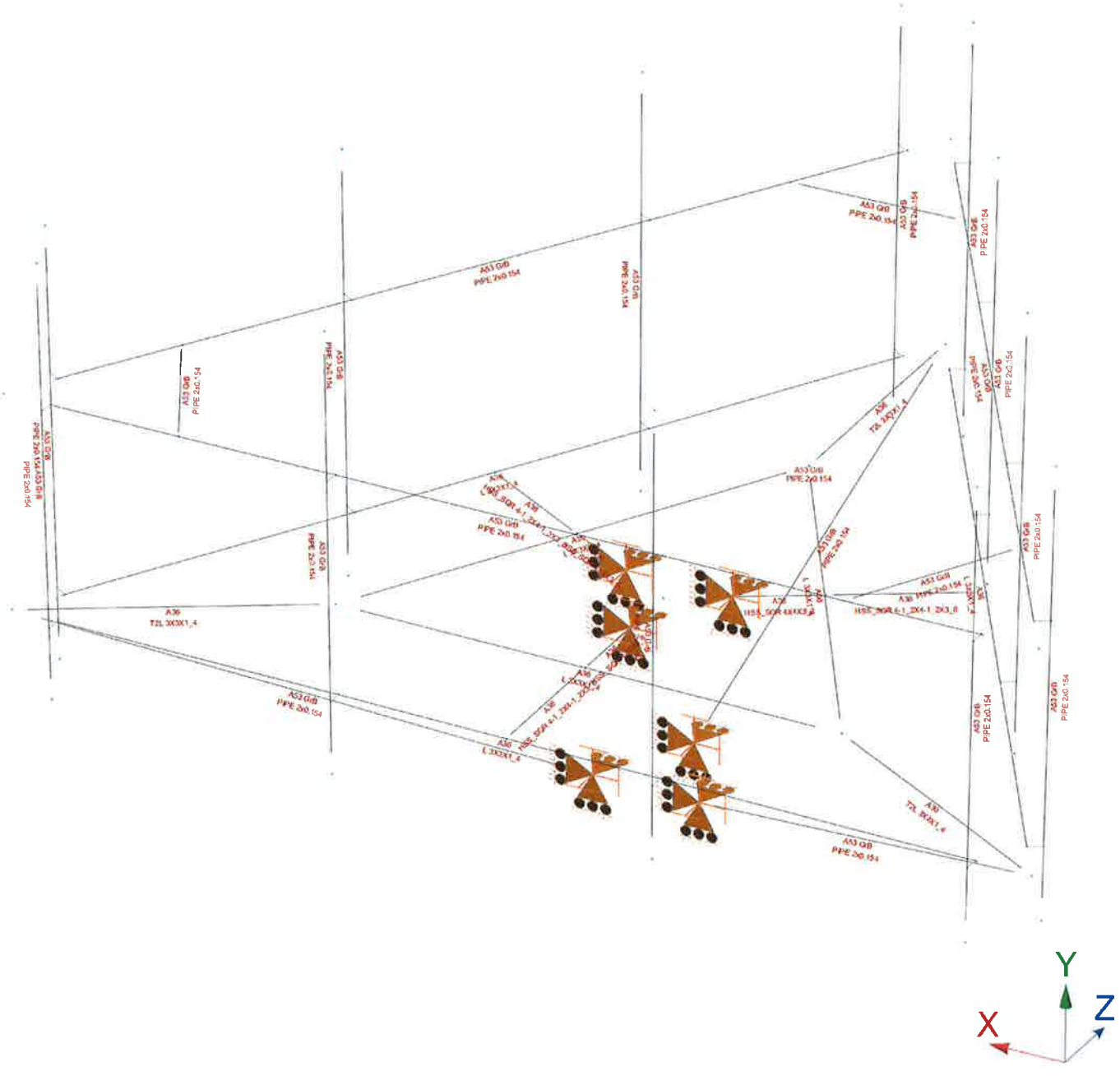

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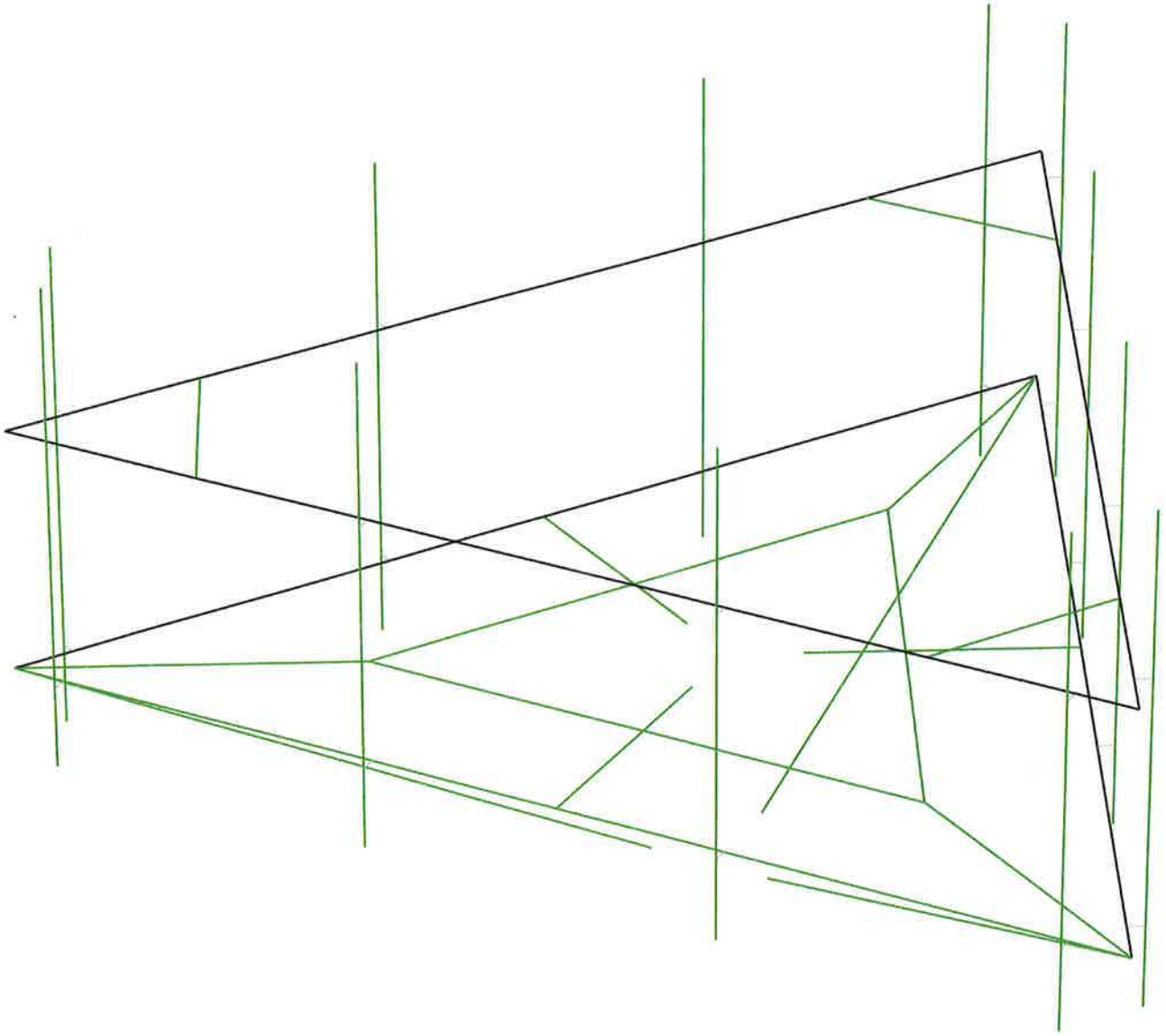
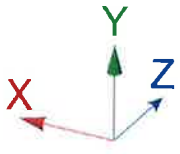
Design status

- Not designed
- Error on design
- Design O.K.
- With warnings





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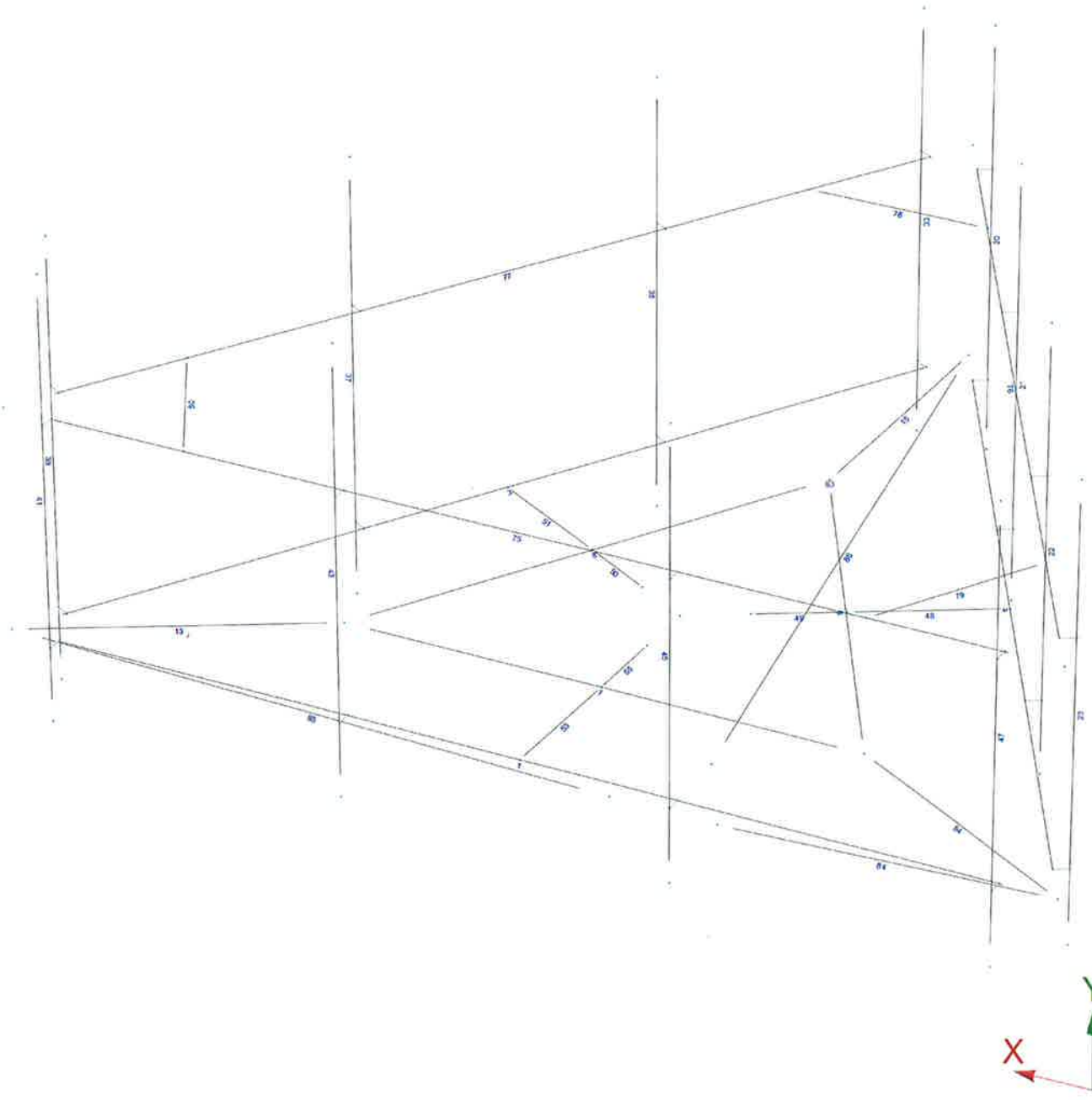

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Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4-1_2X4-1_2X3_8	48	LC1 at 0.00%	**0.35**	**OK**	Eq. H1-1b
			LC2 at 0.00%	0.33	OK	Eq. H1-1b
			LC3 at 0.00%	0.14	OK	Eq. H1-1b
			LC4 at 0.00%	0.08	OK	Eq. H1-1b
			LC5 at 0.00%	0.06	OK	Eq. H1-1b
		51	LC1 at 100.00%	**0.35**	**OK**	Eq. H1-1b
			LC2 at 100.00%	0.33	OK	Eq. H1-1b
			LC3 at 100.00%	0.15	OK	Eq. H1-1b
			LC4 at 100.00%	0.08	OK	Eq. H1-1b
			LC5 at 100.00%	0.06	OK	Eq. H1-1b
		53	LC1 at 0.00%	0.01	OK	Eq. H1-1b
			LC2 at 0.00%	0.01	OK	Eq. H1-1b
			LC3 at 100.00%	**0.07**	**OK**	Eq. H1-1b
			LC4 at 100.00%	0.06	OK	Eq. H1-1b
			LC5 at 100.00%	0.04	OK	Eq. H1-1b
	HSS_SQR 4X4X3_8	49	LC1 at 100.00%	**0.75**	**OK**	Eq. H1-1b
			LC2 at 100.00%	0.71	OK	Eq. H1-1b
			LC3 at 100.00%	0.31	OK	Eq. H1-1b
			LC4 at 100.00%	0.17	OK	Eq. H1-1b
			LC5 at 100.00%	0.13	OK	Eq. H1-1b
		50	LC1 at 0.00%	**0.76**	**OK**	Eq. H1-1b
			LC2 at 0.00%	0.72	OK	Eq. H1-1b
			LC3 at 0.00%	0.31	OK	Eq. H1-1b
			LC4 at 0.00%	0.17	OK	Eq. H1-1b
			LC5 at 0.00%	0.13	OK	Eq. H1-1b
		55	LC1 at 100.00%	0.04	OK	Eq. H1-1b
			LC2 at 0.00%	0.02	OK	Eq. H1-1b
			LC3 at 100.00%	**0.19**	**OK**	Eq. H1-1b
			LC4 at 100.00%	0.15	OK	Eq. H1-1b
			LC5 at 100.00%	0.12	OK	Eq. H1-1b
	L 3X3X1_4	1	LC1 at 48.96%	**0.42**	**OK**	Eq. H3-8
			LC2 at 48.96%	0.41	OK	Eq. H2-1
			LC3 at 48.96%	0.36	OK	Eq. H2-1
			LC4 at 48.96%	0.29	OK	Eq. H2-1
			LC5 at 48.96%	0.22	OK	Eq. H2-1
		3	LC1 at 64.58%	**0.95**	**With warnings**	Eq. H2-1
			LC2 at 64.58%	0.95	With warnings	Eq. H2-1

		LC3 at 51.04%	0.45	With warnings	Eq. H2-1
		LC4 at 51.04%	0.31	With warnings	Eq. H2-1
		LC5 at 51.04%	0.23	With warnings	Eq. H2-1
	4	LC1 at 65.63%	0.72	With warnings	Eq. H2-1
		LC2 at 65.63%	**0.74**	**With warnings**	Eq. H2-1
		LC3 at 48.96%	0.54	OK	Eq. H2-1
		LC4 at 48.96%	0.36	OK	Eq. H2-1
		LC5 at 48.96%	0.27	OK	Eq. H2-1
	6	LC1 at 59.38%	0.21	OK	Eq. H2-1
		LC2 at 62.50%	0.17	OK	Eq. H2-1
		LC3 at 43.75%	**0.24**	**OK**	Eq. H2-1
		LC4 at 40.63%	0.19	OK	Sec. F1
		LC5 at 40.63%	0.14	OK	Sec. F1
	7	LC1 at 50.00%	0.66	OK	Eq. H2-1
		LC2 at 50.00%	**0.68**	**OK**	Eq. H2-1
		LC3 at 50.00%	0.38	OK	Eq. H2-1
		LC4 at 50.00%	0.30	OK	Eq. H2-1
		LC5 at 50.00%	0.23	OK	Eq. H2-1
	8	LC1 at 43.75%	0.21	OK	Eq. H2-1
		LC2 at 37.50%	0.16	OK	Eq. H2-1
		LC3 at 59.38%	**0.24**	**OK**	Sec. F1
		LC4 at 62.50%	0.19	OK	Sec. F1
		LC5 at 62.50%	0.15	OK	Sec. F1
PIPE 2x0.154	20	LC1 at 16.67%	**0.41**	**OK**	Eq. H1-1b
		LC2 at 16.67%	0.38	OK	Eq. H1-1b
		LC3 at 16.67%	0.18	OK	Eq. H1-1b
		LC4 at 16.67%	0.09	OK	Eq. H1-1b
		LC5 at 16.67%	0.07	OK	Eq. H1-1b
	21	LC1 at 64.58%	0.33	OK	Eq. H1-1b
		LC2 at 64.58%	**0.33**	**OK**	Eq. H1-1b
		LC3 at 22.92%	0.11	OK	Eq. H1-1b
		LC4 at 16.67%	0.10	OK	Eq. H1-1b
		LC5 at 16.67%	0.08	OK	Eq. H1-1b
	22	LC1 at 64.58%	0.57	OK	Eq. H1-1b
		LC2 at 64.58%	**0.57**	**OK**	Eq. H1-1b
		LC3 at 16.67%	0.11	OK	Eq. H1-1b
		LC4 at 16.67%	0.03	OK	Eq. H1-1b
		LC5 at 16.67%	0.02	OK	Eq. H1-1b
	23	LC1 at 16.67%	0.27	OK	Eq. H1-1b
		LC2 at 16.67%	**0.28**	**OK**	Eq. H1-1b
		LC3 at 22.92%	0.09	OK	Eq. H1-1b
		LC4 at 16.67%	0.08	OK	Eq. H1-1b
		LC5 at 16.67%	0.06	OK	Eq. H1-1b
	33	LC1 at 16.67%	**0.41**	**OK**	Eq. H1-1b
		LC2 at 16.67%	0.38	OK	Eq. H1-1b
		LC3 at 16.67%	0.17	OK	Eq. H1-1b
		LC4 at 16.67%	0.09	OK	Eq. H1-1b
		LC5 at 16.67%	0.07	OK	Eq. H1-1b
	35	LC1 at 64.58%	**0.44**	**OK**	Eq. H1-1b
		LC2 at 64.58%	0.44	OK	Eq. H1-1b
		LC3 at 64.58%	0.09	OK	Eq. H1-1b
		LC4 at 16.67%	0.04	OK	Eq. H1-1b
		LC5 at 16.67%	0.03	OK	Eq. H1-1b

37	LC1 at 16.67%	**0.60**	**OK**	Eq. H1-1b
	LC2 at 16.67%	0.58	OK	Eq. H1-1b
	LC3 at 16.67%	0.21	OK	Eq. H1-1b
	LC4 at 16.67%	0.09	OK	Eq. H1-1b
	LC5 at 16.67%	0.07	OK	Eq. H1-1b
39	LC1 at 16.67%	0.26	OK	Eq. H1-1b
	LC2 at 16.67%	**0.27**	**OK**	Eq. H1-1b
	LC3 at 16.67%	0.08	OK	Eq. H1-1b
	LC4 at 16.67%	0.08	OK	Eq. H1-1b
	LC5 at 16.67%	0.06	OK	Eq. H1-1b
41	LC1 at 66.67%	**0.21**	**OK**	Eq. H1-1b
	LC2 at 66.67%	0.21	OK	Eq. H1-1b
	LC3 at 16.67%	0.12	OK	Eq. H1-1b
	LC4 at 16.67%	0.08	OK	Eq. H1-1b
	LC5 at 16.67%	0.06	OK	Eq. H1-1b
43	LC1 at 64.58%	**0.32**	**OK**	Eq. H1-1b
	LC2 at 64.58%	0.32	OK	Eq. H1-1b
	LC3 at 64.58%	0.07	OK	Eq. H1-1b
	LC4 at 64.58%	0.02	OK	Eq. H1-1b
	LC5 at 64.58%	0.02	OK	Eq. H1-1b
45	LC1 at 64.58%	**0.20**	**OK**	Eq. H1-1b
	LC2 at 64.58%	0.20	OK	Eq. H1-1b
	LC3 at 16.67%	0.11	OK	Eq. H1-1b
	LC4 at 16.67%	0.08	OK	Eq. H1-1b
	LC5 at 16.67%	0.06	OK	Eq. H1-1b
47	LC1 at 64.58%	**0.15**	**OK**	Eq. H1-1b
	LC2 at 64.58%	0.14	OK	Eq. H1-1b
	LC3 at 16.67%	0.12	OK	Eq. H1-1b
	LC4 at 16.67%	0.09	OK	Eq. H1-1b
	LC5 at 16.67%	0.07	OK	Eq. H1-1b
75	LC1 at 65.18%	**0.46**	**With warnings**	Eq. H1-1b
	LC2 at 65.18%	0.45	With warnings	Eq. H1-1b
	LC3 at 65.18%	0.10	With warnings	Eq. H1-1b
	LC4 at 65.18%	0.06	With warnings	Eq. H1-1b
	LC5 at 65.18%	0.05	With warnings	Eq. H1-1b
76	LC1 at 17.86%	0.50	With warnings	Eq. H1-1b
	LC2 at 17.86%	**0.50**	**With warnings**	Eq. H1-1b
	LC3 at 65.18%	0.09	With warnings	Eq. H1-1b
	LC4 at 64.29%	0.05	With warnings	Eq. H1-1b
	LC5 at 64.29%	0.04	With warnings	Eq. H1-1b
77	LC1 at 33.93%	**0.49**	**With warnings**	Eq. H1-1b
	LC2 at 33.93%	0.48	With warnings	Eq. H1-1b
	LC3 at 64.29%	0.13	With warnings	Eq. H1-1b
	LC4 at 64.29%	0.05	With warnings	Eq. H1-1b
	LC5 at 64.29%	0.04	With warnings	Eq. H1-1b
78	LC1 at 100.00%	0.21	OK	Eq. H1-1b
	LC2 at 100.00%	**0.21**	**OK**	Eq. H1-1b
	LC3 at 0.00%	0.04	OK	Eq. H1-1b
	LC4 at 0.00%	0.01	OK	Eq. H1-1b
	LC5 at 0.00%	0.01	OK	Eq. H1-1b
79	LC1 at 100.00%	**0.32**	**OK**	Eq. H1-1b
	LC2 at 100.00%	0.32	OK	Eq. H1-1b
	LC3 at 100.00%	0.06	OK	Eq. H1-1b
	LC4 at 0.00%	0.02	OK	Eq. H1-1b

		LC5 at 0.00%	0.01	OK	Eq. H1-1b
	80	LC1 at 0.00%	**0.32**	**OK**	Eq. H1-1b
		LC2 at 0.00%	0.32	OK	Eq. H1-1b
		LC3 at 0.00%	0.05	OK	Eq. H1-1b
		LC4 at 0.00%	0.01	OK	Eq. H1-1b
		LC5 at 0.00%	0.01	OK	Eq. H1-1b
	83	LC1 at 0.00%	0.06	OK	
		LC2 at 0.00%	0.03	OK	
		LC3 at 100.00%	**0.13**	**OK**	Eq. H1-1b
		LC4 at 0.00%	0.11	OK	
		LC5 at 0.00%	0.08	OK	
	84	LC1 at 0.00%	0.18	OK	Eq. H1-1b
		LC2 at 0.00%	0.14	OK	Eq. H1-1b
		LC3 at 0.00%	**0.31**	**OK**	Eq. H1-1a
		LC4 at 0.00%	0.16	OK	Eq. H1-1b
		LC5 at 0.00%	0.12	OK	Eq. H1-1b
	85	LC1 at 100.00%	0.17	OK	Eq. H1-1b
		LC2 at 0.00%	0.14	OK	Eq. H1-1b
		LC3 at 100.00%	**0.30**	**OK**	Eq. H1-1a
		LC4 at 0.00%	0.15	OK	Sec. E1
		LC5 at 0.00%	0.12	OK	Sec. E1
	86	LC1 at 0.00%	**0.55**	**OK**	Eq. H1-1a
		LC2 at 0.00%	0.49	OK	Eq. H1-1a
		LC3 at 100.00%	0.41	OK	Eq. H1-1a
		LC4 at 100.00%	0.21	OK	Eq. H1-1b
		LC5 at 100.00%	0.16	OK	Eq. H1-1b
T2L 3X3X1_4	13	LC1 at 0.00%	**0.24**	**OK**	Eq. H1-1b
		LC2 at 0.00%	0.23	OK	Eq. H1-1b
		LC3 at 0.00%	0.11	OK	Eq. H1-1b
		LC4 at 6.25%	0.07	OK	Eq. H1-1b
		LC5 at 6.25%	0.05	OK	Eq. H1-1b
	15	LC1 at 0.00%	**0.18**	**OK**	Eq. H1-1b
		LC2 at 0.00%	0.16	OK	Eq. H1-1b
		LC3 at 100.00%	0.16	OK	Eq. H1-1b
		LC4 at 100.00%	0.13	OK	Eq. H1-1b
		LC5 at 100.00%	0.10	OK	Eq. H1-1b
	54	LC1 at 100.00%	**0.25**	**OK**	Eq. H1-1b
		LC2 at 100.00%	0.23	OK	Eq. H1-1b
		LC3 at 100.00%	0.12	OK	Eq. H1-1b
		LC4 at 93.75%	0.07	OK	Eq. H1-1b
		LC5 at 93.75%	0.06	OK	Eq. H1-1b

Bentley

Current Date: 11/30/2017 2:00 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2313\CT2313 (mod).etz\

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
30	-0.7578	0.00	0.4375	0
31	-3.5005	0.00	2.021	0
32	7.00	0.00	-4.042	0
33	-0.0005	0.00	8.0832	0
34	-1.7684	0.00	1.021	0
37	0.00	0.00	0.00	0
38	3.527	0.00	-2.042	0
39	-0.0049	0.00	4.0755	0
47	0.7578	0.00	0.4375	0
48	3.5005	0.00	2.021	0
50	1.7684	0.00	1.021	0
51	0.0049	0.00	4.0755	0
53	0.00	0.00	-4.042	0
54	-7.00	0.00	-4.042	0
55	0.00	0.00	-2.042	0
56	-3.527	0.00	-2.042	0
57	-0.3755	0.00	7.4337	0
58	-6.6655	0.00	-3.4609	0
60	-2.4571	0.00	3.8281	0
61	-4.6655	0.00	0.0032	0
62	-6.8387	0.00	-3.3609	0
63	-0.5487	0.00	7.5337	0

64	-2.6303	0.00	3.9281	0
65	-4.8387	0.00	0.1032	0
66	-2.6303	5.00	3.9281	0
67	-0.5487	5.00	7.5337	0
68	-4.8387	5.00	0.1032	0
69	-6.8387	5.00	-3.3609	0
70	-0.5487	-1.00	7.5337	0
71	-4.8387	-1.00	0.1032	0
72	-2.6303	-1.00	3.9281	0
73	-6.8387	-1.00	-3.3609	0
90	0.3355	0.00	7.5029	0
91	0.5087	0.00	7.6029	0
92	0.5087	5.00	7.6029	0
93	0.5087	-1.00	7.6029	0
94	2.3355	0.00	4.0388	0
95	2.5087	0.00	4.1388	0
96	2.5087	5.00	4.1388	0
97	2.5087	-1.00	4.1388	0
98	4.5438	0.00	0.2139	0
99	4.717	0.00	0.3139	0
100	4.717	5.00	0.3139	0
101	4.717	-1.00	0.3139	0
102	6.6255	0.00	-3.3917	0
103	6.7987	0.00	-3.2917	0
104	6.7987	5.00	-3.2917	0
105	6.7987	-1.00	-3.2917	0
106	6.33	0.00	-4.042	0
107	6.33	0.00	-4.242	0
108	6.33	5.00	-4.242	0
109	6.33	-1.00	-4.242	0
110	2.33	0.00	-4.042	0
111	2.33	0.00	-4.242	0
112	2.33	5.00	-4.242	0
113	2.33	-1.00	-4.242	0
114	-2.0867	0.00	-4.042	0
115	-2.0867	0.00	-4.242	0
116	-2.0867	5.00	-4.242	0
117	-2.0867	-1.00	-4.242	0
118	-6.25	0.00	-4.042	0
119	-6.25	0.00	-4.242	0
120	-6.25	5.00	-4.242	0
121	-6.25	-1.00	-4.242	0
122	0.00	0.00	-0.872	0
127	-0.7578	-2.50	-0.4375	0
128	0.7578	-2.50	-0.4375	0
129	0.00	-2.50	0.875	0
130	-2.4571	3.00	3.8281	0
131	-2.6303	3.00	3.9281	0
132	-0.3755	3.00	7.4337	0
133	-0.5487	3.00	7.5337	0
134	-4.6655	3.00	0.0032	0
135	-4.8387	3.00	0.1032	0
136	-6.6655	3.00	-3.4609	0
137	-6.8387	3.00	-3.3609	0
138	-0.0005	3.00	8.0832	0
139	-7.0005	3.00	-4.0412	0
150	7.00	3.00	-4.042	0
151	0.3355	3.00	7.5029	0
152	0.5087	3.00	7.6029	0
153	2.3355	3.00	4.0388	0

154	2.5087	3.00	4.1388	0
155	4.5438	3.00	0.2139	0
156	4.717	3.00	0.3139	0
157	6.6255	3.00	-3.3917	0
158	6.7987	3.00	-3.2917	0
159	6.33	3.00	-4.042	0
160	6.33	3.00	-4.242	0
161	2.33	3.00	-4.042	0
162	2.33	3.00	-4.242	0
163	-2.0867	3.00	-4.042	0
164	-2.0867	3.00	-4.242	0
165	-6.25	3.00	-4.042	0
166	-6.25	3.00	-4.242	0
167	-1.2495	3.00	5.9181	0
168	-5.7505	3.00	-1.8761	0
171	1.2505	3.00	5.9181	0
172	5.75	3.00	-1.8769	0
173	4.50	3.00	-4.042	0
174	-4.5005	3.00	-4.0412	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
30	1	1	1	1	1	1
47	1	1	1	1	1	1
122	1	1	1	1	1	1
127	1	1	1	1	1	1
128	1	1	1	1	1	1
129	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	54	32		L 3X3X1_4	A36	0.00	0.00	0.00
3	33	32		L 3X3X1_4	A36	0.00	0.00	0.00
4	33	54		L 3X3X1_4	A36	0.00	0.00	0.00
6	51	56		L 3X3X1_4	A36	0.00	0.00	0.00
7	56	38		L 3X3X1_4	A36	0.00	0.00	0.00
8	38	39		L 3X3X1_4	A36	0.00	0.00	0.00
13	38	32		T2L 3X3X1_4	A36	0.00	0.00	0.00
15	33	39		T2L 3X3X1_4	A36	0.00	0.00	0.00
20	70	67		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
21	72	66		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
22	71	68		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
23	73	69		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
33	93	92		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
35	97	96		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
37	101	100		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
39	105	104		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
41	109	108		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

43	113	112	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
45	117	116	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	121	120	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	34	31	HSS_SQR 4-1_2X4-1_2...	A36	0.00	0.00	0.00
49	34	30	HSS_SQR 4X4X3_8	A36	0.00	0.00	0.00
50	47	50	HSS_SQR 4X4X3_8	A36	0.00	0.00	0.00
51	48	50	HSS_SQR 4-1_2X4-1_2...	A36	0.00	0.00	0.00
53	53	55	HSS_SQR 4-1_2X4-1_2...	A36	0.00	0.00	0.00
54	54	56	T2L 3X3X1_4	A36	0.00	0.00	0.00
55	55	122	HSS_SQR 4X4X3_8	A36	0.00	0.00	0.00
75	150	139	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
76	139	138	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
77	138	150	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
78	171	167	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
79	168	174	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
80	173	172	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
83	39	51	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
84	54	127	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
85	128	32	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
86	129	33	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
3	270.00	0	0.00	0.00	0.00
6	270.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
8	270.00	0	0.00	0.00	0.00
13	180.00	0	0.00	0.00	0.00
15	180.00	0	0.00	0.00	0.00
20	0.00	2	0.50	0.00	0.866
21	0.00	2	0.50	0.00	0.866
22	0.00	2	0.50	0.00	0.866
23	0.00	2	0.50	0.00	0.866
33	0.00	2	0.50	0.00	-0.866
35	0.00	2	0.50	0.00	-0.866
37	0.00	2	0.50	0.00	-0.866
39	0.00	2	0.50	0.00	-0.866
54	180.00	0	0.00	0.00	0.00

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

Structural Analysis Report

Existing 139 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13060-A

Customer Site Name: Newtown 2

Carrier Name: AT&T

Carrier Site ID / Name: CT2313 / Newton-Edmund Road

Site Location: 3 Edmund Road

Newtown, Connecticut

Fairfield County

Latitude: 41.420899

Longitude: -73.298102

6/1/18

Analysis Result:

Max Structural Usage: 54.4% [Pass]

Max Foundation Usage: 44.0% [Pass]

Additional Usage Caused by Mount Modification: +2.5 %

Report Prepared by: Matthew Baker

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Report Prepared by: Matthew Baker

Introduction

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

Sources of Information

Tower Drawings	Sabre Job #06-07285, dated 07/28/05
Foundation Drawing	Sabre Job #06-07285, dated 07/28/05
Geotechnical Report	Jaworski Geotech, Inc. Project #04125G, dated 01/30/04
Modification Drawings	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 120.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 93.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.208, S_1 = 0.066

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	138.5	-	-	Low Profile Platform	-	-
2	128.0	3	Ericsson - AIR21 B2A B4P - Panel	Low Profile Platform	(13) 1 5/8"	T-Mobile
3		3	Ericsson - AIR21 B4A B2P - Panel			
4		3	Ericsson - KRY 112 114-1 Double TMA			
-	119.0	9	Powerwave - 7770 - Panel	Low Profile Platform	(12) 1 5/8" (1) 1/2" Fiber (2) 3/4" DC (1) 2" Innerduct	AT&T
-		3	Powerwave - P65-16-XLH-RR - Panel			
-		9	Powerwave - LGP21401 - TMA			
-		3	Powerwave - TT19-08BP-111-001 - TMA			
-		6	Ericsson - RRUS-11 - RRU			
-		1	Raycap - DC6-48-60-18-8F - SP			

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
5	119.0	6	Powerwave - 7770 - Panel	Low Profile Platform w/ Site Pro HRK12 Handrail Kit and PRK-1245L Mount Reinforcement Kit	(12) 1 5/8" (2) 1/2" Fiber (4) 3/4" DC (1) 2" Innerduct	AT&T
6		3	Quintel - QS66512-2 - Panel			
7		3	Cci - HPA-65R-BUU-H6 - Panel			
8		9	Powerwave - LGP21401 - TMA			
9		3	Powerwave - TT19-08BP-111-001 - TMA			
10		6	Kaelus - DBC0061F1V51-2 - Diplexer			
11		3	Ericsson - RRUS 32 B30 - RRU			
12		3	Ericsson - RRUS-11 - RRU			
13		3	Ericsson - RRUS-32 B2 - RRU			
14		2	Raycap - DC6-48-60-18-8F - SP			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**54.4%**	**49.8%**	**39.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	1882.0	17.2	32.9
Analysis Reactions	1770.1	17.6	33.5
Factored Reactions*	2540.7	23.2	44.4
% of Design Reactions	69.7%	75.9%	75.5%

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

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.9482 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

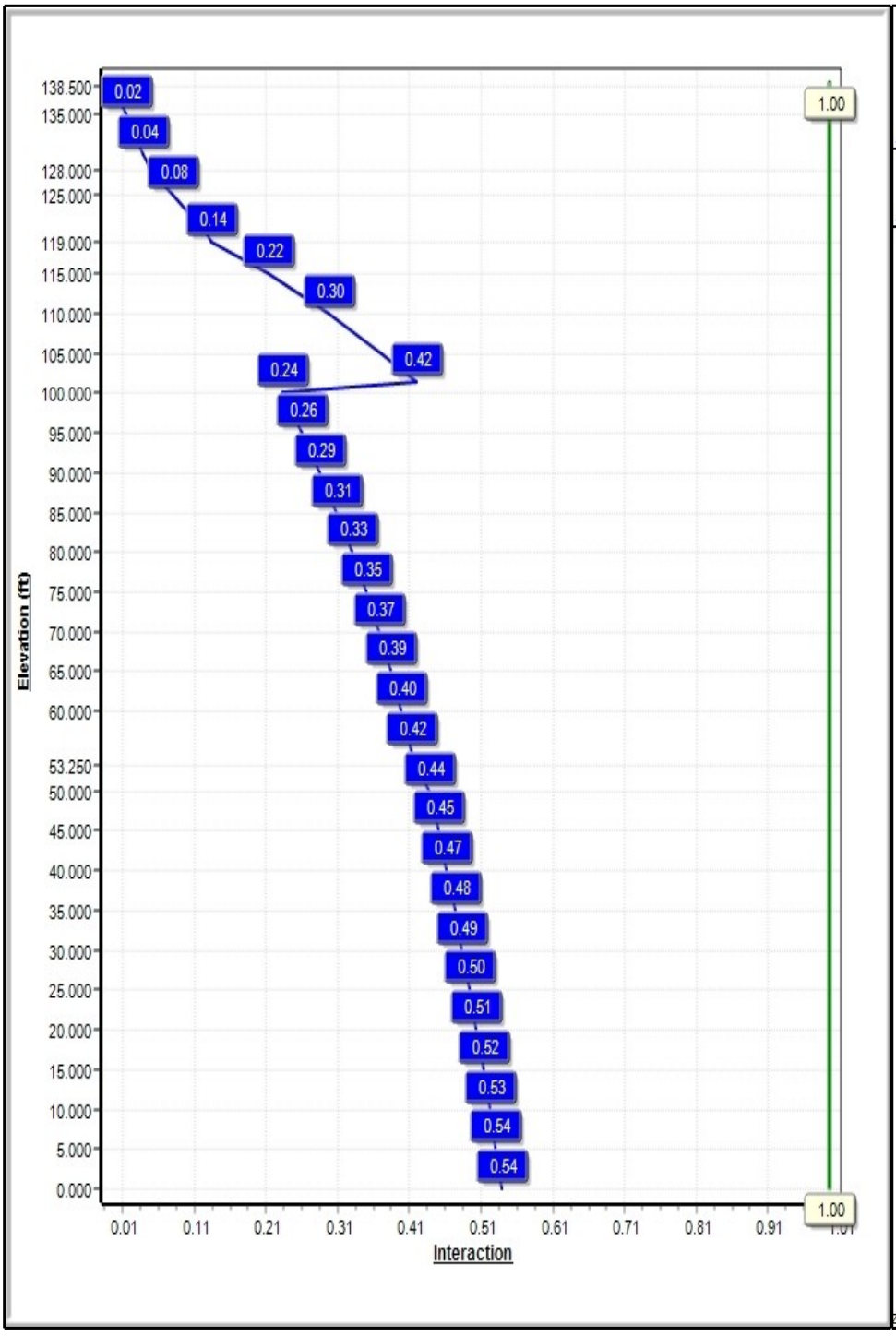
Usage Diagram - Max Ratio 54.37% at 0.0ft

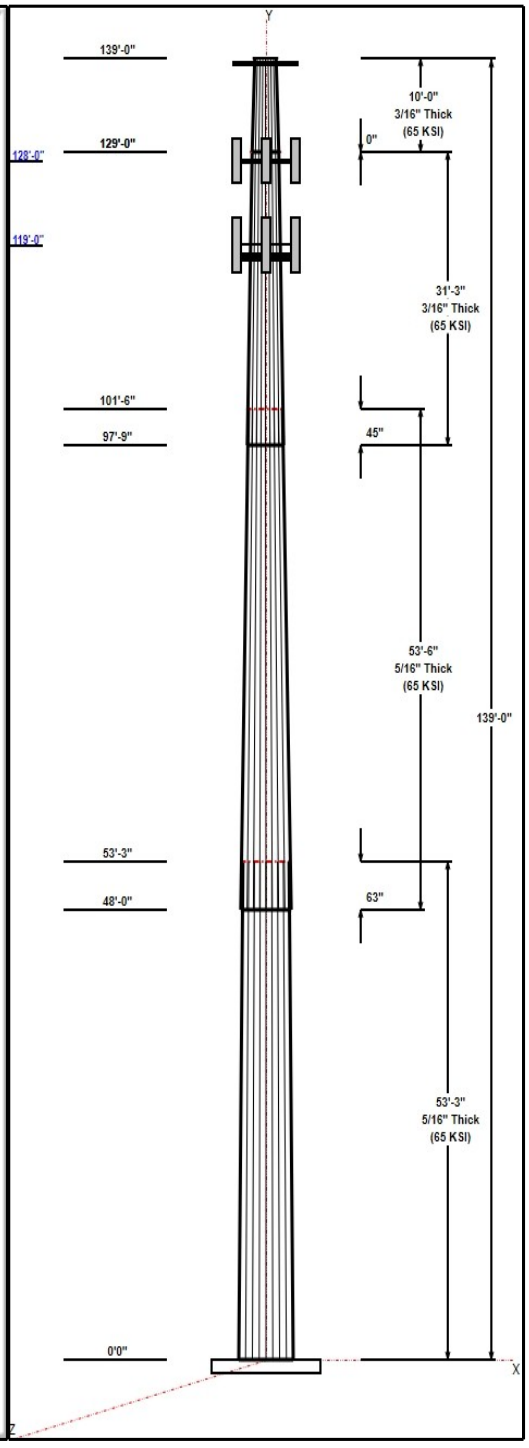
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	24
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 93 mph Wind





Structure: CT13060-A-SBA

Type: Tapered
Site Name: Newtown 2
Height: 139.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23496

6/1/2018

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	39.00	51.51	0.313		0.23496	65
2	53.50	28.29	40.86	0.313	Slip	0.23496	65
3	31.25	22.20	29.54	0.188	Slip	0.23496	65
4	10.00	19.85	22.20	0.188	Butt	0.23496	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
138.50	138.50	1	Low Profile Platform	-
128.00	128.00	1	Low Profile Platform	T-Mobile
128.00	128.00	3	Ericsson - AIR21 B2A B4P	T-Mobile
128.00	128.00	3	Ericsson - AIR21 B4A B2P	T-Mobile
128.00	128.00	3	Ericsson - KRY 112 114-1	T-Mobile
119.00	119.00	1	Low Profile Platform	AT&T
119.00	119.00	6	Powerwave - 7770	AT&T
119.00	119.00	3	Quintel - QS66512-2	AT&T
119.00	119.00	3	Cci - HPA-65R-BUU-H6	AT&T
119.00	119.00	9	Powerwave - LGP21401 -	AT&T
119.00	119.00	3	Powerwave -	AT&T
119.00	119.00	6	Kaelus - DBC0061F1V51-2	AT&T
119.00	119.00	3	Ericsson - RRUS 32 B30 -	AT&T
119.00	119.00	3	Ericsson - RRUS-11 - RRU	AT&T
119.00	119.00	3	Ericsson - RRUS-32 B2 -	AT&T
119.00	119.00	2	Raycap - DC6-48-60-18-8F	AT&T
119.00	119.00	1	Site Pro HRK12 Handrail	AT&T
119.00	119.00	1	Site Pro PRK-1245L	AT&T

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	128.00	Inside	1 5/8" Coax	T-Mobile
0.00	119.00	Inside	1 5/8" Coax	AT&T
0.00	119.00	Inside	1/2" Fiber	AT&T
0.00	119.00	Inside	2" Innerduct	AT&T
0.00	119.00	Inside	3/4" DC	AT&T

Anchor Bolts

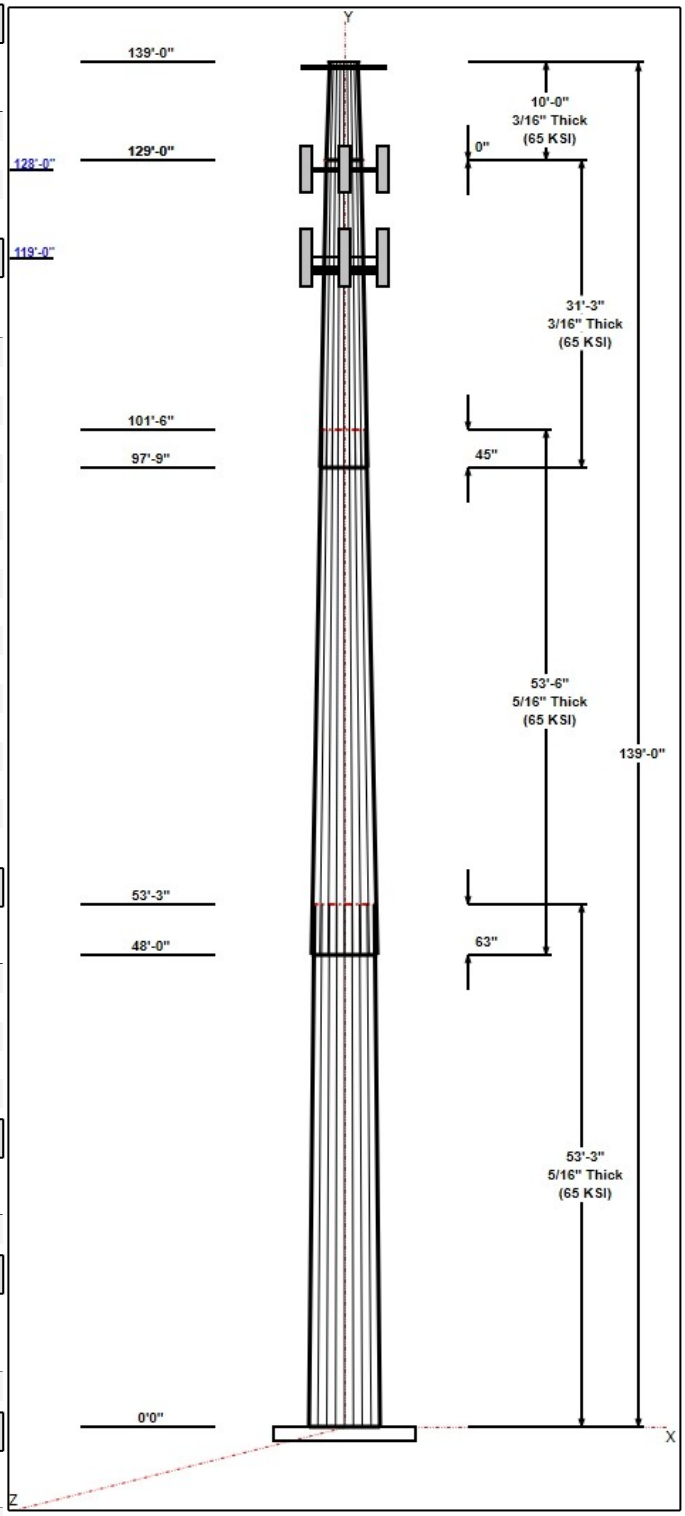
Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	56.0	60.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 93 mph Wind	1770.1	17.6	33.5
0.9D + 1.6W 93 mph Wind	1751.2	17.6	25.1
1.2D + 1.0Di + 1.0Wi 50 mph Wind	572.9	5.7	52.5
1.2D + 1.0E	187.8	1.7	33.5
0.9D + 1.0E	185.6	1.7	25.1



1.0D + 1.0W 60 mph Wind	457.4	4.6	27.9

Structure: CT13060-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Newtown 2
Height: 139.00 (ft)

6/1/2018

Tower Engineering Solutions

Shaft Properties

Structure:	CT13060-A-SBA		**Code:**	EIA/TIA-222-G	6/1/2018
Site Name:	Newtown 2		**Exposure:**	B	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.250	0.3125	65		0.00	8,077
2	18	53.500	0.3125	65	Slip	63.00	6,186
3	18	31.250	0.1875	65	Slip	45.00	1,625
4	18	10.000	0.1875	65	Flange	0.00	422
					Total Shaft Weight:		**16,310**

	Bottom						Top						
Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	51.51	0.00	50.78	16816.70	27.65	164.83	39.00	53.25	38.37	7255.12	20.59	124.7	0.234964
2	40.86	48.00	40.21	8351.83	21.64	130.74	28.29	101.50	27.75	2743.10	14.55	90.52	0.234964
3	29.54	97.75	17.47	1901.87	26.37	157.56	22.20	129.00	13.10	801.92	19.47	118.4	0.234964
4	22.20	129.0	13.10	801.92	19.47	118.40	19.85	139.00	11.70	571.56	17.26	105.8	0.234964

Load Summary

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	138.50	Low Profile Platform	1	1800.00	37.20	1.00	3358.21	66.827	1.00	0.00	0.00
2	128.00	Low Profile Platform	1	1650.00	33.40	1.00	3067.15	59.792	1.00	0.00	0.00
3	128.00	Ericsson - AIR21 B2A B4P	3	91.50	6.09	0.85	249.87	7.165	0.87	0.00	0.00
4	128.00	Ericsson - AIR21 B4A B2P	3	90.40	6.09	0.85	248.73	7.165	0.87	0.00	0.00
5	128.00	Ericsson - KRY 112 114-1 Double	3	11.00	0.41	0.50	21.61	0.878	0.50	0.00	0.00
6	119.00	Low Profile Platform	1	1800.00	40.20	1.00	3334.75	73.105	1.00	0.00	0.00
7	119.00	Powerwave - 7770	6	35.00	5.50	0.77	163.94	6.517	0.79	0.00	0.00
8	119.00	Quintel - QS66512-2	3	111.00	8.13	0.92	320.88	9.378	0.93	0.00	0.00
9	119.00	Cci - HPA-65R-BUU-H6	3	51.00	9.66	0.83	285.26	10.984	0.85	0.00	0.00
10	119.00	Powerwave - LGP21401 - TMA	9	14.10	1.29	0.50	38.53	2.107	0.50	0.00	0.00
11	119.00	Powerwave - TT19-08BP-111-001 -	3	16.00	0.64	0.50	35.78	1.219	0.50	0.00	0.00
12	119.00	Kaelus - DBC0061F1V51-2 -	6	25.40	0.43	0.50	39.61	0.709	0.50	0.00	0.00
13	119.00	Ericsson - RRUS 32 B30 - RRU	3	60.00	2.74	0.67	141.85	3.675	0.67	0.00	0.00
14	119.00	Ericsson - RRUS-11 - RRU	3	51.00	2.52	0.67	121.62	3.139	0.67	0.00	0.00
15	119.00	Ericsson - RRUS-32 B2 - RRU	3	53.00	2.74	0.67	125.30	3.675	0.67	0.00	0.00
16	119.00	Raycap - DC6-48-60-18-8F - SP	2	31.80	0.92	1.00	92.21	1.348	1.00	0.00	0.00
17	119.00	Site Pro HRK12 Handrail Kit	1	261.72	6.75	1.00	565.21	13.196	1.00	0.00	0.00
18	119.00	Site Pro PRK-1245L Platform	1	464.91	9.50	1.00	782.03	19.220	1.00	0.00	0.00
		Totals:	**55**	**8,134.23**			**17,512.53**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	128.00	(13) 1 5/8" Coax	0.00	Inside
0.00	119.00	(12) 1 5/8" Coax	0.00	Inside
0.00	119.00	(2) 1/2" Fiber	0.00	Inside
0.00	119.00	(1) 2" Innerduct	0.00	Inside
0.00	119.00	(4) 3/4" DC	0.00	Inside

Shaft Section Properties

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

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Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3125	51.510	50.780	16816.7	27.65	164.83	68.9	643.0	0.0
5.00		0.3125	50.335	49.614	15685.4	26.99	161.07	69.7	613.8	854.0
10.00		0.3125	49.160	48.449	14606.0	26.33	157.31	70.4	585.2	834.2
15.00		0.3125	47.986	47.284	13577.3	25.67	153.55	71.2	557.3	814.4
20.00		0.3125	46.811	46.119	12598.1	25.00	149.79	72.0	530.1	794.6
25.00		0.3125	45.636	44.954	11667.1	24.34	146.03	72.8	503.5	774.7
30.00		0.3125	44.461	43.788	10783.1	23.68	142.28	73.6	477.7	754.9
35.00		0.3125	43.286	42.623	9945.0	23.01	138.52	74.3	452.5	735.1
40.00		0.3125	42.111	41.458	9151.5	22.35	134.76	75.1	428.0	715.3
45.00		0.3125	40.937	40.293	8401.3	21.69	131.00	75.9	404.2	695.4
48.00	Bot - Section 2	0.3125	40.232	39.593	7971.5	21.29	128.74	76.4	390.3	407.8
50.00		0.3125	39.762	39.127	7693.3	21.02	127.24	76.7	381.1	540.0
53.25	Top - Section 1	0.3125	39.623	38.990	7612.5	20.95	126.79	0.0	0.0	863.9
55.00		0.3125	39.212	38.582	7376.1	20.71	125.48	77.0	370.5	231.0
60.00		0.3125	38.037	37.417	6727.8	20.05	121.72	77.8	348.4	646.5
65.00		0.3125	36.862	36.252	6118.6	19.39	117.96	78.6	326.9	626.7
70.00		0.3125	35.688	35.086	5547.3	18.73	114.20	79.4	306.2	606.9
75.00		0.3125	34.513	33.921	5012.8	18.06	110.44	80.2	286.1	587.0
80.00		0.3125	33.338	32.756	4513.8	17.40	106.68	80.9	266.7	567.2
85.00		0.3125	32.163	31.591	4049.0	16.74	102.92	81.7	248.0	547.4
90.00		0.3125	30.988	30.425	3617.3	16.07	99.16	82.5	229.9	527.6
95.00		0.3125	29.813	29.260	3217.4	15.41	95.40	82.5	212.6	507.7
97.75	Bot - Section 3	0.3125	29.167	28.619	3010.6	15.05	93.34	82.5	203.3	270.8
100.00		0.3125	28.639	28.095	2848.1	14.75	91.64	82.5	195.9	349.7
101.50	Top - Section 2	0.1875	28.661	16.945	1735.7	25.54	152.86	0.0	0.0	229.5
105.00		0.1875	27.839	16.455	1589.6	24.77	148.47	72.3	112.5	198.9
110.00		0.1875	26.664	15.756	1395.5	23.66	142.21	73.6	103.1	274.0
115.00		0.1875	25.489	15.057	1217.8	22.56	135.94	74.9	94.1	262.1
119.00		0.1875	24.549	14.498	1087.1	21.68	130.93	75.9	87.2	201.1
120.00		0.1875	24.314	14.358	1056.0	21.45	129.68	76.2	85.5	49.1
125.00		0.1875	23.139	13.659	909.1	20.35	123.41	77.5	77.4	238.3
128.00		0.1875	22.435	13.239	827.9	19.69	119.65	78.2	72.7	137.3
129.00	Top - Section 3	0.1875	22.200	13.100	801.9	19.47	118.40	78.5	71.1	44.8
129.00	Bot - Section 4	0.1875	22.200	13.100	801.9	19.47	118.40	78.5	71.1	
130.00		0.1875	21.965	12.960	776.5	19.25	117.14	78.8	69.6	44.3
135.00		0.1875	20.790	12.261	657.5	18.14	110.88	80.1	62.3	214.5
138.50		0.1875	19.967	11.771	581.9	17.37	106.49	81.0	57.4	143.1
139.00		0.1875	19.850	11.701	571.6	17.26	105.87	81.1	56.7	20.0
										16310.0

Wind Loading - Shaft

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

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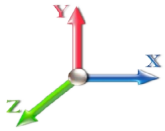
Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	14.724	16.20	339.15	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	14.724	16.20	331.41	0.650	0.000	5.00	21.545	14.00	362.9	0.0	1024.9
10.00		1.00	0.70	14.724	16.20	323.68	0.650	0.000	5.00	21.048	13.68	354.5	0.0	1001.1
15.00		1.00	0.70	14.724	16.20	315.94	0.650	0.000	5.00	20.551	13.36	346.2	0.0	977.3
20.00		1.00	0.70	14.724	16.20	308.21	0.650	0.000	5.00	20.054	13.04	337.8	0.0	953.5
25.00		1.00	0.70	14.724	16.20	300.47	0.650	0.000	5.00	19.557	12.71	329.4	0.0	929.7
30.00		1.00	0.70	14.736	16.21	292.86	0.650	0.000	5.00	19.060	12.39	321.3	0.0	905.9
35.00		1.00	0.73	15.400	16.94	291.47	0.650	0.000	5.00	18.563	12.07	327.0	0.0	882.1
40.00		1.00	0.76	15.999	17.60	289.02	0.650	0.000	5.00	18.066	11.74	330.7	0.0	858.3
45.00		1.00	0.79	16.546	18.20	285.73	0.650	0.000	5.00	17.569	11.42	332.6	0.0	834.5
48.00	Bot - Section 2	1.00	0.80	16.854	18.54	283.41	0.650	0.000	3.00	10.303	6.70	198.6	0.0	489.3
50.00		1.00	0.81	17.052	18.76	281.74	0.650	0.000	2.00	6.875	4.47	134.1	0.0	647.9
53.25	Top - Section 1	1.00	0.83	17.362	19.10	278.82	0.650	0.000	3.25	11.002	7.15	218.5	0.0	1036.7
55.00		1.00	0.83	17.523	19.28	281.65	0.650	0.000	1.75	5.837	3.79	117.0	0.0	277.2
60.00		1.00	0.85	17.964	19.76	276.63	0.650	0.000	5.00	16.342	10.62	335.8	0.0	775.8
65.00		1.00	0.87	18.380	20.22	271.17	0.650	0.000	5.00	15.845	10.30	333.2	0.0	752.0
70.00		1.00	0.89	18.773	20.65	265.32	0.650	0.000	5.00	15.348	9.98	329.6	0.0	728.2
75.00		1.00	0.91	19.147	21.06	259.13	0.650	0.000	5.00	14.851	9.65	325.3	0.0	704.5
80.00		1.00	0.93	19.503	21.45	252.62	0.650	0.000	5.00	14.354	9.33	320.2	0.0	680.7
85.00		1.00	0.94	19.844	21.83	245.84	0.650	0.000	5.00	13.857	9.01	314.6	0.0	656.9
90.00		1.00	0.96	20.170	22.19	238.80	0.650	0.000	5.00	13.359	8.68	308.3	0.0	633.1
95.00		1.00	0.97	20.484	22.53	231.53	0.650	0.000	5.00	12.862	8.36	301.4	0.0	609.3
97.75	Bot - Section 3	1.00	0.98	20.652	22.72	227.44	0.650	0.000	2.75	6.862	4.46	162.1	0.0	325.0
100.00		1.00	0.99	20.787	22.87	224.04	0.650	0.000	2.25	5.574	3.62	132.6	0.0	419.6
101.50	Top - Section 2	1.00	0.99	20.875	22.96	221.76	0.650	0.000	1.50	3.660	2.38	87.4	0.0	275.4
105.00		1.00	1.00	21.079	23.19	219.31	0.650	0.000	3.50	8.367	5.44	201.8	0.0	238.7
110.00		1.00	1.02	21.361	23.50	211.45	0.650	0.000	5.00	11.530	7.49	281.8	0.0	328.8
115.00		1.00	1.03	21.634	23.80	203.43	0.650	0.000	5.00	11.033	7.17	273.1	0.0	314.6
119.00	Appurtenance(s)	1.00	1.04	21.846	24.03	196.88	0.650	0.000	4.00	8.468	5.50	211.6	0.0	241.4
120.00		1.00	1.04	21.898	24.09	195.23	0.650	0.000	1.00	2.067	1.34	51.8	0.0	58.9
125.00		1.00	1.05	22.155	24.37	186.89	0.650	0.000	5.00	10.039	6.53	254.4	0.0	286.0
128.00	Appurtenance(s)	1.00	1.06	22.306	24.54	181.81	0.650	0.000	3.00	5.785	3.76	147.6	0.0	164.8
129.00	Top - Section 3	1.00	1.06	22.356	24.59	180.10	0.650	0.000	1.00	1.888	1.23	48.3	0.0	53.8
130.00		1.00	1.07	22.405	24.65	178.39	0.650	0.000	1.00	1.869	1.21	47.9	0.0	53.2
135.00		1.00	1.08	22.648	24.91	169.77	0.650	0.000	5.00	9.045	5.88	234.3	0.0	257.5
138.50	Appurtenance(s)	1.00	1.08	22.814	25.10	163.65	0.650	0.000	3.50	6.035	3.92	157.5	0.0	171.7
139.00		1.00	1.09	22.838	25.12	162.77	0.650	0.000	0.50	0.842	0.55	22.0	0.0	24.0
								Totals:	**139.00**			**8,593.3**		**19,572.0**

Discrete Appurtenance Forces

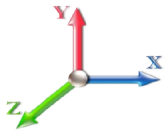
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	138.50	Low Profile Platform	1	22.814	25.095	1.00	1.00	37.20	2160.00	0.000	0.000	1493.68	0.00	0.00
2	128.00	Ericsson - KRY 112 114-1	3	22.306	24.536	0.40	0.80	0.49	39.60	0.000	0.000	19.32	0.00	0.00
3	128.00	Ericsson - AIR21 B4A B2P	3	22.306	24.536	0.68	0.80	12.48	325.44	0.000	0.000	490.03	0.00	0.00
4	128.00	Ericsson - AIR21 B2A B4P	3	22.306	24.536	0.68	0.80	12.48	329.40	0.000	0.000	490.03	0.00	0.00
5	128.00	Low Profile Platform	1	22.306	24.536	1.00	1.00	33.40	1980.00	0.000	0.000	1311.23	0.00	0.00
6	119.00	Raycap -	2	21.846	24.031	0.80	0.80	1.47	76.32	0.000	0.000	56.60	0.00	0.00
7	119.00	Low Profile Platform	1	21.846	24.031	1.00	1.00	40.20	2160.00	0.000	0.000	1545.65	0.00	0.00
8	119.00	Site Pro PRK-1245L	1	21.846	24.031	1.00	1.00	9.50	557.89	0.000	0.000	365.27	0.00	0.00
9	119.00	Site Pro HRK12 Handrail	1	21.846	24.031	1.00	1.00	6.75	314.06	0.000	0.000	259.53	0.00	0.00
10	119.00	Ericsson - RRUS-11 -	3	21.846	24.031	0.54	0.80	4.05	183.60	0.000	0.000	155.80	0.00	0.00
11	119.00	Ericsson - RRUS-32 B2 -	3	21.846	24.031	0.54	0.80	4.41	190.80	0.000	0.000	169.40	0.00	0.00
12	119.00	Ericsson - RRUS 32 B30 -	3	21.846	24.031	0.54	0.80	4.41	216.00	0.000	0.000	169.40	0.00	0.00
13	119.00	Kaelus -	6	21.846	24.031	0.40	0.80	1.03	182.88	0.000	0.000	39.68	0.00	0.00
14	119.00	Powerwave -	3	21.846	24.031	0.40	0.80	0.77	57.60	0.000	0.000	29.53	0.00	0.00
15	119.00	Powerwave - LGP21401 -	9	21.846	24.031	0.40	0.80	4.64	152.28	0.000	0.000	178.56	0.00	0.00
16	119.00	Cci - HPA-65R-BUU-H6	3	21.846	24.031	0.67	0.80	19.34	183.60	0.000	0.000	743.43	0.00	0.00
17	119.00	Quintel - QS66512-2	3	21.846	24.031	0.73	0.80	17.91	399.60	0.000	0.000	688.70	0.00	0.00
18	119.00	Powerwave - 7770	6	21.846	24.031	0.61	0.80	20.22	252.00	0.000	0.000	777.53	0.00	0.00
							Totals:		**9,761.08**			**8,983.36**		

Total Applied Force Summary

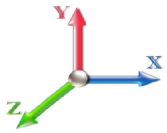
Structure:	CT13060-A-SBA		**Code:**	EIA/TIA-222-G	6/1/2018
Site Name:	Newtown 2		**Exposure:**	B	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

TES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		362.91	1193.88	0.00	0.00
10.00		354.54	1170.09	0.00	0.00
15.00		346.17	1146.30	0.00	0.00
20.00		337.79	1122.51	0.00	0.00
25.00		329.42	1098.72	0.00	0.00
30.00		321.32	1074.93	0.00	0.00
35.00		327.03	1051.14	0.00	0.00
40.00		330.65	1027.35	0.00	0.00
45.00		332.56	1003.56	0.00	0.00
48.00		198.65	590.71	0.00	0.00
50.00		134.11	715.56	0.00	0.00
53.25		218.52	1146.54	0.00	0.00
55.00		117.01	336.31	0.00	0.00
60.00		335.84	944.84	0.00	0.00
65.00		333.16	921.05	0.00	0.00
70.00		329.61	897.26	0.00	0.00
75.00		325.28	873.47	0.00	0.00
80.00		320.25	849.68	0.00	0.00
85.00		314.56	825.89	0.00	0.00
90.00		308.27	802.10	0.00	0.00
95.00		301.42	778.31	0.00	0.00
97.75		162.13	417.93	0.00	0.00
100.00		132.56	495.64	0.00	0.00
101.50		87.41	326.15	0.00	0.00
105.00		201.75	356.99	0.00	0.00
110.00		281.75	497.85	0.00	0.00
115.00		273.05	483.57	0.00	0.00
119.00	(44) attachments	5390.72	5303.22	0.00	0.00
120.00		51.79	75.14	0.00	0.00
125.00		254.44	367.12	0.00	0.00
128.00	(10) attachments	2458.21	2887.86	0.00	0.00
129.00		48.30	53.78	0.00	0.00
130.00		47.89	53.20	0.00	0.00
135.00		234.34	257.46	0.00	0.00
138.50	(1) attachments	1651.20	2331.73	0.00	0.00
139.00		22.01	23.96	0.00	0.00
	Totals:	**17,576.62**	**33,501.77**	**0.00**	**0.00**

Calculated Forces

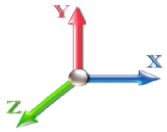
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-33.48	-17.62	0.00	-1770.0	0.00	1770.08	3147.71	1573.86	6633.45	3321.65	0.00	0.000	0.000	0.544
5.00	-32.24	-17.34	0.00	-1681.9	0.00	1681.99	3110.30	1555.15	6403.28	3206.40	0.08	-0.146	0.000	0.535
10.00	-31.03	-17.06	0.00	-1595.3	0.00	1595.30	3071.25	1535.62	6173.46	3091.32	0.31	-0.295	0.000	0.526
15.00	-29.84	-16.79	0.00	-1510.0	0.00	1510.00	3030.56	1515.28	5944.24	2976.54	0.70	-0.446	0.000	0.517
20.00	-28.68	-16.52	0.00	-1426.0	0.00	1426.08	2988.24	1494.12	5715.85	2862.17	1.25	-0.600	0.000	0.508
25.00	-27.54	-16.25	0.00	-1343.5	0.00	1343.50	2944.28	1472.14	5488.53	2748.34	1.96	-0.756	0.000	0.498
30.00	-26.42	-15.99	0.00	-1262.2	0.00	1262.26	2898.69	1449.34	5262.51	2635.17	2.84	-0.915	0.000	0.488
35.00	-25.33	-15.71	0.00	-1182.3	0.00	1182.33	2851.46	1425.73	5038.05	2522.77	3.88	-1.076	0.000	0.478
40.00	-24.27	-15.43	0.00	-1103.7	0.00	1103.77	2802.60	1401.30	4815.37	2411.26	5.10	-1.240	0.000	0.467
45.00	-23.24	-15.13	0.00	-1026.6	0.00	1026.62	2752.10	1376.05	4594.71	2300.77	6.49	-1.405	0.000	0.455
48.00	-22.63	-14.95	0.00	-981.23	0.00	981.23	2721.01	1360.51	4463.39	2235.01	7.40	-1.507	0.000	0.447
50.00	-21.89	-14.83	0.00	-951.34	0.00	951.34	2699.97	1349.98	4376.32	2191.41	8.05	-1.576	0.000	0.442
53.25	-20.73	-14.61	0.00	-903.14	0.00	903.14	2693.71	1346.85	4350.71	2178.59	9.16	-1.688	0.000	0.422
55.00	-20.37	-14.52	0.00	-877.57	0.00	877.57	2675.00	1337.50	4274.96	2140.66	9.79	-1.749	0.000	0.418
60.00	-19.40	-14.21	0.00	-804.95	0.00	804.95	2620.47	1310.24	4060.32	2033.18	11.71	-1.911	0.000	0.403
65.00	-18.45	-13.90	0.00	-733.89	0.00	733.89	2564.30	1282.15	3848.53	1927.13	13.80	-2.074	0.000	0.388
70.00	-17.53	-13.59	0.00	-664.39	0.00	664.39	2506.50	1253.25	3639.84	1822.63	16.06	-2.236	0.000	0.372
75.00	-16.63	-13.27	0.00	-596.46	0.00	596.46	2447.06	1223.53	3434.48	1719.79	18.49	-2.398	0.000	0.354
80.00	-15.76	-12.96	0.00	-530.09	0.00	530.09	2385.98	1192.99	3232.68	1618.74	21.08	-2.558	0.000	0.334
85.00	-14.91	-12.65	0.00	-465.29	0.00	465.29	2323.27	1161.64	3034.69	1519.60	23.85	-2.715	0.000	0.313
90.00	-14.09	-12.34	0.00	-402.05	0.00	402.05	2258.93	1129.46	2840.75	1422.49	26.77	-2.867	0.000	0.289
95.00	-13.31	-12.02	0.00	-340.37	0.00	340.37	2173.88	1086.94	2628.05	1315.98	29.85	-3.013	0.000	0.265
97.75	-12.89	-11.85	0.00	-307.30	0.00	307.30	2126.27	1063.14	2513.60	1258.67	31.61	-3.092	0.000	0.250
100.00	-12.39	-11.71	0.00	-280.63	0.00	280.63	2087.31	1043.66	2421.85	1212.73	33.08	-3.154	0.000	0.237
101.50	-12.05	-11.61	0.00	-263.07	0.00	263.07	1088.23	544.12	1274.83	638.36	34.08	-3.195	0.000	0.424
105.00	-11.68	-11.42	0.00	-222.42	0.00	222.42	1070.27	535.14	1217.34	609.58	36.46	-3.283	0.000	0.376
110.00	-11.17	-11.14	0.00	-165.32	0.00	165.32	1043.23	521.61	1135.83	568.76	39.99	-3.456	0.000	0.302
115.00	-10.68	-10.86	0.00	-109.61	0.00	109.61	1014.55	507.27	1055.24	528.40	43.69	-3.597	0.000	0.218
119.00	-5.73	-5.15	0.00	-66.18	0.00	66.18	990.42	495.21	991.60	496.54	46.74	-3.679	0.000	0.139
120.00	-5.66	-5.09	0.00	-61.03	0.00	61.03	984.23	492.11	975.83	488.64	47.51	-3.695	0.000	0.131
125.00	-5.30	-4.82	0.00	-35.56	0.00	35.56	952.28	476.14	897.82	449.58	51.42	-3.760	0.000	0.085
128.00	-2.58	-2.18	0.00	-21.09	0.00	21.09	932.32	466.16	851.79	426.53	53.79	-3.787	0.000	0.052
129.00	-2.53	-2.13	0.00	-18.92	0.00	18.92	925.54	462.77	836.59	418.92	54.58	-3.794	0.000	0.048
129.00	-2.53	-2.13	0.00	-18.92	0.00	18.92	925.54	462.77	836.59	418.92	54.58	-3.794	0.000	0.048
130.00	-2.48	-2.08	0.00	-16.79	0.00	16.79	918.69	459.34	821.46	411.34	55.37	-3.800	0.000	0.044
135.00	-2.24	-1.83	0.00	-6.40	0.00	6.40	883.47	441.73	746.98	374.05	59.36	-3.821	0.000	0.020
138.50	-0.02	-0.02	0.00	-0.01	0.00	0.01	857.84	428.92	696.10	348.57	62.17	-3.826	0.000	0.000
139.00	0.00	-0.02	0.00	0.00	0.00	0.00	854.11	427.06	688.92	344.97	62.57	-3.826	0.000	0.000

Wind Loading - Shaft

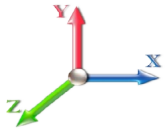
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	14.724	16.20	339.15	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	14.724	16.20	331.41	0.650	0.000	5.00	21.545	14.00	362.9	0.0	768.6
10.00		1.00	0.70	14.724	16.20	323.68	0.650	0.000	5.00	21.048	13.68	354.5	0.0	750.8
15.00		1.00	0.70	14.724	16.20	315.94	0.650	0.000	5.00	20.551	13.36	346.2	0.0	733.0
20.00		1.00	0.70	14.724	16.20	308.21	0.650	0.000	5.00	20.054	13.04	337.8	0.0	715.1
25.00		1.00	0.70	14.724	16.20	300.47	0.650	0.000	5.00	19.557	12.71	329.4	0.0	697.3
30.00		1.00	0.70	14.736	16.21	292.86	0.650	0.000	5.00	19.060	12.39	321.3	0.0	679.4
35.00		1.00	0.73	15.400	16.94	291.47	0.650	0.000	5.00	18.563	12.07	327.0	0.0	661.6
40.00		1.00	0.76	15.999	17.60	289.02	0.650	0.000	5.00	18.066	11.74	330.7	0.0	643.7
45.00		1.00	0.79	16.546	18.20	285.73	0.650	0.000	5.00	17.569	11.42	332.6	0.0	625.9
48.00	Bot - Section 2	1.00	0.80	16.854	18.54	283.41	0.650	0.000	3.00	10.303	6.70	198.6	0.0	367.0
50.00		1.00	0.81	17.052	18.76	281.74	0.650	0.000	2.00	6.875	4.47	134.1	0.0	486.0
53.25	Top - Section 1	1.00	0.83	17.362	19.10	278.82	0.650	0.000	3.25	11.002	7.15	218.5	0.0	777.5
55.00		1.00	0.83	17.523	19.28	281.65	0.650	0.000	1.75	5.837	3.79	117.0	0.0	207.9
60.00		1.00	0.85	17.964	19.76	276.63	0.650	0.000	5.00	16.342	10.62	335.8	0.0	581.9
65.00		1.00	0.87	18.380	20.22	271.17	0.650	0.000	5.00	15.845	10.30	333.2	0.0	564.0
70.00		1.00	0.89	18.773	20.65	265.32	0.650	0.000	5.00	15.348	9.98	329.6	0.0	546.2
75.00		1.00	0.91	19.147	21.06	259.13	0.650	0.000	5.00	14.851	9.65	325.3	0.0	528.3
80.00		1.00	0.93	19.503	21.45	252.62	0.650	0.000	5.00	14.354	9.33	320.2	0.0	510.5
85.00		1.00	0.94	19.844	21.83	245.84	0.650	0.000	5.00	13.857	9.01	314.6	0.0	492.7
90.00		1.00	0.96	20.170	22.19	238.80	0.650	0.000	5.00	13.359	8.68	308.3	0.0	474.8
95.00		1.00	0.97	20.484	22.53	231.53	0.650	0.000	5.00	12.862	8.36	301.4	0.0	457.0
97.75	Bot - Section 3	1.00	0.98	20.652	22.72	227.44	0.650	0.000	2.75	6.862	4.46	162.1	0.0	243.7
100.00		1.00	0.99	20.787	22.87	224.04	0.650	0.000	2.25	5.574	3.62	132.6	0.0	314.7
101.50	Top - Section 2	1.00	0.99	20.875	22.96	221.76	0.650	0.000	1.50	3.660	2.38	87.4	0.0	206.6
105.00		1.00	1.00	21.079	23.19	219.31	0.650	0.000	3.50	8.367	5.44	201.8	0.0	179.0
110.00		1.00	1.02	21.361	23.50	211.45	0.650	0.000	5.00	11.530	7.49	281.8	0.0	246.6
115.00		1.00	1.03	21.634	23.80	203.43	0.650	0.000	5.00	11.033	7.17	273.1	0.0	235.9
119.00	Appurtenance(s)	1.00	1.04	21.846	24.03	196.88	0.650	0.000	4.00	8.468	5.50	211.6	0.0	181.0
120.00		1.00	1.04	21.898	24.09	195.23	0.650	0.000	1.00	2.067	1.34	51.8	0.0	44.2
125.00		1.00	1.05	22.155	24.37	186.89	0.650	0.000	5.00	10.039	6.53	254.4	0.0	214.5
128.00	Appurtenance(s)	1.00	1.06	22.306	24.54	181.81	0.650	0.000	3.00	5.785	3.76	147.6	0.0	123.6
129.00	Top - Section 3	1.00	1.06	22.356	24.59	180.10	0.650	0.000	1.00	1.888	1.23	48.3	0.0	40.3
130.00		1.00	1.07	22.405	24.65	178.39	0.650	0.000	1.00	1.869	1.21	47.9	0.0	39.9
135.00		1.00	1.08	22.648	24.91	169.77	0.650	0.000	5.00	9.045	5.88	234.3	0.0	193.1
138.50	Appurtenance(s)	1.00	1.08	22.814	25.10	163.65	0.650	0.000	3.50	6.035	3.92	157.5	0.0	128.8
139.00		1.00	1.09	22.838	25.12	162.77	0.650	0.000	0.50	0.842	0.55	22.0	0.0	18.0
								Totals:	**139.00**			**8,593.3**		**14,679.0**

Discrete Appurtenance Forces

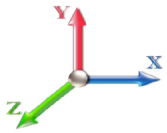
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	138.50	Low Profile Platform	1	22.814	25.095	1.00	1.00	37.20	1620.00	0.000	0.000	1493.68	0.00	0.00
2	128.00	Ericsson - KRY 112 114-1	3	22.306	24.536	0.40	0.80	0.49	29.70	0.000	0.000	19.32	0.00	0.00
3	128.00	Ericsson - AIR21 B4A B2P	3	22.306	24.536	0.68	0.80	12.48	244.08	0.000	0.000	490.03	0.00	0.00
4	128.00	Ericsson - AIR21 B2A B4P	3	22.306	24.536	0.68	0.80	12.48	247.05	0.000	0.000	490.03	0.00	0.00
5	128.00	Low Profile Platform	1	22.306	24.536	1.00	1.00	33.40	1485.00	0.000	0.000	1311.23	0.00	0.00
6	119.00	Raycap -	2	21.846	24.031	0.80	0.80	1.47	57.24	0.000	0.000	56.60	0.00	0.00
7	119.00	Low Profile Platform	1	21.846	24.031	1.00	1.00	40.20	1620.00	0.000	0.000	1545.65	0.00	0.00
8	119.00	Site Pro PRK-1245L	1	21.846	24.031	1.00	1.00	9.50	418.42	0.000	0.000	365.27	0.00	0.00
9	119.00	Site Pro HRK12 Handrail	1	21.846	24.031	1.00	1.00	6.75	235.55	0.000	0.000	259.53	0.00	0.00
10	119.00	Ericsson - RRUS-11 -	3	21.846	24.031	0.54	0.80	4.05	137.70	0.000	0.000	155.80	0.00	0.00
11	119.00	Ericsson - RRUS-32 B2 -	3	21.846	24.031	0.54	0.80	4.41	143.10	0.000	0.000	169.40	0.00	0.00
12	119.00	Ericsson - RRUS 32 B30 -	3	21.846	24.031	0.54	0.80	4.41	162.00	0.000	0.000	169.40	0.00	0.00
13	119.00	Kaelus -	6	21.846	24.031	0.40	0.80	1.03	137.16	0.000	0.000	39.68	0.00	0.00
14	119.00	Powerwave -	3	21.846	24.031	0.40	0.80	0.77	43.20	0.000	0.000	29.53	0.00	0.00
15	119.00	Powerwave - LGP21401 -	9	21.846	24.031	0.40	0.80	4.64	114.21	0.000	0.000	178.56	0.00	0.00
16	119.00	Cci - HPA-65R-BUU-H6	3	21.846	24.031	0.67	0.80	19.34	137.70	0.000	0.000	743.43	0.00	0.00
17	119.00	Quintel - QS66512-2	3	21.846	24.031	0.73	0.80	17.91	299.70	0.000	0.000	688.70	0.00	0.00
18	119.00	Powerwave - 7770	6	21.846	24.031	0.61	0.80	20.22	189.00	0.000	0.000	777.53	0.00	0.00
							Totals:		**7,320.81**			**8,983.36**		

Total Applied Force Summary

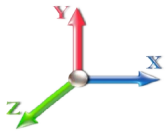
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

TES Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		362.91	895.41	0.00	0.00
10.00		354.54	877.57	0.00	0.00
15.00		346.17	859.72	0.00	0.00
20.00		337.79	841.88	0.00	0.00
25.00		329.42	824.04	0.00	0.00
30.00		321.32	806.19	0.00	0.00
35.00		327.03	788.35	0.00	0.00
40.00		330.65	770.51	0.00	0.00
45.00		332.56	752.67	0.00	0.00
48.00		198.65	443.04	0.00	0.00
50.00		134.11	536.67	0.00	0.00
53.25		218.52	859.91	0.00	0.00
55.00		117.01	252.24	0.00	0.00
60.00		335.84	708.63	0.00	0.00
65.00		333.16	690.79	0.00	0.00
70.00		329.61	672.95	0.00	0.00
75.00		325.28	655.10	0.00	0.00
80.00		320.25	637.26	0.00	0.00
85.00		314.56	619.42	0.00	0.00
90.00		308.27	601.58	0.00	0.00
95.00		301.42	583.73	0.00	0.00
97.75		162.13	313.45	0.00	0.00
100.00		132.56	371.73	0.00	0.00
101.50		87.41	244.61	0.00	0.00
105.00		201.75	267.74	0.00	0.00
110.00		281.75	373.39	0.00	0.00
115.00		273.05	362.68	0.00	0.00
119.00	(44) attachments	5390.72	3977.41	0.00	0.00
120.00		51.79	56.35	0.00	0.00
125.00		254.44	275.34	0.00	0.00
128.00	(10) attachments	2458.21	2165.90	0.00	0.00
129.00		48.30	40.33	0.00	0.00
130.00		47.89	39.90	0.00	0.00
135.00		234.34	193.09	0.00	0.00
138.50	(1) attachments	1651.20	1748.79	0.00	0.00
139.00		22.01	17.97	0.00	0.00
	Totals:	**17,576.62**	**25,126.33**	**0.00**	**0.00**

Calculated Forces

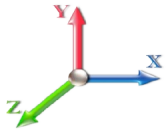
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-25.10	-17.61	0.00	-1751.2	0.00	1751.21	3147.71	1573.86	6633.45	3321.65	0.00	0.000	0.000	0.535
5.00	-24.16	-17.31	0.00	-1663.1	0.00	1663.17	3110.30	1555.15	6403.28	3206.40	0.08	-0.144	0.000	0.527
10.00	-23.24	-17.01	0.00	-1576.6	0.00	1576.64	3071.25	1535.62	6173.46	3091.32	0.31	-0.291	0.000	0.518
15.00	-22.34	-16.71	0.00	-1491.6	0.00	1491.61	3030.56	1515.28	5944.24	2976.54	0.69	-0.441	0.000	0.509
20.00	-21.46	-16.43	0.00	-1408.0	0.00	1408.03	2988.24	1494.12	5715.85	2862.17	1.24	-0.593	0.000	0.499
25.00	-20.60	-16.14	0.00	-1325.9	0.00	1325.90	2944.28	1472.14	5488.53	2748.34	1.94	-0.747	0.000	0.490
30.00	-19.75	-15.87	0.00	-1245.1	0.00	1245.18	2898.69	1449.34	5262.51	2635.17	2.81	-0.904	0.000	0.479
35.00	-18.93	-15.58	0.00	-1165.8	0.00	1165.86	2851.46	1425.73	5038.05	2522.77	3.84	-1.063	0.000	0.469
40.00	-18.12	-15.28	0.00	-1087.9	0.00	1087.97	2802.60	1401.30	4815.37	2411.26	5.04	-1.224	0.000	0.458
45.00	-17.34	-14.97	0.00	-1011.5	0.00	1011.55	2752.10	1376.05	4594.71	2300.77	6.41	-1.387	0.000	0.446
48.00	-16.88	-14.79	0.00	-966.63	0.00	966.63	2721.01	1360.51	4463.39	2235.01	7.31	-1.488	0.000	0.439
50.00	-16.32	-14.67	0.00	-937.06	0.00	937.06	2699.97	1349.98	4376.32	2191.41	7.95	-1.556	0.000	0.434
53.25	-15.45	-14.45	0.00	-889.40	0.00	889.40	2693.71	1346.85	4350.71	2178.59	9.05	-1.665	0.000	0.414
55.00	-15.17	-14.35	0.00	-864.12	0.00	864.12	2675.00	1337.50	4274.96	2140.66	9.67	-1.725	0.000	0.409
60.00	-14.44	-14.03	0.00	-792.36	0.00	792.36	2620.47	1310.24	4060.32	2033.18	11.56	-1.885	0.000	0.395
65.00	-13.72	-13.71	0.00	-722.20	0.00	722.20	2564.30	1282.15	3848.53	1927.13	13.62	-2.045	0.000	0.380
70.00	-13.02	-13.40	0.00	-653.63	0.00	653.63	2506.50	1253.25	3639.84	1822.63	15.85	-2.205	0.000	0.364
75.00	-12.34	-13.08	0.00	-586.64	0.00	586.64	2447.06	1223.53	3434.48	1719.79	18.25	-2.364	0.000	0.346
80.00	-11.69	-12.76	0.00	-521.25	0.00	521.25	2385.98	1192.99	3232.68	1618.74	20.81	-2.521	0.000	0.327
85.00	-11.05	-12.45	0.00	-457.43	0.00	457.43	2323.27	1161.64	3034.69	1519.60	23.53	-2.676	0.000	0.306
90.00	-10.43	-12.14	0.00	-395.17	0.00	395.17	2258.93	1129.46	2840.75	1422.49	26.41	-2.825	0.000	0.283
95.00	-9.84	-11.83	0.00	-334.46	0.00	334.46	2173.88	1086.94	2628.05	1315.98	29.45	-2.969	0.000	0.259
97.75	-9.52	-11.66	0.00	-301.93	0.00	301.93	2126.27	1063.14	2513.60	1258.67	31.18	-3.046	0.000	0.244
100.00	-9.15	-11.52	0.00	-275.69	0.00	275.69	2087.31	1043.66	2421.85	1212.73	32.63	-3.108	0.000	0.232
101.50	-8.90	-11.43	0.00	-258.41	0.00	258.41	1088.23	544.12	1274.83	638.36	33.62	-3.148	0.000	0.413
105.00	-8.61	-11.23	0.00	-218.41	0.00	218.41	1070.27	535.14	1217.34	609.58	35.96	-3.234	0.000	0.367
110.00	-8.23	-10.95	0.00	-162.26	0.00	162.26	1043.23	521.61	1135.83	568.76	39.44	-3.405	0.000	0.294
115.00	-7.86	-10.67	0.00	-107.50	0.00	107.50	1014.55	507.27	1055.24	528.40	43.08	-3.542	0.000	0.212
119.00	-4.23	-5.05	0.00	-64.82	0.00	64.82	990.42	495.21	991.60	496.54	46.08	-3.623	0.000	0.135
120.00	-4.17	-4.99	0.00	-59.77	0.00	59.77	984.23	492.11	975.83	488.64	46.84	-3.639	0.000	0.127
125.00	-3.91	-4.72	0.00	-34.81	0.00	34.81	952.28	476.14	897.82	449.58	50.69	-3.703	0.000	0.082
128.00	-1.91	-2.13	0.00	-20.63	0.00	20.63	932.32	466.16	851.79	426.53	53.02	-3.729	0.000	0.050
129.00	-1.87	-2.08	0.00	-18.50	0.00	18.50	925.54	462.77	836.59	418.92	53.81	-3.735	0.000	0.046
129.00	-1.87	-2.08	0.00	-18.50	0.00	18.50	925.54	462.77	836.59	418.92	53.81	-3.735	0.000	0.046
130.00	-1.83	-2.03	0.00	-16.42	0.00	16.42	918.69	459.34	821.46	411.34	54.59	-3.742	0.000	0.042
135.00	-1.65	-1.79	0.00	-6.26	0.00	6.26	883.47	441.73	746.98	374.05	58.52	-3.762	0.000	0.019
138.50	-0.02	-0.02	0.00	-0.01	0.00	0.01	857.84	428.92	696.10	348.57	61.27	-3.767	0.000	0.000
139.00	0.00	-0.02	0.00	0.00	0.00	0.00	854.11	427.06	688.92	344.97	61.67	-3.767	0.000	0.000

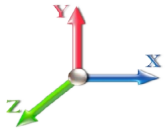
Wind Loading - Shaft

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.242	5.00	22.580	27.10	126.9	401.3	1426.2
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.331	5.00	22.157	26.59	124.5	421.0	1422.1
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	5.00	21.706	26.05	121.9	428.7	1406.0
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.427	5.00	21.243	25.49	119.3	431.1	1384.6
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.459	5.00	20.773	24.93	116.7	430.4	1360.1
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.486	5.00	20.298	24.36	114.1	427.6	1333.5
35.00		1.00	0.73	4.451	4.90	0.00	1.200	1.509	5.00	19.820	23.78	116.5	423.3	1305.5
40.00		1.00	0.76	4.625	5.09	0.00	1.200	1.529	5.00	19.340	23.21	118.1	418.0	1276.3
45.00		1.00	0.79	4.783	5.26	0.00	1.200	1.547	5.00	18.858	22.63	119.1	411.7	1246.2
48.00	Bot - Section 2	1.00	0.80	4.872	5.36	0.00	1.200	1.557	3.00	11.081	13.30	71.3	244.5	733.9
50.00		1.00	0.81	4.929	5.42	0.00	1.200	1.564	2.00	7.396	8.88	48.1	164.3	812.3
53.25	Top - Section 1	1.00	0.83	5.018	5.52	0.00	1.200	1.574	3.25	11.854	14.22	78.5	263.9	1300.6
55.00		1.00	0.83	5.065	5.57	0.00	1.200	1.579	1.75	6.298	7.56	42.1	141.2	418.3
60.00		1.00	0.85	5.193	5.71	0.00	1.200	1.592	5.00	17.669	21.20	121.1	395.2	1171.0
65.00		1.00	0.87	5.313	5.84	0.00	1.200	1.605	5.00	17.182	20.62	120.5	386.7	1138.7
70.00		1.00	0.89	5.426	5.97	0.00	1.200	1.617	5.00	16.695	20.03	119.6	377.8	1106.0
75.00		1.00	0.91	5.534	6.09	0.00	1.200	1.628	5.00	16.208	19.45	118.4	368.5	1073.0
80.00		1.00	0.93	5.637	6.20	0.00	1.200	1.639	5.00	15.719	18.86	117.0	359.0	1039.6
85.00		1.00	0.94	5.736	6.31	0.00	1.200	1.649	5.00	15.231	18.28	115.3	349.1	1006.0
90.00		1.00	0.96	5.830	6.41	0.00	1.200	1.658	5.00	14.741	17.69	113.4	339.0	972.1
95.00		1.00	0.97	5.921	6.51	0.00	1.200	1.667	5.00	14.252	17.10	111.4	328.7	937.9
97.75	Bot - Section 3	1.00	0.98	5.970	6.57	0.00	1.200	1.672	2.75	7.629	9.15	60.1	177.6	502.6
100.00		1.00	0.99	6.008	6.61	0.00	1.200	1.676	2.25	6.203	7.44	49.2	144.9	564.5
101.50	Top - Section 2	1.00	0.99	6.034	6.64	0.00	1.200	1.678	1.50	4.080	4.90	32.5	95.7	371.1
105.00		1.00	1.00	6.093	6.70	0.00	1.200	1.684	3.50	9.349	11.22	75.2	217.9	456.6
110.00		1.00	1.02	6.174	6.79	0.00	1.200	1.692	5.00	12.940	15.53	105.5	300.4	629.2
115.00		1.00	1.03	6.253	6.88	0.00	1.200	1.699	5.00	12.449	14.94	102.8	289.3	603.8
119.00	Appurtenance(s)	1.00	1.04	6.315	6.95	0.00	1.200	1.705	4.00	9.605	11.53	80.1	224.2	465.6
120.00		1.00	1.04	6.330	6.96	0.00	1.200	1.707	1.00	2.352	2.82	19.7	55.6	114.5
125.00		1.00	1.05	6.404	7.04	0.00	1.200	1.714	5.00	11.467	13.76	96.9	266.6	552.6
128.00	Appurtenance(s)	1.00	1.06	6.448	7.09	0.00	1.200	1.718	3.00	6.644	7.97	56.5	155.8	320.6
129.00	Top - Section 3	1.00	1.06	6.462	7.11	0.00	1.200	1.719	1.00	2.175	2.61	18.6	51.5	105.3
130.00		1.00	1.07	6.476	7.12	0.00	1.200	1.720	1.00	2.155	2.59	18.4	51.0	104.2
135.00		1.00	1.08	6.546	7.20	0.00	1.200	1.727	5.00	10.484	12.58	90.6	243.4	500.8
138.50	Appurtenance(s)	1.00	1.08	6.594	7.25	0.00	1.200	1.731	3.50	7.045	8.45	61.3	164.6	336.3
139.00		1.00	1.09	6.601	7.26	0.00	1.200	1.732	0.50	0.987	1.18	8.6	23.4	47.4
								Totals:	**139.00**			**3,129.6**		**29,544.9**

Discrete Appurtenance Forces

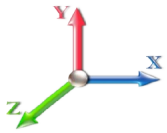
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	138.50	Low Profile Platform	1	6.594	7.254	1.00	1.00	66.83	3718.21	0.000	0.000	484.75	0.00	0.00
2	128.00	Ericsson - KRY 112 114-1	3	6.448	7.092	0.40	0.80	1.05	62.13	0.000	0.000	7.47	0.00	0.00
3	128.00	Ericsson - AIR21 B4A B2P	3	6.448	7.092	0.70	0.80	14.94	687.33	0.000	0.000	105.99	0.00	0.00
4	128.00	Ericsson - AIR21 B2A B4P	3	6.448	7.092	0.70	0.80	14.94	691.41	0.000	0.000	105.99	0.00	0.00
5	128.00	Low Profile Platform	1	6.448	7.092	1.00	1.00	59.79	3247.15	0.000	0.000	424.06	0.00	0.00
6	119.00	Raycap -	2	6.315	6.946	0.80	0.80	2.16	161.74	0.000	0.000	14.98	0.00	0.00
7	119.00	Low Profile Platform	1	6.315	6.946	1.00	1.00	73.10	3994.75	0.000	0.000	507.79	0.00	0.00
8	119.00	Site Pro PRK-1245L	1	6.315	6.946	1.00	1.00	19.22	779.92	0.000	0.000	133.50	0.00	0.00
9	119.00	Site Pro HRK12 Handrail	1	6.315	6.946	1.00	1.00	13.20	879.27	0.000	0.000	91.66	0.00	0.00
10	119.00	Ericsson - RRUS-11 -	3	6.315	6.946	0.54	0.80	5.05	347.46	0.000	0.000	35.06	0.00	0.00
11	119.00	Ericsson - RRUS-32 B2 -	3	6.315	6.946	0.54	0.80	5.91	355.21	0.000	0.000	41.04	0.00	0.00
12	119.00	Ericsson - RRUS 32 B30 -	3	6.315	6.946	0.54	0.80	5.91	408.76	0.000	0.000	41.04	0.00	0.00
13	119.00	Kaelus -	6	6.315	6.946	0.40	0.80	1.70	247.12	0.000	0.000	11.81	0.00	0.00
14	119.00	Powerwave -	3	6.315	6.946	0.40	0.80	1.46	99.53	0.000	0.000	10.16	0.00	0.00
15	119.00	Powerwave - LGP21401 -	9	6.315	6.946	0.40	0.80	7.58	308.24	0.000	0.000	52.68	0.00	0.00
16	119.00	Cci - HPA-65R-BUU-H6	3	6.315	6.946	0.68	0.80	22.33	714.18	0.000	0.000	155.10	0.00	0.00
17	119.00	Quintel - QS66512-2	3	6.315	6.946	0.74	0.80	20.82	872.34	0.000	0.000	144.61	0.00	0.00
18	119.00	Powerwave - 7770	6	6.315	6.946	0.63	0.80	24.74	1235.66	0.000	0.000	171.86	0.00	0.00
							Totals:		**18,810.40**			**2,539.56**		

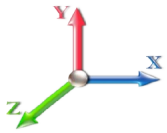
Total Applied Force Summary

Structure:	CT13060-A-SBA		**Code:**	EIA/TIA-222-G	6/1/2018
Site Name:	Newtown 2		**Exposure:**	B	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 18

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		126.85	1595.18	0.00	0.00
10.00		124.48	1591.12	0.00	0.00
15.00		121.94	1575.02	0.00	0.00
20.00		119.34	1553.60	0.00	0.00
25.00		116.70	1529.08	0.00	0.00
30.00		114.13	1502.52	0.00	0.00
35.00		116.46	1474.48	0.00	0.00
40.00		118.06	1445.31	0.00	0.00
45.00		119.06	1415.25	0.00	0.00
48.00		71.26	835.26	0.00	0.00
50.00		48.12	879.89	0.00	0.00
53.25		78.53	1410.44	0.00	0.00
55.00		42.10	477.47	0.00	0.00
60.00		121.10	1340.07	0.00	0.00
65.00		120.49	1307.76	0.00	0.00
70.00		119.58	1275.06	0.00	0.00
75.00		118.40	1242.01	0.00	0.00
80.00		116.97	1208.65	0.00	0.00
85.00		115.32	1175.00	0.00	0.00
90.00		113.45	1141.10	0.00	0.00
95.00		111.39	1106.97	0.00	0.00
97.75		60.11	595.51	0.00	0.00
100.00		49.19	640.56	0.00	0.00
101.50		32.50	421.80	0.00	0.00
105.00		75.19	574.89	0.00	0.00
110.00		105.46	798.22	0.00	0.00
115.00		102.76	772.85	0.00	0.00
119.00	(44) attachments	1491.37	11004.99	0.00	0.00
120.00		19.65	130.74	0.00	0.00
125.00		96.93	633.74	0.00	0.00
128.00	(10) attachments	700.05	5057.26	0.00	0.00
129.00		18.55	105.25	0.00	0.00
130.00		18.42	104.22	0.00	0.00
135.00		90.59	500.85	0.00	0.00
138.50	(1) attachments	546.08	4054.54	0.00	0.00
139.00		8.60	47.36	0.00	0.00
	Totals:	**5,669.19**	**52,524.03**	**0.00**	**0.00**

Calculated Forces

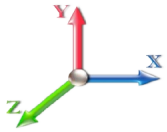
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-52.52	-5.69	0.00	-572.92	0.00	572.92	3147.71	1573.86	6633.45	3321.65	0.00	0.000	0.000	0.189
5.00	-50.92	-5.61	0.00	-544.47	0.00	544.47	3110.30	1555.15	6403.28	3206.40	0.03	-0.047	0.000	0.186
10.00	-49.33	-5.52	0.00	-516.44	0.00	516.44	3071.25	1535.62	6173.46	3091.32	0.10	-0.095	0.000	0.183
15.00	-47.75	-5.44	0.00	-488.84	0.00	488.84	3030.56	1515.28	5944.24	2976.54	0.23	-0.144	0.000	0.180
20.00	-46.19	-5.35	0.00	-461.65	0.00	461.65	2988.24	1494.12	5715.85	2862.17	0.40	-0.194	0.000	0.177
25.00	-44.66	-5.27	0.00	-434.89	0.00	434.89	2944.28	1472.14	5488.53	2748.34	0.64	-0.245	0.000	0.173
30.00	-43.15	-5.19	0.00	-408.53	0.00	408.53	2898.69	1449.34	5262.51	2635.17	0.92	-0.296	0.000	0.170
35.00	-41.67	-5.10	0.00	-382.59	0.00	382.59	2851.46	1425.73	5038.05	2522.77	1.26	-0.348	0.000	0.166
40.00	-40.22	-5.01	0.00	-357.08	0.00	357.08	2802.60	1401.30	4815.37	2411.26	1.65	-0.401	0.000	0.162
45.00	-38.80	-4.91	0.00	-332.02	0.00	332.02	2752.10	1376.05	4594.71	2300.77	2.10	-0.455	0.000	0.158
48.00	-37.97	-4.85	0.00	-317.29	0.00	317.29	2721.01	1360.51	4463.39	2235.01	2.40	-0.488	0.000	0.156
50.00	-37.08	-4.81	0.00	-307.59	0.00	307.59	2699.97	1349.98	4376.32	2191.41	2.61	-0.510	0.000	0.154
53.25	-35.67	-4.74	0.00	-291.94	0.00	291.94	2693.71	1346.85	4350.71	2178.59	2.97	-0.546	0.000	0.147
55.00	-35.19	-4.72	0.00	-283.65	0.00	283.65	2675.00	1337.50	4274.96	2140.66	3.17	-0.566	0.000	0.146
60.00	-33.85	-4.61	0.00	-260.07	0.00	260.07	2620.47	1310.24	4060.32	2033.18	3.79	-0.618	0.000	0.141
65.00	-32.54	-4.51	0.00	-237.01	0.00	237.01	2564.30	1282.15	3848.53	1927.13	4.47	-0.671	0.000	0.136
70.00	-31.26	-4.40	0.00	-214.47	0.00	214.47	2506.50	1253.25	3639.84	1822.63	5.20	-0.723	0.000	0.130
75.00	-30.02	-4.29	0.00	-192.47	0.00	192.47	2447.06	1223.53	3434.48	1719.79	5.98	-0.775	0.000	0.124
80.00	-28.81	-4.18	0.00	-171.01	0.00	171.01	2385.98	1192.99	3232.68	1618.74	6.82	-0.827	0.000	0.118
85.00	-27.63	-4.08	0.00	-150.09	0.00	150.09	2323.27	1161.64	3034.69	1519.60	7.72	-0.878	0.000	0.111
90.00	-26.49	-3.97	0.00	-129.71	0.00	129.71	2258.93	1129.46	2840.75	1422.49	8.66	-0.927	0.000	0.103
95.00	-25.38	-3.85	0.00	-109.87	0.00	109.87	2173.88	1086.94	2628.05	1315.98	9.66	-0.974	0.000	0.095
97.75	-24.78	-3.79	0.00	-99.28	0.00	99.28	2126.27	1063.14	2513.60	1258.67	10.23	-0.999	0.000	0.091
100.00	-24.14	-3.74	0.00	-90.74	0.00	90.74	2087.31	1043.66	2421.85	1212.73	10.70	-1.020	0.000	0.086
101.50	-23.72	-3.71	0.00	-85.14	0.00	85.14	1088.23	544.12	1274.83	638.36	11.03	-1.033	0.000	0.155
105.00	-23.14	-3.64	0.00	-72.16	0.00	72.16	1070.27	535.14	1217.34	609.58	11.79	-1.061	0.000	0.140
110.00	-22.35	-3.54	0.00	-53.96	0.00	53.96	1043.23	521.61	1135.83	568.76	12.94	-1.118	0.000	0.116
115.00	-21.57	-3.43	0.00	-36.27	0.00	36.27	1014.55	507.27	1055.24	528.40	14.13	-1.164	0.000	0.090
119.00	-10.60	-1.72	0.00	-22.53	0.00	22.53	990.42	495.21	991.60	496.54	15.12	-1.191	0.000	0.056
120.00	-10.47	-1.70	0.00	-20.81	0.00	20.81	984.23	492.11	975.83	488.64	15.37	-1.197	0.000	0.053
125.00	-9.84	-1.59	0.00	-12.31	0.00	12.31	952.28	476.14	897.82	449.58	16.64	-1.219	0.000	0.038
128.00	-4.80	-0.79	0.00	-7.53	0.00	7.53	932.32	466.16	851.79	426.53	17.41	-1.228	0.000	0.023
129.00	-4.69	-0.76	0.00	-6.74	0.00	6.74	925.54	462.77	836.59	418.92	17.67	-1.231	0.000	0.021
129.00	-4.69	-0.76	0.00	-6.74	0.00	6.74	925.54	462.77	836.59	418.92	17.67	-1.231	0.000	0.021
130.00	-4.59	-0.74	0.00	-5.98	0.00	5.98	918.69	459.34	821.46	411.34	17.92	-1.233	0.000	0.020
135.00	-4.09	-0.64	0.00	-2.26	0.00	2.26	883.47	441.73	746.98	374.05	19.22	-1.241	0.000	0.011
138.50	-0.05	-0.01	0.00	0.00	0.00	0.00	857.84	428.92	696.10	348.57	20.13	-1.242	0.000	0.000
139.00	0.00	-0.01	0.00	0.00	0.00	0.00	854.11	427.06	688.92	344.97	20.26	-1.242	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E					**Iterations**	22
Gust Response Factor	1.10			**Sds**	0.22	**Ss**	0.21
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.11	**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency**	0.36	**SA**	0.04	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		854.05	0.00	0.03	0.02	19.73	
10.00		834.22	0.01	0.05	0.03	27.29	
15.00		814.40	0.02	0.07	0.04	30.27	
20.00		794.57	0.04	0.07	0.04	31.29	
25.00		774.75	0.06	0.07	0.04	31.53	
30.00		754.92	0.09	0.07	0.04	31.55	
35.00		735.10	0.12	0.07	0.03	31.52	
40.00		715.27	0.16	0.07	0.03	31.34	
45.00		695.45	0.20	0.06	0.02	30.69	
48.00	Bot - Section 2	407.75	0.23	0.06	0.02	17.82	
50.00		539.96	0.24	0.06	0.02	23.24	
53.25	Top - Section 1	863.90	0.28	0.05	0.01	35.50	
55.00		230.96	0.30	0.05	0.01	9.12	
60.00		646.52	0.35	0.03	0.01	20.84	
65.00		626.69	0.41	0.01	0.01	12.79	
70.00		606.87	0.48	-0.01	0.01	2.68	
75.00		587.04	0.55	-0.03	0.01	-7.89	
80.00		567.22	0.63	-0.06	0.02	-16.72	
85.00		547.39	0.71	-0.09	0.03	-22.18	
90.00		527.57	0.79	-0.11	0.05	-23.68	
95.00		507.74	0.88	-0.12	0.08	-21.42	
97.75	Bot - Section 3	270.81	0.93	-0.12	0.10	-10.21	
100.00		349.65	0.98	-0.11	0.12	-11.37	
101.50	Top - Section 2	229.53	1.01	-0.11	0.14	-6.49	
105.00		198.89	1.08	-0.08	0.17	-3.19	
110.00		274.02	1.18	-0.01	0.24	1.97	
115.00		262.13	1.29	0.11	0.33	9.73	
119.00	Appurtenance(s)	4306.6	1.39	0.26	0.42	284.05	
120.00		49.09	1.41	0.30	0.44	3.63	
125.00		238.34	1.53	0.57	0.58	28.02	
128.00	Appurtenance(s)	2365.9	1.60	0.79	0.67	348.31	
129.00	Top - Section 3	44.81	1.63	0.87	0.71	7.07	
130.00		44.34	1.65	0.95	0.74	7.47	
135.00		214.55	1.78	1.46	0.95	48.61	
138.50	Appurtenance(s)	1943.1	1.88	1.91	1.11	528.03	
139.00		19.97	1.89	1.98	1.14	5.56	
	Totals:	**24,444.2**				**1,536.5**	**Total Wind:** **17,576.6**

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

Calculated Forces

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 22

Gust Response Factor	1.10			**Sds**	0.22			**Ss**	0.21
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.11			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency**	0.36	**SA**	0.04	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-33.50	-1.66	0.00	-187.80	0.00	187.80	3147.71	1573.86	6633.45	3321.65		0.00	0.00	0.067
5.00	-32.31	-1.65	0.00	-179.49	0.00	179.49	3110.30	1555.15	6403.28	3206.40		0.01	-0.02	0.066
10.00	-31.14	-1.63	0.00	-171.23	0.00	171.23	3071.25	1535.62	6173.46	3091.32		0.03	-0.03	0.066
15.00	-29.99	-1.61	0.00	-163.07	0.00	163.07	3030.56	1515.28	5944.24	2976.54		0.07	-0.05	0.065
20.00	-28.87	-1.59	0.00	-155.01	0.00	155.01	2988.24	1494.12	5715.85	2862.17		0.13	-0.06	0.064
25.00	-27.77	-1.56	0.00	-147.08	0.00	147.08	2944.28	1472.14	5488.53	2748.34		0.21	-0.08	0.063
30.00	-26.69	-1.54	0.00	-139.27	0.00	139.27	2898.69	1449.34	5262.51	2635.17		0.30	-0.10	0.062
35.00	-25.64	-1.51	0.00	-131.59	0.00	131.59	2851.46	1425.73	5038.05	2522.77		0.42	-0.12	0.061
40.00	-24.61	-1.49	0.00	-124.03	0.00	124.03	2802.60	1401.30	4815.37	2411.26		0.55	-0.14	0.060
45.00	-23.61	-1.46	0.00	-116.60	0.00	116.60	2752.10	1376.05	4594.71	2300.77		0.70	-0.15	0.059
48.00	-23.02	-1.44	0.00	-112.23	0.00	112.23	2721.01	1360.51	4463.39	2235.01		0.80	-0.17	0.059
50.00	-22.30	-1.42	0.00	-109.34	0.00	109.34	2699.97	1349.98	4376.32	2191.41		0.87	-0.17	0.058
53.25	-21.16	-1.39	0.00	-104.72	0.00	104.72	2693.71	1346.85	4350.71	2178.59		1.00	-0.19	0.056
55.00	-20.82	-1.38	0.00	-102.29	0.00	102.29	2675.00	1337.50	4274.96	2140.66		1.06	-0.19	0.056
60.00	-19.87	-1.36	0.00	-95.39	0.00	95.39	2620.47	1310.24	4060.32	2033.18		1.28	-0.21	0.054
65.00	-18.95	-1.35	0.00	-88.57	0.00	88.57	2564.30	1282.15	3848.53	1927.13		1.51	-0.23	0.053
70.00	-18.06	-1.35	0.00	-81.80	0.00	81.80	2506.50	1253.25	3639.84	1822.63		1.76	-0.25	0.052
75.00	-17.18	-1.36	0.00	-75.03	0.00	75.03	2447.06	1223.53	3434.48	1719.79		2.04	-0.27	0.051
80.00	-16.33	-1.36	0.00	-68.25	0.00	68.25	2385.98	1192.99	3232.68	1618.74		2.33	-0.29	0.049
85.00	-15.50	-1.36	0.00	-61.46	0.00	61.46	2323.27	1161.64	3034.69	1519.60		2.65	-0.31	0.047
90.00	-14.70	-1.36	0.00	-54.67	0.00	54.67	2258.93	1129.46	2840.75	1422.49		2.99	-0.33	0.045
95.00	-13.92	-1.36	0.00	-47.87	0.00	47.87	2173.88	1086.94	2628.05	1315.98		3.35	-0.35	0.043
97.75	-13.51	-1.36	0.00	-44.14	0.00	44.14	2126.27	1063.14	2513.60	1258.67		3.55	-0.36	0.041
100.00	-13.01	-1.36	0.00	-41.08	0.00	41.08	2087.31	1043.66	2421.85	1212.73		3.73	-0.37	0.040
101.50	-12.68	-1.36	0.00	-39.05	0.00	39.05	1088.23	544.12	1274.83	638.36		3.85	-0.38	0.073
105.00	-12.33	-1.36	0.00	-34.30	0.00	34.30	1070.27	535.14	1217.34	609.58		4.13	-0.39	0.068
110.00	-11.83	-1.36	0.00	-27.50	0.00	27.50	1043.23	521.61	1135.83	568.76		4.56	-0.42	0.060
115.00	-11.34	-1.35	0.00	-20.71	0.00	20.71	1014.55	507.27	1055.24	528.40		5.01	-0.44	0.050
119.00	-6.04	-1.02	0.00	-15.31	0.00	15.31	990.42	495.21	991.60	496.54		5.39	-0.46	0.037
120.00	-5.97	-1.02	0.00	-14.28	0.00	14.28	984.23	492.11	975.83	488.64		5.49	-0.47	0.035
125.00	-5.60	-0.99	0.00	-9.17	0.00	9.17	952.28	476.14	897.82	449.58		5.98	-0.48	0.026
128.00	-2.71	-0.62	0.00	-6.20	0.00	6.20	932.32	466.16	851.79	426.53		6.29	-0.49	0.017
129.00	-2.66	-0.61	0.00	-5.58	0.00	5.58	925.54	462.77	836.59	418.92		6.39	-0.49	0.016
129.00	-2.66	-0.61	0.00	-5.58	0.00	5.58	925.54	462.77	836.59	418.92		6.39	-0.49	0.016
130.00	-2.61	-0.60	0.00	-4.96	0.00	4.96	918.69	459.34	821.46	411.34		6.49	-0.49	0.015
135.00	-2.35	-0.55	0.00	-1.94	0.00	1.94	883.47	441.73	746.98	374.05		7.01	-0.50	0.008
138.50	-0.02	-0.01	0.00	0.00	0.00	0.00	857.84	428.92	696.10	348.57		7.38	-0.50	0.000
139.00	0.00	-0.01	0.00	0.00	0.00	0.00	854.11	427.06	688.92	344.97		7.43	-0.50	0.000

Seismic Segment Forces (Factored)

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E					**Iterations**	22
Gust Response Factor	1.10			**Sds**	0.22	**Ss**	0.21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.11	**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency**	0.36	**SA**	0.04	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		854.05	0.00	0.03	0.02	19.73	
10.00		834.22	0.01	0.05	0.03	27.29	
15.00		814.40	0.02	0.07	0.04	30.27	
20.00		794.57	0.04	0.07	0.04	31.29	
25.00		774.75	0.06	0.07	0.04	31.53	
30.00		754.92	0.09	0.07	0.04	31.55	
35.00		735.10	0.12	0.07	0.03	31.52	
40.00		715.27	0.16	0.07	0.03	31.34	
45.00		695.45	0.20	0.06	0.02	30.69	
48.00	Bot - Section 2	407.75	0.23	0.06	0.02	17.82	
50.00		539.96	0.24	0.06	0.02	23.24	
53.25	Top - Section 1	863.90	0.28	0.05	0.01	35.50	
55.00		230.96	0.30	0.05	0.01	9.12	
60.00		646.52	0.35	0.03	0.01	20.84	
65.00		626.69	0.41	0.01	0.01	12.79	
70.00		606.87	0.48	-0.01	0.01	2.68	
75.00		587.04	0.55	-0.03	0.01	-7.89	
80.00		567.22	0.63	-0.06	0.02	-16.72	
85.00		547.39	0.71	-0.09	0.03	-22.18	
90.00		527.57	0.79	-0.11	0.05	-23.68	
95.00		507.74	0.88	-0.12	0.08	-21.42	
97.75	Bot - Section 3	270.81	0.93	-0.12	0.10	-10.21	
100.00		349.65	0.98	-0.11	0.12	-11.37	
101.50	Top - Section 2	229.53	1.01	-0.11	0.14	-6.49	
105.00		198.89	1.08	-0.08	0.17	-3.19	
110.00		274.02	1.18	-0.01	0.24	1.97	
115.00		262.13	1.29	0.11	0.33	9.73	
119.00	Appurtenance(s)	4306.6	1.39	0.26	0.42	284.05	
120.00		49.09	1.41	0.30	0.44	3.63	
125.00		238.34	1.53	0.57	0.58	28.02	
128.00	Appurtenance(s)	2365.9	1.60	0.79	0.67	348.31	
129.00	Top - Section 3	44.81	1.63	0.87	0.71	7.07	
130.00		44.34	1.65	0.95	0.74	7.47	
135.00		214.55	1.78	1.46	0.95	48.61	
138.50	Appurtenance(s)	1943.1	1.88	1.91	1.11	528.03	
139.00		19.97	1.89	1.98	1.14	5.56	
	Totals:	**24,444.2**				**1,536.5**	**Total Wind:** **17,576.6**

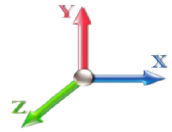
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	22		
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.11	**Ss**	0.21		
Wind Load Factor	0.00	**Structure Frequency**	0.36	**SA**	0.04	**S1**	0.07	**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-25.13	-1.66	0.00	-185.64	0.00	185.64	3147.71	1573.86	6633.45	3321.65		0.00	0.00	0.064
5.00	-24.23	-1.65	0.00	-177.33	0.00	177.33	3110.30	1555.15	6403.28	3206.40		0.01	-0.02	0.063
10.00	-23.35	-1.63	0.00	-169.09	0.00	169.09	3071.25	1535.62	6173.46	3091.32		0.03	-0.03	0.062
15.00	-22.49	-1.60	0.00	-160.95	0.00	160.95	3030.56	1515.28	5944.24	2976.54		0.07	-0.05	0.061
20.00	-21.65	-1.58	0.00	-152.94	0.00	152.94	2988.24	1494.12	5715.85	2862.17		0.13	-0.06	0.061
25.00	-20.83	-1.55	0.00	-145.05	0.00	145.05	2944.28	1472.14	5488.53	2748.34		0.21	-0.08	0.060
30.00	-20.02	-1.52	0.00	-137.30	0.00	137.30	2898.69	1449.34	5262.51	2635.17		0.30	-0.10	0.059
35.00	-19.23	-1.50	0.00	-129.68	0.00	129.68	2851.46	1425.73	5038.05	2522.77		0.41	-0.12	0.058
40.00	-18.46	-1.47	0.00	-122.19	0.00	122.19	2802.60	1401.30	4815.37	2411.26		0.54	-0.13	0.057
45.00	-17.71	-1.44	0.00	-114.85	0.00	114.85	2752.10	1376.05	4594.71	2300.77		0.69	-0.15	0.056
48.00	-17.26	-1.43	0.00	-110.52	0.00	110.52	2721.01	1360.51	4463.39	2235.01		0.79	-0.16	0.056
50.00	-16.73	-1.40	0.00	-107.67	0.00	107.67	2699.97	1349.98	4376.32	2191.41		0.86	-0.17	0.055
53.25	-15.87	-1.37	0.00	-103.11	0.00	103.11	2693.71	1346.85	4350.71	2178.59		0.98	-0.18	0.053
55.00	-15.61	-1.36	0.00	-100.71	0.00	100.71	2675.00	1337.50	4274.96	2140.66		1.05	-0.19	0.053
60.00	-14.90	-1.34	0.00	-93.90	0.00	93.90	2620.47	1310.24	4060.32	2033.18		1.26	-0.21	0.052
65.00	-14.21	-1.33	0.00	-87.18	0.00	87.18	2564.30	1282.15	3848.53	1927.13		1.49	-0.23	0.051
70.00	-13.54	-1.33	0.00	-80.52	0.00	80.52	2506.50	1253.25	3639.84	1822.63		1.74	-0.25	0.050
75.00	-12.88	-1.33	0.00	-73.86	0.00	73.86	2447.06	1223.53	3434.48	1719.79		2.01	-0.27	0.048
80.00	-12.25	-1.34	0.00	-67.19	0.00	67.19	2385.98	1192.99	3232.68	1618.74		2.30	-0.29	0.047
85.00	-11.63	-1.34	0.00	-60.51	0.00	60.51	2323.27	1161.64	3034.69	1519.60		2.61	-0.31	0.045
90.00	-11.02	-1.34	0.00	-53.83	0.00	53.83	2258.93	1129.46	2840.75	1422.49		2.95	-0.33	0.043
95.00	-10.44	-1.34	0.00	-47.15	0.00	47.15	2173.88	1086.94	2628.05	1315.98		3.30	-0.35	0.041
97.75	-10.13	-1.34	0.00	-43.48	0.00	43.48	2126.27	1063.14	2513.60	1258.67		3.50	-0.36	0.039
100.00	-9.76	-1.33	0.00	-40.47	0.00	40.47	2087.31	1043.66	2421.85	1212.73		3.68	-0.37	0.038
101.50	-9.51	-1.33	0.00	-38.47	0.00	38.47	1088.23	544.12	1274.83	638.36		3.79	-0.37	0.069
105.00	-9.24	-1.34	0.00	-33.80	0.00	33.80	1070.27	535.14	1217.34	609.58		4.07	-0.39	0.064
110.00	-8.87	-1.34	0.00	-27.12	0.00	27.12	1043.23	521.61	1135.83	568.76		4.49	-0.41	0.056
115.00	-8.50	-1.33	0.00	-20.44	0.00	20.44	1014.55	507.27	1055.24	528.40		4.94	-0.44	0.047
119.00	-4.53	-1.01	0.00	-15.13	0.00	15.13	990.42	495.21	991.60	496.54		5.31	-0.45	0.035
120.00	-4.47	-1.01	0.00	-14.12	0.00	14.12	984.23	492.11	975.83	488.64		5.41	-0.46	0.033
125.00	-4.20	-0.98	0.00	-9.07	0.00	9.07	952.28	476.14	897.82	449.58		5.90	-0.47	0.025
128.00	-2.03	-0.61	0.00	-6.14	0.00	6.14	932.32	466.16	851.79	426.53		6.20	-0.48	0.017
129.00	-1.99	-0.61	0.00	-5.52	0.00	5.52	925.54	462.77	836.59	418.92		6.30	-0.48	0.015
129.00	-1.99	-0.61	0.00	-5.52	0.00	5.52	925.54	462.77	836.59	418.92		6.30	-0.48	0.015
130.00	-1.95	-0.60	0.00	-4.92	0.00	4.92	918.69	459.34	821.46	411.34		6.40	-0.49	0.014
135.00	-1.76	-0.55	0.00	-1.92	0.00	1.92	883.47	441.73	746.98	374.05		6.91	-0.49	0.007
138.50	-0.02	-0.01	0.00	0.00	0.00	0.00	857.84	428.92	696.10	348.57		7.28	-0.49	0.000
139.00	0.00	-0.01	0.00	0.00	0.00	0.00	854.11	427.06	688.92	344.97		7.33	-0.49	0.000

Wind Loading - Shaft

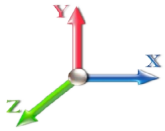
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	218.81	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	213.82	0.650	0.000	5.00	21.545	14.00	94.4	0.0	854.0
10.00		1.00	0.70	6.129	6.74	208.83	0.650	0.000	5.00	21.048	13.68	92.2	0.0	834.2
15.00		1.00	0.70	6.129	6.74	203.83	0.650	0.000	5.00	20.551	13.36	90.1	0.0	814.4
20.00		1.00	0.70	6.129	6.74	198.84	0.650	0.000	5.00	20.054	13.04	87.9	0.0	794.6
25.00		1.00	0.70	6.129	6.74	193.85	0.650	0.000	5.00	19.557	12.71	85.7	0.0	774.7
30.00		1.00	0.70	6.134	6.75	188.94	0.650	0.000	5.00	19.060	12.39	83.6	0.0	754.9
35.00		1.00	0.73	6.410	7.05	188.05	0.650	0.000	5.00	18.563	12.07	85.1	0.0	735.1
40.00		1.00	0.76	6.659	7.33	186.47	0.650	0.000	5.00	18.066	11.74	86.0	0.0	715.3
45.00		1.00	0.79	6.887	7.58	184.34	0.650	0.000	5.00	17.569	11.42	86.5	0.0	695.4
48.00	Bot - Section 2	1.00	0.80	7.015	7.72	182.84	0.650	0.000	3.00	10.303	6.70	51.7	0.0	407.8
50.00		1.00	0.81	7.098	7.81	181.76	0.650	0.000	2.00	6.875	4.47	34.9	0.0	540.0
53.25	Top - Section 1	1.00	0.83	7.227	7.95	179.88	0.650	0.000	3.25	11.002	7.15	56.8	0.0	863.9
55.00		1.00	0.83	7.294	8.02	181.71	0.650	0.000	1.75	5.837	3.79	30.4	0.0	231.0
60.00		1.00	0.85	7.477	8.22	178.47	0.650	0.000	5.00	16.342	10.62	87.4	0.0	646.5
65.00		1.00	0.87	7.650	8.42	174.95	0.650	0.000	5.00	15.845	10.30	86.7	0.0	626.7
70.00		1.00	0.89	7.814	8.60	171.17	0.650	0.000	5.00	15.348	9.98	85.7	0.0	606.9
75.00		1.00	0.91	7.969	8.77	167.18	0.650	0.000	5.00	14.851	9.65	84.6	0.0	587.0
80.00		1.00	0.93	8.118	8.93	162.98	0.650	0.000	5.00	14.354	9.33	83.3	0.0	567.2
85.00		1.00	0.94	8.260	9.09	158.61	0.650	0.000	5.00	13.857	9.01	81.8	0.0	547.4
90.00		1.00	0.96	8.396	9.24	154.07	0.650	0.000	5.00	13.359	8.68	80.2	0.0	527.6
95.00		1.00	0.97	8.526	9.38	149.37	0.650	0.000	5.00	12.862	8.36	78.4	0.0	507.7
97.75	Bot - Section 3	1.00	0.98	8.596	9.46	146.73	0.650	0.000	2.75	6.862	4.46	42.2	0.0	270.8
100.00		1.00	0.99	8.652	9.52	144.54	0.650	0.000	2.25	5.574	3.62	34.5	0.0	349.7
101.50	Top - Section 2	1.00	0.99	8.689	9.56	143.07	0.650	0.000	1.50	3.660	2.38	22.7	0.0	229.5
105.00		1.00	1.00	8.774	9.65	141.49	0.650	0.000	3.50	8.367	5.44	52.5	0.0	198.9
110.00		1.00	1.02	8.891	9.78	136.42	0.650	0.000	5.00	11.530	7.49	73.3	0.0	274.0
115.00		1.00	1.03	9.005	9.91	131.24	0.650	0.000	5.00	11.033	7.17	71.0	0.0	262.1
119.00	Appurtenance(s)	1.00	1.04	9.093	10.00	127.02	0.650	0.000	4.00	8.468	5.50	55.1	0.0	201.1
120.00		1.00	1.04	9.115	10.03	125.96	0.650	0.000	1.00	2.067	1.34	13.5	0.0	49.1
125.00		1.00	1.05	9.222	10.14	120.57	0.650	0.000	5.00	10.039	6.53	66.2	0.0	238.3
128.00	Appurtenance(s)	1.00	1.06	9.284	10.21	117.30	0.650	0.000	3.00	5.785	3.76	38.4	0.0	137.3
129.00	Top - Section 3	1.00	1.06	9.305	10.24	116.20	0.650	0.000	1.00	1.888	1.23	12.6	0.0	44.8
130.00		1.00	1.07	9.326	10.26	115.09	0.650	0.000	1.00	1.869	1.21	12.5	0.0	44.3
135.00		1.00	1.08	9.427	10.37	109.53	0.650	0.000	5.00	9.045	5.88	61.0	0.0	214.5
138.50	Appurtenance(s)	1.00	1.08	9.496	10.45	105.58	0.650	0.000	3.50	6.035	3.92	41.0	0.0	143.1
139.00		1.00	1.09	9.506	10.46	105.01	0.650	0.000	0.50	0.842	0.55	5.7	0.0	20.0
								Totals:	**139.00**			**2,235.5**		**16,310.0**

Discrete Appurtenance Forces

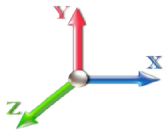
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	138.50	Low Profile Platform	1	9.496	10.446	1.00	1.00	37.20	1800.00	0.000	0.000	388.57	0.00	0.00
2	128.00	Ericsson - KRY 112 114-1	3	9.284	10.213	0.40	0.80	0.49	33.00	0.000	0.000	5.02	0.00	0.00
3	128.00	Ericsson - AIR21 B4A B2P	3	9.284	10.213	0.68	0.80	12.48	271.20	0.000	0.000	127.48	0.00	0.00
4	128.00	Ericsson - AIR21 B2A B4P	3	9.284	10.213	0.68	0.80	12.48	274.50	0.000	0.000	127.48	0.00	0.00
5	128.00	Low Profile Platform	1	9.284	10.213	1.00	1.00	33.40	1650.00	0.000	0.000	341.11	0.00	0.00
6	119.00	Raycap -	2	9.093	10.002	0.80	0.80	1.47	63.60	0.000	0.000	14.72	0.00	0.00
7	119.00	Low Profile Platform	1	9.093	10.002	1.00	1.00	40.20	1800.00	0.000	0.000	402.09	0.00	0.00
8	119.00	Site Pro PRK-1245L	1	9.093	10.002	1.00	1.00	9.50	464.91	0.000	0.000	95.02	0.00	0.00
9	119.00	Site Pro HRK12 Handrail	1	9.093	10.002	1.00	1.00	6.75	261.72	0.000	0.000	67.52	0.00	0.00
10	119.00	Ericsson - RRUS-11 -	3	9.093	10.002	0.54	0.80	4.05	153.00	0.000	0.000	40.53	0.00	0.00
11	119.00	Ericsson - RRUS-32 B2 -	3	9.093	10.002	0.54	0.80	4.41	159.00	0.000	0.000	44.07	0.00	0.00
12	119.00	Ericsson - RRUS 32 B30 -	3	9.093	10.002	0.54	0.80	4.41	180.00	0.000	0.000	44.07	0.00	0.00
13	119.00	Kaelus -	6	9.093	10.002	0.40	0.80	1.03	152.40	0.000	0.000	10.32	0.00	0.00
14	119.00	Powerwave -	3	9.093	10.002	0.40	0.80	0.77	48.00	0.000	0.000	7.68	0.00	0.00
15	119.00	Powerwave - LGP21401 -	9	9.093	10.002	0.40	0.80	4.64	126.90	0.000	0.000	46.45	0.00	0.00
16	119.00	Cci - HPA-65R-BUU-H6	3	9.093	10.002	0.67	0.80	19.34	153.00	0.000	0.000	193.40	0.00	0.00
17	119.00	Quintel - QS66512-2	3	9.093	10.002	0.73	0.80	17.91	333.00	0.000	0.000	179.16	0.00	0.00
18	119.00	Powerwave - 7770	6	9.093	10.002	0.61	0.80	20.22	210.00	0.000	0.000	202.27	0.00	0.00
							Totals:		**8,134.23**			**2,336.98**		

Total Applied Force Summary

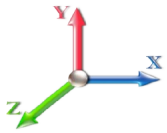
Structure:	CT13060-A-SBA		**Code:**	EIA/TIA-222-G	6/1/2018
Site Name:	Newtown 2		**Exposure:**	B	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		94.41	994.90	0.00	0.00
10.00		92.23	975.07	0.00	0.00
15.00		90.05	955.25	0.00	0.00
20.00		87.88	935.42	0.00	0.00
25.00		85.70	915.60	0.00	0.00
30.00		83.59	895.77	0.00	0.00
35.00		85.08	875.95	0.00	0.00
40.00		86.02	856.12	0.00	0.00
45.00		86.51	836.30	0.00	0.00
48.00		51.68	492.26	0.00	0.00
50.00		34.89	596.30	0.00	0.00
53.25		56.85	955.45	0.00	0.00
55.00		30.44	280.26	0.00	0.00
60.00		87.37	787.37	0.00	0.00
65.00		86.67	767.54	0.00	0.00
70.00		85.75	747.72	0.00	0.00
75.00		84.62	727.89	0.00	0.00
80.00		83.31	708.07	0.00	0.00
85.00		81.83	688.24	0.00	0.00
90.00		80.19	668.42	0.00	0.00
95.00		78.41	648.59	0.00	0.00
97.75		42.18	348.28	0.00	0.00
100.00		34.48	413.04	0.00	0.00
101.50		22.74	271.79	0.00	0.00
105.00		52.49	297.49	0.00	0.00
110.00		73.30	414.87	0.00	0.00
115.00		71.03	402.98	0.00	0.00
119.00	(44) attachments	1402.37	4419.35	0.00	0.00
120.00		13.47	62.61	0.00	0.00
125.00		66.19	305.94	0.00	0.00
128.00	(10) attachments	639.49	2406.55	0.00	0.00
129.00		12.56	44.81	0.00	0.00
130.00		12.46	44.34	0.00	0.00
135.00		60.96	214.55	0.00	0.00
138.50	(1) attachments	429.55	1943.11	0.00	0.00
139.00		5.72	19.97	0.00	0.00
	Totals:	**4,572.48**	**27,918.14**	**0.00**	**0.00**

Calculated Forces

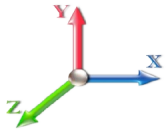
Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-27.92	-4.58	0.00	-457.40	0.00	457.40	3147.71	1573.86	6633.45	3321.65	0.00	0.000	0.000	0.147
5.00	-26.92	-4.50	0.00	-434.49	0.00	434.49	3110.30	1555.15	6403.28	3206.40	0.02	-0.038	0.000	0.144
10.00	-25.94	-4.43	0.00	-411.97	0.00	411.97	3071.25	1535.62	6173.46	3091.32	0.08	-0.076	0.000	0.142
15.00	-24.98	-4.35	0.00	-389.83	0.00	389.83	3030.56	1515.28	5944.24	2976.54	0.18	-0.115	0.000	0.139
20.00	-24.04	-4.28	0.00	-368.06	0.00	368.06	2988.24	1494.12	5715.85	2862.17	0.32	-0.155	0.000	0.137
25.00	-23.13	-4.21	0.00	-346.66	0.00	346.66	2944.28	1472.14	5488.53	2748.34	0.51	-0.195	0.000	0.134
30.00	-22.23	-4.14	0.00	-325.62	0.00	325.62	2898.69	1449.34	5262.51	2635.17	0.73	-0.236	0.000	0.131
35.00	-21.35	-4.06	0.00	-304.93	0.00	304.93	2851.46	1425.73	5038.05	2522.77	1.00	-0.278	0.000	0.128
40.00	-20.49	-3.99	0.00	-284.61	0.00	284.61	2802.60	1401.30	4815.37	2411.26	1.32	-0.320	0.000	0.125
45.00	-19.65	-3.91	0.00	-264.67	0.00	264.67	2752.10	1376.05	4594.71	2300.77	1.67	-0.363	0.000	0.122
48.00	-19.16	-3.86	0.00	-252.94	0.00	252.94	2721.01	1360.51	4463.39	2235.01	1.91	-0.389	0.000	0.120
50.00	-18.56	-3.83	0.00	-245.22	0.00	245.22	2699.97	1349.98	4376.32	2191.41	2.08	-0.407	0.000	0.119
53.25	-17.61	-3.77	0.00	-232.77	0.00	232.77	2693.71	1346.85	4350.71	2178.59	2.37	-0.435	0.000	0.113
55.00	-17.32	-3.75	0.00	-226.17	0.00	226.17	2675.00	1337.50	4274.96	2140.66	2.53	-0.451	0.000	0.112
60.00	-16.53	-3.67	0.00	-207.42	0.00	207.42	2620.47	1310.24	4060.32	2033.18	3.02	-0.493	0.000	0.108
65.00	-15.76	-3.59	0.00	-189.08	0.00	189.08	2564.30	1282.15	3848.53	1927.13	3.56	-0.535	0.000	0.104
70.00	-15.02	-3.50	0.00	-171.16	0.00	171.16	2506.50	1253.25	3639.84	1822.63	4.14	-0.577	0.000	0.100
75.00	-14.29	-3.42	0.00	-153.64	0.00	153.64	2447.06	1223.53	3434.48	1719.79	4.77	-0.618	0.000	0.095
80.00	-13.58	-3.34	0.00	-136.53	0.00	136.53	2385.98	1192.99	3232.68	1618.74	5.44	-0.660	0.000	0.090
85.00	-12.89	-3.26	0.00	-119.83	0.00	119.83	2323.27	1161.64	3034.69	1519.60	6.15	-0.700	0.000	0.084
90.00	-12.22	-3.18	0.00	-103.54	0.00	103.54	2258.93	1129.46	2840.75	1422.49	6.91	-0.739	0.000	0.078
95.00	-11.57	-3.10	0.00	-87.64	0.00	87.64	2173.88	1086.94	2628.05	1315.98	7.70	-0.777	0.000	0.072
97.75	-11.22	-3.05	0.00	-79.13	0.00	79.13	2126.27	1063.14	2513.60	1258.67	8.16	-0.797	0.000	0.068
100.00	-10.81	-3.02	0.00	-72.25	0.00	72.25	2087.31	1043.66	2421.85	1212.73	8.54	-0.813	0.000	0.065
101.50	-10.53	-2.99	0.00	-67.73	0.00	67.73	1088.23	544.12	1274.83	638.36	8.79	-0.824	0.000	0.116
105.00	-10.24	-2.94	0.00	-57.25	0.00	57.25	1070.27	535.14	1217.34	609.58	9.41	-0.846	0.000	0.104
110.00	-9.82	-2.87	0.00	-42.54	0.00	42.54	1043.23	521.61	1135.83	568.76	10.32	-0.891	0.000	0.084
115.00	-9.42	-2.80	0.00	-28.20	0.00	28.20	1014.55	507.27	1055.24	528.40	11.27	-0.927	0.000	0.063
119.00	-5.02	-1.32	0.00	-17.01	0.00	17.01	990.42	495.21	991.60	496.54	12.06	-0.948	0.000	0.039
120.00	-4.96	-1.31	0.00	-15.68	0.00	15.68	984.23	492.11	975.83	488.64	12.26	-0.952	0.000	0.037
125.00	-4.65	-1.24	0.00	-9.13	0.00	9.13	952.28	476.14	897.82	449.58	13.26	-0.969	0.000	0.025
128.00	-2.26	-0.56	0.00	-5.42	0.00	5.42	932.32	466.16	851.79	426.53	13.88	-0.976	0.000	0.015
129.00	-2.21	-0.55	0.00	-4.86	0.00	4.86	925.54	462.77	836.59	418.92	14.08	-0.978	0.000	0.014
129.00	-2.21	-0.55	0.00	-4.86	0.00	4.86	925.54	462.77	836.59	418.92	14.08	-0.978	0.000	0.014
130.00	-2.17	-0.53	0.00	-4.31	0.00	4.31	918.69	459.34	821.46	411.34	14.29	-0.979	0.000	0.013
135.00	-1.96	-0.47	0.00	-1.64	0.00	1.64	883.47	441.73	746.98	374.05	15.31	-0.985	0.000	0.007
138.50	-0.02	-0.01	0.00	0.00	0.00	0.00	857.84	428.92	696.10	348.57	16.04	-0.986	0.000	0.000
139.00	0.00	-0.01	0.00	0.00	0.00	0.00	854.11	427.06	688.92	344.97	16.14	-0.986	0.000	0.000

Final Analysis Summary

Structure:	CT13060-A-SBA	**Code:**	EIA/TIA-222-G	6/1/2018	
Site Name:	Newtown 2	**Exposure:**	B		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 93 mph Wind	17.6	0.00	33.48	0.00	0.00	1770.08
0.9D + 1.6W 93 mph Wind	17.6	0.00	25.10	0.00	0.00	1751.21
1.2D + 1.0Di + 1.0Wi 50 mph Wind	5.7	0.00	52.52	0.00	0.00	572.92
1.2D + 1.0E	1.7	0.00	33.50	0.00	0.00	187.80
0.9D + 1.0E	1.7	0.00	25.13	0.00	0.00	185.64
1.0D + 1.0W 60 mph Wind	4.6	0.00	27.92	0.00	0.00	457.40

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 93 mph Wind	-33.48	-17.62	0.00	-1770.0	0.00	-1770.0	3147.71	1573.8	6633.45	3321.65	0.00	0.544
0.9D + 1.6W 93 mph Wind	-25.10	-17.61	0.00	-1751.2	0.00	-1751.2	3147.71	1573.8	6633.45	3321.65	0.00	0.535
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-52.52	-5.69	0.00	-572.92	0.00	-572.92	3147.71	1573.8	6633.45	3321.65	0.00	0.189
1.2D + 1.0E	-12.68	-1.36	0.00	-39.05	0.00	-39.05	1088.23	544.12	1274.83	638.36	101.50	0.073
0.9D + 1.0E	-9.51	-1.33	0.00	-38.47	0.00	-38.47	1088.23	544.12	1274.83	638.36	101.50	0.069
1.0D + 1.0W 60 mph Wind	-27.92	-4.58	0.00	-457.40	0.00	-457.40	3147.71	1573.8	6633.45	3321.65	0.00	0.147

Base Plate Summary

Structure:	CT13060-A-SB		**Code:**	EIA/TIA-222-G	6/1/2018
Site Name:	Newtown 2		**Exposure:**	B	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	1882.00
Axial (kip):	32.90
Shear (kip):	17.20
Analysis	
Moment (kip-ft):	1770.08
Axial (kip):	52.52
Shear (kip):	17.62
Moment Design %:	94.05

Base Plate	
Yield (ksi):	60.00
Width (in):	56.00
Style:	Clipped
Polygon Sides:	4.00
Clip Length (in):	10.00
Effective Len (in):	10.31
Moment (kip-in):	410.33
Allow Stress (ksi):	81.00
Applied Stress (ksi):	0.00
Stress Ratio:	0.39

Anchor Bolts	
Bolt Circle:	58.00
Number Bolts:	12.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	6.00
Start Angle (deg):	45.00
Compression	
Force (kip):	126.45
Allowable (kip):	260.00
Ratio:	0.50
Tension	
Force (kip):	117.70
Allowable (kip):	260.00
Ratio:	0.46

Last revised on 11/28/2017

Monopole Mat Foundation Design

			Date: 6/1/2018
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	139
Site Number:	CT13060-A-SBA	**Engineer Name:**	M. Baker
Engr. Number:	53402	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

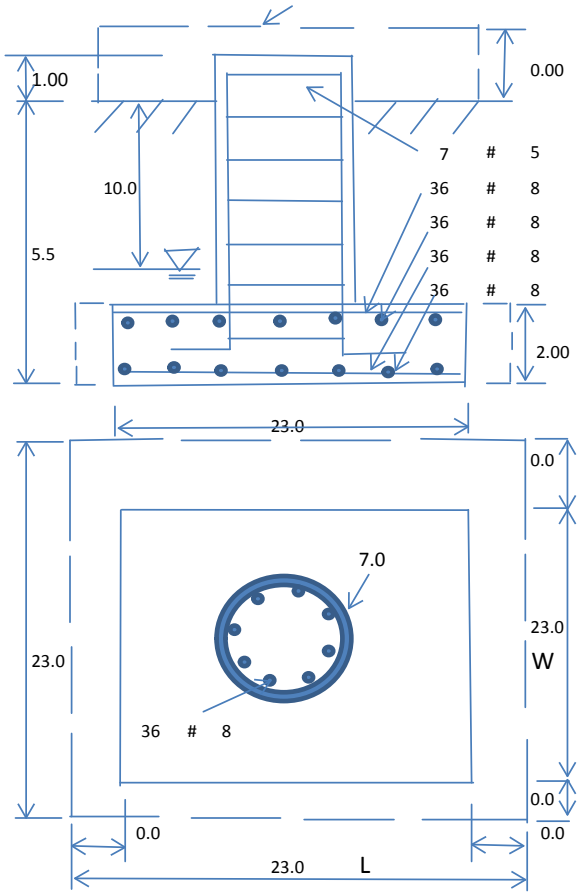
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	33.5	Shear Force (Kips):	17.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1770.1
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	5.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	23	Width of Pad (ft.):	23
Final Length of pad (ft)	23.0	Final width of pad (ft):	23.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	36	Qty. of Rebar in Pad (W):	36	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	36	Qty. of Rebar in Pad (W):	36	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	10.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	1716.80	Total Dry Soil Weight (Kips):	188.85
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	188.85	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1231.18	Total Dry Concrete Weight (Kips):	184.68
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	184.68	Total Vertical Load on Base (Kips):	407.01

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1758	<	Allowable Factored Soil Bearing (psf):	9000	0.20	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	4251.0	>	Design Factored Momont (kips-ft):	1885	0.44	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.26	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00			
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	0.79		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	4845.7	>	Design Factored Moment (Mu, Kips-Ft	1849.3	0.38	OK!
Calculated Shear Capacity (Kips):	734.1	>	Design Factored Shear (Kips):	17.6	0.02	OK!
Calculated Tension Capacity (Tn, Kips):	1535.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9747.6	>	Design Factored Axial Load (Pu Kips):	33.5	0.00	OK!
Moment & Axial Strength Combination:	0.38	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.005		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	536.8	>	One-Way Factored Shear (L-D. Kips):	145.0	0.27	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	536.8	>	One-Way Factored Shear (W-D., Kips)	145.0	0.27	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	516.0	>	One-Way Factored Shear (C-C, Kips):	141.5	0.27	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0050	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0050		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2507.2	>	Moment at Bottom (L-Dir. K-Ft):	670.4	0.27	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2507.2	>	Moment at Bottom (W-Dir. K-Ft):	670.4	0.27	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	3500.6	>	Moment at Bottom (C-C Dir. K-Ft):	948.2	0.27	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0050	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0050		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2507.2	>	Moment at the top (L-Dir K-Ft):	268.2	0.11	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2507.2	>	Moment at the top (W-Dir K-Ft):	268.2	0.11	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3500.6	>	Moment at the top (C-C Dir. K-Ft):	252.6	0.07	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	708.0	k-ft.	Max. factored shear stress v_{u_CD}:		0.7	Psi
Max. factored shear stress v_{u_AB}:	9.0	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	9.0	Psi	Check Usage of Punching Shear Capacity:		0.05	OK!